Appendix I: European Site Characterisations

Special Areas of Conservation

1. Abermenai to Aberffraw Dunes SAC
2. Afon Eden - Cors Goch Trawsfynydd SAC
3. Afon Gwyrfrai a Lyn Cwellyn SAC
4. Anglesey Coast: Saltmarsh SAC
5. Anglesey Fens SAC
6. Berwyn and South Clwyd Mountains SAC
7. Cadair Idris SAC
8. Cemlyn Bay SAC
9. Coedydd Aber SAC
10. Cors Fochno SAC
11. Corsydd Eifionydd SAC
12. Glan-traeth SAC
13. Glynllifon SAC
14. Great Orme's Head SAC
15. Holy Island Coast SAC
16. Llyn Fens SAC
17. Llyen Peninsula and the Sarnau SAC
18. Llyn Dinam SAC
19. Meirionnydd Oakwoods and Bat Sites SAC
20. Menai Strait and Conwy Bay SAC
21. Migneint - Arenig - Dduallt SAC
22. Morfa Harlech a Morfa Dyffryn SAC
23. Preseli SAC
24. Rhinog SAC
25. River Dee and Bala Lake SAC
26. Sea Cliffs of Lleyn SAC

27. Snowdonia SAC

Special Protection Areas
1. Aberdardon Coast and Bardsey Island SPA
2. Berwyn SPA
3. Craig yr Aderyn SPA
4. Dyfi Estuary SPA
5. Elenydd - Mallaen SPA
6. Holy Island Coast SPA
7. Lavan Sands, Conway Bay SPA
8. Liverpool Bay SPA
9. Migneint - Arenig - Dduallt SPA
10. Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal SPA
11. Puffin Island SPA
12. Ynys Feurig, Cemlyn Bay and the Skerries SPA

Ramsar
1. Anglesey and Llyn Fens Ramsar
2. Cors Fochno and Dyfi Ramsar
3. Llyn Idwal Ramsar
4. Llyn Tegid Ramsar

Special Areas of Conservation

Abermenai to Aberffraw Dunes SAC

Overview

The Abermenai to Aberffraw Dunes Special Area of Conservation (SAC) is at the southern end of the Menai Strait in Ynys MÔn and Gwynedd, Wales. It comprises 3 main areas. Tywyn Aberffraw is a large and relatively intact calcareous hind-shore dune system enclosing a shallow lake. Newborough Warren is a large sand-dune system, partly afforested, located between the estuaries of the Afon Cefni and the Afon Braint including the shingle spit of Abermenai. Morfa Dinlle, on the south side of the Strait, is a large shingle spit and dune system.

Abermenai to Aberffraw Dunes Special Area of Conservation (SAC) lies adjacent to, and is functionally integrated with, the Anglesey Coast Saltmarsh SAC. This includes the estuaries of the Afon Ffraw (within Tywyn Aberffraw SSSI) Afon Cefni and Afon Braint (within Newborough Warren – Ynys Llanddwyn SSSI) Glantraeth SAC, selected for its population of great crested newts, is adjacent to the dune SAC and Newborough Warren Ynys Llanddwyn SSSI.

Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC, selected for its reefs, bays, mudflats and sandflats, subtidal sandbanks and caves is adjacent to the saltmarsh SAC and Newborough Warren Ynys Llanddwyn SSSI.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
2110 Embryonic shifting dunes
2120 Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes`)
2130 Fixed dunes with herbaceous vegetation (`grey dunes`) * Priority feature
2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
2190 Humid dune slacks

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Annex II species that are a primary reason for selection of this site:
1395 Petalwort *Petalophyllum ralfsii*
1441 Shore dock *Rumex rupestris*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Embryonic shifting dunes (EU Ref: 2110)

Vision for feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The distribution and extent of embryonic shifting dunes in late summer is determined by the availability of naturally accreting sand and strand line organic material. However, we would not expect all this potential embryonic dune habitat area to be vegetated in any one year and embryonic dunes may be absent in some years. Continuous absence over the six-year reporting cycle would cause the condition to be considered unfavourable.
- The potential for the embryonic shifting dunes element of the typical zonation, from beach to fixed dune, is intact along the soft coastal frontage. This includes an unrestricted supply of sediment, opportunity for aeolian transport and naturally occurring organic strandline material.
- The typical species of the strandline vegetation include *Atriplex spp., Beta vulgaris, Cakile maritime, Honkenya peploides, Salsola kali.*
- The typical species of the embryonic dune vegetation include *Elytrigia juncea* and /or *Leymus*
- *arenarius.*
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") (2120)

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Shifting dunes with *Ammophila arenaria* are present along the dune front facing prevailing (southwest) winds where sediment supply is adequate.
- There should be no decrease in the total (aggregate) area of qualifying dune habitats for which this site was designated (i.e., the sum total of qualifying dune habitat should not diminish). The extent and location of individual dune habitat features may be subject to periodic and seasonal variation.
- The shifting dunes element of the typical zonation from beach to fixed dune is intact along the soft coastal frontage.
- Bare ground is present.
- The typical species of the shifting dune vegetation include *Ammophila arenaria, Leymus arenarius, Elymus farctus, Eryngium maritimum, Euphorbia portlandica, Euphorbia paralias*, and *Calystegia soldanella*.

- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for Feature 3: Fixed dunes with herbaceous vegetation (`grey dunes`)*(Habitats Directive priority feature)

Vision for feature 3

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The distribution of fixed dunes within the site may vary in response to natural dynamic processes and changes to other qualifying dune habitats for the site.
- There should be no decrease in the total area of fixed dunes with herbaceous vegetation.
- The fixed dunes element of the typical zonation from beach to fixed dune is intact along the soft coastal frontage.
- Bare ground is present
- The typical species of the fixed dune vegetation include *Cerastium fontanum, Crepis capillaris, Cladonia spp., Peltigera spp., Erodium cicutarium, Geranium molle, Luzula campestris, Odontites verna, Pilosella officinarum, Plantago lanceolata, Prunella vulgaris, Festuca rubra, Galium verum, Anacamptis pyramidalis, Thymus polytrichus, Sedum acre, Veronica chamaedrys, Carex arenaria, C. flacca, Euphrasia officinalis, Hypnum cupressiforme, Hypochaeris radicata, Linum catharticum, Lotus corniculatus, Ononis repens, Rhinanthus minor, Rhytidiadelphus squarrosus, R triquetrus, Tortula muralis Viola canina, V. riviniana* and *V. tricolor.*
- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for Feature 4: Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)

Vision for feature 4

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The distribution of dunes with *Salix repens ssp argentea* is consistent with the typical dune zonation and where topographic conditions are suitable. The location of dunes with *Salix repens ssp argentea* within the site may vary in response to natural dynamic processes and changes to other qualifying dune habitats for the site.
- There should be no decrease in the total (aggregate) area of qualifying dune habitats for which this site was designated (i.e., the sum total of qualifying dune habitat should not diminish).
- The extent of individual dune habitat features may be subject to periodic and seasonal variation.
- Salix repens is at least frequent and generally 5 - 30cm tall.
- Opportunities for the initiation of embryonic dune slacks by wind erosion exist.
- Bare ground is present.
- The groundwater level is appropriate in winter and summer.
- Groundwater quality is unaffected by pollution.

- The typical species include *Salix repens, Carex arenaria, C flacca, Euphrasia officinalis, Festuca rubra, Lotus corniculatus, Ononis repens, Equisetum variegatum, Epipactis palustris, Epipactis leptochila spp dunensis* and *Pilosella officinarum.*
- All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for Feature 5: Humid dune slacks (2190)

Vision for feature 5

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The distribution of humid dune slacks is consistent with the typical dune zonation and where topographical conditions are suitable. The location of humid dune slacks within the site may vary in response to natural dynamic processes and changes to other qualifying dune habitats for the site.
- There should be no decrease in the total (aggregate) area of qualifying dune habitats for which this site was designated (i.e., the sum total of qualifying dune habitat should not diminish).
- The extent and location of individual dune habitat features may be subject to periodic and seasonal variation.
- All humid dune slack communities should be present, from embryonic dune slacks with a high
- % of bare ground to more closed vegetation with Salix repens.
- Opportunities for the initiation of embryonic dune slacks (by wind erosion) exist.
- Bare ground is present.
- The ground water level is appropriate in winter and summer.
- Ground water quality is unaffected by pollution.
- The typical species include *Salix repens, Carex arenaria, C flacca, Equisetum variegatum, Lotus corniculatus, Ononis repens, Potentilla anserina, Galium palustre, Mentha aquatica, Hydrocotyle vulgaris*, *Campyllium stellatum, Prunella vulgaris, Ranunculus flammula, Calliergon cuspidatum, Anagallis tenella. Parnassia palustris, Selaginalla selaginoides, Dactylorhiza incarnata* and *Epipactis palustris.*
- Petalwort occurs in humid dune slacks in which *Equisetum variegatum* is frequent at Aberffraw and Newborough compartments.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for Feature 6: Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Vision for feature 6

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The distribution of the lakes reflects their physiographic status as dune-dammed lakes of shallow valleys.
- The extent (area) of the habitat is 30ha, except if reduced by natural succession to swamp or bog.
- The catchment of the lakes continues to provide adequate quality and quantity of water.

- Appropriate water level is maintained throughout the year, (seasonal fluctuation +/- 30cm).
- Water quality is characteristic of maritime, high alkalinity shallow lakes, such as to maintain pH 7-9, alkalinity 1500-2500µeq/l, dissolved oxygen and peak annual Total Phosphorus <50µg/l.
- Chlorophyll values are low, and sufficient to allow both lakes to be passed as 'Good' or better for a 'high alkalinity shallow lake' using Water Framework Directive classification methods.
- The typical species are submerged aquatic plants including *Elatine hydropiper, Potamogeton trichoides, P pectinatus P. perfoliatus P. lucens, Ranunculus circinatus, , Eleocharis acicularis, Myriophyllum spicatum, Callitriche hermaphroditica,* and *Chara spp.*.
- Emergent aquatic plants, typically *Phragmites australis, Schoenoplectus lacustris, Sparganium erectum, Typha latifolia, Alisma plantago-aquatica*, and *Litorella uniflora* should be present on the shoreline.
- Invasive or disruptive species such as *Crassula helmsii* or coarse fish should be absent.
- All factors affecting the achievement of these conditions are under control.

4.8 Conservation Objective for Feature 8: Petalwort *Petallophyllum ralfsii*

Vision for feature 8

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The population of petalwort is stable or increasing.
- Petalwort occurs in humid dune slacks in which *Equisetum variegatum* is frequent, across all sectors of the site where habitat conditions are suitable, i.e. Aberffraw and Newborough compartments.
- Humid dune slack with bare sand or humus crust and short vegetation characterised by *Equisetum variegatum* is present at Aberffraw and Newborough compartments where sediment and hydrological conditions permit (see Objective for humid dune slacks).
- Competition (including shading) from other species is controlled.
- All factors affecting the achievement of these conditions are under control.

4.9 Conservation Objective for Feature 9: Shore dock *Rumex rupestris*

Vision for feature 9

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The population of shore dock is stable or increasing.
- Shore dock occurs in at least 3 locations across the site.
- Opportunities occur for marine dispersal of seed.
- Open streamside, coastal soft cliff seepages or dune slack pool habitat is adequate for its survival.
- Adequate freshwater supply is maintained.
- Bare ground or disturbed areas are maintained (e.g. by grazing animals) to permit germination.

- Competition (including shading) from other species is controlled.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Y Twyni O Abermenai I Aberffraw/Abermenai To Aberffraw Dunes SAC; Glannau Môn: Cors Heli/ Anglesey Coast: Saltmarsh SAC; Newborough Warren - Ynys Llanddwyn SSSI; Tywyn Aberffraw SSSI; and Morfa Dinlle SSSI (Countryside Council for Wales, April 2008).

Vulnerabilities

Dune stabilisation is leading to the gradual loss of early successional phases. The maintenance of dynamic geomorphological processes is constrained at Newborough by the conifer forest that occupies the same part of the site. The hydrological integrity of the site is also compromised by water-table reduction due to the conifer crop.

The spread of *Hippophae rhamnoides* and pine seedlings from the forest threaten the dunes, and both are controlled by cutting and spraying. There is no ready solution to these problems without removal of part of the forest. Redesign of the forest is now under discussion with the Forestry Commission.

Abandonment of traditional grazing on Aberffraw common land could occur due to traffic hazards on unfenced roads, and the installation of cattle grids is under discussion with the owners.

The ecological requirements of shore dock are not well known, although shading and scrub development on its forest refuge appears to be a threat. This is being tackled by tree removal and pony grazing, resulting in an increase in the shore dock population.

Afon Eden - Cors Goch Trawsfynydd SAC

Overview

The Afon Eden/River Eden is a relatively unmodified river, mainly upland in character, of approximately 10km length. The watershed begins just south of Llyn Trawsfynydd, within an area of gently sloping and poorly drained land. T he upper section of the catchment is slow flowing with a number of deep pools along its length. In the lower two-thirds of the catchment the river flows more steeply into a narrow rocky gorge, with an adjacent area of forestry plantation, known as Coed y Brenin. The Afon Eden joins with the Afon Mawddach, just above the village of Ganllwyd, but the SAC boundary continues downstream to the tidal limit of the Mawddach at Llanelltyd. The Afon Eden is fed by a number of

base-poor upland streams, which flow from the eastern flanks of the Rhinog mountains. The Ardudwy leat takes the most acidic waters from the eastern tributaries to Llyn Trawsfynydd. This water is used to maximise the water available for HEP generation by the Maentwrog Power Station.

The area receives high average rainfall, which has contributed to the development of raised bogs, blanket bog, and transition mires and quaking bogs. Two areas of raised bog occur at the top end of the catchment, close to the watershed, where they were once part of a much larger extent of bog, much of which is now flooded by Llyn Trawsfynydd. Transition mires and quaking bogs occur in waterlogged situations where they receive nutrients from the surrounding catchment as well as from rainfall. They are located within the wetlands surrounding the areas of raised bog.

The ecological structure and functions of the site are dependent on hydrological and geomorphological processes (often referred to as hydromorphological processes), the quality of riparian habitats and connectivity of habitats. Animals that are highly mobile such as migratory fish and otters are also affected by factors operating outside the site.

The river contains the last known population of freshwater pearl mussels surviving in Wales; they are almost entirely confined to one section of the river. Historically the mussels were more widespread in the catchment. The mussels rely on salmonid parr hosting, for a short period of time, the glochidial larvae of the mussels on their gills, so the success of migratory and spawning fish in the catchment is crucial to their long term survival. Atlantic salmon is also an important fish species that breeds in the Mawddach catchment. In the slow moving waters just upstream from Pont y Grible is a population of floating water plantain.

Qualifying Features

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
7110 Active raised bogs * Priority feature

Annex II species that are a primary reason for selection of this site:
1029 Freshwater pearl mussel *Margaritifera margaritifera*
1831 Floating water-plantain *Luronium natans*

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1106 Atlantic salmon *Salmo salar*
1355 Otter *Lutra lutra*

Conservation Objectives

4.1 Conservation Objective for SSSI Feature 1:Water Courses

Vision for water courses

The ecological status of the water course is a major determinant in the capacity for the habitats in the SAC to support each feature at near-natural population levels, as determined by natural ecological and hydromorphological processes and characteristics. Flow regime, water quality, quantity and physical habitat should be maintained or restored as far as possible to a near-natural state in order to support the coherence of the ecosystem structure and function. Favourable conservation status (FCS) is determined in part by the capacity of the water course to support the species for which it is considered special, so the relevant SAC features must be in FCS for the water course feature to be in FCS.

FCS can be maintained or restored to favourable conservation status when all the following conditions for the water course are satisfied:

1. Water flows and water quantity shall be sufficient to support the SAC features. This shall include:

- during the migration periods of each migratory fish species that their passage upstream to spawning sites is not hindered by abstraction discharges, engineering or gravel extraction activities or other impacts.
- Water quantity and flows at pearl mussel beds, fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.

2. Water quality shall be sufficient to support the SAC features. This shall include:-

- Levels of nutrients, in particular orthophosphate, will be agreed between EA and CCW for the Water Framework Directive water body in the Afon Eden – Cors Goch Trawsfynydd SAC, and measures taken to maintain nutrients below these levels.
- Levels of suspended solids will be agreed between EA and CCW for the Water Framework Directive water body in the Afon Eden – Cors Goch Trawsfynydd SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

3. The physical habitat and substrate quantity shall be maintained. All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat except where natural processes cause them to change. Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, e.g. leats, bridge sills etc.

4.2 Conservation Objective for SAC Feature 2: Floating water-plantain *Luronium natans* (Code: 1831)

Vision for feature 2

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- The *L. natans* populations will be viable throughout their current extent in the Afon Eden & will be able to maintain themselves on a long-term basis. There will be no contraction of the current *L. natans* distribution in the Afon Eden and each *L. natans* population must be able to disperse and complete sexual and/or vegetative reproduction successfully.
- The river will have sufficient habitat to support existing *L. natans* populations within their current distribution and future expansion.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for SAC Feature 3: Freshwater pearl mussel *Margaritifera margaritifera* (Code: 1029)

Vision for feature 3

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- The freshwater pearl mussel population must be viable throughout its distribution in the river and maintaining itself on a long-term basis.
- There will be no contraction of the number, age range, distribution or size of mussel beds found within the population.
- Within the distribution of these beds there will be sufficient habitat to support a viable population.
- The transference of pearl mussel glochidia (larvae) is facilitated by an abundant and self-sustaining Atlantic salmon population.
- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for Feature 4: Atlantic Salmon *Salmo salar* (Code: 1106)

Vision for feature 4

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- The Atlantic salmon population must be viable throughout its distribution in the river and maintaining itself on a long-term basis.
- There will be no contraction of the number or age range of the salmon population.
- There will be sufficient habitat to support a viable population.
- All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for Feature 5: Otter *Lutra lutra* (Code: 1355)

Vision for feature 5

The vision for this feature is for it be in favourable conservation status, where all of the following conditions are satisfied:

- The population of otters in the SAC is stable or increasing over the long term and reflects the natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour.
- The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding

territories.
- A number of potential and breeding sites have been identified (Lyles, 2006) in the upper reaches of the Afon Eden. The size of breeding territories may vary depending on prey abundance.
- The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the provision of artificial holts. No otter breeding site is subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance are managed. Survey information shows that otters are widely distributed in the Mawddach catchment.
- The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for SAC Feature 6: Active raised bog (Code: 7110)

Vision for feature 6

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied for both raised bogs management units:
- The location and distribution of the raised bogs and associated rands and fen laggs will increase at the expense of less desirable vegetation communities.
- The extent of the raised bogs and associated rands, fen lags and blanket bog (including those areas that are considered unfavourable or currently degraded) will be at least 157 ha. This area estimate is based on the extent of the management units within which the peat 'domes' are situated.
- The raised bogs will exhibit a near-natural zonation from the purely ombrogenous (rain fed) bog crowns, through sloping rand and wet lagg zones to adjacent blanket bog.
- The abundance and distribution of uncommon plants is maintained or increased.
- The typical species of the vegetation communities comprising the active raised bog SAC feature are frequent.
- The hydrological integrity of each bog will be restored and maintained and the development of scrub and encroachment of *Molinia caerulea* will be managed. The structure of the bogs are maintained and restored to include bog pools, depressions, hummocks and hollows as a natural feature of the bog surface. Artificial drainage ditches or moor grips are not present as functioning drains.
- Invasive non-native species such as conifers, rhododendron, Japanese knotweed, Himalayan balsam and bridewort (*Spirea)* are not present within the SAC boundary.
- Each active raised bog management unit is free from all trees.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Afon Eden - Cors Goch Trawsfynydd (Countryside Council for Wales, March 2008).

Vulnerabilities

The pearl mussel and salmonids are particularly vulnerable to water pollution e.g. sheep-dip, nitrate input, sediment input, and inappropriate river management. Any inputs to the river which affect water chemistry need to be controlled, and river management must take account of the needs of the features. The mire features require appropriate grazing and control/cessation of burning, currently being addressed through agri-environment scheme agreements (Tir Cymen/Tir Gofal). The high rainfall and acidic geology/pedology renders this area vulnerable to acidification.

Afon Gwyrfrai and Llyn Cwellyn SAC

Overview

This site comprises the Afon Gwyrfai and Llyn Cwellyn. The Gwyrfai flows out of Llyn y Gader near Rhyd Ddu and passes through Llyn Cwellyn on its way to the sea at Y Foryd, Caernarfon Bay. It also includes a tributary of the Gwyrfai, the Afon Treweunydd, and the small lake it flows from on the slopes of Snowdon. Sporadically throughout its course, the SAC is abutted by semi-natural wetland riparian habitat much of which is within the SSSI.

Llyn Cwellyn has long been recognised for its conservation importance and is an excellent example of a deep (maximum depth of 37m, average depth of 23m) oligotrophic lake formed during the last Ice Age. Its nutrient–poor waters support a range of typical macrophytes, and one of the best populations of floating water plantain in the UK.

The whole of the Gwyrfai river system is of outstanding ecological quality. The river is particularly noted for its excellent salmon population, for which it is considered to be one of the best supporting rivers in the United Kingdom. It is also notable for its otter population which occur here in good numbers because of the relative naturalness of its riparian habitats and the abundance of undisturbed dense cover. In addition to the lake, the river supports a discrete community of floating water plantain, and water-crowfoot Ranunculus spp, with other associated vegetation including bryophyte assemblages occurring in various sectors of the river.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Annex II species that are a primary reason for selection of this site:
1106 Atlantic salmon *Salmo salar*
1831 Floating water-plantain *Luronium natans*

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1355 Otter *Lutra lutra*

Conservation Objectives

4.1 Conservation Objective for the water course:

The ecological status of the water course is a major determinant of FCS for all features. The required conservation objective for the water course is defined below.

- The capacity of the habitats in the SAC to support each feature at near-natural population levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics, should be maintained as far as possible, or restored where necessary.
- The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure. It is anticipated that these limits will concur with the relevant standards agreed between CCW and the Environment Agency through the Review of Consents process.
- Flow regime, water quality and physical habitat should be maintained in, or restored as far as possible to, a near-natural state, in order to support the coherence of ecosystem structure and function across the whole area of the SAC.
- All known breeding, spawning and nursery sites of species features should be maintained as suitable habitat as far as possible, except where natural processes cause them to change.
- Flows, water quality, substrate quality and quantity at fish spawning sites and nursery areas will not be depleted by abstraction, discharges, engineering or gravel extraction activities or other impacts to the extent that these sites are damaged or destroyed.
- The river plan-form and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC, including, but not limited to, revetments on active alluvial river banks using stone, concrete or waste materials, unsustainable extraction of gravel, addition or release of excessive quantities of fine sediment, will be avoided.

- River habitat SSSI features should be in favourable condition.
- Artificial factors impacting on the capability of each species feature to occupy the full extent of its natural range should be modified where necessary to allow passage, e.g. weirs, bridge sills, acoustic barriers.
- Natural factors such as waterfalls, which may limit the natural range of a species feature or dispersal between naturally isolated populations, should not be modified.
- Flows during the normal migration periods of each migratory fish species feature will not be depleted by abstraction to the extent that passage upstream to spawning sites is hindered.
- Levels of nutrients, in particular phosphate, will be agreed between the EA and CCW in the Water Framework Directive water body in the Afon Gwyrfai a Llyn Cwellyn SAC, and measures taken to maintain nutrients below these levels. It is anticipated that these limits will concur with the standards to be agreed between CCW and Environment Agency Wales used by the Review of Consents process.
- Levels of water quality parameters that are known to affect the distribution and abundance of SAC features will be agreed between EA and CCW for the Water Framework Directive water body in the Afon Gwyrfai a Llyn Cwellyn SAC and measures taken to maintain pollution below these levels. It is anticipated that these limits will concur with the standards to be agreed between CCW and Environment Agency Wales used by the Review of Consents process.
- Potential sources of pollution not addressed in the Review of Consents, such as contaminated land, forestry operations and improvement of riparian habitat, will be considered in assessing plans and projects.
- Levels of suspended solids will be agreed between EA and CCW for the Water
- Framework Directive water body in the Afon Gwyrfai a Llyn Cwellyn SAC. Measures including, but not limited to, the control of suspended sediment generated by agriculture, forestry and engineering works, will be taken to maintain suspended solids below these levels.

4.2 Conservation Objective for Feature 1: Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and /or of the *Isoteo-Nanojuncetea* (EU Habitat Code: 3130)

Vision for feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Water quality of the lake is within parameters which are suitable to support the characteristic flora and fauna.
- The lake shows a characteristic vegetation zonation from the shore to the deeper water.
- The lake has a macrophyte flora which includes many of the characteristic species including *Littorella uniflora*, *Lobelia dortmanna*, *Isoetes lacustris*, *Luronium natans* and *Subularia aquatica,* together with a diverse range of associates including *Myriophyllum alterniflorum*, *Callitriche hamulata, Nitella flexilis* and *Potamogeton berchtoldii.*
- *Nitella gracilis* and *Luronium natans* to be present as characteristic plants.

4.3 Conservation Objective for Feature 2: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho- Batrachion*

vegetation (EU Habitat Code: 3130)

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The conservation objective for the water course as defined in 4.1 above must be met.
- The extent of this feature within its potential range in this SAC should be stable or increasing.
- The extent of the sub-communities that are represented within this feature should be stable or increasing.
- The conservation status of the feature's typical species should be favourable.
- All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

4.4 Conservation Objective for Feature 3: Atlantic salmon *Salmo salar* (EU Species Code 1106)

Vision for feature 3:

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The conservation objective for the water course as defined in 4.1 above must be met
- The population of the feature in the SAC is stable or increasing over the long term.
- The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural.
- The Gwyrfai will continue to be a sufficiently large habitat to maintain the feature's population in the SAC on a long-term basis.

4.5 Conservation Objective for Feature 4: Floating water-plantain *Luronium natans* (Code: 1831)

Vision for feature 2

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- The conservation objective for the water course as defined in 4.1 above must be met.
- Llyn Cwellyn will continue to support a peripheral floating water-plantain assemblage, as well
- as a deeper water assemblage, with a characteristic zonation of vegetation from the shore at two areas of the lake.
- Floating water-plantain will continue to flourish in the Afon Gwyrfai and will continue to occur in every selected section
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for Feature 5: European otter *Lutra lutra*

Vision for feature 5:
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The population of otters in the SAC is stable or increasing over the long term and reflects the natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour.
- The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories.
- The size of breeding territories may vary depending on prey abundance.
- The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the provision of artificial holts. No otter breeding site is subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance are managed.
- The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Corsydd Môn/ Anglesey Fens SAC (Countryside Council for Wales, April 2008).

Vulnerabilities

The lake is utilised as a raw drinking water reservoir. The present abstraction regime is compatible with its nature conservation status.

Recent investigations have revealed that Llyn Cwellyn has acidified by 0.7 pH units since the late 1800s, due to increases in emissions of oxides of sulphur and nitrogen and subsequent acidic depositions in the form of 'acid rain'. The management of the extensive block of coniferous plantation on the shores of Llyn Cwellyn is an important factor in safeguarding the conservation value of the lake. A management plan has been agreed upon between the Countryside Council for Wales and Forest Enterprise. Negotiations are in progress to redesign the plantation to remove trees from around tributary streams, and hence reduce any further risk of acidification.

The Afon Gwyrfai is likely to be most vulnerable to cumulative impacts of small-scale changes along its length which may affect water quality

and habitat structure.

Anglesey Coast: Saltmarsh SAC

Overview

The Abermenai to Aberffraw Dunes Special Area of Conservation (SAC) is at the southern end of the Menai Strait in Ynys M^n and Gwynedd, Wales. It comprises 3 main areas. Tywyn Aberffraw is a large and relatively intact calcareous hind-shore dune system enclosing a shallow lake. Newborough Warren is a large sand-dune system, partly afforested, located between the estuaries of the Afon Cefni and the Afon Braint including the shingle spit of Abermenai. Morfa Dinlle, on the south side of the Strait, is a large shingle spit and dune system.

Abermenai to Aberffraw Dunes Special Area of Conservation (SAC) lies adjacent to, and is functionally integrated with, the Anglesey Coast Saltmarsh SAC. This includes the estuaries of the Afon Ffraw (within Tywyn Aberffraw SSSI) Afon Cefni and Afon Braint (within Newborough Warren – Ynys Llanddwyn SSSI) Glantraeth SAC, selected for its population of great crested newts, is adjacent to the dune SAC and Newborough Warren Ynys Llanddwyn SSSI. Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC, selected for its reefs, bays, mudflats and sandflats, subtidal sandbanks and caves is adjacent to the saltmarsh SAC and Newborough Warren Ynys Llanddwyn SSSI.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
1310 Salicornia and other annuals colonising mud and sand
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
1130 Estuaries
1140 Mudflats and sandflats not covered by seawater at low tide

Conservation Objectives

4.11 Conservation Objective for Feature 11: Estuaries

Vision for feature 11
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- the distribution and extent of the *estuaries,* and their encompassed habitats, are determined predominantly by natural structure and

environmental processes
- the natural habitat structures necessary for the long-term maintenance of the *estuaries* and their encompassed habitats and typical species are maintained;
- the granulometry and structure of the *estuaries'* sediments, and their natural variation, distribution and extent, are determined predominantly by natural sediment supply and transport processes
- the quality of habitat structure is no more degraded as a consequence of human action or by materials of anthropogenic origin
- the natural environmental processes necessary for the long-term maintenance of the *estuaries*, their encompassed habitats and their typical species are maintained
- Water & sediment chemistry are determined predominantly by natural hydrodynamic, hydrological and meteorological processes
- the salinity regime and gradients within the *estuaries* are determined predominantly by natural hydrodynamic, hydrological and meteorological processes
- typical species are determined predominantly by inherent population dynamics and ecological processes
- the species richness, population dynamics, abundance, biomass, population structures, physiological health, reproductive capacity, recruitment, range and mobility are maintained
- the management of activities or operations likely to degrade the distribution, extent, structure, function or typical species populations of the feature, is appropriate for maintaining favourable
- conservation status and is secure in the long-term; *and*
- the management of existing commercial fisheries for typical species ensures that species exploitation is at or below maximum sustainable yield and is secure in the long-term.

4.12 Conservation Objective for Feature 12: *Salicornia* and other annuals colonising mud and sand

Vision for feature 12

The vision for this feature is for it to be in a favourable conservation status, where, subject to natural processes all of the following conditions are satisfied:
- the distribution and extent of Salicornia and other annuals is determined predominantly by natural structure and environmental processes;
- the natural habitat structures necessary for the long-term maintenance of Salicornia and other annuals and their typical species are maintained;
- the granulometry and structure of Salicornia and other annuals' sediments, and their natural variation, distribution and extent, are determined predominantly by natural sediment supply and transport processes;
- the geomorphology of the Salicornia and other annuals feature, and its natural variation,
- distribution and extent, are determined predominantly by the underlying geology and natural environmental processes;
- the natural environmental processes necessary for the long-term maintenance of the Salicornia and other annuals feature and its typical

species, are maintained;
- the hydrographic and meteorological processes necessary for the long-term maintenance of the Salicornia and other annuals feature and its typical species are determined predominantly by natural environmental processes;
- the salinity regime and gradients of the Salicornia and other annuals feature are determined predominantly by natural hydrodynamic, hydrological and meteorological processes;
- nutrients in the water column and sediments remain within ranges that are not potentially detrimental to the long-term maintenance of the Salicornia and other annuals' communities, their distribution and range;
- contaminants in the water column and sediments derived from human activity remain below levels potentially detrimental to the long-term maintenance of the Salicornia and other annuals' communities, their distribution and range;
- dissolved oxygen levels in the water column and sediments are determined predominantly by natural environmental processes
- communities of typical species are maintaining their conservation status on a long-term basis as viable components of the Salicornia and other annuals' habitats
- the management of activities or operations likely to degrade the distribution, extent, structure, function or typical species communities of the feature, is appropriate for maintaining favourable conservation status and is secure in the long-term.

4.13 Conservation Objective for Feature 13: Mudflats and sandflats not covered by seawater at low tide

Vision for feature 13

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- the distribution and extent of the *mudflats and sandflats,* and their encompassed habitat, are determined predominantly by natural structure and environmental processes
- the natural habitat structures necessary for the long-term maintenance of the *mudflats and sandflats,* and their encompassed habitat and typical species are maintained
- the granulometry and structure of the *mudflats and sandflats'* sediments, and their natural variation, distribution and extent, are determined predominantly by natural sediment supply and transport processes
- the quality of habitat structure is no more degraded as a consequence of human action or by materials of anthropogenic origin
- the natural environmental processes necessary for the long-term maintenance of the *mudflats and sandflats*, their encompassed habitats and their typical species are maintained
- Water & sediment chemistry are determined predominantly by natural hydrodynamic, hydrological and meteorological processes
- the salinity regime and gradients within the *mudflats and sandflats* are determined predominantly by natural hydrodynamic, hydrological and meteorological processes
- typical species are determined predominantly by inherent population dynamics and ecological processes

- the species richness, population dynamics, abundance, biomass, population structures, physiological health, reproductive capacity, recruitment, range and mobility are maintained
- the management of activities or operations likely to degrade the distribution, extent, structure, function or typical species populations of the feature, is appropriate for maintaining favourable conservation status and is secure in the long-term; *and*
- the management of existing commercial fisheries for typical species ensures that species exploitation is at or below maximum sustainable yield and is secure in the long-term.

4.14 Conservation Objective for Feature 14: Atlantic salt meadow (ASM)

Vision for feature 11

The vision for this feature is for it to be in a favourable conservation status, where, subject to natural processes all of the following conditions are satisfied:

- the distribution and extent of the saltmeadows is determined predominantly by natural structure and environmental processes;
- the natural habitat structures necessary for the long-term maintenance of the saltmeadows and typical species are maintained;
- the granulometry and structure of the saltmeadows' sediments, and their natural variation, distribution and extent, are determined predominantly by natural sediment supply and transport processes;
- the geomorphology of the saltmeadows, and their natural variation, distribution and extent, are determined predominantly by the underlying geology and natural environmental processes;
- the hydrographic and meteorological processes necessary for the long-term maintenance of the saltmeadows and their typical species are determined predominantly by natural environmental processes;
- the salinity regime and gradients within the saltmeadows are determined predominantly by natural hydrodynamic, hydrological and meteorological processes;
- nutrients in the water column and sediments are within ranges that are not potentially detrimental to the long-term maintenance of the saltmeadows' communities, their distribution and range;
- contaminants in the water column and sediments derived from human activity remain below levels potentially detrimental to the long-term maintenance of the saltmeadows' communities, their distribution and range;
- dissolved oxygen levels in the water column and sediments are determined predominantly by natural environmental processes;
- the zonation of saltmarsh from pioneer, lower mid marsh and upper mid marsh and their transitions to fresh water and terrestrial vegetation are maintained;
- communities of typical species are maintaining their conservation status on a long-term basis as viable components of the saltmeadows' habitats,
- the species richness, community dynamics, abundance, biomass, community structures, physiological health, reproductive capacity, recruitment and range are maintained:

- the management of activities or operations likely to degrade the distribution, extent, structure, function or typical species communities of the feature, is appropriate for maintaining favourable conservation status and is secure in the long-term.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Y Twyni O Abermenai I Aberffraw/Abermenai To Aberffraw Dunes SAC; Glannau Môn: Cors Heli/ Anglesey Coast: Saltmarsh SAC; Newborough Warren - Ynys Llanddwyn SSSI; Tywyn Aberffraw SSSI; and Morfa Dinlle SSSI (Countryside Council for Wales, April 2008).

Vulnerabilities

Drastic modification to the Cefni estuary in the early 19th century continues to cause rapid accretion of sediment, permitting invasion by Spartina anglica on the seaward edges of the saltmarsh. This is reduced by herbicide treatment but successional development of saltmarsh over much of the present mudflat area is inevitable. Some development of Spartina anglica on the Braint estuary is also likely.

Anglesey Fens SAC

Overview

Corsydd Mon comprises a series of fen basins located on the limestone of eastern Anglesey. Several of the sites (Cors Goch, Cors y Farl, Cors Erddreiniog, and Cors Bodeilio) occupy former lake basins which have gradually in filled with clay, marl and peat sediments. These sites and others (Waun Eurad, Caeau Talwrn, Gwenfro - Rhos y Gad) also contain areas of flush mire where calcareous springs irrigate the surface. The site includes some of the best examples of base-rich fen (Alkaline fen and Calcareous fen) in Wales along with oligotrophic (nutrient poor) lakes, areas of purple moor grass (Molinia caerulea) meadow, wet and dry heath and associated areas of neutral and calcareous grassland. The sites support many species including Geyer's whorl snail, southern damselfly, marsh fritillary, great crested newt and otter. The component sites are set within a mainly agricultural landscape of livestock farms and small settlements.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * Priority feature
7230 Alkaline fens

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
4010 Northern Atlantic wet heaths with *Erica tetralix*
6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

Annex II species that are a primary reason for selection of this site:
1013 Geyer`s whorl snail *Vertigo geyeri*

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1044 Southern damselfly Coenagrion mercuriale
1065 Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* (EU habitat code 7120)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Calcareous fen occupies at least 20% (93ha) of the total site area.
- Calcareous fen is distributed over at least 5 of the 7 sites including Cors Erddreiniog, Cors Bodeilio, Cors Goch, Gwenfro-Rhos Y Gad and Cors Y Farl.
- Calcareous fen exhibits a range of condition states (see below) in which great fen sedge *Cladium* is frequent to dominant, with no less than 10% referable to species-poor *Cladium* swamp and the remainder to either vegetation in which *Cladium* occurs with sweet gale *Myrica gale*, bluntflowered rush *Juncus subnodulosus*, purple moor-grass *Molinia caerulea* and cross-leaved heath *Erica tetralix*, or vegetation with many of the above elements as well as bog-bean *Menyanthes trifoliata* marsh cinquefoil *Potentilla palustris,* bladderwort *Utricularia vulgaris*, and slender sedge *Carex lasiocarpa* and other small sedges.
- Species indicative of drainage or agricultural modification, such as Yorkshire fog Holcus lanatus, bramble *Rubus spp*., nettle *Urtica dioica* are largely absent from the calcareous fen.
- Purple moor grass *Molinia caerulea* does not exceed 25% of ground cover.
- Leaf Litter forms no more than 20% of the ground cover at any location.
- Scrub species such as willow *Salix* and birch *Betula* are largely absent from the calcareous fen.
- *Rhododendron spp*. is absent.
- Standing surface water is present or expressable on footfall over most of the winter period.

- Groundwater is within 15cm of surface in midsummer.
- All hydrological (diffuse, surface and sub-surface) pathways (inputs and outputs) are restored and/or intact (includes ditch infilling, blocking, diversion and re-engineering). Water quality reflects the base-rich but nutrient poor requirements of the habitat.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Alkaline fen

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Alkaline fen occupies at least 17% of the total site area.
- Alkaline fen is found on all 7 component sites.
- The following plants are common in the alkaline fen: black bog rush *Schoenus nigricans*, moss *Campyllium stellatum*, great fen sedge *Cladium mariscus* (up to 1m tall), blunt flowered rush *Juncus subnodulosus*, sweet gale *Myrica gale*, moss *Drepanocladus revolvens,* bladderwort *Utricularia sp.,* butterwort *Pinguicula vulgaris*,
- Species indicative of drainage or agricultural modification, such as Yorkshire fog Holcus lanatus, bramble *Rubus spp*., nettle *Urtica dioica*, are largely absent from the alkaline fen.
- Purple moor grass *Molinia caerulea* does not exceed 25% of ground cover and is restricted to drier areas
- Bare ground including tufa constitutes about 10% of the ground cover.
- Alkaline Fen exhibits a diverse age and height structure across the site (tussocks are undamaged and 20% short grazed, 50% mature – 30% in between including bare ground?).
- Scrub species such as willow *Salix spp* and birch *Betula pubescens* are largely absent from the alkaline fen.
- *Rhododendron spp*. is absent.
- Water expressable on foot-fall or running surface water is present between tussocks throughout the year.
- All Hydrological (diffuse, surface and sub-surface) pathways (inputs and outputs) should be restored and/or intact (includes ditch infilling, blocking, diversion and re-engineering)
- Water quality is appropriate to the needs of the vegetation and species.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for Feature 3: Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

The vision

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Open water occupies not less than 1% of the total site area.
- Natural deep lakes persist at Cors Goch and Cors Erddreiniog component sites
- The macrophyte, phytoplankton, zooplankton and predator components of the ecosystem operate in balance in a clear-water environment, where:
- Characteristic macrophyte species are present in the water bodies, including dense beds of stoneworts (*Chara* spp), in areas <6m deep.
- Invasive non-native species are absent, or occur at no more than rare or occasional frequency.
- Locally native (non-coarse) fish are present.
- All coarse fish are absent.
- Water quality is such as to maintain pH 7-9 and mean annual Total Phosphorus <15µg/l.
- The water is clear throughout the year, with an absence of algal blooms.
- Marl deposition occurs within all the lakes.
- There is minimal extraneous sediment input.
- The integrity of the natural hydrological system (inputs and outputs) is intact.
- Appropriate water level is maintained throughout the year, (seasonal fluctuation 30cm).
- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for Feature 4: *Molinia* meadows on calcareous, peaty or clayey silt laden soils (*Molinion caeruleae*)

Vision for feature 4

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Molinia meadows occupy at least 2% of the total site area.
- Molinia meadows are distributed over at all 7 component sites.
- The following plants are common in the Molinia meadows: purple moor-grass *Molinia caerulea*; devil's bit scabious *Succisa pratensis*; carnation sedge *Carex panicea;* saw wort *Serratula tinctoria;* lousewort *Pedicularis sylvestris*, *Carex pulicaris* and C. *hostiana and* Marsh orchids *Dactylorhiza* sp
- Soft rush *Juncus effusus* and species indicative of agricultural modification, such as perennial rye grass *Lolium perenne* and white clover *Trifolium repens* are largely absent from the *Molinia* Meadows.
- Purple moor grass *Molinia caerulea* does not exceed 50% of ground cover.
- Scrub species such as willow *Salix* and birch *Betula* are largely absent from the Molinia meadows
- Rhododendron spp. are absent.
- Leaf litter should comprise <25% of ground cover.
- Groundwater will be between –10cm and –25cm below ground level for most of the year.
- The integrity of the hydrological system (inputs and outputs) will be intact.

- Swards structure should reflect the requirements of feature 9 (Marsh fritillary).
- All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for Feature 5: Northern Atlantic wet heaths with *Erica tetralix*

The vision

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Wet heath covers at least 4%ha of the site.
- The following plants are common in the wet heath: heather *Calluna vulgaris*; Cross-leaved heath *Erica tetralix* as well as bog moss *Sphagnum* spp. Devil's bit scabious *Succisa pratensis* and
- *Narthecium ossifragum*.
- Competitive species indicative of under-grazing, particularly bracken *Pteridium aquilinum*, purple moor-grass *Molinia caerulea* and western gorse *Ulex gallii* will be kept in check.
- 70% of wet heath will be "good condition" wet heath.
- The wet heath supports viable populations of marsh gentian at Cors Erddreiniog.
- The wet heath contributes to the support of a viable meta-population of marsh fritillary.
- All factors affecting the achievement of these conditions are under control.

4.7 Conservation Objective for Feature 7: Vertigo geyeri

The vision

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- *Vertigo geyeri* is frequent in suitable habitat at Cors Erddreiniog and Waun Eurad Sections:
- There are abundant areas of flushed fen grassland (M13 / feature 2) with sedge/moss lawns 5- 15cm tall, containing species such as *Carex viridula* subsp. *brachyrrhyncha*, *Pinguicula vulgaris, Briza media, Equisetum palustre, Juncus articulatus* and the mosses *Drepanocladus revolvens, Campylium stellatum,* with scattered tussocks of *Schoenus nigricans* no greater than 80cm tall.
- Soils are saturated schoenus tussocks lower than 80cm.

4.8 Conservation Objective for Feature 8: *Coenagrion mercuriale*

The vision

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- Population size is stable or increasing

- The population occupies at least 3 distinct management units.
- The total area of good breeding habitat does not fall below 1000m2.
- Seepages and shallow runnels at Nant Isaf will be clear, pollution free and will support good numbers of native aquatic plants.
- The population of southern damselflies on the site (allowing for normal annual fluctuations) is maintained or increases.
- Species indicative of drainage or agricultural modification, such as Yorkshire fog Holcus lanatus, bramble *Rubus spp*., nettle *Urtica dioica* are largely absent.
- Alkaline Fen habitat exhibits a diverse age and height structure across the site (tussocks are undamaged and 20% short grazed, 50% mature – 30% in between including bare ground.
- Scrub species such as willow *Salix spp* and birch *Betula pubescens* are largely absent from the alkaline fen habitat.
- Rhododendron spp. is absent from the feature.
- Appropriate grazing is managed across 100% of the site.
- Standing or running surface water is present between tussocks throughout the year and visible over 30% of the tussock covered area.
- All Hydrological (diffuse, surface and sub-surface) pathways (inputs and outputs) should be restored and/or intact (includes ditch infilling, blocking, diversion and re-engineering).
- Water quality is appropriate to the needs of the vegetation and species.
- All factors affecting the achievement of the foregoing conditions are under control.

4.9 Conservation Objective for Feature 9: *Euphydryas (Eurodryas, Hypodryas) aurinia*

The vision

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The site supports a sustainable meta population of the marsh fritillary.
- The population is viable in the long term, (acknowledging the extreme population fluctuations of the species).
- Habitats on the site are in optimal condition to support the metapopulation.
- At least 6% (approximately 30ha) of the total site area is marshy grassland or wet heath suitable for supporting marsh fritillary, with Devil's-bit scabious *Succisa pratensis* present and only a low cover of scrub.
- At least 40% of this 30ha is good marsh fritillary breeding habitat, dominated by purple moorgrass *Molinia caerulea*, with *S. pratensis* abundant throughout and a vegetation height of 10-20cm over the winter period.
- Areas of good marsh fritillary habitat are scattered over several management units.
- Off site habitats that function as stepping stone or corridors located between SAC compartments will be maintained for migration, dispersal, foraging and genetic exchange purposes.
- All factors affecting the achievement of the foregoing conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Afon Gwyrfrai a Lyn Cwellyn SAC (Countryside Council for Wales, April 2008).

Vulnerabilities

Past drainage and maintenance of lowered water levels in parts of the site continue to damage some of the fen communities. Management agreements and acquisitions are being pursued to try to resolve this, and a water level management plan is in preparation by the Environment Agency.

The abandonment of traditional grazing and reed and peat-cutting practices in some areas is leading to successional change in vegetation. Management agreements or direct management by conservation agencies (CCW & North Wales Wildlife Trust) are seeking to reinstate grazing with cattle or ponies, scrub and reed cutting and in some instances possibly peat-cutting, to slow down successional change.

Pollution of water supplies, especially by agricultural run-off of nitrate and phosphate, threatens the site with eutrophication. Means to address this problem are currently being explored. Airborne nitrate inputs may be a long-term threat.

The NNR sections of this site are subject to management plans.

Berwyn and South Clwyd Mountains SAC

Overview

The Berwyn and South Clwyd Mountains SAC is a large upland site (27,132 ha), the largest area of blanket bog and European dry heath in Wales. It comprises three discrete sites, Berwyn SSSI, Llandegla Moor SSSI and Ruabon and Llantysilio Mountains and Minera SSSI. All of these sites are predominantly a mixture of dry heath and blanket bog vegetation with patches of transition mires and quaking bogs vegetation found as an intricate mosaic, usually on acidic rock types, and can together be described as upland moorland.

Berwyn supports the most extensive tract of near-natural blanket bog in Wales. Much of the blanket bog vegetation is dominated by NVC type M19 *Calluna vulgaris–Eriophorum vaginatum* blanket mire, with crowberry *Empetrum nigrum* and an often extensive hypnoid moss cover; within this community cloudberry *Rubus chamaemorus* is found close to the southernmost limit of its British range. On deeper peats, there are smaller stands of M18 *Erica tetralix–Sphagnum papillosum* mire, some of which exhibit distinctive surface patterning. The mire vegetation shows transitions to heather-dominated dwarf-shrub heath.

Berwyn contains the largest stands of upland European dry heath in Wales. The dry heath is characteristic of Berwyn's more easterly location and less oceanic climate than the other major Welsh uplands, and consists principally of NVC type H12 *Calluna vulgaris–Vaccinium myrtillus* heath, with frequent crowberry *Empetrum nigrum* and occasional cowberry *Vaccinium vitis-idaea*. Other heath vegetation present includes areas of H18 *Vaccinium myrtillus–Deschampsia flexuosa* heath and in some areas stands of damp H21 *Calluna vulgaris–Vaccinium myrtillus–Sphagnum capillifolium* heath. These latter heaths occur in an intermediate position between the drier heaths and blanket mire and support occasional plants of lesser twayblade *Listera cordata.*

Berwyn is the most important upland in Wales for breeding birds. It supports a wide range of species including internationally significant numbers of hen harrier *Circus cyaneus*, merlin *Falco columbarius*, peregrine *Falco peregrinus* and red kite *Milvus milvus*, as well as significant proportions of the Welsh populations of other species including short eared owl *Asio flammeus*, golden plover *Pluvialis apricaria*, red grouse *Lagopus lagopus* and black grouse *Tetrao tetrix*.

The calcareous vegetation communities for which the site is also notified are found on the section of the Ruabon and Llantysilio and Minera SSSI. This area contains carboniferous limestone outcrops on the scarp known as the Eglwyseg Rocks, with its prominent cliffs, screes and grasslands. The calcareous screes in this area support many rare species such as the limestone fern *Gymnocarpium robertianum*, with the rocky slopes or cliffs supporting rigid buckler fern *Dryopteris submontana*, a nationally scarce fern of limestone pavement and scree at the southern edge of its distribution on Ruabon. Eglwyseg Rocks also holds populations of the endemic whitebeam *(Sorbus anglica)* and Welsh Hawkweed *(Heiracium cambricum)*.

Calcareous grasslands are also found at the north-eastern end of the Ruabon and Llantysilio mountains and Minera SSSI. This area contains several types of neutral, upland acid and calcareous grassland over areas of acidic and calcareous rock, along with areas of bracken and scrub. This area holds the only Welsh locality for the critically endangered Sedge *Carex muricata* ssp. *muricata*.

Colonies of Welsh clearwing moth *Synanthedon scoliaeformis* are found in several localities, this being the strongest of only three populations on Wales.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
4030 European dry heaths
7130 Blanket bogs * Priority feature

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)
7140 Transition mires and quaking bogs
8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)
8210 Calcareous rocky slopes with chasmophytic vegetation

Conservation Objectives

4.1 Conservation Objective for Feature 1: Blanket bogs * Priority feature (EU Habitat Code: 7130)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There will be no measurable decline in blanket bog; the area of the habitat must be stable or increasing.
- Dry blanket bog on moisture shedding ridges and slopes will be defined as ericoid (typically *Calluna*) dominated, with clearly subordinate *Erica tetralix*. *Empetrum nigrum*, *Vaccinium vitis-idaea* and/or *V. myrtilus* will be present at high frequency. *Eriophorum vaginatum* typically constant but sometimes only at low cover – other graminoids are typically scarce. *Vaccinium oxycoccus* may sprawl over the thick bryophyte mat but other elements of "wet" bog such as *Narthecium* and *Drosera* are characteristically sparse. Hypnoid mosses (typically *Hypnum jutlandicum* and *Pleurozium schreberi*) often the dominant bryophyte component, and *Sphagna* where present most often represented by *Sphagnum capillifolium*.
- Wet blanket bog on plateaux and col areas is characterised by a more even balance between *ericoids* and *graminoids*. *Eriophorum vaginatum* generally achieves a higher cover than in drier situations and *E. angustifolium* is constant. Representation of *Molinia caerulea* and *Trichophorum cespitosum* is variable according to past management and hydrology. Smaller elements such as *Vaccinium oxycoccus*, *Narthecium* and *Drosera* are typically present. Hypnoids and *Sphagnum capillifolium* may still comprise the main bryophyte element, but often joined by species of Sphagnum sect. Sphagnum.
- All areas of blanket bog should exhibit a high water table just below the surface of the ground for the majority of the year and this consistent with continued peat formation.
- In areas of wet bog in particular, the vegetation should develop or retain an irregular pattern with drier hummocks and wetter hollows.
- The quality of blanket bog (including in terms of ecological structure and function) must be maintained.
- Areas with habitats classed as degraded or modified blanket bog and bare peat should be restored to a more sustainable state by encouraging the growth of typical blanket bog vegetation and the blocking of drainage ditches.
- Burning blanket bog will be discouraged as it retards the development of hummock & hollows as well as the development of more sensitive Sphagna.
- There should be no moor drains or grips draining the peat body.

- There should be no evidence of damage caused, for example, by active drainage or burning.
- Any typical species must also be at FCS, as defined below.
- Non-native plant species should be absent.
- There should be no decline in the range or abundance of characteristic plant species and vegetation communities.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2:
European dry heaths (EU Habitat Code: 4030)
Vision for feature 2
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There will be no measurable decline of dry heath area; the area of the habitat must be stable or increasing.
- The European dry heath consists principally of NVC type H12 *Calluna vulgaris–Vaccinium myrtillus* heath, with frequent *Empetrum nigrum* and occasional *Vaccinium vitis-idaea*. Other heath vegetation present includes areas of H18 *Vaccinium myrtillus–Deschampsia flexuosa* heath and in some areas stands of damp H21 *Calluna vulgaris–Vaccinium myrtillus–Sphagnum capillifolium* heath. These latter heaths occur in an intermediate position between the drier heaths and blanket mire and support occasional plants of *Listera cordat.a*
- Its quality (including in terms of ecological structure and function) must be being maintained.
- The areas of heath vegetation should be retained and where possible permitted to re-establish on areas modified or degraded as a result of agricultural improvement, or through inappropriate management.
- The dry heathland should have a diverse age structure in the heather and other shrubby plants.
- Management will ensure the development of a mosaic of age structures through pioneer, building, mature to degenerate heather with at least 10% identified for no-management and allowed to develop through to maturity.
- Management will not be undertaken within sensitive habitat areas.
- Some native scrub development will be acceptable up to 10% cover with higher densities, up to 20% within e.g. identified black grouse management zones.
- Heather and other plants should not exhibit signs of suppressed growth forms due to grazing.
- There should be areas of long heather providing nesting habitat for ground nesting birds such as grouse, merlin and hen harriers; and areas of lower young heather, and wet flushes where birds can feed on heather shoots and invertebrates.
- Non-native plant species should be absent.
- Any typical species must also be at FCS.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for Feature 3: Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia) (EU Habitat Code: 6210)

Vision for feature 3

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The extent of the calcareous and neutral grasslands should be maintained or increase in size at the expense of bracken, scrub and other more improved grasslands. No loss in extent is acceptable.
- The calcareous grassland varies floristically. At low altitudes the sward of the calcareous grassland should be rich in calcicolous species such as *Carlina vulgare*, *Briza media* and *Sanguisorba minor*. Locally scarce species such as *Gymnadenia conopsea* and *Blackstonia perfoliata* should also be present. At higher elevations the calcareous sward has more acid species present. Along with the typical indicator species of calcareous grassland, acid loving species such as *Agrostis tenuis* and *Potentilla erecta* are regular. Within the sward, fine leaved grasses and herb species like *Briza media*, *Carlina vulgaris* and *Thymus polytrichus* will be regular, although due to the upland nature of the site other more typically acid-loving herbs like heath *Galium saxatile* and *Campanula rotundifolia* may commonly occur. Though described as grasslands, more than half of the ground cover will consist of herbaceous species.
- The limestone grassland areas will have a wide variety of plant communities with the limestone grasslands having those typical of thin, lime rich soils.
- Grazing will be at levels that allow plants to flower and set seed whilst preventing the spread of trees and scrub.
- Bracken will only be found in a few isolated patches at the perimeters.
- Within the sward tree and scrub seedlings, and robust or tussock forming grasses such as *Dactylis glomerata*, and *Deschampsia cespitosa* are uncommon or at low cover. While weeds and other agriculturally favoured species such as *Lolium perenne*, *Urtica dioica*, *Cirsium arvensis* and *C. vulgare* are rare or absent.
- Introduced species should be absent and control measures should be taken if any such species becomes established.
- High levels of grazing results in localised soil erosion on steeper parts of the escarpment, which degrades some areas. However, grazing pressure should be sufficient to open small transient patches of bare ground within the sward providing a seed bed for the vascular plant species and suitable habitat for the diminutive bryophytes, macro-lichens and short-lived vascular plant species which are particularly characteristic of limestone grassland on the steeper, more exposed slopes.
- On deeper soils south of the quarry acid grassland develops and in places forms a mosaic of habitats with the calcareous grassland. On these soils the spread of gorse and bracken should be controlled.
- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for Feature 4: Transition mires and quaking bogs (EU Habitat Code: 7140)

Vision for feature 4

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There will be no measurable decline in Transition mires and quaking bogs; the area of the habitat must be stable or increasing.

- Typically characterised by a range of low-growing sedges over an extensive carpet of *Sphagnum* bog mosses, accompanied by other mosses, rushes and some scattered herbs.
- The water table is above the surface of the substrate, giving rise to characteristic floating mats of vegetation.
- The vegetation normally has intimate mixtures of species considered to be acid-lovers and others thought of as lime-lovers.
- There should be no moor drains or grips draining the mire.
- There will be no threats to the transition mire habitat from burning or grazing.
- There is no significant input of nutrient-rich water from ditches and surrounding land.
- All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for Feature 5: Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) (EU Habitat Code: 8120)

Vision for feature 5

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There will be no measurable decline of habitat, the area of the habitat must be stable but due to its nature an increase in extent is unlikely.
- The feature is typically characterised by sensitive pioneer species including maidenhair spleenwort, and bryophytes that are able to colonise the scree, as the crags and ledges provide shelter from grazing and frost action.
- The flora representative of this feature reflects the base rich nature of the rocks including limestone, calcareous-schists and the more basic igneous rocks such as serpentine and basalt.
- The scree community is important for the rich fern flora and acts as refugia for a number of rare species.
- Light grazing will prevent the succession to scrub and minimise colonisation by species such as ash and hazel whilst not damaging the feature through overgrazing.
- The scree will remain largely undisturbed by human activity and the depositional slopes will continue to accumulate small amounts of scree. The vegetation is only likely to be truly representative of this feature where it occurs on stable scree on less steep slopes where the vegetation can accumulate.
- The existing diversity of species in each of the above communities should be maintained.
- There will be no reduction in extent as a result of undesirable human activity such as afforestation, quarrying, climbing or civil engineering works.
- The use of herbicides, such as Asulox to control the spread of bracken, should be restricted to areas where they will not adversely impact the feature.
- Only native species should be present.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for Feature 6: Calcareous rocky slopes with chasmophytic vegetation (EU Habitat Code: 8210)

Vision for feature 6

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There will be no measurable loss of habitat, the area of the habitat must be stable but due to its nature an increase in extent is unlikely.
- The chasmophytic vegetation will consist of plant communities colonising cracks and fissures of rock faces. The type of plant communities developing will be largely determined by the base-status of the rock face.
- The chasmophytic vegetation is usually dominated by ferns such as *Asplenium ruta-muraria* and small herbs such as *Thymus praecox* and *Hieracium spp*. The inaccessibility of rock habitats to grazing animals, rock ledges provides a refuge for many vascular plants that are sensitive to grazing, including numerous local and rare species.
- Bryophytes and crustose lichens should form a dominant component in crevices but are also found on open rock surfaces where there is a lack of competition from vascular plants. Ledge communities are recognised as part of the feature on the site due to the spectacular stepped topography.
- Grass benches should be floristically diverse supporting species characteristic of the feature such as *Campanula rotundifolia, Centaurea nigra and Dryopteris spp*.
- The existing diversity of species in each of the above communities should be maintained.
- Only native species should be present.
- Chasmophytic vegetation and grass benches vegetation will not exhibit signs of overgrazing.
- There will be no reduction in extent as a result of undesirable activities such as quarrying.
- Small scale excavations may enhance the interest of the site by providing additional exposures but would be deleterious to the highly vulnerable scree and clitter slopes.
- The use of herbicides, such as Asulox, to control the spread of bracken should be restricted to areas where they will not adversely impact the feature. 12. All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Berwyn & South Clwyd Mountains SAC & Berwyn SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

The blanket bog, heaths, fens, and grasslands have been threatened by inappropriate agricultural development including drainage, reseeding, application of fertilisers, burning, track construction and the adoption of damaging grazing regimes. Some areas of grassland and

heath are also threatened by the encroachment of bracken.

These problems are being addressed successfully by means of management agreements with owners and occupiers and through joint agreements with the Tir Gofal scheme.

Local tourist pressure and damage by recreational vehicles can cause erosion problems. This is being addressed by visitor management and the presence of wardens as well as positive management works of vegetation reinstatement on eroded areas.

Cadair Idris SAC

Overview

The site is located to the south of Dolgellau and is of special interest for its biological, Ordovician/igneous bedrock geology and Pleistocene/Quaternary geomorphology features.

Cadair Idris SAC is underpinned by Cadair Idris SSSI. The woodlands on the northern edge of the SSSI form part of Coedydd Derw a Safleoedd Ystlumod Meirion SAC and are not covered by this plan.

The site encompasses Cadair Idris mountain and the lower slopes, which are a mosaic of broadleaved woodland, wet meadows, upland habitats and grassland. It is a truly spectacular area with very many habitats and species, which are of national and international importance.

The broad range of physical conditions gives rise to a wide range of habitat types. These include dwarf scrub heath communities, montane grasslands, herb- and fern-rich communities, blanket mire; soligenous flush communities, a spring-flush habitat, open water and oak woodland. The most prevalent are acid grasslands dominated by *Nardus stricta* and *Festuca ovina* and acid dry heaths dominated by *Calluna vulgaris*. In the context of the SSSI the site is also of special interest for its assemblage of higher plants, lichens, bryophytes and montane invertebrates. Nine higher plants are of special interest in their own right as is the (SAC feature) slender green feather moss *Hamatocaulis vernicosus* and an edge of range lichen species. Also of special interest are populations of the marsh fritillary butterfly, Welsh clearwing moth, and lesser horseshoe bat.

Cadair Idris SAC includes five oligotrophic lakes, namely Llyn y Gadair, Llyn Gafr, Llyn Arran, Llyn Cyri, and Llyn Cau.

The Cadair Idris National Nature Reserve forms an area of approximately 450 hectares in the heart of the site, including Cwm Cau and Penygadair. CCW also own and manage an area of mixed woodland adjacent to the NNR at Ystradlyn, and c81ha of undeclared reserve on the lower north slopes of the site at Tanygader.

Cadair Idris is without doubt the walking honey-pot of south Eryri. An estimated 168,000 people visited the NNR in 2007.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
8210 Calcareous rocky slopes with chasmophytic vegetation
8220 Siliceous rocky slopes with chasmophytic vegetation

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
4010 Northern Atlantic wet heaths with *Erica tetralix*
4030 European dry heaths
6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
7130 Blanket bogs * Priority feature
7230 Alkaline fens
91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1065 Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*
1393 Slender green feather-moss *Drepanocladus* (*Hamatocaulis*) *vernicosus*

Conservation Objectives

4.1 Conservation Objective for the clear-water lake SAC feature : Oligotrophic to mesotrophic* standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* (EU 3130)

Vision for Clear-water lakes Feature
The vision for the oligotrophic to mesotrophic (clear-water) lakes SAC features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:

- 1 The total extent of the clear-water lakes shall be maintained as indicated on Map, including open water/swamp and immediate lake

basin visible on air photographs. The catchments should also be maintained in at least their current condition.
- 2 The location of the clear-water lakes will be as shown on Map and as referred to by name (y Gadair, Gafr, Arran, Cyri, Cau).
- 3 The typical species, as listed following, of the vegetation communities comprising the Clear-water lakes SAC feature will be common. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora*, water lobelia *Lobelia dortmanna* and quillworts *Isoetes* spp. being the defining components. On Cadair Idris these species occur in association with bog pondweed *Potamogeton polygonifolius*, bulbous rush *Juncus bulbosus*, alternate water milfoil *Myriophyllum alterniflorum,* the stonewort *Nitella flexilis* and floating water bur-reed *Sparganium angustifolium*.
- 4 Invasive non-native species are absent.
- 5 All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature : Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) (EU Habitat Code: 8110)

Vision for siliceous scree

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The total extent of the vegetated scree should be maintained.
- The scree vegetation should be made up primarily of either desirable species (*Cryptogramma crispa*, *Oreopteris limbosperma, and Hymenophyllum wilsonii)* or by other lichen and bryophyte dominated communities characteristic of mobile scree.
- The scree should be mobile and open and free from bracken, tree and scrub species such as
- birch *Betula* and rowan.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objectives for: Feature; Calcareous rocky slopes with chasmophytic vegetation (Chasmophytic vegetation) (EU Habitat Code: 8210); Feature; Siliceous rocky slopes with chasmophytic vegetation (Chasmophytic vegetation) (EU Habitat Code: 8220); and Feature: Hydrophilous tall herb fringe communities of plains to and of the mountain to alpine level (Tall herb ledges) (EU Habitat Code: 6430)

Vision for hydrophilous tall herbs and calcareous and siliceous chasmophytic vegetation

The vision for these features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:
- The total extent of the tall herb ledge and chasmophytic vegetation should be stable or increasing.
- The tall herb ledges and chasmophytic vegetation should be made up primarily of the typical and desirable species listed in the table below.
- Non-native species are absent or rare.
- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objectives for the European dry heaths (EU 4030) and Northern Atlantic wet heath with *Erica tetralix* SAC features (EU 4010)

Vision for heath SAC Features
The vision for the heath land SAC features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:

- 1 The total extent of the dry heath, approximately 1451 ha, shall at least be maintained. The currently unfavourable areas of dry heath and acid grassland capable of restoration should be managed under a restoration programme. The area of dry heath should increase at the expense of less desirable vegetation communities such as acid grassland. The total extent of the wet heath, approximately 239 ha, shall at least be maintained. The area of wet heath should increase overall at the expense of less desirable vegetation communities. Some areas of wet heath which are degraded blanket bog may be restored to that priority habitat provided that there is no net loss of wet heath within the SAC.
- 2 The distribution of the dry and wet heath will at least be as mapped in Gray(2003) & Averis
- (2000) and will preferably be increasing as it is restored in additional areas.
- 3 The typical species of the vegetation communities comprising the dry heath and wet heath will be frequent and abundant.
- 4 The abundance and distribution of uncommon plants (see Table 2) will be maintained or increased.
- 5 The structure of the heath should be maintained and restored, to show natural regeneration by layering and seeding, and to ensure that the component vegetation communities are naturally diverse (refer also to 3 and 4 above). In practise some stands will benefit from being taller with very mature heather (e.g. NVC H 21) and others including wet heath from having a medium to short structure, less than 30cms height. Signs of overgrazing, including 'suppressed', 'topiary' or 'drumstick' growth habits will not be apparent.
- 6 Invasive non-native species such as conifers, rhododendron, Japanese knotweed and Himalayan balsam will not be present.
- 7 The surface of the heath will be generally free from trees and at most have only a few individuals at a density of no more than 2 per hectare. Exceptions to this rule are transition zones from woodland to heath land where trees may be denser grading to open heath. Limits for woodland transition zones should be set on a unit or sub-unit basis.
- 8 All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for SAC feature: Blanket Bog (EU 7130)

Vision for the blanket bog SAC feature
The vision for this priority blanket bog SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the blanket bog area is stable at some 200 ha in total of NVC blanket bog communities and some 73ha of vegetation on deep peat (Gray 2003), or increasing. Vegetation mapped as NVC M20, or not recognisable as a blanket bog community, is always

considered to be unfavourable. The area of the blanket bog feature is increasing at the expense of less desirable vegetation communities or if wet heath is restored to blanket bog commensurate areas of land are gained to wet heath.

- The location and distribution of the blanket bog is increasing at the expense of less desirable vegetation communities.
- The typical species of the vegetation communities comprising the blanket bog SAC feature are frequent.
- The structure of the blanket bog is maintained and restored to include bog pools, depressions, hummocks and hollows as a natural feature of the bog surface. Artificial drainage ditches or moor grips are not present as functioning drains. No significant areas of peat erosion should be present.
- Invasive non-native species such as conifers, rhododendron, Japanese knotweed and Himalayan balsam are not present within the SAC and a species specific buffer area.
- The blanket bog is free from all trees.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for the woodland SAC feature : "Old Sessile oak woods with Ilex and Blechnum woodlands"

Vision for the woodland SAC feature

The vision for the Woodland SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the woodland area, including woodland canopy and scrub, woodland glades and associated dry heath, bracken and grassland, of approximately 73ha shall be stable or increasing.
- The location of the woodland SAC feature will be at least as indicated on Map 1 in the Core Management Plan (Countryside council for Wales, January 2012; pp. 39). The woodland covered by this feature is woodland often without clear boundary such as on Tir Stent (unit 9) and should be encouraged to spread up slope at Dol y Cae.
- The tree canopy percentage cover within the woodland area shall be no less than the current cover (excepting natural catastrophic events).
- The canopy and shrub layer comprises locally native species, as indicated in Table 2 in the Core Management Plan (Countryside council for Wales, January 2012; pp. 40). (Some areas are less oak and more birch dominated examples of this SAC feature.)
- There shall be sufficient natural regeneration of locally native trees and shrubs to maintain the
- woodland canopy and shrub layer, by filling gaps, joining fragments of woodland and allowing the recruitment of young trees, and encouraging a varied age structure.
- The typical ground layer species of the woodland SAC feature will be common, see Table 2. It is important that the vegetation does not become rank and overgrown with a height above 40cm and/or dominated by species such as bramble, ivy and young holly. Limits may be set on a unit or compartment basis. Typical lower plants including oceanic species (refer to Table 1 below for an indicative list) should continue to be abundant and/or maintained. Dol y cae is known to support oceanic bryophytes of interest.
- The abundance and distribution of uncommon mosses, liverworts, lichens and ferns, will be

- maintained or increased.
- There will be a defined number of mature trees per hectare within the existing tree canopy on a unit basis. These are, as a guide, of c60cm diameter plus for oak and ash and/or with signs of decay, holes etc.
- Dead wood will be present and consist of a mixture of fallen trees (minimum 1 per hectare), broken branches, dead branches on live trees, and standing dead trees (minimum 1 per hectare). Volumes of deadwood are currently at relatively low levels because the woodlands, in general, have an even-age structure and lack mature trees. Some lower plants are dead wood specialists but these woodlands tend to lack the rare dead wood invertebrate assemblage found in other parts of the UK.
- Invasive non-native species such rhododendron, larch, sycamore, beech, ornamental broadleaved and conifer trees are not present. <1%?
- All factors affecting the achievement of these conditions are under control.

4.7 Conservation Objective for *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) (EU Habitat Code: 6410)

Vision for the Molinia grasslands SAC feature

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the *Molinia* grasslands should be stable or increasing. Both upland *Molinia*
- grasslands and lowland *Molinia* grasslands should be represented at Tir Stent.
- The *Molinia* grasslands are composed of typical species (indicative list –table 1 above).
- Rare/uncommon species shall flourish.
- Species indicative of agricultural modification, such as perennial rye grass *Lolium perenne* and white clover *Trifolium repens* will be absent from the *Molinia* grasslands.
- Bare ground is limited.
- The vegetation is not rank and overgrown.
- Tree and scrub species such as willow *Salix* and birch *Betula* will also be absent from the *Molinia* grasslands.
- All factors affecting the achievement of these conditions are under control.

4.8 Conservation Objective for: Alkaline Fens (EU Habitat Code: 7230)

Vision for Alkaline Fens

The vision for the feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the alkaline fen vegetation should be stable or increasing.
- The alkaline fens are vegetated primarily with the desirable species listed in the table
- The alkaline fens have a low frequency/cover of *Molinia caerulea* and rushes.

- Tree and scrub species such as willow *Salix* and birch *Betula* are absent.
- All factors affecting the achievement of these conditions are under control.

4.9 Conservation Objective for Feature 12: Slender green feather moss. *Drepanocladus* (*Hamatocaulis) vernicosus* (EU Species Code: 1393)

Vision for Hamatocaulis vernicosus

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The population of *Hamatocaulis vernicosus* is stable or increasing.
- The habitats, which support the Hamatocaulis vernicosus, should be in good condition.
- All factors affecting the achievement of these conditions are under control.

4.10 Conservation Objective for Feature: Marsh Fritillary *Euphydryas, (Eurodryas, Hypodryas) aurinia* (EU Species Code: 1065)

Vision for Marsh Fritillary

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The metapopulation of the marsh fritillary should be stable or increasing.
- The marshy grasslands which support the marsh fritillary should be in good condition for the marsh fritillaries. The marsh fritillary breeding habitat within the Cadair Idris SAC and SSSI comprises marshy grassland, wet heath and neutral flushes. The primary habitat however, is the marshy grasslands M25 *Molinia caerulea- Potentilla erecta,* M24 *Molinia carulea- Cirsium dissectum* fen meadow and M26 *Molinia caerulea- Crepis paludosa* mire. M24 and M26 make up the Annex II habitat *Molinia*
- meadows.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Cadair Idris Special Area of Conservation (Countryside Council for Wales, January 2012).

Vulnerabilities

The area is very popular for walking, with heavy visitor pressure causing localised damage to the vegetation. However this problem is being addressed by the Snowdonia Upland Path Partnership (CCW/SNPA/NT). The moorland has been grazed and burnt heavily in some areas leading to an increase in the grassland component. However CCW is discussing management agreements with owners on the site in order to

reduce the grazing levels to an appropriate level, and to restrict heather burning. The NNR section of the site is managed according to a CCW management plan, but suffers from the fact that CCW does not own the grazing rights.

The high rainfall renders the site vulnerable to acidification.

Cemlyn Bay SAC

Overview

The SPA of Ynys Feurig, Cemlyn Bay and The Skerries is located on the north and west coast of the Isle of Anglesey, North-west Wales. The SPA comprises three separate areas. Ynys Feurig lies on Anglesey's west coast close to Valley Airfield, with Cemlyn Bay, also a SAC, situated on the north coast about 20 km away. The Skerries lie 3 km off Carmel Head to the north of Anglesey (see Figure 1).

Ynys Feurig consists of a series of low-lying islands extending about 1 km out to sea from a sandy shore. There is little vegetation, except on the highest outer islands. At Cemlyn Bay, a shingle storm beach forms a bar between a tidal lagoon and the open shore. The shingle habitats, together with saltmarsh developing around the lagoon and brackish pools further inland are an unusual combination of habitats. The Skerries are a group of sparsely vegetated islets, 17 ha in extent. They are protected by strong currents but are very exposed to strong westerly and northerly winds.

The SPA site is of importance for four species of breeding terns. The three separate areas are treated as a single site as a consequence of regular movement by birds between the component parts.

The SAC site is of importance for its lagoon and associated species and the shingle ridge and its vegetation.

Other areas of importance to the SPA and SAC sites are areas of scrub, marshy grassland, coastal grassland, saltmarsh, ditches, intertidal, maritime cliff and associated ledges and crevices.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
1150 Coastal lagoons * Priority feature

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
1220 Perennial vegetation of stony banks

Conservation Objectives

4.2 Conservation Objective for Feature 5: Coastal Lagoon and Feature 9: Spiral tasselweed *Ruppia cirrhosa*

Vision for Features 5 and 9
The vision for these features is for them to be in a favourable conservation status, where all the following conditions are satisfied:
- There is no loss of area other than that due to natural processes.
- The specialised plant and animal communities within the lagoon remain.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for Feature 6: Perennial Vegetation of Stony Banks

Vision for Feature 6
The vision of this feature is for it to be in a favourable conservation status, where all the following conditions are satisfied:
- The extent of the vegetation of shingle banks is maintained unless altered by natural (e.g. storm) events.
- Typical component species of vegetation of shingle banks are maintained.
- Invasive alien species (e.g. *Fallopia japonica*) are absent.
- The management of activities or operations likely to damage or degrade the population dynamics, natural range and supporting habitat of the feature is appropriate for maintaining.
- favourable conservation status and is secure in the long-term.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Ynys Feurig, Cemlyn Bay and The Skerries SPA, Cemlyn Bay SAC, Ynys Feurig SSSI, The Skerries SSSI and Cemlyn Bay SSSI (Countryside Council for Wales, March 2008).

Vulnerabilities

The site is owned by the National Trust and managed by North Wales Wildlife Trust for its breeding tern colony. It is a designated SPA. Lagoon conditions are controlled by a sluice which determines salinity levels. Public access to the shingle ridge is controlled during the breeding season.

Coedydd Aber SAC

Overview

Coedydd Aber extends 4 km along the steep-sides valleys of the Afon Rhaeadr Fawr and Afon Anafon, which are situated immediately south of Abergwyngregyn village.

The SAC comprises 346.2 hectares and is concurrent with the area of SSSI (with the exception of unit 7 which is SSSI only). Coedydd Aber NNR comprises some 169 hectare of the SAC area. The site lies between 50 metres (at Bont Newydd) and 540 metres (at Marian Rhaeadr Fawr) above sea level.

Coedydd Aber is of special interest for its botanical, ornithological and entomological interest. The site supports a mosaic of native broadleaved woodland types of international importance including alluvial forests with alder and ash, and old sessile oak woods, which form a natural elevation – dependent habitat transition from coast to open mountain. The transition zones include stands of mixed oak, ash, alder and birch woodland, some of which can be classed as ancient, open hawthorn scrub, sub-montane heath, cliffs and acidic grassland. The tree dwelling or epiphytic lichen communities that the woodland communities support are also of national importance. The transition from woodland to mountain vegetation is also reflected in the diverse array of bird species assemblages from woodland, through torrent river, woodland edge, ffridd and heath to open species assemblages. The woodland, montane heath and grassland breeding bird assemblages qualify the site. The Afon Rhaeadr Fawr is one of the most precipitous rivers in Britain outside Scotland and is of national importance as a representative of this river type.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* * Priority feature

Conservation Objectives

4.1 Conservation Objective for Feature 1: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (EU Habitat Code: 91A0)

Vision for feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The woodland is maintained as far as possible by natural processes.
- The location of open glades or gaps varies over time.
- Trees and shrubs are locally native, and neither beech nor conifers are dominant anywhere in the canopy or understorey.
- Trees and shrubs of a wide range of ages and sizes are present.
- Tree seedlings are plentiful throughout the site and where occurring in open glades develop into viable saplings.
- Field and ground layers are a patchwork of various vegetation communities characteristic of local soil and humidity conditions.
- There are abundant dead and dying trees (with holes and hollows, rot columns, torn off limbs and rotten branches) with associated dead wood dependent species present.
- Humidity levels are high enough to favour the presence of ferns, mosses and liverworts.
- The woodland continues to support populations of birds and mammals.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno – Padion*, *Alnion incanae*, *Salicion albae*) (EU Habitat Code 91E0)

Vision for feature 2

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- The woodland is maintained as far as possible by natural processes.
- The trees and shrubs will be locally native broadleaved species with alder dominating the canopy.
- The sparse shrub layer will comprise a scattering of hazel, willow and rowan.
- Seedlings will be relatively sparse throughout the site with only a few native seedlings from non-self coppicing trees developing into saplings.
- The majority of regeneration will be from the base of the alders by means of self-coppicing.
- There will be abundant dead and dying trees with holes and hollows, rot columns, torn off limbs and rotten branches throughout the woodland. Dead wood, both standing and fallen, will be retained to provide habitats for other species.
- Veteran trees will be favoured during any silvicultural management because they support a wide variety of species, including lichens. Old forest lichen species will be found throughout the sites, especially on well-lit trees around woodland edges and glades.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just

the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Coedydd Aber SAC (Countryside Council for Wales, February 2008).

Vulnerabilities

This site consists of the existing Coedydd Aber NNR with extensions to take in an additional area of mainly broadleaved woodland lying on slopes above the coastal plain and along an adjacent valley to the east. The woodland habitat is relatively robust, but there is scope for its enhancement through removal of conifers and other invasive species. Part of the site, within the existing NNR, has recently been entered into a Tir Gofal agreement. The involvement of Forest Enterprise is necessary to ensure improved conservation management and better integration of existing and restored woodland on the higher slopes above Aber valley and to ensure the current integrity of the NNR is maintained.

Cors Fochno SAC

Overview

The peatland complex of Cors Fochno lies on the southern flank of the Afon Dyfi, within the estuarine floodplain. It is a rare and striking landscape feature, and considered to be the 'locus typicus' for estuarine raised mire in the UK. Although reduced in size by drainage and reclamation, the remaining expanse at Borth comprises one of the largest actively growing raised bogs in the lowlands of Britain, and accounts for around 4% (200ha) of the total British resource of primary surface (i.e. uncut) raised mire.

Cors Fochno is a site of national geological importance containing a 7m deep peat archive, continuously developed over 5000 years and storing information on sea level, climate and other environmental change. This, together with the site being one of only a handful in the UK considered representative of active northern peatland complexes make the site highly valued for research, particularly relating to climate change. The bog also contains important archaeological remains including the best example of a medieval timber track way known in Wales.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
7110 Active raised bogs * Priority feature
7120 Degraded raised bogs still capable of natural regeneration

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
7150 Depressions on peat substrates of the *Rhynchosporion*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Active raised bogs (EU Habitat Code: 7110), incorporating Feature 3 (Depressions on peat substrates of the *Rhyncosporion*)

Vision for feature 1 (and 3)
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- NVC type M18 *Sphagnum papillosum-Erica tetralix* raised mire and M2 *Sphagnum cuspidatum* bog pool communities will occupy > 95% of the 'primary' (i.e. uncut) bog area.
- The cover level of characteristic bog mosses (*Sphagnum* species) will be sufficiently high (>25%) to indicate healthy peat growth.
- 'Hummock and hollow' patterning will be present across the centre of the bog dome.
- The hollows (i.e. *Rhyncosporion* depressions) will usually have greater sundew *Drosera anglica* present and will be increasing or maintaining their extent.
- The following species will be common in the active raised bog: *Sphagnum capillifolium, S. papillosum* and *S. magellanicum*, bog rosemary *Andromeda polifolia* and white-beak sedge *Rhyncospora alba*.
- The rare hummock forming bog mosses *Sphagnum austinii* and *S. fuscum* will be have stable or increasing populations.
- Purple moor grass *Molinia caerulea* will be largely absent from the active raised mire
- Scrub species such as willow *Salix* and birch *Betula* will also be largely absent.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Degraded raised bogs still capable of natural regeneration (EU Habitat Code: 7120)

Vision for feature 2
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- 80% of the degraded raised bog resource is restored to active raised bog, with the remainder, being hydrologically compatible with active bog.
- Vegetation corresponding to National Vegetation Classification raised mire communities types M2 and/or M18 will be stable or increasing in extent relative to that mapped in 2003.
- Areas/ stands of M18 vegetation will have a 20% or more cover of bog moss, and tree species and rhododendron will be rare or absent.
- Other non-woodland semi-natural vegetation communities, including poor fen, brackish fen and swamp will have tree species not exceeding their extent in 2003.
- Characteristic plant species of the mire margins and transitions, including alder buckthorn, black bog rush; brown beak-sedge, greater

tussock sedge, lesser butterfly orchid, marsh cinquefoil, royal fern and veilwort will have stable or increasing populations.
- Species intolerant of impeded drainage such as bracken and most grass species will be absent or rare throughout the site, together with alien invasive species such as rhododendron.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Cors Fochno SAC (Countryside Council for Wales, February 2011).

Vulnerabilities

The quality and extent of the raised mire and transitional brackish mire habitats have been affected by past drainage works, agricultural conversion, peat cutting and fire.

A significant proportion of the degraded mire is protected from seawater incursion by artificial structures and is therefore vulnerable to flooding. The potential for restoration of brackish transitions requires detailed assessment.

Vulnerability of the intact mire has been significantly reduced in recent decades by land acquisition and designation, such that a broad 'buffer zone' of modified mire is now under conservation management. The maintenance of peripheral drains is the main threat to successful rehabilitation. CCW is addressing this problem through liaison with the Environment Agency, and input to a water level management plan.

Monitoring of the hydrology and the mire vegetation indicates a positive response to ditch blocking works commenced in 1981. Further remedial actions are being addressed, as set out in the management plan.

Corsydd Eifionydd SAC

Overview

Corsydd Eifionydd SAC is made up of four separate Sites of Special Scientific Interest; Cors Graianog SSSI, Cors Gyfelog SSSI/NNR, Cors Llanllyfni SSSI and Cors y Wlad SSSI. The sites are situated within the upland-fringe transition between Snowdonia and the Llín Peninsula and together they cover an area of over 144 ha. Between them, they should support three features of international importance namely transition mire and quaking bog, marsh fritillary and slender green feather moss. The sites should also support a range of other wetland habitats including marshy grassland, fen, bog, wet woodland and swamp habitats.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
7140 Transition mires and quaking bogs

Annex II species that are a primary reason for selection of this site:
1065 Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*
1393 Slender green feather-moss *Drepanocladus* (*Hamatocaulis*) *vernicosus*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Transition mires and quaking bogs (EU Habitat Code: 7140)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Transition mire and quaking bog will be the dominant habitat at Cors Gyfelog and Cors Graianog
- A mosaic of fen, bog, marshy grassland and swamp habitats should cover at least 80% of both sites. The habitat should be of good quality, supporting a number of scarce, rare and endangered plant species. It should also provide habitat for a wide range of birds, insects and reptiles.
- During the driest part of the year most of the site should have water at or above the surface and when the site is walked upon, the bog shakes. This quaking bog should support wetland habitats with typical species such as cross-leaved heath, bog asphodel, sundews, bogmosses (*Sphagnum* spp.) and cotton grass.
- The site should support healthy populations of rarer plants such as intermediate bladderwort, bog sedge, royal fern, oblong-leaved sundew together with rare insect populations. Habitat suitable for the marsh fritillary butterfly should be present. The blue flowered devil's bit scabious should be common on the site because it is the food plant of marsh fritillary caterpillars.
- Wet woodland should cover no more than 30% of Cors Gyfelog and 10% of Cors Graianog and there should be no rhododendron present. This diverse woodland community has developed over a number of years and supports a rich lichen and moss community. The woodland should continue to contain a number of different tree species and be able to support the lichen and moss communities.
- Light grazing by cattle and ponies will occur across all accessible parts of the site during the late spring to early summer months.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Slender green feather moss *Dreplanocladus* (*Hamatocaulis*) *vernicosus*. EU Species Code 1393

Vision for feature 4.2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The low growing fen vegetation of Cors Gyfelog and Cors Llanllyfni should continue to support a healthy population of the slender green feather-moss. Management shall ensure that the population remains stable and afford it the opportunity to expand
- On Cors Gyfelog, *H. vernicosus* is confined to neutral or slightly basic flushes and runnels with an open vegetation structure of brown mosses, sedges, mixed forbs and *Sphagnum* spp.
- The open vegetation needs to be maintained by seasonally light grazing and a high water table with ground conditions being wet throughout the year, the water table being at or near to the surface.
- Under-grazing is a significant threat to the *H. vernicosus* sub-populations at both sites since it could lead to increased cover by rushes, forbs, sedges and scrub invasion. When the vegetation became denser, the *H. vernicosus* formed small sub-populations of a few scattered scrawny stems. The site is summer-grazed by ponies, which maintains the short open sward conditions favoured by the moss.
- Nutrient enrichment of the water source is also a potential risk at both sites. Measures should be implemented to prevent and/or reduce to a minimum source of nutrient enrichment.
- Certain herbs, grasses and sedges grow in close proximity to the moss populations. These plants share the habitat requirements of the moss; they include Lesser Spearwort, Sharpflowered Rush, Purple Moor Grass, Star Sedge, Carnation Sedge, Devil's- bit Scabious, Lesser Skullcap, Large Birdfoot Trefoil, Bogbean,, Common marsh-bedstraw, Common Cotton Sedge, Bottle Sedge, Common Sedge, Common Yellow Sedge, Velvet Bent and Flea Sedge.
- All factors affecting the achievement of the foregoing conditions are under control.

4.3 Conservation Objective for Feature 2: Marsh fritillary butterfly *Euphydryas aurinia* EU Species Code 1065.

Vision for feature 4.3

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- To ensure this, at least 80% of Cors y Wlad SSSI should be covered by habitat suitable for the marsh fritillary i.e. rushy vegetation (rhos pasture). The habitat should be of good quality
- (tussocky grassland at a height of 10 – 20cm) with an abundance of devil's bit-scabious, the food plant of the marsh fritillary caterpillars.
- The SAC supports a nationally important population of the marsh fritillary butterfly. Although, numbers of adult butterflies and larvae fluctuate annually in response to a parasitic wasp and weather conditions, the population is robust, resilient and viable in the long term. This population contributes towards the larger population of the butterfly in the general area.
- During peak years, a visitor taking a walk through the site on a sunny day in June will seen numerous adult butterflies. In these years the caterpillars, feeding communally in silken webs on their food plant devils bit scabious, will be abundant throughout those units supporting the butterfly.

- The SAC population contributes to and is the core of the Eifionydd marsh fritillary metapopulation. The metapopulation consists of the SAC population, plus populations breeding on land outside the SAC.
- The population breeds throughout 4 units, where it is a key species driving the management of each unit.
- Rosettes of devils bit scabious will be both very numerous and widespread throughout parts of those units supporting marsh fritillary (particularly Cors y Wlad SSSI), growing amongst a turf of grasses, sedges and flowering herbs with scattered tussocks of purple moor grass and rushes providing shelter for the caterpillars in wet weather.
- Dense mixed hedges of hawthorn, hazel, mountain ash and other locally native species grow around the external and internal boundaries and offer vital shelter to the breeding adult butterflies during poor weather in what is otherwise a very exposed landscape with little shelter.
- All factors affecting the achievement of the foregoing conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Corsydd Eifionydd SAC including the following: Cors Graianog SSSI/NCR; Cors Gyfelog SSSI/NNR; Cors Llanllyfni SSSI; and Cors y Wlad SSSI (Countryside Council for Wales, April 2008).

Vulnerabilities

The site is under one principal threat - scrub encroachment due to a lack of grazing, which is a reflection of the inaccessible, boggy nature of the terrain. Drainage and pollution are additional threats.

Glan-traeth SAC

Overview

Glan-traeth SAC lies to the southwest of the village of Newborough and is part of the adjacent Newborough Warren / Ynys Llanddwyn sand body although separated by the A4080 road.

The shallow pools at Glan-traeth, which were created by the extraction of sand, supported one of the largest breeding populations of great crested newt *Triturus cristatus*. At time of SSSI notification over 500 animals were counted during torch survey. The actual total population would have been considerably larger. The pools are also the breeding site for significant numbers of palmate newt *T helveticus*, common frog *Rana temporaria* and toad *Bufo bufo*.

Surrounding areas of land comprise grazed dune grassland developed in former sand workings, and a sand ridge to the southeast which is un-

grazed by domestic stock. There are also areas of dumped material that have now grassed over and form valuable hibernacula. These are important foraging and wintering areas for the adult amphibians and are an essential component of the habitat of these species.

The early sand grass *Mibora minima*, a rarity in Britain (restricted to a few areas in Anglesey and the Gower Peninsula) occurs in the grazed dune grassland, particularly near the edge of bare or eroded sand patches. Meadow saxifrage *Saxifraga granulata*, which is uncommon in Gwynedd, occurs in the grassland, whilst variegated horsetail *Equisetum variegatum* and round-leaved wintergreen *Pyrola rotundifolia* occur in the damp depressions.

Qualifying Features

Annex II species that are a primary reason for selection of this site:
1166 Great crested newt *Triturus cristatus*

Conservation Objectives

4.1 Conservation Objective for Feature 1: *Triturus cristatus* (EU Species Code: 1166)

Vision for feature 1:
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions will be satisfied:

- There will be a viable breeding great crested newt population present on the site.
- Ample display/breeding ponds will be found on site.
- Great crested newt larvae will be found in most of the breeding ponds.
- Most of the display/breeding ponds on the site will have standing water during the average summer months.
- The breeding ponds will dry out by midsummer occasionally (>5year intervals).
- There will be adequate native water plants (macrophytes) for egg laying and adequate areas of bare pond bottom for displaying newts.
- Surrounding vegetation will not heavily shade breeding and display ponds.
- Algal blooms and surface sheens will be absent from display/breeding ponds.
- Fish will be absent or rare in breeding/display ponds that support great crested newts.
- Only small numbers of wildfowl will occur on the ponds.
- The terrestrial habitat surrounding breeding ponds will comprise of refuge areas for newts, foraging areas, areas of hibernacula and corridors that will aid the movement of great crested newts back and forth with the neighbouring Newborough Warren – Ynys Llanddwyn SSSI (for migration, dispersal, foraging and genetic exchange purposes).
- There will be no significant loss of great crested newts as a result of road engineering such as gully-pots.

- Non-native aquatic species will be absent or if present, not at more than "occasional" frequency.
- All factors affecting the achievement of the above conditions will be under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Glan-Traeth Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI) (Countryside Council for Wales, March 2008).

Vulnerabilities

Lowering of the water-table as extensive forestry plantations in Newborough Forest mature could possibly affect the permanence of shallow pools, important as newt breeding sites. Pond management or creation onsite would be considered if breeding habitat is adversely affected and monitoring of newt numbers shows that the population is affected. The next known great crested newt population is 2 km south-west.

Glynllifon SAC

Overview

Glynllifon SAC contains maternity roosts at management units 16 (Glynllifon Mansion), 32 (Melin y Cim) and 36 (Pen y Bont), and two hibernation roosts / areas at management units 16 (Glynllifon Mansion) (which is used both as a hibernation and a maternity roost) and 37 (Simdde – dylluan Copper Mine) old mine workings in the Nantlle Valley. In addition areas of habitat surrounding these roosts have been included; a tree lined stream linking management units 32 and 36 (Melin-y- Cim and Pen y Bont), a large amount of woodland surrounding unit 16 (Glynllifon Mansion) and a small area of hillside unit 37 surrounding the Simdde – dylluan mine levels (Wilkinson, 2006).

Regular data is collected regarding the number of bats that use each of these roosts. Exit counts are carried out twice a year following the standard lesser horseshoe bat monitoring protocol at all three maternity roosts. A data logger is additionally installed at management unit 16 (Glynllifon Mansion). The data logger records the number of bats exiting and returning to the roost, throughout the year. The data is downloaded and analysed by Peter Andrews (Andrews, 2002, 2004a and 2004b).

However, there is only limited data for management unit 37 (Simdde – dylluan mine levels), and further survey is required to establish how and when the bats use these mines (Wilkinson, 2006).

Although some habitat is included within the SAC boundary, the bats use a much wider area for feeding and commuting and there are also known linked roosts outside of the SAC boundary. All these aspects need to be considered when determining the conservation status of the

population of lesser horseshoe bats. Radio-tracking work has been undertaken to try to identify the feeding areas and flight lines used. The work was commissioned largely to determine the potential effects of the A487 road scheme. The data needs to be analysed to determine if there are key areas of habitat, flight routes or roosts, which need to be maintained in the landscape in order to support this= population of bats. Further research is required to determine how CCW assesses the conservation status of this mobile species (Wilkinson, 2006).

Qualifying Features

Annex II species that are a primary reason for selection of this site:
1303 Lesser horseshoe bat *Rhinolophus hipposideros*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Lesser horseshoe bat *Rhinolophus hipposideros* (EU Habitat Code 1303).

Vision for feature 1

- The natural range of lesser horseshoe bats will not be reduced, nor be likely to be reduced for the foreseeable future.
- There is, and will continue to be, sufficient habitat to maintain the lesser horseshoe bat population on a long-term basis.
- The three maternity roosts will continue to be occupied annually by lesser horseshoe bats and their Babies: Glynllifon Mansion (Unit 16); Melin y Cim (Unit 32); and Pen y Bont (Unit 36).
- There will be a sufficiently large area of suitable habitat surrounding these roosts to support the bat population, including continuous networks of sheltered, broadleaved and coniferous woodland, tree lines and hedgerows connecting the various types of roosts with areas of insect-rich grassland and open water.
- All factors affecting the achievement of these conditions are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Glynllifon SAC (Countryside Council for Wales, March 2008).

Vulnerabilities

The site includes the roost and adjacent feeding areas utilised by the bats. The building in which the roost is located is currently on sale, and the management of the estate grounds, including the woodlands, is being revised. A recent road improvement scheme, which has interfered

with a key flight path out of the estate and which has failed to incorporate adequate mitigation for the bats, also illustrates the pressure on this site. A management agreement exists with the current owners of the roost building but this does not extend to the feeding areas, currently excluded from the SSSI and SAC. There is some scope for improving management of the site as a whole for the bats, through management agreement, agri-environment schemes and other partnership initiatives.

Great Orme's Head SAC

Overview

Pen Y Gogarth / Great Orme's Head is of special interest for its geological, botanical, entomological, ornithological and marine biological features. This limestone headland, which rises in a multitude of tiers to a summit plateau at 207 metres, includes sea cliffs and boulderstrewn shores, and extends for nearly eight kilometres along the North Wales coastline, separating Conwy Bay and Llandudno Bay. There are on the north and east sides, sheer cliffs plunging vertiginously into the sea whereas those on the south facing sides have less severe slopes with a series of low tiers of limestone cliffs falling to soft boulder clay slopes and cliffs on the southwest side. Where soils are not derived from the limestone bedrock there is evidence that the deeper soils are derived from wind-blown sand (loess) of periglacial age.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
4030 European dry heaths
6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates *(Festuco-Brometalia)*

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
1230 Vegetated sea cliffs of the Atlantic and Baltic coasts

Conservation Objectives

4.1 Conservation Objective for Feature 1: European Dry Heath (4030)

Vision for Dry Heath
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The dry heath occupies at least 25% of the total site area.
- The dry heath is given the opportunity to expand at the expense of bracken and gorse but not at the expense of semi-natural dry grassland.

- The dry heath is co-dominated by heather, bell heather and western gorse.
- At least 33% of the dry heath is species-rich where the following plants are present; common rock-rose, dropwort, sheep's-fescue, glaucous sedge, harebell, wild thyme and common birdsfoot trefoil.
- Pioneer and building phases of heath vegetation are present.
- Competitive species indicative of lack of management, bracken *Pteridium aquilinum*, gorse *Ulex europaeus* and native shrub and tree species are kept in check.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco – Brometalia*) (6210)

Vision for Semi-natural dry grasslands

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The semi-natural dry grasslands occupy at least 35% of the total site area.
- The semi-natural dry grasslands are given the opportunity to expand at the expense of bracken and gorse but not at the expense of dry heath.
- The semi-natural dry grasslands are a species-rich mixture of characteristic herbs, grasses and sedges that include hoary rock-rose, common rock-rose, salad burnet, wild thyme, dropwort, common bird's-foot-trefoil, sheep's fescue, crested hair-grass, quaking grass, meadow oat-grass, glaucous sedge and spring sedge.
- Terricolous lichens, acrocarpous mosses and bare rock and soil are present in the open short turf grassland community.
- Species indicative of agricultural improvement and/or trampling are rare or absent.
- Native shrub and tree species and bracken are rare or absent.
- Invasive non-native species such as low growing and mat-forming Cotoneasters are absent.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for Feature 3: Vegetated sea cliffs of the Atlantic and Baltic coasts (1230)

Vision for Vegetated Sea Cliffs

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The extent of the sea cliffs and their associated short turf maritime grassland will occupy not more than 5% of the site, excepting natural catastrophic cliff collapse.
- Cliff and crevice vegetation will occur naturally on suitable cliff sections throughout the site.
- The vegetation will be composed of native plants such as sea cabbage *Brassica oleracea*.
- The expansion of climbing plants such ivy Hedera helix and the spread of non-native red valerian Centranthus ruber will be discouraged.

- Short turf maritime grassland will be dominated by red fescue and characteristic species such as thrift and buck's-horn plantain
- All factors affecting the achievement of these conditions are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Great Orme's Head / Pen Y Gogarth SAC (Countryside Council for Wales, March 2008).

Vulnerabilities

The plateau top of the Great Orme and its slopes are subject to high levels of grazing, which produces short cropped turf. On the steeper slopes there are areas which are under grazed, due to difficult livestock access. Invasion by native and non-native shrub species is occurring in these areas. These problems are being addressed by a management plan agreed upon by CCW and the local authority.

Recreational pressure on the Great Orme is substantial, as it is immediately adjacent to Llandudno, a major tourist centre. The site is managed as a Country Park and Local Nature Reserve by the local authority in close consultation with CCW. A joint management plan has been agreed upon and is being implemented, which should ensure maintenance of the special features.

Holy Island Coast SAC

Overview

Glannau Ynys Gybi (South Stack)

This site is of special interest for its geological and biological features, including heathland and maritime grassland communities, coastal cliffs and ledges, its assemblages of vascular plants and birds, invertebrates and its solid geology. The site lies on the north west corner of Holy Island and includes the most westerly point on Anglesey. Holyhead lies immediately to the east.

Tre Wilmot

This is a large area of acidic, lowland heath overlying a series of rocky ridges and intervening depressions, which give rise to a range of heathland vegetation communities. The well drained heath on the ridges is dominated by ling *Calluna vulgaris* and western gorse *Ulex gallii*, with spring squill *Scilla verna* and, on rock outcrops, English stonecrop *Sedum anglicum*.

The lower-lying areas support wet heath or peatland communities, with species such as crossleaved heath *Erica tetralix*, purple moor-grass *Molinia caerulea*, common cotton grass *Eriophorum angustifolium* and creeping willow *Salix repens*. Of particular note is a very large population of marsh gentian *Gentiana pneumonanthe* and, in small open water areas, pillwort *Pilularia globulifera*; both these species have decreased markedly over the country as a whole with progressive reclamation of their habitats. Three lobed water crowfoot *Ranunculus trilobata* also occurs here.

Glannau Rhoscolyn

Extending along the west coast of Holy Island, Anglesey for approximately 6.5 km (from Porthygaran to Silver Bay) and covering an area of approximately 157 ha, Glannau Rhoscolyn SSSI is an area rich in biological and geological features. This site is selected for its botanical, ornithological and geological features and has substantial marine biological interest.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
4030 European dry heaths

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
4010 Northern Atlantic wet heaths with *Erica tetralix*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Vegetated sea cliffs of the Atlantic and Baltic coasts (including cliff & crevice vegetation, maritime grassland and maritime heath).-including: Feature 9: Golden hair lichen *Teloschistes flavicans*; Feature 10: South Stack fleawort *Tephroseris integrifolia ssp maritime;* Feature 11: Ciliate strap lichen *Heterodermia leucolmelos*; and Feature 12: *Cladonia peziziformis*

Vision for feature 1
The vision is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- Cliff and crevice vegetation, maritime grassland and maritime heath occurs throughout the site in appropriate areas and their relative extent and zonation are determined by topography, exposure, grazing and natural stochastic events (e.g. storms).
- The cliff vegetation is composed of native plants such as sea spurrey *Spergularia rupicola* Sea lavenders *(Limonium britannicum, L procerum, L. binervosum)* and sea samphire *Crithmum maritimum*.

- Non-native plants, such as Hottentot fig *Carpobrotus edulis* or purple dew-plant *Disphyma crassifolium* are preferably absent or at least not spreading from their 2000 extent.
- Maritime Grassland occupies higher ledges on the coastal cliffs and the cliff-top.
- The following plants are common in the maritime grassland: red fescue *Festuca rubra*, thrift *Armeria maritima;* spring squill *Scilla verna* and sea plantain *Plantago maritima*
- Maritime Heathland occupies areas inland of the maritime grassland.
- The following plants are common in the maritime heathland: heather *Calluna vulgaris*; bell heather *Erica cinerea* Western gorse *Ulex gallii,* thrift *Armeria maritima*, sea plantain *Plantago maritima*, buck's horn plantain *Plantago coronopus* or spring squill *Scilla verna.*
- Competitive species indicative of under-grazing, particularly bracken *Pteridium aquilinum* and gorse *Ulex europaeus* and grass species indicative of improvement including creeping bent *Agrostis stolonifera,* cock's foot *Dactylus glomerata,* perennial rye-grass *Lolium perenne* and Yorkshire fog *Holcus lanatus* are largely absent from the heath.
- Sustainable populations of the plants which make up the Atlantic sea cliff rare plant assemblage will be present, notably, South Stack fleawort *Tephroseris integrifolia*, Sea lavenders *(Limonium britannicum, L. procerum, L. binervosum)* Golden hair lichen *Teloschistes flavicans* and Ciliate strap lichen *Heterodermia leucomelos.*
- All factors affecting the achievement of these conditions, including grazing intensity and burning, will be under control.

4.2 Conservation Objective for Feature 2. Northern Atlantic wet heaths with Erica tetralix including Pillwort *Pilularia globulifera*, Three lobed water crowfoot *Ranunculus trilobata*, Marsh gentian *Gentiana pneumonanthe*, Bog bush cricket *Metrioptera brachyptera*.

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Wet heath covers no less than the present mapped extent (*to be determined*)
- The following plants are common in the wet heath: heather *Calluna vulgaris*; cross-leaved heath *Erica tetralix,* bog moss *Sphagnum* spp. devil's bit scabious *Succisa pratensis* and *Narthecium ossifragum.*
- Competitive species indicative of under-grazing, particularly bracken *Pteridium aquilinum*, purple moor-grass *Molinia caerulea* and western gorse *Ulex gallii* are kept in check.
- 70% of wet heath will be "good condition" wet heath.
- The wet heath supports sustainable (flowering) populations of marsh gentian, three-lobed water crowfoot, and pillwort.
- The wet heath supports a viable population of bog bush cricket.
- The wet heath contributes potential support of a meta-population of marsh fritillary.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for Feature 3: European dry heaths inc Feature 8 Spotted rock rose *Tuberaria guttata*, Feature 12 the lichen *cladonia peziziformis*, Feature 13 Juniper *Juniperus communis*, Feature 14 Dodder *Cuscuta epithymum* and Feature 15 silver studded blue

butterfly *Plebejus argus*.

The vision

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Dry heath covers no less than the present mapped extent (*to be determined*)
- The following plants are common in the dry heath: heather *Calluna vulgaris*; bell heather *Erica cinerea,* western gorse *Ulex gallii.*
- Competitive species indicative of under-grazing, particularly bracken *Pteridium aquilinum*, purple moor-grass *Molinia caerulea* and western gorse *Ulex gallii* are kept in check.
- 70% of dry heath will be "good condition" dry heath.
- The dry heath provides abundant and accessible food for breeding chough.
- The dry heath supports sustainable (flowering) populations of dodder.
- Spotted rock rose occurs in at least 5 distinct loci (presently South Stack, Porth Dafarch north, Porth y Garan, Pany yr Hyman path, Pant yr Hyman heath) of at least 200 plants each.
- Juniper occurs in at least 3 locations totalling 50 plants.
- The dry heath supports a viable population of silver studded blue.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Glannau Ynys Gybi SAC & Glannau Ynys Gybi SPA (Countryside Council for Wales, April 2008).

Vulnerabilities

Pressure for recreational development remains a threat and visitor pressure requires constant management to counter soil erosion and the disturbance of wildlife. There is a mineral extraction permit on land held by the local authority which is not currently exercised, and pressure for further telecommunications development.

Spread of exotic plants (e.g. *Disphyma crassifolium*) from nearby colonies may cause future problems with cliff communities, and this is being carefully monitored.

Vegetation succession on areas remote from the cliff top requires regular intervention by grazing, cutting or burning to mimic traditional management. Much of the area is managed by RSPB in accordance with a management plan or by private landowners under CCW management agreement or ESA agreements.

Llyn Fens SAC

Overview

Corsydd Llín SAC consists of a chain of four rich-fen sites running across the centre of the Llín Peninsula, north-west Wales. Cors Geirch is the largest component site; the remaining three component sites of Cors Hirdre, Rhyllech Uchaf and Aber Geirch occupy separate hydrotopographical units.

Due to the underlying geology, the springs and seepage areas are rich in base elements. Such base-rich fens and flushes are very rare in Wales and the UK. The particularly characteristic habitat found under these conditions is alkaline fen which manifests as soligenous communities referable to NVC type M13 *Schoenus nigricans – Juncus subnodulosus* mire, together with M9 *Carex rostrata – Calliergon cuspidatum/giganteum* mire in dominantly topogenous settings – stands with elements of both communities are also present. Much of the alkaline fen interest at this site occurs within a matrix of human modified peatland vegetation in which bog myrtle *Myrica gale*, purple moor-grass *Molinia caerulea*, blunt-flowered rush *Juncus subnodulosus* and common reed *Phragmites australis* occur as prominent components; great fen-sedge *Cladium mariscus* is also locally dominant. Outstanding floristic features of the alkaline fen at Corsydd Llín include the nationally rare slender cottongrass *Eriophorum gracile* at its sole north Wales station, together with significant populations of narrowleaved marsh orchid *Dactylorhiza traunsteineri*, Grass of Parnassus *Parnassia palustris* and lessertussock sedge *Carex diandra*.

The SAC also supports rare invertebrate species, including the whorl snails, hornet robber fly and a remnant population of marsh fritillary, The population of Desmoulin's whorl snail *Vertigo moulinsiana* on Cors Geirch NNR occurs in stands of great-fen sedge *Cladium mariscus* in calcareous fen and is the only locality known for the species in Wales.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
7230 Alkaline fens

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * Priority feature

Annex II species that are a primary reason for selection of this site:
1016 Desmoulin`s whorl snail *Vertigo moulinsiana*

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1013 Geyer`s whorl snail *Vertigo geyeri*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Alkaline fen (EU Habitat Code 7230)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Alkaline fen occupies at least 7.1% of the total SAC area (i.e. 20.14ha) and occupies areas which have potential to support this habitat.
- Alkaline fen is found on all 4 component sites.
- The following plants are common in the alkaline fen: *Schoenus nigricans*, yellow starry feather moss *Campyllium stellatum*, great fen sedge *Cladium mariscus* (up to 1m tall), blunt flowered rush *Juncus subnodulosus*, sweet gale *Myrica gale*, moss *Drepanocladus revolvens,* bladderwort *Utricularia minor,* butterwort *Pinguicula vulgaris*,
- Species indicative of drainage or agricultural modification, such as Yorkshire fog *Holcus lanatus*, bramble *Rubus spp*., nettle *Urtica dioica*, are largely absent from the alkaline fen.
- Purple moor grass *Molinia caerulea* does not exceed 25% of ground cover and is restricted to drier areas
- Bare ground should constitute no more than about 5% of the ground cover (perhaps 10% on the wettest soligenous examples of alkaline fen).
- Alkaline Fen exhibits a diverse age and height structure across the site (tussocks are undamaged and 20% short grazed, 50% mature – 30% in between including bare ground).
- Scrub species such as willow *Salix spp* and birch *Betula pubescens* are largely absent from the alkaline fen.
- Invasive, non-native species are absent
- Appropriate grazing is managed across 100% of the site
- Standing or running surface water is present between tussocks throughout the year, and visible over 30% of the tussock covered area
- All Hydrological (diffuse, surface and sub-surface) pathways (inputs and outputs) should be restored and/or intact (includes ditch infilling, blocking, diversion and re-engineering).
- Water quality is appropriate to the needs of the vegetation and species – namely base-rich but nutrient-poor.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae (EU Habitat Code 7210)

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied

- Calcareous fen occupies at least 3.8% (10.78ha) of Cors Geirch.
- The following plants are common in the Calcareous fen: Great fen sedge *Cladium mariscus,* blunt flowered rush *Juncus subnodulosus*, and sweet gale *Myrica gale*; bog-bean *Menyanthes trifoliate* marsh cinquefoil *Potentilla palustris,* bladderwort *Utricularia vulgaris* and slender sedge *Carex lasiocarpa*, are locally prominent.
- Species indicative of drainage or agricultural modification, such as Yorkshire fog *Holcus lanatus*, bramble *Rubus spp*., nettle *Urtica dioica* are largely absent from the calcareous fen.
- Purple moor grass *Molinia caerulea* does not exceed 25% of ground cover.
- Calcareous Fen exhibits a diverse age and height structure across the site (20% short sward?) Pure (monospecific) stands of single age and structure *Cladium mariscus* do not exceed 50% of the feature area.
- Scrub species such as willow *Salix* and birch *Betula* are largely absent from the calcareous fen.
- Non native invasive species are absent.
- Standing surface water is present over most of the winter period.
- Groundwater is within 15cm of surface in midsummer.
- All Hydrological (diffuse, surface and sub-surface) pathways (inputs and outputs) are restored and/or intact (includes ditch infilling, blocking, diversion and re-engineering)
- Water quality is appropriate to the needs of the vegetation – namely base-rich but nutrient poor.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 3: Desmoulin`s whorl snail *Vertigo moulinsiana (EU* Species Code 1016)

Vision for feature 3

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied

- *Vertigo moulinsiana* is frequent in suitable habitat at Cors Geirch SSSI.
- Average height of vegetation is not less than 70cm when measured in August.
- Greater and lesser pond sedges, tussock sedge and saw sedge, branched burr-reed and yellow flag indicate favourable conditions, as can sparse *Phragmites* and *Phalaris*.
- Ground moisture levels at between damp and very wet.
- Prevent any significant rise in water levels such that aquatic plants (e.g. watercress Rorippa nasturtium-aquaticum, and fool's water cress Apium nodiflorum) become Dominant.
- Light or rotational grazing or no grazing.
- No increase in scrub cover compared to the baseline.

- Avoid heavy grazing and poaching of banks.
- Prevent any decrease in water quality leading to eutrophication and changes in nutrient status.
- No increase in rank herbs (particularly nettle *Urtica dioica*, thistle *Cirsium* spp., meadowsweet *Filipendula ulmaria*, great willow-herb *Epilobium hirsutum* and butterbur *Petasites* spp.) with vegetation height increasing

4.2 Conservation Objective for Feature 4: *Geyer`s whorl snail* Vertigo geyeri (EU Species Code 101)

Vision for feature 4

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- *Vertigo geyeri* is frequent in suitable habitat at Cors Geirch.
- There are abundant areas of flushed fen grassland (M13 / feature 2) with sedge/moss lawns 5- 15cm tall, containing species such as *Carex viridula* subsp. *brachyrrhyncha,* mosses *Drepanocladus revolvens, Campylium stellatum*, *Pinguicula vulgaris, Briza media, Equisetum palustre, Juncus articulatus together* with scattered tussocks of *Schoenus nigricans* no greater than 80cm tall.
- The ground supporting suitable habitat is saturated and there is a spring flow with a network of dendritic trickles
- Light grazing of suitable habitat with ponies and/or cattle.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Corsydd Llyn SAC (Countryside Council for Wales, April 2008).

Vulnerabilities

The site is under pressure from agricultural pressures (e.g. ditch maintenance, fertiliser application, neglect). Also the water quality of the site is vulnerable to deterioration due to agricultural activities (e.g. slurry). Scrub encroachment is an ongoing management problem.

CCW owns and manages part of the site (Cors Geirch NNR) and can therefore control these activities, subject to resource availability. There are also management agreements in place over other parts of the site which address the agricultural and water quality issues. However, about one-third of the site has no kind of agreement or protective ownership.

Lleyn Peninsula and the Sarnau SAC

Overview

The Pen Llŷn a'r Sarnau SAC encompasses areas of sea, coast and estuary that support a wide range of different marine habitats and wildlife. The nature of the seabed and coast and the range of environmental conditions present vary throughout the SAC. Differences in rock and sediment type, aspect, sediment movement, exposure to tidal currents and wave action, water clarity and salinity together with biological and food chain interactions have created a wide range of habitats and associated communities of marine plant and animal species, some of which are unique in Wales. Pen Llŷn a'r Sarnau SAC is a multiple interest site that has been selected for the presence of 9 marine habitat types and associated wildlife (Habitats Directive Annex I habitat types) and 3 mammal species (Habitats Directive Annex II species).

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
1110 Sandbanks which are slightly covered by sea water all the time
1130 Estuaries
1150 Coastal lagoons * Priority feature
1160 Large shallow inlets and bays
1170 Reefs

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
1140 Mudflats and sandflats not covered by seawater at low tide
1310 *Salicornia* and other annuals colonising mud and sand
1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
8330 Submerged or partially submerged sea caves

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1349 Bottlenose dolphin *Tursiops truncatus*
1355 Otter *Lutra lutra*
1364 Grey seal *Halichoerus grypus*

Conservation Objectives

The vision for the Pen Llŷn a'r Sarnau SAC is for a high quality marine and coastal environment which is healthy, productive and biologically diverse, supporting resilient marine ecosystems and communities. The special habitat and species features of the SAC will be maintained and, where necessary, restored so that they will be able to sustain themselves in the long-term as part of naturally functioning ecosystems. The diversity of the wildlife habitats and species in the SAC will not be degraded.

The varied physical character and processes in different parts of the SAC will operate without any undue interference; this includes the natural processes of tides, waves and currents and the associated processes of sediment erosion and deposition. The quality of water in the SAC will be maintained or restored to a level necessary to maintain the features in favourable condition for the foreseeable future. The health and quality of the 12 SAC features are inter-related and will also depend on the state of other non SAC feature marine habitats within the site, as well as structural and functional components of the marine ecosystem.
The *reefs* of the SAC should continue to comprise a large variety of habitats and their associated biological communities both on the shore and underwater. The different components of the reef habitat should continue to be present with no significant loss of extent, and the quality of the wildlife communities they support should be maintained or enhanced; these components comprise reef formed from different types of hard substrate throughout the site (bedrock, boulders, cobbles and mixed ground), biogenic reefs and carbonate reef. The potential for expansion of the biogenic reef communities on the shore and underwater will be safeguarded through appropriate management.

The *large shallow bay feature* (Tremadog Bay) should continue to comprise a variety of high quality sediment and hard substrate habitats and their associated biological communities. The special characteristics of the bay will be maintained, including species rich and species diverse subtidal sediments as the dominant habitat type within the bay. The subtidal sediments should comprise a mosaic of sediment types including extensive areas of muddy gravel, fine and muddy sand and mud. On the shore, the condition of the varied habitat types and their associated communities will be expected to be maintained or improved under appropriate management. The intertidal habitat types present will include muddy and sandy gravel, mixed sediment and boulder shores, bedrock, sand and shingle. The natural biological productivity of the bay and its ability to function as a nursery area for fish and shellfish species will be maintained and safeguarded. The potential for expansion of the biogenic reefs and eelgrass (seagrass) communities that are components of the bay feature should be safeguarded through appropriate management.

The *subtidal sandbanks* for the SAC should continue to comprise mobile or highly mobile sediment habitats and their associated communities. The overall structure, sediment characteristics and biological communities of the Tripods, Bastram Shoal and Devil's Ridge sandbanks will reflect their exposure to the prevailing south-westerly winds and strong tidal flow. The sediment characteristics and biological communities of the Four-fathom bank sandbank will reflect conditions of slightly less exposure to wind and tidal currents. Sediment supply and hydrodynamic processes forming the sandbanks will continue unhindered. The condition of the biological communities within and on the sediment, together with mobile species associated with the sandbanks, will be maintained or improved under appropriate management.

Each of the three *estuaries* of the SAC will continue to be shallow, bar-built drying estuaries supporting a mosaic of habitats and associated wildlife that reflects the transition from the estuarine to terrestrial habitats. The estuaries will support good quality saltmarsh transitions to other habitats such as shingle, sand dune, peat mire, brackish and freshwater marsh, reed swamp, bog and woodland. The sediments of the estuaries will continue to comprise a high proportion of sandy to muddy sediments, and the sediment type and biological communities

associated with them will reflect a gradient from more exposed and saline conditions at the mouth of each estuary to more sheltered freshwater-influenced communities in their landward reaches. The structure and characteristics of each estuary will be determined by unhindered geomorphological and biological processes, including sediment transport, erosion and accretion and the influence of flood events and by appropriate management of the surrounding catchments. Artificial constraints on the estuaries form and functioning will be minimised to ensure the long-term presence and viability of estuary habitats; restore floodplain functions and habitats; and improve the ecosystem resilience to climate change. The estuaries will continue to function as fish nursery areas and to support important populations of migratory fish and birds, and other key species such as otter.

The Morfa Gwyllt *coastal lagoon* will continue to be present in its current location with no loss of extent or reduction in its ability to provide a specialised brackish water lagoon habitat. Specialist lagoon species will continue to be present as viable populations together with a range of other marine species characteristic of the predominantly sediment habitat in the lagoon basin. The negative impact of disturbance to the lagoon from human activities would be expected to be reduced under appropriate management, thereby improving the ability of Morfa Gwyllt to continue to exist and function as a coastal lagoon.

The *intertidal mudflats and sandflats* feature should continue to comprise an array of sediment habitats and their associated biological communities, ranging from exposed and moderately exposed sands in open coast situations, through exposed to sheltered sands and muds in estuarine conditions. Complete examples of zonation of exposed and moderately exposed sediment communities will continue to be present. The quality of intertidal mudflat and sandflat communities would be expected to be maintained or improved. The potential for expansion of the nationally scarce eelgrass (seagrass) community should be safeguarded through appropriate management. The long-term viability and quality of the intertidal mudflats and sandflats in estuarine conditions may be enhanced by restoration of more naturally functioning estuary systems.

The site retains its complete sequences of *saltmarsh vegetation*, from pioneer vegetation, such as glasswort, through to upper saltmarsh. The variety of communities will continue to be present and their quality will be maintained or improved. The long-term viability and quality of the saltmarsh features will be improved through management of the estuaries that restores more naturally functioning estuary systems.

The *sea caves* feature should continue to comprise intertidal and subtidal caves, clefts, crevices and tunnels in the bedrock substrate within the SAC. The extent of the sea caves and the variety and quality of the biological communities they support will be maintained or improved. Many of the caves (intertidal and subtidal) will continue to support well-developed zonation of sea cave communities. The sea caves of the SAC will continue to provide accessible and high quality breeding places for grey seal.

The SAC will continue to provide a productive and supportive marine area for *grey seals*. The population of grey seals frequenting the SAC will form and important component of a larger southwest UK population of grey seals. Grey seals will continue to be widespread throughout the

SAC predominantly in areas of open coast and sea. Grey seals will have access to, and sufficient availability of prey, and they will have widespread availability and access to good quality essential habitats, including areas for hauling out and pupping, that are free from excessive disturbance. The quality and distribution of haul out and breeding sites for grey seals within the site will be maintained or improved through appropriate management.

The SAC will continue to provide a productive and supportive marine area for *bottlenose dolphin*. Bottlenose dolphin will continue to be widespread within the waters of the SAC and those frequenting the SAC will reflect a healthy population structure including immature and adult male and female dolphins. The bottlenose dolphins in the SAC will form an important component a larger population of this species present in Cardigan Bay and in the wider sea area around Wales and the north east Atlantic. The animals using the SAC will reflect good physiological health. The bottlenose dolphins will have access to and sufficient availability of prey, and they will have widespread availability and access to good quality essential habitats free from excessive disturbance. The quality and distribution of essential habitats (such as for feeding, calving, resting and travelling) within the site will be maintained or improved through appropriate management.

Otters will continue to be widespread throughout the SAC both in areas of open coast and within the estuaries. Otters will have sufficient availability of prey and widespread availability and access to good quality essential habitats including freshwater and undisturbed resting and breeding sites to allow the otter population to thrive. The distribution, breeding centres and actual/potential breeding sites of otters within the site and adjacent catchments will be maintained or improved through appropriate management.

The landscape quality and conservation value of the area will continue to be high. The presence of the Pen Llŷn a'r Sarnau SAC and its special wildlife enhances the economic and social values of the area by providing a high quality environment for fisheries, outdoor activities, ecotourism, scientific and educational study, and peaceful enjoyment by local people and visitors. The positive contribution of the SAC to the natural, social and economic quality of the area will be recognised and promoted through appropriate sea and land management which ensures compatibility between activities and the sustainable use of the site. Local communities will take pride in their surroundings and work actively to make sustainable improvements for future generations.

Vulnerabilities

The relevant authorities for the site have prepared a management plan and action plan addressing management issues relating to the reefs and estuaries. The additional site features are due to be incorporated into the plans by the end of 2004.

Construction, e.g. of slipways, coastal defence and marinas/harbours could cause disturbance to the estuarine, intertidal mudflat and sandflat, and reef habitats and disrupt physical processes essential for maintenance of these habitats. CCW is consulted by the local planning authorities and other statutory bodies over such developments. There is an increasing demand for additional facilities and/or upgrading

existing facilities, and CCW will need to work with the other relevant authorities to assess the implications of all proposed developments of this sort for the SAC features.

Certain reef communities are vulnerable to disturbance from specific fishing methods, in particular heavy bottom-fishing gear. CCW will liaise with the relevant Sea Fisheries Committee to identify ways of minimising impact on habitats as well as keeping a watching brief on the levels of such fishing activity. The potential impacts of heavy bottom-fishing gear on the subtidal sandbank and shallow inlet and bay habitats will need to be assessed.

There is the possibility of future drilling for oil and gas in Cardigan Bay and the Irish Sea as well as the possibility of offshore wind power developments – CCW is advising the Department of Trade and Industry on potential impacts and possible ways of minimising these.

Many of the marine wildlife communities in the cSAC are sensitive to oil pollution. The development of oilwells and boat traffic in the Irish Sea present potential pollution sources. CCW is working with the oil companies and with other statutory organisations so that adequate safety measures are in place to try and prevent pollution incidents. Also, CCW is a member of the North Wales Standing Environment Group which is preparing a regional contingency plan to help coordinate response to try and minimise environmental impacts in the event of a pollution incident.

Llyn Dinam SAC

Overview

Llynnau y fali comprises a complex of lakes and associated habitats adjacent to RAF Valley in western Anglesey with very small catchments – that of Llyn Penrhyn is 43 ha (Allot et al 1994). Llyn Dinam is the northernmost of the lakes and the least impacted by human activity. The important features of the site include standing water habitats and aquatic plants found therein, reedswamp, marsh fern and breeding and overwintering birds. Other habitats such as unimproved grassland, ditches and rock outcrops contribute to the overall interest.

This diversity of habitats supports a wide range of other species including eleven species of dragonfly and damselfly, including the hairy dragonfly (*Brachytron pratense)* and the variable damselfly (*Coenagrion pulchelum)* and water beetles (*Gyrinus* spp.) including the rare *G. suffriana* and the nationally scarce species *G. paykulli*. These too are a key component of the special interest of the site. Bittern were last recorded breeding in the mid 1980s and still use the site to overwinter.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:

3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Conservation Objectives

4.1 Conservation Objective for Feature 1: Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation (includes SSSI features: Standing water – eutrophic & Standing water – marl/high alkalinity)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There is no loss of area other than that due to natural processes (succession).
- The aquatic plant community is typical of this lake type in terms of composition and structure.
- Plants indicating very high nutrient levels and/or excessive silt loads are not dominant
- Invasive non-native water plants do not threaten to out-compete the native flora.
- Invasive non-native fauna do not threaten the native flora and/or fauna.
- Bird species listed as SSSI features continue to be present at m1% of UK populations.
- The nutrient, pH and dissolved oxygen levels are typical for a lake of this type and there is no excessive growth of cyanobacteria or green algae.
- Chlorophyll values are low, and sufficient to allow Llyn Dinam and Llyn Penrhyn to be passed as 'Good' or better for a 'high alkalinity shallow lake' using Water Framework Directive classification methods. http://www.wfduk.org/management_info/News/UKCLASSPUB/
- The fringing swamp and mire vegetation is maintained.
- All factors affecting the achievement of these conditions are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Llyn Dinam Special Area for Conservation and Llynnau Y Fali Site of Special Scientific Interest (Countryside Council for Wales, March 2008).

Vulnerabilities

The site is 75% controlled by the RSPB and a further part falls under an ESA scheme. Ownership of 25% of the lake is not known. Minor threats occur due to occasional waste disposal from adjacent domestic properties. Enhancement of the reedbed for foraging bittern took place in 1998.

Meirionnydd Oakwoods and Bat Sites SAC

Overview

The Meirionnydd Oakwoods and Bat Sites SAC is made up of a series of woodlands, stretching from Dolgellau in the south to Eryri in the north.

The majority of the SAC is classified as the woodland type known as "Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles", which covers approximately 84% of the SAC and is the dominant woodland type at most of the sites. A key feature of European importance is the rich Atlantic bryophyte communities that are often well developed within this Annex I type. These include numerous rare species, such as *Campylopus setifolius, Sematophyllum demissum, Adelanthus decipiens, Leptocyphus cuneifolius* and *Plagiochila atlantica.* Another key feature of the Meirionnydd Oakwoods and Bat Sites SAC is the lichen flora which is exceptionally rich and includes numerous rare species such as, *Micarea xanthonica, Parmelinopsis horrescens, Phyllopsora rosei, Micarea stipitata* and *Tyothallia biformigera*. Frequently the oak woodland occurs as part of a mosaic of woodland types including other Annex I Habitats, "Bog woodland", "Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior*" and "*Tilio-Acerion* forests of slopes, screes and ravines" which occur in small areas and are only significant at a few of the component SSSI/units. The transitions between these different woodland types are important in terms of maintaining the structure and function of the habitat type and vary across the U.K.

The heath is characterised by abundant *Calluna vulgaris*, *Ulex gallii* and *Erica cinerea* growing on thin, poor acidic soils. There are many small areas of dry heath interspersed amongst the woodland, which have not been measured, but the three largest areas of dry heath, together comprise 1% of the area of the SAC.

The feature "Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation" occurs within the Afon Glaslyn, within the Glaslyn SSSI and currently outside the SAC but within a proposed extension to the SAC.

Lesser horseshoe bats have over 20 known roosts within the SAC and forage widely within the SAC's woodlands, associated habitats and the surrounding countryside. The SAC includes maternity roost sites in various types of buildings and structures, and winter hibernation sites, especially in mines. There are other types of roost such as night, transitional, leks and swarming sites, about which very little is known.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* * Priority feature

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
4010 Northern Atlantic wet heaths with *Erica tetralix*
4030 European dry heaths
9180 *Tilio-Acerion* forests of slopes, screes and ravines * Priority feature
91D0 Bog woodland * Priority feature

Annex II species that are a primary reason for selection of this site:
1303 Lesser horseshoe bat *Rhinolophus hipposideros*

Conservation Objectives

4.1 Conservation Objective for SAC Features : Woodlands, including the following: Old sessile oak woods with Ilex and Blechnum (NVC : W17, W11, W10); Bog woodland (NVC : W4c); *Tilio-Acerion* forests of slopes, screes and ravines (NVC : W8 and W9); and Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (NVC : W5, W6 and W7)

The vision
The vision for the Woodland SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The total extent of the woodland area, including woodland canopy and scrub, woodland glades and associated dry heath, bracken and grassland shall be maintained as indicated on maps some 1826 ha in total.
- The location of the different woodland SAC features, as listed in the title above, will be as shown in Annex 2 (Countryside council for Wales, April 2008). The distribution of these woodland communities is largely a reflection of the topography, soils, geology and aspect and is unlikely to change.
- The tree canopy percentage cover within the woodland area for the whole SAC shall be no less than 80%, 87% being the current canopy cover (excepting natural catastrophic events). Some units will have a lower canopy cover which is acceptable provided this is compatible with safeguard of the habitat, features and special interest.
- The canopy and shrub layer comprises locally native species; see Table 2 (Countryside council for Wales, April 2008; pp. 11) for the relevant species for each woodland SAC feature.
- There shall be sufficient natural regeneration of locally native trees and shrubs to maintain the woodland canopy and shrub layer, by filling gaps and allowing the recruitment of young trees, and encouraging a varied age structure.
- The typical ground layer species of each woodland SAC feature will be common, see Table 2. It is important for most of the woodland SAC that the vegetation does not becomes rank and overgrown with a height above 40cm and/or dominated by species such as bramble, ivy

and young holly. Limits may be set on a unit or compartment basis.
- The abundance and distribution of common and typical (Atlantic, sub-Atlantic, western, oceanic) mosses and liverworts, lichens (and slime moulds), will be maintained or increased.
- The abundance and distribution of uncommon mosses and liverworts, lichens and slime moulds, will be maintained or increased.
- There will be a scattering of 5 mature trees per hectare within the existing tree canopy or parkland, that is trees of c60cm diameter plus for oak and ash and/or with signs of decay, holes etc. In the longer-term, by 2060 there should be 1 veteran tree per hectare that is trees of c100cm diameter plus for oak and ash and 75cms birch.
- The volume of dead wood will exceed 30 cubic metres per hectare throughout and consist of a mixture of fallen trees (minimum 1 per hectare), broken branches, dead branches on live trees and standing dead trees (minimum 1 per hectare). Volumes of deadwood are currently at relatively low levels because the woodlands, in general, have an even-age structure and lack mature trees and any quantity of deadwood because of past silvicultural management. Some lower plants are dead wood specialists but these woodlands tend to lack the rare dead wood invertebrate assemblage found in other parts of the UK.
- Invasive non-native species such as rhododendron, Japanese knotweed and Himalayan balsam will not be present.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature: Lesser horseshoe bats *Rhionolphus hipposideros*

The vision

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- 1 The population of lesser horseshoe bats should be maintained at its current size and encouraged where possible to increase. See Table 7 for summaries of population counts at recorded roost sites and maps in Annex 4, showing the locations of the roosts. As there has been an upward trend in lesser horseshoe bats numbers in Wales it is reasonable to expect the Gwynedd population to increase.
- 2 There are sufficient breeding roosts (buildings, structures and trees) and hibernation roosts (mines and buildings) of appropriate quality. The other types of roost such as night, transitional, leks and swarming sites, should also be maintained as our knowledge of these often significant roosts improves.
- 3 Foraging or feeding habitat in the SAC and surrounding countryside, including grasslands and some gardens, is of appropriate quality, extent and connectivity across the range.
- 4 The range of the population within the SAC/Gwynedd is stable or increasing.
- 5 All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for SAC Feature: European dry heaths

The vision

The vision for the dry heath feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- 1 The total extent of the dry heath area, approximately 21 ha, shall be maintained.
- 2 The distribution of the dry heath will at least be as shown on Map in Countryside council for Wales, April 2008; Annex 2.
- 3 The typical and uncommon species of the vegetation communities comprising the dry heath will be frequent and abundant.
- 4 The structure of the heath should be maintained and restored, to show natural regeneration by layering and seeding, and to ensure that the component vegetation communities are naturally diverse (refer also to 3 above).
- 5 Invasive non-native species such as conifers, rhododendron, Japanese knotweed and Himalayan balsam will not be present.
- 6 The heath will be generally free from trees and at most have only a few individuals at a density of no more than 2 per hectare. Exceptions to this rule are transition zones from woodland to heath land where trees may be denser grading to open heath. Limits for woodland transition zones should be set on a unit or sub-unit basis.
- 7 All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for SAC Feature: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

The vision

The vision for this feature is for it to be in favourable conservation status, where all the following conditions are satisfied:

- The extent of suitable river habitat within which the *Ranunculion fluitantis* and *Callitricho-*
- *Batrachion* vegetation can occur should be stable as indicated on map in Annex 2.
- The current distribution (not known) of the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation should be stable or increasing.
- The river with floating vegetation may be dominated by water crowfoot species usually
- *Ranunculus fluitans,* (but this species is not recorded in Meirionnydd), *Callitriche stagnalis* and bryophytes.
- Species indicative of unfavourable condition for this feature e.g. filamentous algae, are associated with eutrophication and invasive non-native species, should be absent or below an acceptable threshold level, indicative of high ecological status, within the SAC. This attribute is considered further under factors.
- All factors affecting the achievement of these factors are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Meirionnydd Oakwoods and Bat Sites SAC (Countryside Council for Wales, April 2008).

Vulnerabilities

Management of the key features of these woodlands i.e. the Atlantic bryophyte and lichen assemblages requires light grazing of the field layer vegetation, usually by sheep grazing. This must be balanced against the requirements to allow natural regeneration of trees. Within the NNRs, fencing is maintained to allow grazing regimes ranging from total exclusion to relatively heavy periodic grazing. Mosses and liverworts in gorges where recreational activities such as gorge-walking and extreme canoeing take place are threatened by over-use. A Code of Conduct is being drawn up, combined with restrictions on use. There are CCW management plans for the areas declared as National Nature Reserves. In other areas there are S15 management agreements with landowners and occupiers where appropriate grazing regimes have been implemented.

Feral goats present within some of the sites require careful control to prevent bark-stripping and browsing damage to sapling and seedling trees. CCW undertakes annual monitoring of the herds throughout the SAC and implements control measures when numbers exceed set limits. Due to the very acid nature of the soils throughout the woodlands, they are vulnerable to acidification. In the past the heathland has been threatened by inappropriate burning/grazing and afforestation. These issues are being addressed through agri-environment schemes (Tir Cymen/Tir Gofal) and S15 Management Agreements.

The populations of lesser horseshoe bats are most vulnerable in their summer and winter roosts. They are also affected by a reduction in the availability of insect prey due to changes in agricultural practices and pesticide use. Roosts are most often protected through the planning system, by incorporating the bats' requirements into the plans at an early stage. Also many roosts in mine adits have now been grilled to prevent disturbance to hibernating bats.

Menai Strait and Conwy Bay SAC

Overview

The unique physiographic conditions experienced within the Menai Strait and Conwy Bay SAC make this an unusual site, which has long been recognised as important for marine wildlife. The variation in physical and environmental conditions throughout the site, including rock and sediment type, aspect, water clarity and exposure to tidal currents and wave action result in a wide range of habitats and associated marine communities. Many of these community types are unusual in Wales. Of particular interest is the continuum of environmental and physical conditions and associated marine communities from the tide-swept, wave-sheltered narrows of the Menai Strait to the more open, less tide-swept waters of Conwy Bay and the moderately wave-exposed Great and Little Ormes. The Menai Strait and Conwy Bay SAC is a multiple interest site that has been selected for the presence of 5 marine habitat types and associated wildlife (Habitats Directive Annex I habitat types).

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
1110 Sandbanks which are slightly covered by sea water all the time
1140 Mudflats and sandflats not covered by seawater at low tide
1170 Reefs

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
1160 Large shallow inlets and bays
8330 Submerged or partially submerged sea caves

Conservation Objectives

The long term vision for the Menai Strait and Conwy Bay Special Area of Conservation (SAC) is for it to be a healthy, productive and biologically diverse maritime area, supporting resilient marine ecosystems and communities.

The intertidal mudflats and sandflats feature should continue to comprise an array of sediment habitats and their associated biological communities, ranging from wave-exposed sands, through to sheltered muds and tide-swept muddy gravels. In many areas, such as at Traeth Lafan and around the mouth of the Conwy Estuary, the feature will comprise a dynamic mosaic of sediment types, with associated communities, whilst other intertidal sediments, such as sheltered areas in the Menai Strait are expected to have more temporal and spatial stability.

Intertidal mud and sandflat habitats and communities which are currently impacted by activities such as bait digging and the use of vehicles on the shore, would be expected to improve in quality and become more diverse under appropriate management. As water quality in the area continues to improve, dwarf eelgrass *Zostera noltei* beds are expected to expand their range and distribution within the site. Other habitats and communities associated with this feature are expected to either maintain their condition or improve. While the commercial mussel fisheries continue to operate at the eastern and western ends of the Menai Strait, as well as in the Conwy Estuary, intertidal mud and sandflat feature in these areas will continue to be present in a modified state. There is currently no requirement for restoration of these areas of intertidal mudflat and sandflat.
The reef feature should continue to comprise a variety of habitats and their associated biological communities, occurring on hard substrate of different types throughout the site. Substrate types range from limestone and clay habitats, through to areas of tide-swept sublittoral hard substrata, including boulders and bedrock. Some areas of reef feature, such as intertidal boulder habitats are expected to improve in quality and become more diverse under appropriate management. Other areas will be expected to either maintain their condition or improve.

The subtidal sandbanks feature should continue to comprise mobile or highly mobile sediment habitats and their associated communities. On the extreme lower shore in the western Menai Strait and Conwy Bay, dynamism is expected between the subtidal sandbank and the intertidal mudflat and sandflat features, depending on the prevailing physical conditions. In addition, sandbanks in Conwy Bay and Red Wharf Bay are expected to continue to be part of the dynamic mosaic of shallow sublittoral coastal sediments within the two bays and may also fluctuate according to prevailing physical conditions.

The large shallow bay feature should continue to comprise a variety of sediment and hard substrate habitats and their associated biological communities, subject to a wide range of physical conditions, from the wave-sheltered, tide-swept conditions at the eastern end of the Menai Strait through to the more open coast, wave-exposed conditions in Conwy Bay. The subtidal sediments within the embayment should comprise a dynamic mosaic of sediment types, with associated communities which may display considerable temporal and spatial variation, influenced by prevailing physical conditions. Areas of enriched muddy sand in Red Wharf Bay and Conwy Bay are expected to persist, whilst the large shallow bay is expected to continue to be an important feeding and breeding area for a variety of fish species. Certain habitats and communities within the large shallow bay (many of which are part of other habitat features) are expected to improve in quality and become more diverse under appropriate management. Other areas will be expected to either maintain their condition or improve.

The sea caves feature should continue to comprise intertidal and subtidal caves, clefts, crevices and tunnels in the limestone substrate around the Great and Little Ormes and the north-east coast of Anglesey.
The health and quality of the five SAC habitat features are inter-related and may also depend on the state of other non-feature marine habitats within the site, as well as structural and functional components of the marine ecosystem.
The Menai Strait and Conwy Bay supports a vibrant coastal economy, with a variety of commercial and recreational activities dependent on the area, many of which in turn rely on the long-term health and quality of the marine environment.

Vulnerabilities

Construction, e.g. of slipways, coastal defence and marinas/harbours could cause disturbance to the European habitats and disrupt physical processes essential for the maintenance of these habitats. CCW is consulted by the local planning authorities and other statutory bodies over such developments

Although the level of commercial fishing (excluding shellfish) is relatively low, trawling occurs in some areas. The potential impacts of heavy bottom-fishing gear on the subtidal sandbank and shallow inlet and bay habitats will need to be assessed. There are relatively extensive mussel lays in the eastern end of the Menai Strait, and CCW will be working with the fishing industry and the local fisheries regulator (the North Western & North Wales Sea Fisheries committee) to assess the potential impacts of this fishery on the features of the SAC.

There are many boat moorings present in the Menai Strait and a demand for additional facilities (moorings and marina developments) to accommodate more craft. CCW will need to work with the other relevant authorities to assess the implications of all proposed developments of this sort for the SAC features.

Disposal of dredged material may be contributing to increasing turbidity, which affects the distribution and composition of subtidal algal communities. Appropriate assessment of the significance of future proposed activities is required.

Many of the marine wildlife communities in the SAC are sensitive to oil pollution. The development of oil wells and frequent boat traffic in Liverpool Bay present potential pollution sources. CCW is working with the oil companies and with other statutory organisations so that adequate safety measures are in place to try and prevent pollution incidents. Also, CCW is a member of the North Wales Standing Environment Group which is preparing a regional contingency plan to help coordinate response to try and minimise environmental impacts in the event of a pollution incident.

Migneint - Arenig - Dduallt SAC

Overview

Migneint-Arenig-Dduallt is a large upland site that stretches between Ysbyty Ifan and Penmachno in the north down to Rhydymain in the south, and from Trawsfynnydd in the west to just east of Llyn Celyn. It ranges in altitude from 300 m to 712 m. The northern section encompasses a high peatland plateau centred on Migneint and extending to Tomen y Mur in the west and Cwm Hesgyn in the east, with higher points such as Arenig Fach around the rim. The southern section, south of the Afon Lliw, also comprises a high plateau surrounded by higher ground and dominated by Dduallt mountain. The central section, lies south of Cwm Prysor and Llyn Celyn and includes Moel Llyfnant and Moel y Slates as well as the Arenig Fawr mountain ridge which is the highest part of the whole site.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
4030 European dry heaths
7130 Blanket bogs * Priority feature

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
3160 Natural dystrophic lakes and ponds
4010 Northern Atlantic wet heaths with *Erica tetralix*

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Conservation Objectives

4.1 Conservation Objective for SAC feature: Blanket Bog (EU 7130)

Vision for Feature 1
The vision for this priority blanket bog SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the blanket bog area, including those areas that are considered unfavourable or currently degraded is maintained at the area present when designated, some 8100 ha in total. Vegetation mapped as NVC M20, currently approx. 1700ha, is always considered to be unfavourable. The area of the blanket bog feature is expanding into areas of heavily modified bog currently occupied by wet heath or acid grassland.
- The location and distribution of the blanket bog is increasing at the expense of less desirable vegetation communities.
- The degraded areas and currently unfavourable blanket bog are managed under a restoration programme so that the area and distribution of favourable blanket bog is increasing.
- The typical species of the vegetation communities comprising the blanket bog SAC feature are frequent.
- The abundance and distribution of uncommon plants is maintained or increased.
  The structure of the blanket bog is maintained and restored to include bog pools, depressions, hummocks and hollows as a natural feature of the bog surface. Artificial drainage ditches or moor grips are not present as functioning drains. Peat erosion should be under control, and limited to apparently long-established plateux erosion systems.
- Invasive non-native species such as conifers, rhododendron, Japanese knotweed, Himalayan balsam and bridewort (*Spiraea)* are not present within the SAC and a species specific buffer area.
- The blanket bog is free from all trees.
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for the European dry heaths (EU 4030) and Northern Atlantic wet heath with *Erica tetralix* SAC features (EU 4010)

Vision for Feature 2
The vision for the heath land SAC features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the dry heath area, including those areas that are 'degraded' (approx 2600ha) shall at least be maintained as present when designated. The degraded areas and currently unfavourable dry heath should be managed under a restoration programme. The

area of dry heath should increase at the expense of less desirable vegetation communities such as acid grassland. The total extent of the wet heath area, including those areas that are 'degraded' (approx 400 ha) shall at least be maintained as present when designated. The area of wet heath should increase in overall at the expense of less desirable vegetation communities. Some areas of wet heath which are degraded blanket bog may be restored to that priority habitat provided that there is a net gain of wet heath within the SAC.

- The distribution of the dry and wet heath will at least be as shown on Maps 1-4 (Countryside Coucil for Wales, March 2008) and will preferably be increasing as it is restored in additional areas.
- The typical species of the vegetation communities comprising the dry heath and wet heath will be frequent and abundant. See Table 1.
- The abundance and distribution of uncommon plants (see Table 2) will be maintained or increased.
- The structure of the heath should be maintained and restored, to show natural regeneration by layering and seeding, and to ensure that the component vegetation communities are naturally diverse (refer also to 3 and 4 above). In practise some stands will benefit from being taller with very mature heather (e.g. NVC H 21) and others including wet heath from having a medium to short structure, less than 30cms height. Signs of overgrazing, including 'suppressed', 'topiary' or 'drumstick' growth habits will not be apparent.
- Invasive non-native species such as conifers, rhododendron, Japanese knotweed, Himalayan balsam and bridewort (*Spiraea*) will not be present.
- The surface of the heath will be generally free from trees and at most have only a few individuals at a density of no more than 2 per hectare. Exceptions to this rule are transition zones from woodland to heath land where trees may be denser grading to open heath. Limits for woodland transition zones should be set on a unit or sub-unit basis.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objectives for the lake SAC feature. Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* (EU 3130) and for natural dystrophic lakes and ponds (EU code 3160)

Vision for Feature 3

The vision for the oligotrophic to mesotrophic (clear-water) and dystrophic (peaty) lakes SAC features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the clear-water and peaty lakes shall be maintained as indicated on maps 1 – 4 (Countryside Council for Wales, March 2008), some x ha of open water/swamp and immediate lake basin, as visible on air photographs. The lake condition is intrinsically linked to the condition of the catchment therefore the catchments should be maintained in at least their current condition (including vegetation cover, drainage and appropriate management i.e. not over grazing and burning).
- The location of the clear-water and peaty lakes will be as shown on Maps 1-4 (Countryside Council for Wales, March 2008) and as referred to by name in the table 'SAC Features: Lakes - Oligotrophic or Dystrophic' (Countryside Council for Wales, March 2008: pp. 21).
- The typical species, as listed following, of the vegetation communities comprising the Clearwater lakes SAC feature will be common. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* being considered

as the defining component. This species often occurs in association with water lobelia *Lobelia dortmanna*, bog pondweed *Potamogeton polygonifolius*, quillwort *Isoetes lacustris*, bulbous rush *Juncus bulbosus*, alternate water milfoil *Myriophyllum alterniflorum* and floating water bur-reed *Sparganium angustifolium*. On Migneint- Arenig-Dduallt all the above species are present, together with yellow water-lily *Nuphar lutea*, white water-lily *Nymphaea alba*, smooth stonewort *Nitella flexilis*, lesser bladderwort *Utricularia minor* and the nationally scarce slender stonewort *Nitella gracilis*.

In the case of peaty lakes, these water bodies are very acidic and poor in plant nutrients. Their water has a high humic acid content and is usually stained dark brown through exposure to peat. Most examples are small (less than 5 ha in extent), shallow, and contain a limited range of flora and fauna, with the principal aquatic plants being *Sphagnum*, floating bur-reed and water lilies. The pools are naturally species-poor and a littoral zone is often absent. Fringing vegetation is that characteristic of the habitat in which the pools occur.

- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for the woodland SAC Feature : Old sessile oak woods with Ilex and Blechnum Woodland

Vision for Feature 4

The vision for the Woodland SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the woodland area, including woodland canopy and scrub, woodland glades and associated dry heath, bracken and grassland shall be maintained as indicated on the map in the annex, of 67 ha plus additional areas of c.13ha (not mapped) giving a total of approx. 80 ha. Broadleaved woodland and scrub currently covers about 0.4% of the site (and bracken over 2% (c. 450 ha).
- The location of the woodland SAC feature will be as shown on Maps in annex 1. Woodlands include. Coed Dol- Fudr (SH 831318), Coed Gordderw (SH838336), Coed Maen y Menyn (SH 848354) and Coed Boch-y-Rhaeadr (SH 843398).
- The tree canopy percentage cover within the woodland area (see maps 1 - 4) shall be no less than 85% (excepting natural catastrophic events).
- The canopy and shrub layer comprises locally native species, as indicated in Table 2, typical of this upland woodland which is less oak and more birch dominated than more lowland examples of this SAC feature.
- There shall be sufficient natural regeneration of locally native trees and shrubs to maintain the woodland canopy and shrub layer, by filling gaps and allowing the recruitment of young trees, and encouraging a varied age structure.
- The typical ground layer species of the woodland SAC feature will be common, see Table 3.
- It is important for most of the woodland SAC that the vegetation does not becomes rank and overgrown with a height above 40cm and/or dominated by species such as bramble, ivy and young holly. Limits may be set on a unit or compartment basis. Typical lower plants including oceanic species (refer to Table 2 below for an indicative list where known records are ticked) should continue to be abundant and/or maintained.
- The abundance and distribution of uncommon mosses, liverworts, lichens and ferns, will be, maintained or increased.
- There will be a defined number of mature trees per hectare within the existing tree canopy on a unit basis. This will need to be defined by

diameter for the upland situation where comparable trees at lower altitude are of c60cm diameter plus for oak and ash and/or with signs of decay, holes etc.

- Dead wood will be present and consist of a mixture of fallen trees (minimum 1 per hectare), broken branches, dead branches on live trees, and standing dead trees (minimum 1 per hectare). Volumes of deadwood are currently at relatively low levels because the woodlands, in general, have an even-age structure and lack mature trees. Some lower plants are dead wood specialists but these woodlands tend to lack the rare dead wood invertebrate assemblage found in other parts of the UK.
- Invasive non-native species such as rhododendron, Japanese knotweed and Himalayan balsam will not be present.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Migneint-Arenig-Dduallt SAC/SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

The main threats to the vegetation features of this site are from inappropriate grazing/burning/drainage and consequent degradation of blanket bog and heath. Afforestation of mire and heath has also been a problem in the past. These problems are being addressed through a number of agri-environment scheme agreements (Tir Cymen/Tir Gofal) and several S15 management agreements. A joint RSPB/Forest Enterprise/CCW black grouse project has also helped restore blanket bog and heath in some areas which had previously been planted with conifers.

The vegetation and lake features are vulnerable to acidification due to atmospheric pollution, which is compounded by the high rainfall and acidic geology/pedology of the site. Artificial liming of the catchment is an additional threat.

In the past this site has been significantly affected by quarrying, resulting in habitat destruction.

Morfa Harlech a Morfa Dyffryn SAC

Overview

The Morfa Harlech a Morfa Dyffryn SAC covers two sand dune systems, Morfa Harlech to the north and Morfa Dyffryn to the south. Morfa Harlech is a rapidly accreting dune system gaining sand from the coast to the south including the dune system at Morfa Dyffryn, which is eroding.

The various sand dune communities will through natural processes expand at the expense of others. This may affect the extent of the component SAC features, however, the dynamic processes of the sand dunes and their associated vegetation communities is a valued aspect of the coastal dune systems. The biggest potential conflict is stabilization of dunes and the potential loss of pioneering vegetation communities to fixed dune communities.

Morfa Harlech sand dune system is accreting and is of great importance for its early successional features including its shifting and embryo dunes. The area of dunes away from the beach is very stable with little bare sand.

The dune slacks at Morfa Harlech vary from drier slacks which grade into fixed dune grasslands to very damp slacks which undergo frequent flooding and support fen type vegetation communities.

Although *Petalophyllum ralfsii* has been recorded at Morfa Harlech the lack of young slacks in this system means that the species is not abundant.

Morfa Dyffryn is an eroding system which is highly mobile. A high proportion of the site is made up of bare sand. Shifting dunes extend from the shore right through to the landward boundaries of the dune system and are punctuated by extensive dune slacks. The slack vegetation varies from pioneering embryo slack habitats, successionally young slack communities which support the bulk of the population of *Petalophyllum ralfsii* through to mature, species rich dune slacks.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
2110 Embryonic shifting dunes
2120 Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes`)
2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
2190 Humid dune slacks

Annex II species that are a primary reason for selection of this site:
1395 Petalwort *Petalophyllum ralfsii*

Conservation objectives

4.1 Conservation Objective for Feature 1: Embryonic shifting dunes (EU Habitat Code: 2110)

Vision for Feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the embryonic shifting dunes including those areas that are considered unfavourable or currently degraded is maintained at the area present when designated.
- The strand line and embryonic dune vegetation should be made up of typical species listed in the table 5 (Countryside Council for Wales, March 2008: pp. 13).
- All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for Feature 2: Shifting dunes along the shoreline with *Ammophila arenaria* (EU Habitat Code : 2120)

Vision for Feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the shifting dunes including those areas that are considered unfavourable or currently degraded is maintained at the area present when designated, c.18.9 ha at Morfa Harlech which should be present both along the seaward dune ridge and inland within units 1,
- 3, 4 and 5 and at least 82 ha of shifting dunes at Morfa Dyffryn which should be distributed throughout units 28, 27, 26, 24, and 23.
- The shifting dunes should be vegetated by species such as those listed in the table 8 (Countryside Council for Wales, March 2008: pp. 19).
- All factors affecting the achievement of these conditions are under control.

Humid Dune Slacks (EU Habitat Code 2190): Feature 3 Dunes with Salix repens (EU Habitat Code 2170): Feature 4 Comprising dune slacks of the following National Vegetation Classification (NVC) communities: SD13, SD14, SD15, SD16 and SD17.

Vision for Features 3 & 4

The vision for these features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the humid dune slacks and dunes with *Salix repens* including those areas that are considered unfavourable or currently degraded is maintained at the area present when designated, some 65.1 ha at Morfa Harlech and 43.6 ha at Morfa Dyffryn.
- All successional phases of dune slack vegetation should be present at Morfa Dyffryn.
- The humid dune slacks should be vegetated with typical and desirable species such as those outlined in the table below.
- The dune slack vegetation should be free from scrub and should have a relatively short sward.
- All factors affecting the achievement of these conditions are under control.

Conservation Objective for Feature 5: Petalwort *Petalophyllum ralfsii* (EU Habitat Code 1395)

Vision for Features 5

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The population of *Petalophyllum* will remain stable or increase.
- *Petalophyllum* should be present at Morfa Harlech should be distributed across the northern part of Morfa Dyffryn sand dune system (Units 26 and 28).
- The successionally young dune slacks that support the *Petalophyllum* should be in good condition as defined in the conservation objective for features 3 and 4 above.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Morfa Harlech a Morfa Dyffryn Special Area of Conservation (Countryside Council for Wales, March 2008).

Vulnerabilities

The beaches adjacent to both dune systems are subject to heavy recreational pressure, particularly in the summer months. Access points through the dunes are actively managed to minimise anthropogenic dune destabilisation. Morfa Dyffryn is especially vulnerable as it is actively mobile and has a limited external sand supply. Parts of both dunes have been managed as National Nature Reserves since the late 1950s (Morfa Harlech) and early 1960s (Morfa Dyffryn).

Preseli SAC

Overview

The extensive Mynydd Preseli SSSI and the smaller commons of Waun Fawr SSSI, Waun Isaf and Gors Fawr, underpin Preseli SAC. Mynydd Preseli and Gors Fawr are physically linked whilst Waun Isaf and Waun Fawr are separate detached components of the SAC. As well as the SAC features, the two SSSIs include a number of species and habitats SSSI features that do not qualify the site under the Habitats Directive.

Qualifying Features

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
4010 Northern Atlantic wet heaths with *Erica tetralix*

4030 European dry heaths
7150 Depressions on peat substrates of the *Rhynchosporion*
7230 Alkaline fens

Annex II species that are a primary reason for selection of this site:
1044 Southern damselfly *Coenagrion mercuriale*
1065 Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*
1393 Slender green feather-moss *Drepanocladus* (*Hamatocaulis*) *vernicosus*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Southern Damselfly *Coenagrion mercuriale*

Vision for Southern Damselfly
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The density of adult males, during sampling, will be at least 1 male per 10 square metres of breeding habitat.
- There will be at least 3500 square metres of breeding habitat.
- All factors affecting the feature will be under control.

4.2 Conservation Objective for Feature 2: Marsh Fritillary *Euphydryas aurinia*

Vision for marsh fritillary butterfly
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
A healthy population of the marsh fritillary butterfly will be present on and around the SAC. There will be sufficient suitable and good condition habitat to support viable meta-populations of the butterfly which is dependent here on marshy grassland and flush, with tussocks of purple moor-grass and plenty of the caterpillar's main food-plant, devil's bit scabious. The swards will vary in height so that there are short 'lawn' areas for the caterpillars to sun themselves on, and taller tussocky areas to provide shelter.
For each of the two Meta-populations present within the SAC:
- There should be at least 200 larval webs per hectare of Good Condition habitat.
- There should be at least 50ha of Suitable habitat on the SAC or within a 2km radius around it.
- At least 10ha of this suitable habitat should be Good Condition habitat.
- All factors affecting the feature must be under control.

4.3 Conservation Objective for Feature 3: Slender green feather-moss *Hamatocaulis vernicosus*

Vision for Slender Green Feather Moss
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
Slender green feather moss is a qualifying feature in the SAC, but has been found to be considerably more frequent and abundant both within Preseli SAC, and indeed in a number of other sites in Wales than was previously thought. In the light of this, it has been decided to treat the feature as part of the Rare mosses on damp ground SSSI feature.

4.4 Conservation Objective for Feature 4: Alkaline fens

Vision for Alkaline Fen
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
Alkaline fen will be present in patches across the site and display a range of plant and insect species typical of the habitat, including the southern damselfly. The flushes supporting this specific habitat will comprise short, open vegetation rich in small mosses, sedges and plants characteristic of less acidic conditions.

- Alkaline fens will be present in 8 out of the 10 pink areas as shown on the accompanying map (Countryside Council for Wales, March 2008)
- Characteristic flush species such as Menyanthes trifoliata, Triglochin palustre, Anagallis tenella, Pedicularis palustris and Pinguicula vulgaris will be present.
- Scrub species such as willow Salix and birch Betula will also be largely absent.

4.5 Conservation Objective for Feature 5: Depressions on peat substrates of the Rhynchosporion

Vision for Depressions on peat substrates of the Rhynchosporion
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
Depressions on peat substrates is a habitat type which typically occurs in complex mosaics with wet heath and flush habitats. The vegetation will be open, and have an abundance of species such as white beak-sedge Rhynchospora alba, the bog moss Sphagnum auriculatum, marsh clubmoss Lycopodiella inundata and round-leaved sundew Drosera rotundifolia. The amount of this habitat on the site has not been clearly defined yet, but is thought to be around 1-2% of the total site area.

- Depressions on peat substrates of the Rhynchosporion will occupy roughly 1-2% of the SAC, and be present in at least two management units (currently units 2 and 3).
- The following plants will be common: white beaked sedge Rhynchospora alba, the bog moss, Sphagnum denticulatum, round-leaved sundew Drosera rotundifolia and, in relatively base-rich sites, brown mosses such as Drepanocladus revolvens and Scorpidium scorpioides.
- The vegetation in these areas will be typically very open and competitive species indicative of under-grazing, particularly purple moor-

grass Molinia caerulea, will be kept in check.
- Scrub species such as willow Salix and birch Betula will also be largely absent.

4.6 Conservation Objective for Feature 6: 4030 European dry heaths

Vision for Dry Heath
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- Dry heath will cover at least 11%2 of Mynydd Preseli SSSI and display a range of plant, insect and bird species typical of the habitat.
- The following plants will be common in the dry heath: heather Calluna vulgaris; bell heather Erica cinerea and western gorse Ulex gallii.
- Competitive species indicative of under-grazing, particularly bracken Pteridium aquilinum, purple moor-grass Molinia caerulea and western gorse Ulex gallii will be kept in check.

4.7 Conservation Objective for Feature 7: 4010 Northern Atlantic wet heaths with Erica tetralix

Vision for feature Wet Heath
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
Wet heath will cover at least 11%3 of the site and display a range of plant species typical of the habitat. Most of the wet heath will have a mixture of tussocks of purple moor-grass, separated by closely grazed patches rich in deer grass, bog mosses and heathers such as cross-leaved heath. A proportion should also have a range of short sedges and flowering plants such as round leaved sundew.
- The following plants will be common in the wet heath: heather Calluna vulgaris; cross-leaved heath Erica tetralix; purple moor-grass Molinia caerulea; bog asphodel Narthecium ossifragum; short sedges Carex species; mosses including bog moss Sphagnum species; devil's bit scabious Succisa pratensis.
- Competitive species indicative of under-grazing, particularly Purple Moor Grass Molinia caerulea and Western Gorse Ulex gallii will be kept in check.
- Bracken, and scrub species such as willow Salix and birch Betula will also be largely absent from the wet heath.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Preseli SAC (Special Area of Conservation) (Countryside Council for Wales, March 2008).

Vulnerabilities

Coenagrion mercuriale requires well-grazed open wet heath and mire vegetation with small runnels or streams. *Drepanocladus vernicosus* requires boggy slopes flushed with spring water, where the vegetation is quite low-growing. Both species are therefore vulnerable to inappropriate levels or the cessation of grazing. The continuance of the current moderate to high summer grazing regime is essential, but difficult to influence because of the common land status of the site and the large number of registered rights. The current winter transhumance to the Castlemartin section of the Limestone Coast of South West Wales candidate SAC is a vital part of this upland pastoral regime.

Acidification of this upland site is a threat, and atmospheric monitoring occurs at a nearby NNR. Monitoring of water chemistry and *Coenagrion mercuriale* population size is essential. These issues will be addressed in a management plan, which is in preparation.

Rhinog SAC

Overview

The Rhinogydd are carved out of the hard, acidic Cambrian grits of the Harlech dome and have a rugged topography with scattered upland lakes, block-littered slopes, cliffs and outcrops.

The geographical position of the site imposes an oceanic influence on the climate resulting in high rainfall, moderate temperatures and generally high humidity. The vegetation is dominated by heather *Calluna vulgaris* growing on thin, poor acidic soils. Grazing and burning practices over the past 60 years have been relatively minor and as such the heather stands are deep and mature. This, together with the prevailing climatic conditions, has resulted in a luxuriant ground flora of bryophytes and ferns. As an example of such unmodified *Calluna* habitat this site is unique in Wales.

On shady slopes, the site contains what is considered to be the best development of the sub alpine heath community *Calluna vulgaris-Vaccinium myrtillus-Sphagnum capillifolium* heath outside Scotland; this community forms part of the dry heath feature of this SAC. Other NVC types represented include *Calluna vulgaris-Ulex gallii* heath, Calluna *vulgaris-Erica cinerea* heath and Calluna *vulgaris-Vaccinium myrtillus* heath. Broad terraces have allowed the development of blanket mire, wet heath and valley mires. Unlike many upland areas, there are still some good remnants of native woodland supporting oceanic lower plants and ferns.

Public interest in the site is confined to hiking and some camping. However, when compared to other mountainous regions in North Wales, public interest is extremely low.

Rhinog SAC is underpinned by the Rhinog SSSI, and covers all but the main woodland compartments of the SSSI. These areas form part of the Coedydd Derw Meirion SAC and are not dealt with in this plan. The National Nature Reserve, owned and managed by CCW, which forms part

of this site was designated a European Biogenetic Reserve in 1992.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
4030 European dry heaths
91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
4010 Northern Atlantic wet heaths with *Erica tetralix*
4060 Alpine and Boreal heaths
7130 Blanket bogs * Priority feature
7150 Depressions on peat substrates of the *Rhynchosporion*

Conservation Objectives

4.1 Conservation Objective for the European dry heaths (EU 4030) and Northern Atlantic wet heath with Erica tetralix SAC features (EU 4010)

The vision
The vision for the heath land SAC features is for them to be in a favourable conservation status, where all of the following conditions are satisfied:

- 1 The total extent of the dry heath area, approximately 1419 ha, shall be maintained. The area of dry heath should increase at the expense of less desirable vegetation communities such as acid grassland where appropriate. The total extent of the wet heath area, approximately 324ha, shall be maintained. The area of wet heath should increase in overall at the expense of less desirable vegetation communities. Some areas of wet heath which are degraded blanket bog may be restored to that priority habitat provided that there is a net gain of wet heath within the SAC.
- 2 The distribution of the dry and wet heath will at least be as at its present extent and will preferably be increasing as it is restored in additional areas.
- 3 The typical and uncommon species of the vegetation communities comprising the dry heath and wet heath, including lower plants, will be frequent and abundant. The nationally rare liverwort Welsh notchwort *Gymnocolia acutiloba* should continue to flourish at its known locations within the humid rocky heath.
- 4 The structure of the heath should be maintained and restored, to show natural regeneration by layering and seeding, and to ensure that

the component vegetation communities are naturally diverse (refer also to 3 above). Wet heath will often benefit from having a medium to short structure, less than 30cms height. Signs of overgrazing, including 'suppressed', 'topiary' or 'drumstick' growth habits will not be apparent.

- 5 Invasive non-native species such as conifers, rhododendron, Japanese knotweed, Himalayan balsam and bridewort (*Spiraea*) will not be present.
- 6 The surface of the heath will be generally free from trees and at most have only a few individuals at a density of no more than 2 per hectare. Exceptions to this rule are transition zones from woodland to heath land where trees may be denser grading to open heath. Limits for woodland transition zones should be set on a unit or sub-unit basis.
- 7 All factors affecting the achievement of these conditions are under control.

4.2 Conservation Objective for the woodland SAC Feature: "Old sessile oak woods with Ilex and Blechnum Woodland"

The vision

The vision for the Woodland SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the woodland area, including woodland canopy and scrub, woodland glades and associated dry heath, bracken and grassland shall be maintained as at present, of some 42 ha plus. The woodland feature is broadly in 5 interconnecting 'zones' to the west and south-west of Llyn Cwm Bychan.
- The location of the woodland SAC feature will be as at present. Most of the woodland within Rhinog SSSI is excluded from Rhinog SAC and is included within Meirionnydd Oakwoods and Bat sites SAC (refer to that SAC plan). The woodland covered by this feature is woodland generally without clear boundary between the heath, bog, acid grassland and bracken. Indeed these transitions between the habitats to woodland, which make measuring woodland extent difficult, are of interest in their own right.
- The tree canopy percentage cover within the woodland area shall be no less than the current cover (excepting natural catastrophic events).
- The canopy and shrub layer comprises locally native species, as indicated in Table 2 (Countryside Council for Wales, April 2008: pp.19), typical of this upland woodland which tends to be less oak and more birch dominated than more lowland examples of this SAC feature.
- There shall be sufficient natural regeneration of locally native trees and shrubs to maintain the woodland canopy and shrub layer, by filling gaps, joining fragments of woodland and allowing the recruitment of young trees, and encouraging a varied age structure.
- The typical ground layer species of the woodland SAC feature will be common, see Table 2 (Countryside Council for Wales, April 2008: pp.19). It is important that the vegetation does not become rank and overgrown with a height above 40cm and/or dominated by species such as bramble, ivy and young holly. Limits may be set on a unit or compartment basis. Typical lower plants including oceanic species (refer to Table 1 below for an indicative list (Countryside Council for Wales, April 2008: pp.18/19),) should continue to be abundant and/or maintained.
- The abundance and distribution of uncommon mosses, liverworts, lichens and ferns, will be maintained or increased.

- There will be a defined number of mature trees per hectare within the existing tree canopy on a unit basis. This will need to be defined by diameter for the upland situation where comparable trees at lower altitude are of c60cm diameter plus for oak and ash and/or with signs of decay, holes etc.
- Dead wood will be present and consist of a mixture of fallen trees (minimum 1 per hectare), broken branches, dead branches on live trees, and standing dead trees (minimum 1 per hectare). Volumes of deadwood are currently at relatively low levels because the woodlands, in general, have an even-age structure and lack mature trees. Some lower plants are dead wood specialists but these woodlands tend to lack the rare dead wood invertebrate assemblage found in other parts of the UK.
- Invasive non-native species such as rhododendron, conifers, sweet chestnut, Japanese knotweed and Himalayan balsam will not be present.
- All factors affecting the achievement of these conditions are under control.

4.3 Conservation Objective for SAC feature: Blanket Bog (EU 7130)

The vision

The vision for this priority blanket bog SAC feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The total extent of the blanket bog area of approximately 231 ha, is maintained.
- The location and distribution of the blanket bog is maintained.
- The typical species of the vegetation communities comprising the blanket bog SAC feature are frequent. The bulk of the blanket bog is referable to *Trichophorum- Eriophorum* bog (M17) with more localised stands of *Calluna – Eriophorum* bog (M19). See Table 1.
- The abundance and distribution of uncommon plants, often indicative of good quality, is maintained or increased.
- The structure of the blanket bog is maintained and restored where appropriate to include bog pools, depressions, hummocks and hollows as a natural feature of the bog surface. Artificial drainage ditches or moor grips are not present as functioning drains. No significant areas of peat erosion should be present.
- Invasive non-native species such as conifers, rhododendron, Japanese knotweed, Himalayan balsam and bridewort (*Spirea)* are not present within the SAC and a species-specific buffer area
- The blanket bog is free from all trees.
- All factors affecting the achievement of these conditions are under control.

4.4 Conservation Objective for Feature: Alpine and sub-alpine heaths (EU Habitat Code: 4060)

Vision for alpine heaths

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The extent of alpine and sub-alpine heath (currently 5.1ha of NVC H14 and possibly less than 1 ha of U10a –not measured) is maintained to be as large as possible such that it occupies all the area suitable for its development. The extent is unlikely to increase significantly here as most suitable areas are already NVC H14.
- The location and range of the alpine and sub-alpine shall be the summits of Rhinog Fawr, Rhinog Fach and currently fragmentary stands around Craig Wion as well as Y Llethr, which currently supports small patches of moss heath (U10a) within the acid grassland NVC U4e.
- Vegetation composition: The following characteristic plants will be common in the NVC H14 heath: *Calluna vulgaris, Vaccinium myrtillus, V.vitis-idaea, Empetrum nigrum, Racomitrium lanuginosum, Hypnum jutlandicum, Cladonia* sps. This NVC community also has a less mossy form on Rhinog which is considered to be the most common form of this montane heath in Wales. Typical montane clubmosses, sedges and grasses. Moss-heath NVC U10a here on y Llethr is "an almost continuous carpet of *Racomitrium*
- *lanuginosum* studded with small plants such as *Salix herbacea, Vaccinium myrtillus, V.vitisidaea, Carex bigelowii* and *Diphasiastrum alpinum*" (Averis 2004). Typical montane clubmosses, sedges and grasses will also be present.
- Non-native species are not present.
- All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for Feature : Depressions on peat substrates of the *Rhynchosporion* (EU Habitat Code: 7150)

Vision for the feature "Depressions on peat substrates"

The vision for this feature at Rhinog is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Extent: The feature occupies all the area suitable for its development within a complex mosaic of mires, wet heaths and bog pools. From a partial survey in 2007 this feature is currently thought to cover about 1 ha.
- Location:
- Vegetation composition: The following plants will be common in the "depressions on peat substrates of the *Rhynchosporion*": *Rhyncospora alba, Sphagnum papillosum*, *Molinia caerulea, m Narthecium ossifragum, Drosera rotundifolia, Eriophorum angustifolium*. Extensive mats of *Sphagum* mosses will also be present locally, and *Menyanthes trifoliata* and *Carex echinata* also feature frequently. Other than *Myrica gale*, dwarf shrubs will be sparse. There will be no non native species present.
- Uncommon species continue to be present including *Sphagnum magellanicum*, *Drosera intermedia* and the nationally scarce marsh clubmoss *Lycopodiella inundata*.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for the lake SAC feature: *Oligotrophic to mesotrophic standing waters with vegetation of the* Littorelletea uniflorae *and/or of the* Isoëto-Nanojuncetea *(EU 3130).*

Vision for Clear-water lakes feature

The vision for the oligotrophic to mesotrophic (clear-water) lakes SAC feature is where all of the following conditions are satisfied:

- The total extent of the clear-water lakes shall be maintained, some x ha of open water/swamp and immediate lake basin visible on air photographs. The catchments should also be maintained in at least their current condition.
- The location of the clear-water lakes
- The typical species, as listed following, of the vegetation communities comprising the Clearwater lakes SAC feature will be common. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* and quillworts *Isoetes* spp. being considered as the defining components. On Rhinog, this species often grows in association with water lobelia *Lobelia dortmanna*, awlwort *Subularia aquatica*, bog pondweed *Potamogeton polygonifolius*, bulbous rush *Juncus bulbosus*, floating club-rush *Eleogiton fluitans*, alternate water-milfoil *Myriophyllum alterniflorum* and floating bur-reed *Sparganium angustifolium,* small pondweed *Potamogeton berchtoldii* and bladderworts *Utricularia* spp.
- All factors affecting the achievement of these conditions are under control.

4.7 Conservation Objective for Feature : *Luronium natans* / Floating water plantain

Vision for the Floating water plantain feature

The conservation objective for the Oligotrophic lakes feature as defined in conservation objective number 4.6 must be met. The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- There will be no contraction of the current *L. natans* extent and distribution from Llyn Cwm Bychan. *L. natans* populations in sections 1 and 2 of the lake will be viable & will be able to maintain themselves on a long-term basis. *L. natans* must be able to complete sexual and/or vegetative reproduction successfully.
- The lake will have sufficient habitat to support existing *L. natans* populations within their current distribution and for future expansion.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Rhinog SAC (Special Area of Conservation) (Countryside Council for Wales, April 2008).

Vulnerabilities

The area is popular for walking; however, due to the rough terrain, recreational pressures are largely confined to public rights of way and car parks, with minimal impact upon the special features.

The high rainfall and extensive acidic geology/pedology renders this area, especially its watercourses and lakes, vulnerable to acidification. The lichen-rich and bryophyte-rich oceanic heathland is vulnerable to burning and over-grazing. Current general policy is to continue the traditionally low levels of sheep/feral goat grazing and to discourage burning.

In the woodland areas, the vegetation requires careful management by manipulation of grazing to achieve appropriate light and humidity levels for the exceptionally rich lichen and bryophyte assemblages while ensuring adequate regeneration of the woodland. These issues are being addressed through the use of agri-environment schemes (Tir Cymen/Tir Gofal) and S15 management agreements.

The NNR section of the site is managed in accordance with a CCW management plan.

River Dee and Bala Lake SAC

Overview

The source of the River Dee lies within the Snowdonia National Park and its catchment contains a wide spectrum of landscapes from high mountains around Bala, steep-sided wooded valleys, near Llangollen, to the rich agricultural plains of Cheshire and north Shropshire and the vast mudflats of the estuary.

The course and topography of the River Dee and its tributaries were strongly influenced and modified during the last Ice Age. The underlying geology of the Dee ranges from impermeable Cambrian and Ordovician shales in the west, through Silurian to Carboniferous Limestone outcrop at Llangollen to Coal Measures and thick boulder clay overlying the Triassic sandstones of the Lower Dee valley.

The site extends from the western extremity of Llyn Tegid taking in the entire lake and its banks to its outfall into the River Dee. It then takes in the river and its banks downstream to where it joins the Dee Estuary SSSI. A number of the Dee's tributaries are also included, these being the Ceiriog, Meloch, Tryweryn, and Mynach. In its swifter upper reaches, the Dee flows through the broad valley near Corwen, and the spectacular Vale of Llangollen before entering the Cheshire plain at Erbistock where it meanders northwards through the Cheshire plain to Chester. Below Chester Weir, the river is largely Estuarine in character. However there is a tidal influence as far upstream as Farndon, as high tides regularly exceed the weir's height. In its slower, more mature reaches the river is characteristic of a floodplain river with meanders, oxbows and other river-formed landscape features.

Llyn Tegid, the Tryweryn and the Dee form part of the River Dee Regulation System. The flow of water is controlled by Environment Agency Wales (EAW), primarily in order to minimise flooding and for the transportation of water to abstraction points down stream. The level of control is such that the Dee itself is said to be the most regulated river in Europe. However, of the water that reaches Chester, only about a third is regulated by EAW (This is based on an average; the proportion varies depending on conditions and operational requirements). Of the

tributaries within the SAC and SSSI, the only regulated tributary is the Afon Tryweryn,

Parts of the Rivers Dee and Ceiriog lie within both Wales and England. They have therefore been notified as two separate SSSIs – the Afon Dyfrdwy (River Dee) SSSI in Wales and the River Dee (England) SSSI in England. However, the features for which the SSSIs are notified, in particular migratory fish, depend upon the whole river ecosystem.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Annex II species that are a primary reason for selection of this site:
1106 Atlantic salmon *Salmo salar*
1831 Floating water-plantain *Luronium natans*

Annex II species present as a qualifying feature, but not a primary reason for site selection:
1095 Sea lamprey *Petromyzon marinus*
1096 Brook lamprey *Lampetra planeri*
1099 River lamprey *Lampetra fluviatilis*
1163 Bullhead *Cottus gobio*
1355 Otter *Lutra lutra*

Conservation Objectives

4.1 Conservation Objective for water courses (Rivers):

Vision for the Water Course
The vision for the water course is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure (It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process).
- There will be no deterioration in water quality other than that temporarily generated by natural variations in water flow or by manmade variations occurring as a result of operating the River Dee flow control regime within its normal operating parameters.

- The Dee flow regime should remain within 10% of 'recent actual flow' as described by Bethune
- (2006).
- The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC will be avoided.
- Artificial factors impacting on the capability of each feature to occupy the full extent of its potential range should be modified where necessary to allow passage, e.g. weirs, bridge sills, or other forms of barrier.
- Natural limiting factors such as waterfalls, which may limit the natural range of a feature or its dispersal between naturally isolated populations, should not be modified.
- Flow objectives for assessment points in the Dee Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary.
- Levels for nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain nutrients below these levels (It is anticipated that these limits will concur with the standards used by the Review of Consents process).
- The levels of water quality parameters, in addition to those deemed to be nutrients and including levels of suspended solids, that may affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain them below these levels (It is anticipated that these limits will concur with the standards used by the Review of Consents process).
- Potential sources of pollution, nutrient enrichment and/or suspended solids that have not been addressed in the Review of Consents such as, but not confined to, diffuse pollution or disturbance to sediments, will be considered in assessing plans and projects.

4.2 Conservation Objective for Feature 1: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho- Batrachion* vegetation (EU Habitat Code: 3260)

Vision for feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The conservation objective for the water course as defined in 4.1 above must be met
- The extent of this feature within its potential range in this SAC should be stable or increasing
- The extent of the sub-communities that are represented within this feature should be stable or increasing.
- The conservation status of the feature's typical species should be favourable.
- All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

4.3 Conservation Objective for Feature : 2 Atlantic salmon *Salmo salar* (EU Species Code : *1106*)

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The parameters defined in the vision for the water course as defined in 4.1 above must be met
- The SAC feature populations will be stable or increasing over the long term.
- The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
- There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis
- All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

4.4 Conservation Objective for Feature 3:*Luronium natans* / Floating water plantain

Vision for feature 3

The vision for this feature is for it to be in favourable conservation status, where all of the following conditions are satisfied:

- There will be no contraction of the current *L. natans* extent and distribution, and the populations will be viable throughout their current distribution & will be able to maintain themselves on a long-term basis. Each *L. natans* population must be able to complete sexual and/or vegetative reproduction successfully.
- The lake will have sufficient habitat to support existing *L. natans* populations within their current distribution and for future expansion.
- All factors affecting the achievement of these conditions are under control.

4.5 Conservation Objective for Features 4, 5, and 6: Sea lamprey *Petromyzon marinus* (EU Species Code: 1095); Brook lamprey *Lampetra planeri* (EU Species Code : *1096*); and River lamprey *Lampetra fluviatilis* (EU Species Code : *1099*)

Vision for features 4, 5, and 6

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The parameters defined in the vision for the water course as defined in 4.1 above must be met
- The SAC feature populations will be stable or increasing over the long term.
- The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
- There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for Feature 7: Bullhead *Cottus gobio* (EU Species Code: *1163*).

Vision for feature 7

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The parameters defined in the vision for the water course as defined in 4.1 above must be met
- The SAC feature populations will be stable or increasing over the long term.
- The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
- There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis.
- All factors affecting the achievement of these conditions are under control.

4.7 Conservation Objective for Feature 8: European otter Lutra lutra (EU Species Code: 1355)

Vision for feature 8

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The parameters defined in the vision for the water course as defined in 4.1 above must be met.
- The SAC otter population is stable or increasing over the long term, both within the SAC and within its catchment.
- There will be no loss of otter breeding or resting sites other than by natural means (such as naturally occurring river processes) within the SAC or its catchment.
- There number of potential resting sites within the SAC will not be a factor limiting that limits the otter population's size or extent.
- There should be no reduction of fish biomass within the SAC or its tributaries except for that attributable to natural fluctuations.
- There should be no loss of amphibian habitat likely to provide a source of prey for members of the SAC otter population.
- The potential range of otters in the within the SAC or its catchment is neither being reduced nor is likely to be reduced for the foreseeable future.
- All known or potential access or dispersal routes within the catchment for otters that might be considered part of the SAC population should be maintained such that their function is not impaired including the incorporation of measures or features required to avoid disturbance.
- Off site habitats likely to function as 'stepping stones' within the catchment for members of the SAC otter population will be maintained for migration, dispersal, foraging and genetic exchange purposes.
- All man-made structures within or likely to be used by otters from the SAC population must incorporate effective measures to facilitate the safe movement and dispersal of otters.
- All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just

the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for River Dee And Bala Lake/Afon Dyfrdwy A Llyn Tegid SAC (Countryside Council for Wales, March 2008).

Vulnerabilities

The habitats and species for which the site is designated are dependent on the maintenance of good water quality and suitable flow conditions. Fish species require suitable in-stream habitat and an unobstructed migration route. Otters also require suitable terrestrial habitat to provide cover and adequate populations of prey species.

The site and its features are threatened by practices which have an adverse effect on the quality, quantity and pattern of water flows. In particular the following may threaten river ecosystems: inappropriate flow regulation; excessive abstraction (for industry, agriculture and domestic purposes); threats to water quality from direct and diffuse pollution; eutrophication and siltation. Degradation of riparian habitats due to engineering works, agricultural practices and invasive plant species may also have an adverse effect. The Atlantic salmon population is threatened by excessive exploitation by high sea, estuarine and recreational fisheries. Introduction of non-indigenous species could also threaten both fish and plant species.

These issues are being addressed by a variety of statutory bodies that are in a position to overcome these threats through regulatory powers and partnerships with landowners, industry and other interested parties.

Sea Cliffs of Lleyn SAC

Overview

The Clogwyni Pen Llŷn SAC site occupies a large section of the coast of the Llín Peninsula, bordered by the Irish Sea and exposed to the prevailing winds and weather systems. Its habitats are necessarily influenced by its location, geology and the climate, and the coastal area supports some of the best remaining examples of coastal and maritime heaths and grasslands on the Llín. The site has been designated as a SAC for the internationally important habitat 'Vegetated Sea Cliffs of the Atlantic and Baltic Coasts'. This feature covers a range of habitats many of which are represented on this site, including hard and soft cliffs, maritime and coastal heath, maritime grassland and maritime therophyte communities. Dry heath is not currently include as part of this SAC feature, but it is intended to include this habitat as a SAC feature in the future since dry heath is makes up a large percentage of this site and it is a notified feature of the component SSSIs. Ynys Enlli SSSI supports the largest areas of maritime grassland and maritime heath within Clogwyni Pen Llŷn. There are good examples of dry and coastal heath on the mainland at Mynydd Mawr, Mynydd Anelog, Mynydd Cilan and Mynydd Penarfynydd. Parts of Clogwyni Pen Llŷn are also an SPA for chough and Manx shearwater. There are six component SSSIs some of which have rare plant, lichen and invertebrate features. A complex relationship exists between the habitat, invertebrate, bird and lichen interest on the site.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
1230 Vegetated sea cliffs of the Atlantic and Baltic coasts

Conservation Objectives

4.1 Conservation Objective for Feature 1: Conservation Objective for Feature 1: Vegetated sea cliffs of the Atlantic and Baltic coasts (H7 *Calluna vulgaris–Scilla verna* heath, H8d *Calluna vulgaris-Ulex galli* heath, *Scilla verna* sub-community, MC8 *Festuca rubra–Armeria maritima,* MC9 *Festuca rubra–Holcus lanatus* and MC10 *Festuca rubra–Plantago spp* maritime grassland communities, coastal grassland and maritime cliff and slope).

***Vision for Feature 1:* Coastal heath/Dry and maritime heath/Atlantic Sea Cliff.**
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Extent of coastal or maritime heath is stable or increasing.
- At least 2 different coastal or maritime heath NVC community types are present and support a range of characteristic plant species.
- Areas of heath form a mosaic with maritime grassland with patches of bare ground – no blanket heath cover.
- Pioneer heath plants are present.
- Grazing occurs annually at a level which prevents a long sward developing but does not suppress heather growth or flowering. A low sward height in grassland habitats and an open, varied structure in heath will be maintained within the cliff top habitats for feeding chough, without causing a decline in the extent or quality of the grassland and heathland.
- The coastal heath will comprise vegetation with *Ulex gallii* present and at least 30% ericoid cover, usually *Calluna vulgaris*, with at least one maritime indicator present such as *Armeria maritima*, *Plantago maritima*, *Plantago coronopus* or *Scilla verna.*
- Healthy populations of the rare vascular plants (including spotted rockrose, *Tuburaria guttata,* prostrate broom *Cytisus scoparius* subsp, *maritimus,* rock sea-lavender *Limonium britannicum* subsp. *pharense,* small adder's tongue, *Ophioglossum azoricum,* western clover, *Trifolium occidentale* and sharp rush *Juncus acutus*) will be present.
- Healthy populations of rare non-vascular plant species, including moss and liverwort species with restricted European distributions, and the soil-living lichens, ciliate strap-lichen *Heterodermia leucomela* and golden hair lichen *Teloschistes flavicans* will be present.
- Species indicative of rank or unmanaged conditions including European gorse, *Ulex europeaus*, bracken *Pteridium aquilinum,* foxglove *Digitalis purpurea*, ragwort species *Senecio sp,* dock *Rumex obtusifolius* and nettle *Urtica dioica* should be largely absent.
- Grass species indicative of improvement including creeping bent *Agrostis stolonifera,* cock's foot *Dactylus glomerata,* perennial rye-grass

Lolium perenne and Yorkshire fog *Holcus lanatus* should be largely absent.
- Associated important species such as feeding chough (on the mainland and Ynys Enlli) and nesting Manx shearwater (on Ynys Enlli) are recorded in coastal or maritime heath areas.
- All factors affecting the achievement of these conditions, including grazing intensity and burning, will be under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Clogwyni Pen Llŷn/ Seacliffs of Lleyn SAC (Countryside Council for Wales, April 2008).

Vulnerabilities

The site is physically relatively robust although activities in recent years have clearly demonstrated the vulnerability of habitats on both hard and soft cliffs to human pressure. Inappropriate agricultural management, including under grazing, overgrazing and physical disturbance of habitat, continues to be a problem, which is addressed on some parts of the site through Management Agreements.

Snowdonia SAC

Overview

Eryri comprises three upland massifs separated by roads, the Carneddau, Glyderau and Yr Wyddfa. All three host a number of biological and geological SSSI features and SAC features. The three massifs are divided into land parcels or compartments, most of which are in private ownership, but some are common land and some are owned by organisations such as the National Trust and power companies.

Qualifying Features

Annex I habitats that are a primary reason for selection of this site:
3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
6150 Siliceous alpine and boreal grasslands
6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
8210 Calcareous rocky slopes with chasmophytic vegetation
8220 Siliceous rocky slopes with chasmophytic vegetation

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
4010 Northern Atlantic wet heaths with *Erica tetralix*
4030 European dry heaths
4060 Alpine and Boreal heaths
6170 Alpine and subalpine calcareous grasslands
6230 Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe) * Priority feature
7130 Blanket bogs * Priority feature
7150 Depressions on peat substrates of the *Rhynchosporion*
7220 Petrifying springs with tufa formation (*Cratoneurion*) * Priority feature
7230 Alkaline fens
7240 Alpine pioneer formations of the *Caricion bicoloris-atrofuscae* * Priority feature
91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Annex II species that are a primary reason for selection of this site:
1393 Slender green feather-moss *Drepanocladus* (*Hamatocaulis*) *vernicosus*
1831 Floating water-plantain *Luronium natans*

Conservation Objectives

4.1 Conservation Objective for Feature 1: Siliceous alpine and boreal grasslands (EU Habitat Code: 6150)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
• The high summits of the Carneddau (Carnedd Dafydd, Pen yr Ole Wen, Carnedd Llewelyn, Garnedd Uchaf, Yr Aryg, Foel Grach, Llwytmor, Drosgl, Foel Fras, Pen Llythrig y Wrach and Pen yr Helgi Ddu) the Glyderau (Y Garn, Glyder Fach, Glyder Fawr, Elidir Fach, Carnedd y Ffiliast and Mynydd Perfedd), should each support summit heath vegetation which does not show signs of heavy modification by grazing and/or heavy trampling.
• There should be no further loss of summit heath on Yr Wyddfa. The extent of the habitat at
Crib y Ddysgl and Garnedd Uchaf should be retained as an absolute minimum and there should be no loss of quality.
• The vegetation should be dominated by species typical of species of summit heath such as
Racomitrium lanuginosum (woolly hair moss), *Carex bigelowii* (stiff sedge), shrubs dwarfed by the high altitude conditions such as *Vaccinium myrtillus* (bilberry) and *Salix herbacea*, lichens and montane bryophytes.
• Grasses should not comprise a significant proportion of the vegetation.

• The habitat should grade into montane heath at its lower level.
• All factors affecting the achievement of these conditions are under control.

CCW believes that we should be aiming to achieve this vision because the habitat is of such high conservation value being at its southerly limit in the UK. However this is a very long-term vision and at present we have no means of controlling all of the factors impacting on the feature. However, research has indicated that if we could control the grazing impact the habitat should respond. Exclusion of grazing animals from the most degraded heath is therefore a priority in the Pen yr Ole Wen – Carnedd Dafydd area. It is not possible to predict exactly what quality can be achieved since the habitat is now in a very poor condition and is possibly being impacted to some extent by atmospheric pollution, but any improvement to this habitat will help reduce further erosion and loss of vegetation cover. We cannot make exact inferences from one summit to another since they each have differing amounts of impact.

In the short term we should expect to see increases in the cover of *Racomitrium* and dwarf shrubs while seeing a decrease in grass cover, particularly Agrostis species, as nutrients are leached out of the habitat and not replaced.

4.2 Conservation Objective for Feature 2: Alpine and Boreal Heaths (EU code 4060) (Montane Heath)

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Alpine and Boreal heath habitat should cover considerable areas of the Eryri SAC at high altitudes i.e. from about 600m upwards, though it may extend below this in particularly exposed areas.
- It should grade into summit heath on the high summits and ridges, and into dry heath at its lower end.
- This vegetation should be dominated by dwarf shrubs, typically stunted by the high altitude conditions, such as cowberry (*Vaccinium vitis idea*), bilberry (*Vaccinium myrtillus)* and mountain crowberry (*Empetrum hermaphroditum*), prostrate ling (*Calluna vulgaris*) and in some stands dwarf juniper (*Juniperus communis* ssp. *nana*.)Other montane species such as wooley hair moss (*Racomitrium lanuginosum*) and other montane bryophytes and lichens should be present.
- Although some grasses, particularly sheep's fescue, will be present, they should not be at high cover.
- In the long term we expect existing habitat to be retained and to improve in quality in its current locations, and also to expand into other suitable localities where the habitat now exists in a degraded state.
- All factors affecting the achievement of these conditions are under control.

Although much of this habitat has been converted to grassland over many years, there are still good stands of it, notably on Lliwedd on the Wyddfa massif and below the summits of Carnedd Dafydd and Pen y Ole Wen on the Carneddau massif. There is also good quality habitat in the Glyderau as at Esgair Felen. Elsewhere it is very fragmented and there is no clear zonation between degraded montane heath and the more ubiquitous dry heath.

We expect to see a decline in the grasses, especially *Agrostis* species as nutrients get leached out and don't get replaced, and an increase in *Racomitrium* and dwarf shrubs.

4.3 Conservation Objective for Feature 3: Hydrophilous tall herb communities of plains and of the montane to alpine levels (EU Habitat Code: 6430)

Vision for feature 3

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The area of tall herb ledge must be stable, or increasing in the long term. There will be no loss of tall herb ledge vegetation and the feature will occur in all management units in which it currently occurs
- Tall herb ledge vegetation will develop on ledges and on damp calcareous grassland below cliffs where the potential exists but expansion is currently prevented by grazing.
- Tall herb vegetation will consist of a number of flowering plant species such as Lady's mantle *Alchemilla spp.,* Meadowsweet *Filipendula vulgaris,* Globeflower *Trollius europaeus,* Welsh poppy *Meconopsis cambrica,* Devilsbit scabious *Succisa pratensis,* Ox-eye daisy *Leucanthemum vulgare,* Wild Angelica *Angelica sylvestris,* Roseroot *Sedum rosea,* Lesser meadow rue *Thalictrum minus* and Common valerian *Valeriana officinalis*
- The flowering plants will be un-grazed and able to mature and set seed freely.

4.4 Conservation Objective for Feature 4: Calcareous rocky slopes with chasmophytic vegetation (EU Habitat Code: 8210)

Vision for feature 4

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The feature must be stable or increasing in the long term. There will be no loss of calcareous chasmophytic vegetation and it will continue to occur in all of management units in which it currently occurs.
- The feature must continue to support a range of arctic alpine plant populations.
- The plants will be un-grazed and able to mature and set seed freely, or non-flowering plants reproduce by propagules or vegetative means.
- The feature will not be inhibited by invasive non-native plant species.

4.5 Conservation Objective for Feature 5: Alpine and subalpine calcareous grasslands (EU Habitat Code: 6170)

Vision for feature 5

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- This habitat should remain in its current locations although there may be some shifts in its extent.
- The feature should continue to support the characteristic plants including arctic alpine plant species.

• The only acceptable losses of this habitat should be due to succession to other valuable montane communities such as tall herb ledge vegetation.

4.6 Conservation Objective for Feature 6: Siliceous rocky slopes with chasmophytic vegetation (EU Habitat Code: 8220)

Vision for feature 6

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- This habitat should support a range of bryophytes and ferns in suitable crevices on acid rocks.
- The feature should not be damaged by grazing.
- It should be widespread on suitable moist acidic rock crevices on each massif.

4.7 Conservation Objective for Feature 7: Siliceous scree of the montane to snow levels (EU Habitat Code: 8110)

Vision for feature 7

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The naturally mobile scree on each massif will have open vegetation on or among the boulders, with *Cryptogramma crispa, Deschampsia flexuosa, Festuca ovina, Galium saxatile, Huperzia selago* and an extensive and varied bryophyte flora.
- There will not be excessive disturbance to the as a result of human or animal activity.

4.8 Conservation Objective for Feature 8: Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* (EU Habitat Code: 3130)

Vision for feature 8

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- Each of the lakes has a macrophyte flora which includes some of the characteristic species such as *Littorella uniflora, Lobelia dortmanna, Isoetes lacustris, Myriophorum alterniflorum, Juncus bulbosus, Potamogeton* species and *Subularia aquatic*.
- The lakes which have not been dammed for use as reservoirs retain a natural profile.
- All of the lakes show a characteristic vegetation zonation from the shore to the deeper water.
- Water quality of each lake is within parameters which are suitable to support the characteristic flora and fauna.

4.9 Conservation Objective for Feature 9: North Atlantic wet heaths with *Erica tetralix* (EU Habitat Code: 4010

Vision for feature 9

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The feature must be stable or increasing in the long term.
- The habitat will typically comprise *Erica tetralix* and *Calluna vulgaris* and mosses on a wet peaty substrate with a range of small flowering plants such as bog asphodel *Narthecium ossifragum,* milkwort *Polygala serpyllifolia,* Common butterwort *Pinguicula vulgaris,* small sedges and round leaved sundew *Drosera rotundifolia.*

4.10 Conservation Objective for Feature 10: European dry heath (EU Habitat Code: 4030)

Vision for feature 10

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The feature must be stable or increasing in the long term.
- The habitat will be dominated by at least two dwarf shrub species, usually heather *Calluna vulgaris* and bilberry *Vaccinium mytillus*, but sometimes western gorse Ulex gallii or crowberry *Empetrum nigrum* may be prominent.
- There will be a mixed age range of heath at an appropriate scale which includes stands of young vigorous dwarf shrubs, mature stands where the heather is becoming senescent, and all age ranges in between.
- The heath shrubs will not exhibit forms characteristic of overgrazing.
- There will be no signs of frequent burning or reversion to grassland.
- All factors affecting the achievement of these conditions are under control.

4.11 Conservation Objective for Feature 11: Blanket bog (EU Habitat Code: 7130)

Vision for feature 11

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The extent of this habitat should be of the order of 1342 ha (as notified on the N2K data form).
- This figure however includes a considerable amount of degraded blanket bog. At present it is unknown how much of this is capable of restoration to good quality blanket bog habitat.
- The good quality blanket bog will support typical species e.g. oligotrophic *Sphagnum* spp., cotton grass *Eriophourm spp*, ling *Calluna vulgaris*, bell heather *Erica cinerea*, crowberry *Empetrum nigrum*, cow berry *Vaccinium vitis-idaea*, and cranberry *Vaccinium oxycoccus*.
- The intact habitat will not show any signs of degradation as a result of overgrazing, drainage, or burning, such as depletion of dwarf shrubs and sphagna with increased grass cover.
- The degraded habitat will not show any recent signs of further degradation as a result of overgrazing, drainage or burning.

- All factors affecting the achievement of these conditions are under control.

4.12 Conservation Objective for Feature 12: Depressions on peat substrates of the Rhynchosporion (EU Habitat Code: 7150)

Vision for feature 12

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The extent has not been fully measured because the nature of the habitat is small scale and patchy within mosaics of blanket bog and wet heath. However the extent should be at least that which has been mapped.
- The habitat, characterised by white beak sedge *Rhynchospora alba* will support a range of plant species such as bog pimpernel *Anagallis tenella*, ling *Calluna vulgaris*, round leaved sundew *Drosera rotundifolia*, cross-leaved heath *Erica tetralix*, cottongrass *Eriophorum angustifolium*, marsh St John's wort *Hypericum elodes*, purple moor grass *Molinia caerulea*, bog asphodel *Narthecium ossifragum,* bog pondweed *Potamogeton polygonifolius*, *Sphagnum* spp., and short sedges.
- There will be no signs of excessive grazing which would result in large areas of bare peat and possibly significant cover of rushes *Juncus spp.*
- Drainage or burning would damage this habitat and neither activity should be consented where this habitat could potentially be affected.
- At Cwmffynnon and other small areas in the Glyderau, the habitat supports the uncommon species, marsh clubmoss *Lycopodiella inundata.* Here we would expect to see frequent small patches of bare peat which support the species. Many of these areas may be caused by vigorous flushing of water rather than by grazing animals.

4.13 Conservation Objective for Feature 13: Species-rich Nardus grassland on siliceous substrates in mountain areas (EU Habitat Code: 6230)

Vision for feature 13

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The extent will be at least 10 hectares of the habitat to include 5 ha on the slopes above Llyn Llydaw.
- The grassland will support a range of plant species such as Harebell *Campanula rotundifolia,* Eyebright *Euphrasia spp.* Devilsbit scabious *Succisa pratensis,* Wild thyme *Thymus polytrichus,* Heath speedwell *Veronica officinalis,* Spring sedge *Carex caryophyllea,* Flea sedge *Carex pulicaris,* Carnation sedge *Carex panicea,* Lady's mantle *Alchemila glabr.*
- There will not be any significant cover of invasive species. New Zealand willowherb, *Epilobium brunnescens* is a long established alien plant on the site and is accepted at present as it doesn't appear to adversely affect the feature. (At present CCW has no knowledge of any means of reducing or eliminating it).

4.14 Conservation Objective for Feature 14: Old sessile oak woods with Ilex and Blechnum (EU Habitat Code: 91A0)

Vision for feature 14
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The extent is increasing.
- The woodland comprises locally native canopy forming trees including: *Quercus petraea, Betula pubescens, B. pendula, Fraxinus excelsior* and *Sorbus aucuparia.*
- There is a mixed age structure within the woodland.
- Regeneration is occurring and sufficient seedlings can grow on to saplings and ultimately canopy trees.
- There are no significant alien species.

4.15 Conservation Objective for Feature 15: Petrifying springs with tufa formation (Cratoneuron) (EU Habitat Code: 7220

Vision for feature 15
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- This feature on Eryri does not form tufa but should display a dominant cover of mosses such as *Cratoneuron communatum, Philonotis fontana* and *Bryum pseudotriquetrum* with frequent characteristic forbs such as *Montia fontana, Chrysosplenium oppositifolium* and *Saxifraga stellaris.*
- There are no significant increases in grass or rush cover.
- The extent of the spring vegetation is largely dictated by natural factors, chiefly hydrology. Reductions in extent could occur in response to trampling, and encroachment by rush and grass species due to nutrient enrichment.

4.16 Conservation Objective for Feature 16: Alkaline fens (EU Habitat Code: 7230)

Vision for feature 16
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The habitat consists of flushes, influenced by some base-enrichment, where brown mosses (such as *Scorpidium scorpioides*, *Cratoneuron commutatum* and *Drepanocladus revolvens*) are present. Small sedge species such as *Carex viridula, C. panicea, C. dioica C. pulicaris* and *Eriophorum spp* will be present and usually also *Pinguicula vulgaris.*

4.17 Conservation Objective for Feature 17: Alpine pioneer formations of the Caricion bicolorisatrofuscae (EU Habitat Code: 7240

Vision for feature 17
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The feature consists of base rich flushes at high altitude which are flushed continuously with cold water.

- This habitat should have a high bryophyte cover and support arctic alpines such as *Saxifraga oppositifolia*, *S. stellaris* and *Thalictrum alpinum*. *Juncus triglumis* should be present and sedges such as *Carex viridula*.
- There should be no non-native species.
- The flowering plants should be able to flower and set seed unhindered by grazing.

4.18 Conservation Objective for Feature 18: Floating water plantain *Luronium natans*(EU Habitat Code: 1831)

Vision for feature 18
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- *Luronium natans* occurs in Llyn Cwmffynnon as a minimum.

4.19 Conservation Objective for Feature 19: Slender green feather-moss *Drepanocladus (Hamatocaulis) vernicosus* (EU Habitat Code: 1393)

Vision for feature 19
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The moss is present at Cwm Afon Llafar Flush A and Flush B.
- The associated vegetation should be dominated by rushes and sedges, with <20% rush cover.
- There should be less than 10% disturbed bare ground within the flushes.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Eryri SAC (Countryside Council for Wales, March 2008).

Vulnerabilities

The area is extensively grazed by sheep. In many areas, ecological overgrazing takes place, ericaceous species are being suppressed, grass species are dominating and montane communities such as moss heath are being damaged and reduced in area. Resolution of this problem is complex, due to the breakdown of traditional shepherding, other changes in livestock management on these open mountain areas, and the economics of upland farming. This is being actively tackled by the Countryside Council for Wales (CCW) by the negotiation of management agreements.

Snowdonia, which contains the highest peaks in Wales, has long been used for rock-climbing and fell walking. It is subject to intense recreational pressures and where these are concentrated, particularly on paths and summit areas, there are severe erosion problems, despite

management. However, these rarely impinge upon the special features of the area. Remedial work by Snowdonia National Park Authority, National Trust and CCW is tackling this problem.

The high rainfall and extensive acidic geology/pedology renders this area, especially its watercourses and lakes, vulnerable to acidification.

Sections of the site (Cwm Crafnant, Cwm Idwal and Yr Wyddfa) are managed as National Nature Reserves and are covered by CCW management plans.

Special Protection Areas

Aberdardon Coast and Bardsey Island SPA

Overview

The site lies at the very south-western tip of the Llyn Peninsula, almost surrounded by the Irish Sea and exposed to the prevailing winds and weather systems. Its habitats are necessarily influenced by its location, geology and the climate, and the coastal area supports some of the best remaining examples of coastal and maritime heaths and grasslands on the Llyn, while areas further inland supporting more agriculturally improved areas. The site includes three islands, Ynys Enlli and two small islands known as Ynysoedd y Gwylanod. The site is designated an SPA for its ornithological interest, and is particularly important for its chough and Manx shearwater breeding populations.

The area has long been a stronghold for the chough, and over 14 pairs regularly nest here. Chough thrive in the area which supports 5% of the UK population because of the variety of short turf and thin soil feeding habitats and available breeding sites - the sea cliffs and caves provide breeding sites, while the cliffs, heath, maritime grassland, and inland pasture and arable fields provide feeding sites throughout the year for these specialist invertebrate feeders. Manx shearwaters spend most of their lives out in the open sea, but congregate at breeding sites to which they faithfully return throughout their lives. Theses tend to be offshore islands that are free of predators, and Bardsey supports over 2% of the UK breeding population. They are long-lived birds (a bird ringed in 1955 was recorded again in 2002 and 2003) but productivity is typically low, with a single egg produced by adults (>5years) annually. They are present on the island from mid-March to mid-October, and nest in burrows on the mountain, cliff slopes and in man-made banks and walls.

Ynysoedd y Gwylanod, and particularly the larger Ynys Gwylan Fawr, are important for supporting the largest breeding colony of puffin in North Wales, and razorbills and guillemots also nest in small numbers. There is also a healthy population of breeding cormorant which is in excess of 1% of the UK breeding population.

The site is also important for several vascular and non-vascular plant species, particularly spotted rockrose, *Tuburaria guttata* and prostate broom *Cytisus scoparius* subsp, *maritimus* and two nationally rare heathland lichens, the ciliate strap lichen *Heterodermia leucomela* and the golden hair moss *Teloschistes flavicans.*

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Pyrrhocorax pyrrhocorax 3.5% of the GB breeding population Count, as at late 1990s

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Puffinus puffinus 3.2% of the population in Great Britain Count, as at 1996

Conservation Objectives

4.1 Conservation Objective for Feature 1: Internationally important population (1% or more of the Great Britain population) of breeding and non-breeding season chough *Pyrrhocorax pyrrhocorax*.

Vision for feature 1: Chough
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The breeding population of chough is at least 14 pairs, or 5% of the GB population.
- The wintering population of chough is at least 28 individuals, or 5% of the GB population.
- Sufficient suitable habitat is present to support the populations.
- Breeding population is stable or increasing.
- Productivity is stable.
- Non-breeding flocks are stable or increasing (summer and winter).
- Breeding and non-breeding birds use Ynys Enlli for feeding throughout the year.
- Chough feeding habitats are themselves in a favourable conservation status and that the specified and operational limits and grazing prescriptions for these habitats incorporate chough feeding requirements (i.e. sward height and bare ground).
- Disturbance of breeding and feeding chough is minimal.
- The factors affecting the feature are under control.

4.2 Conservation Objective for Feature 2: Internationally important population (1% or more of the Great Britain population) of breeding Manx shearwaters *Puffinus puffinus*.

Vision for Feature 2: Manx shearwater
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- Breeding population of Manx shearwater (confined to Ynys Enlli) is stable or increasing.

- Reproductive rates remain stable.
- Deaths from the lighthouse attractions, fencing and other infrastructure are minimal.
- No ground predators are introduced.
- Nesting birds are not disturbed by restoration works on boundary walls or recreational activities.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Glannau Aberdaron and Ynys Enlli /Aberdaron Coast and Bardsey Island SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

Heavy levels of sheep grazing physically damage burrows of Manx shearwater; management plans to reduce livestock numbers are being considered. Invasion of bracken into coastal grassland is reducing feeding areas; methods to control bracken invasion are being considered. Parts of the area experience heavy recreational pressure from walkers and their dogs which disturb feeding chough, although this is not thought to be significant at present.

Berwyn SPA

Overview

The Berwyn and South Clwyd Mountains SAC is a large upland site (27,132 ha), the largest area of blanket bog and European dry heath in Wales. It comprises three discrete sites, Berwyn SSSI, Llandegla Moor SSSI and Ruabon and Llantysilio Mountains and Minera SSSI. All of these sites are predominantly a mixture of dry heath and blanket bog vegetation with patches of transition mires and quaking bogs vegetation found as an intricate mosaic, usually on acidic rock types, and can together be described as upland moorland.

Berwyn supports the most extensive tract of near-natural blanket bog in Wales. Much of the blanket bog vegetation is dominated by NVC type M19 *Calluna vulgaris–Eriophorum vaginatum* blanket mire, with crowberry *Empetrum nigrum* and an often extensive hypnoid moss cover; within this community cloudberry *Rubus chamaemorus* is found close to the southernmost limit of its British range. On deeper peats, there are smaller stands of M18 *Erica tetralix–Sphagnum papillosum* mire, some of which exhibit distinctive surface patterning. The mire vegetation shows transitions to heather-dominated dwarf-shrub heath.

Berwyn contains the largest stands of upland European dry heath in Wales. The dry heath is characteristic of Berwyn's more easterly location

and less oceanic climate than the other major Welsh uplands, and consists principally of NVC type H12 *Calluna vulgaris–Vaccinium myrtillus* heath, with frequent crowberry *Empetrum nigrum* and occasional cowberry *Vaccinium vitis-idaea*. Other heath vegetation present includes areas of H18 *Vaccinium myrtillus–Deschampsia flexuosa* heath and in some areas stands of damp H21 *Calluna vulgaris–Vaccinium myrtillus–Sphagnum capillifolium* heath. These latter heaths occur in an intermediate position between the drier heaths and blanket mire and support occasional plants of lesser twayblade *Listera cordata.*

Berwyn is the most important upland in Wales for breeding birds. It supports a wide range of species including internationally significant numbers of hen harrier *Circus cyaneus*, merlin *Falco columbarius*, peregrine *Falco peregrinus* and red kite *Milvus milvus*, as well as significant proportions of the Welsh populations of other species including short eared owl *Asio flammeus*, golden plover *Pluvialis apricaria*, red grouse *Lagopus lagopus* and black grouse *Tetrao tetrix*.

The calcareous vegetation communities for which the site is also notified are found on the section of the Ruabon and Llantysilio and Minera SSSI. This area contains carboniferous limestone outcrops on the scarp known as the Eglwyseg Rocks, with its prominent cliffs, screes and grasslands. The calcareous screes in this area support many rare species such as the limestone fern *Gymnocarpium robertianum*, with the rocky slopes or cliffs supporting rigid buckler fern *Dryopteris submontana*, a nationally scarce fern of limestone pavement and scree at the southern edge of its distribution on Ruabon. Eglwyseg Rocks also holds populations of the endemic whitebeam (*Sorbus anglica)* and Welsh Hawkweed *(Heiracium cambricum)*.

Calcareous grasslands are also found at the north-eastern end of the Ruabon and Llantysilio mountains and Minera SSSI. This area contains several types of neutral, upland acid and calcareous grassland over areas of acidic and calcareous rock, along with areas of bracken and scrub. This area holds the only Welsh locality for the critically endangered Sedge *Carex muricata* ssp. *muricata*.

Colonies of Welsh clearwing moth *Synanthedon scoliaeformis* are found in several localities, this being the strongest of only three populations on Wales.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Circus cyaneus 2.2% of the GB breeding population 5 year mean, 1991-1995
Falco columbarius 1.1% of the GB breeding population 5 year mean, 1991-1995
Falco peregrinus 1.5% of the GB breeding population 5 year mean, 1991-1995

Milvus milvus 1.2% of the GB breeding population 5 year mean, 1991-1995

Conservation Objectives

4.7 Conservation Objective for Feature 7: Hen harrier *Circus cyaneus* (EU Species Code: A082)

Vision for feature 7

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The size of the population must be being maintained at eleven breeding pairs or increased beyond this.
- There will be sufficient appropriate habitat to support the population in the long-term including patches of tall heather available for nesting and roosting, areas grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
- Distribution of species within site is maintained.
- Distribution and extent of habitats supporting the species is maintained.
- Developments should not be permitted where they can be shown to have likely adverse impacts upon hen harrier.
- Populations of legally controllable predator species, such as foxes and carrion crows, will not pose a threat to ground nesting birds.
- Hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
- There will be no disturbance of any nest location.
- Illegal human persecution of protected bird species should not occur.
- All factors affecting the achievement of these conditions are under control.

4.8 Conservation Objective for Feature 8: Merlin *Falco columbarius* (EU Code: A098)

Vision for feature 8

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The size of the population must be being maintained at 13 breeding pairs or increased beyond this.
- There will be sufficient appropriate habitat to support the population in the long-term including patches of tall heather available for nesting and roosting, areas grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
- Distribution of species within site is maintained.
- Distribution and extent of habitats supporting the species is maintained.
- Developments should not be permitted where they can be shown to have likely adverse impacts upon merlin.

- Populations of legally controllable predator species, such as foxes and carrion crows, should not pose a threat to ground nesting birds.
- Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
- There will be no disturbance of any nest location.
- Illegal human persecution of protected bird species should not occur.
- All factors affecting the achievement of these conditions are under control.

4.9 Conservation Objective for Feature 9: Peregrine falcon *Falco peregrinus* (EU Code: A103)

Vision for feature 9

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The size of the population must be being maintained at 13 breeding pairs or increased beyond this.
- Mountainous and moorland terrain with cliffs, crags and quarries for nesting and roosting plus grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
- The range of the population must not be contracting.
- Distribution and extent of habitats supporting the species is maintained.
- Developments should not be permitted where they can be shown to have likely adverse impacts upon peregrine.
- Populations of legally controllable predator species, such as foxes and carrion crows, should not pose a threat to ground nesting birds.
- Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
- There will be no disturbance of any nest location.
- Illegal human persecution of protected bird species should not occur.
- All factors affecting the achievement of these conditions are under control.

4.10 Conservation Objective for Feature 10: Red kite *Milvus milvus* (EU Code: A074)

Vision for feature 10

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The size of the population must be being maintained at 2 breeding pairs or increased beyond this.
- Sufficient Broadleaf woodland required for nesting and roosting plus heath and rough grassland for feeding with an adequate supply of prey species in the form of carrion, small birds and small mammals to maintain successful breeding. (NOTE: Red kite do not nest within the SPA.)
- Developments should not be permitted where they can be shown to have likely adverse impacts upon red kite.

- Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
- There will be no disturbance of any nest location.
- Illegal human persecution of protected bird species should not occur.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Berwyn & South Clwyd Mountains SAC & Berwyn SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

The breeding habitats of the hen harrier, merlin, red kite and peregrine are threatened by inappropriate agricultural operations such as drainage and reseeding, application of fertilisers and the adoption of damaging grazing regimes. These problems are being addressed successfully by means of management agreements with owners and occupiers and through joint agreement via the Tir Cymen Scheme, an agri-environment scheme. The breeding productivity of the ground nesting hen harriers and merlins is vulnerable to high levels of predation by species such as the fox and carrion crow. Landowners are encouraged to use appropriate measures to control pest species.

All the qualifying species are vulnerable to human persecution, by disturbance or destruction of nests, eggs or young; as well as illegal killing of adult birds. Liaison with owners, the police and the Royal Society for the Protection of Birds, as well as improving public understanding is attempting to address this problem.

Craig yr Aderyn SPA

Overview

The high crag of Craig Yr Aderyn, rising from sea level to over 250 metres is a striking landscape feature on the south side of the Dysynni valley. The site is a Special Protection Area because it is an important breeding and roosting site for chough. Craig yr Aderyn itself forms the core of a large anticline where Ordovician rock comprising the Craig Cau formation outcrops. These predominantly igneous rocks consist of rhyolitic ash-flow tuffs that have in the past been quarried for road stone.

The crags used to regularly support over 1% of the British population of breeding chough, with five or six pairs nesting in holes and crevices, making this the densest population of breeding chough in the British Isles (six pairs in 0.5Km). However, in recent years breeding numbers have

declined to 3-4 pairs. Craig yr Aderyn is also a roost site for chough throughout the year, with non-breeders in the summer and high numbers outside the breeding season. During the period 1991/92-1995/96 the average maximum count was 56, however since then the number of roosting birds has fallen to an average of 18 during the 1999/00-2004/05 period. It has become clear that the birds using Craig yr Aderyn are part of a metapopulation that spend much of the year in south Meirionydd, with the other principle roosting site being at Tonfannau Quarry, 8 km away, near Tywyn.

In recent years the origin of individuals using Craig yr Aderyn has been established by tracing colour–ringed chicks. The results to date indicate that the birds using this site were born in Ceredigion and Montgomeryshire and have fledged from nests up to 70kms away. There are only a few records of birds from north Gwynedd.

Craig yr Aderyn was formerly located on the Dysynni estuary. This was drained in the Eighteenth century and so the rock now overlooks farmland and is 7 km from the sea. Despite this the Rock supports a breeding colony of cormorants, the only regular inland nesting site in Wales. The colony was first recorded by Edward Lluyd in 1695 and was mentioned in Thomas Pennant's "Tour in Wales" in 1784. Over 60 pairs of cormorant nest on the crags, which represent about 1% of the GB breeding population. Other breeding species include barn owl, peregrine, redstart, wheatear, linnet and little owl.

To the north and east of the crags, there is a large area of unimproved acid grassland mixed with bracken. This is one of the major factors influencing the number of breeding and roosting chough, as they require an unimproved sward, rich in their main food, soil invertebrates and short enough for chough to be able to use their beaks to probe for food. Acidic, dry heathland occurs in the south-eastern part of the site. A small area of base-enriched marshy grassland above Gesail adds to the plant diversity with species such as common butterwort *Pinguicula vulgaris*, many-stalked spike-rush *Eleocharis multicaulis* and pale sedge *Carex Pallescens* and mosses such as *Campylium stellatum, Ctenidium molluscum and Fissidens adianthiodes.*

The north facing cliffs and slopes support a good range of moss and liverwort species. Of particular note are the nationally scarce mosses growing on boulders in the scree; *Grimmia decipens*, which appears to be decreasing in its national range and *Hedwigia integrifolia* which occurs here at its southernmost location in Britain. The uncommon liverwort *Jubula hutchinsiae* has been recorded from streamside rocks. On rocky areas above the main cliff face Wilson's filmy fern *Hymenophyllum wilsonii* and oak fern *Gymnocarpium dryopteris* have been recorded.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:

Pyrrhocorax pyrrhocorax 1.8% of the GB breeding population 1999

Over winter the area regularly supports:
Pyrrhocorax pyrrhocorax 8% of the GB population 1996

Conservation Objectives

4.1 Conservation Objective for Feature 1: Internationally important population (1% or more of the Great Britain population) of breeding and non-breeding season Chough *Pyrrhocorax pyrrhocorax*

Vision for Feature 1, Chough
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The breeding population of Chough is at least 5 pairs
- The winter roosting population should be at least 27 birds
- Sufficient suitable habitat is present to support the populations
- The factors affecting the feature are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Craig Yr Aderyn (Bird's Rock) SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

The crags regularly support over 1% of the British population of breeding chough, and 8% of the British wintering population, as it is also a roost site for this species. It is the site of the only regular in-land breeding colony of cormorant in Wales. Both these species are vulnerable to disturbance as the crags are a well known climbing site. This is being addressed by imposing restrictions on when the activity can take place. The grazing pressure is regulated by a Tir Gofal management agreement at the moment, to produce favourable chough feeding habitat.

Dyfi Estuary SPA

Overview

The Dyfi Estuary is located on the west coast of Wales on the boundary between Ceredigion, Gwynedd and Powys. The SPA comprises the

estuary, with adjoining saltmarsh, marshy grassland and improved grassland. The estuarine complex is of outstanding physiographic interest. It includes sandbanks, mud-flats, saltmarsh, peatbogs, river channels and creeks, with an extensive sand dune complex across the mouth of the estuary. The estuary itself is a feature of the Penllyn a'r Sarnau marine SAC.

The site is of importance as a traditional wintering area for Greenland White-fronted Goose *Anser albifrons flavirostris* – the most southerly regularly used area for this population in the UK. Until the early 1980s the geese roosted on the estuary and flew inland either to the Cambrian mountains or to the raised bog of Cors Fochno to feed. The geese now use the saltmarsh and grasslands for feeding and roost on the sandbanks and mud-flats.

A general decline in Greenland white-front populations is reported due to the birds having a delayed age of first breeding, leading to a reduction of young birds. It appears that something is stopping the birds from achieving breeding condition and therefore very few geese are surviving long enough to breed (Fox A.D. pers.comm. 2008). Inter-specific competition with Greater Canada Geese on the breeding grounds in Greenland, and poor weather, has been cited as possible reasons but the influential factors are not fully understood. Worldwide numbers have declined from a high of 35,600 in 99/00 to an estimated 24,895 in 2006 with poor numbers of young recorded in that period. This is reflected in the Dyfi wintering flock, which has contained very few young geese in recent years, and where wintering numbers have declined steadily from 167 in 1998/99 to a maximum of 102 in the last three winters (2005-6 to 2007-8). The decline is also mirrored at other sites such as in SW Scotland and at Wexford.

The Dyfi Estuary is the sole remaining wintering site in Wales and the most southerly in the UK. It is both a roosting and feeding area, and is particularly important in the context of maintaining the traditional wintering range within the UK. However, evidence of past range contraction suggests that small isolated populations are particularly vulnerable.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:
Anser albifrons flavirostris (Greenland/Ireland/UK) 1% of the GB population 5 year peak mean for 1993/94 - 1997/98

Conservation Objectives

4.1 Conservation Objective for Feature 1: Greenland white-fronted goose *Anser albifrons flavirostris*

Vision for Feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The Dyfi wintering population attains national importance level (ie.1% of the national (UK) population), annually.
- Winter mortality levels are <1% annually.
- Juvenile/ sub-adult birds comprise > 5% of the wintering population annually.
- All site-specific factors affecting the achievement of these conditions (e.g. avoidable disturbance), are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Dyfi Estuary / Aber Dyfi SPA (Countryside Council for Wales, April 2008).

Vulnerabilities

The Dyfi estuary regularly supports over 1% of the GB wintering population of Greenland white-fronted geese, and as the only site in England and Wales, it is the most southerly population in the UK. Disturbance by leisure activities including wildfowling, and also low-flying aircraft, may be significant to feeding and roosting geese. CCW and the RSPB lease the sporting rights over the majority of the site. The sporting rights are left to local wildfowling clubs within the NNR where there is a voluntary ban on shooting the geese. There are also sanctuary areas where no shooting takes place within the eastern half of the estuary. CCW and RSPB have wardens in place and disturbance from leisure activities is monitored. Appropriate grazing of the saltmarsh and grassland is important to maintain feeding areas. There is an increasing resident flock of Canada geese on the estuary of approximately 2,000 birds. The interactions between this species and the Greenland white-fronted geese and the impact on the habitat are unknown.

Elenydd - Mallaen SPA

Overview

The Elenydd – Mallaen area occupies the southern section of the Cambrian Mountains in central Wales, stretching from the upper Cothi and Tywi valleys north-west of Llandovery to the Ystwyth, Elan and Wye valleys in the north. These hills are built of rocks of Silurian and Ordovician age and the landforms are typical of the 'slate uplands' of south-central Wales, with plateaux separated by steep-sided valleys.

Elenydd is located in the centre of this area. It is one of the most important areas of hill land in Wales for nature conservation and is of outstanding interest for its range of breeding birds. Much of the hill vegetation is also of special interest. Elenydd is important in Mid Wales for its nutrient-poor upland lakes. The area supports a wide variety of uncommon plants and animals.

Cwm Doethie – Mynydd Mallaen, consisting largely of steep-sided valleys and upland tracts, is located in the southern part of the Cambrian Mountains. It is of outstanding interest for its heath and woodland habitats and wildlife and, in particular, its birdlife.

Marcheini Uplands, Gilfach Farm and Gamallt are located to the north of the River Wye above Rhayader. This is an area of outstanding ornithological interest. The site also supports important areas of blanket bog, dry heath, woodland, grassland and lichen-rich rock outcrops.

Carn Gafallt is located at the junction of the rivers Elan and Wye just below Rhayader. It is an excellent example of a predominantly upland site supporting a diverse range of habitat types. These include nationally important examples of semi-natural broadleaved woodland, above which is situated one of the largest expanses of heather moorland in Brecknock. The area is not only important for its plant communities, but also supports notable populations of birds, invertebrates and lower plants.

Llynoedd Ieuan, located in the hills between the Wye and Ystwyth valleys, is an extensive area of submontane heathland and blanket mire containing three upland lakes with associated areas of actively growing basin mire.

Cwm Gwynllyn occupies a glaciated valley to the north west of Rhayader. It has a number of features of biological interest. It includes important areas of freely drained, sessile oak woodland developed on acidic Silurian rocks, which grade into heath, ffridd and rocky habitats. Gwynllyn, a good example of a nutrient-poor lake, is surrounded by a well-developed transition into bog, scrub and grassland habitats.

Coedydd Glannau a Cwm Coel are located in the Elan Valley on the west side of Garreg-ddu Reservoir. They comprise a particularly diverse example of sessile oak woodland, with well-developed epiphytic lichen, moss and liverwort communities.

Coed yr Allt-goch is located on the north-east shore of Penygarreg Reservoir in the Elan Valley. It is a good example of sessile oak woodland, developed on free draining Silurian rocks.

Cerrig Gwalch is a fine example of mixed deciduous woodland developed on an east-facing steep cliff in the Wye valley to the north of Rhayader.

Caban Lakeside Woodlands are located on the east-facing slopes above Caban Coch Reservoir in the Claerwen valley. They support one of the most interesting lower plant floras in Radnor.

Mwyngloddfa Cwmystwyth comprises old mine workings located in the upper Ystwyth valley. It is of special interest for its minerals and for the plant communities that have developed on the metal-rich spoil tips, associated rock outcrops and ruined buildings. These habitats support a

great variety of lichens, including a number of rare species, which are typically only found associated with heavy-metal-rich sites. The mine workings are also important for hibernating bats.

Caeau Cnwch a Ty'n-y-graig comprises four traditionally managed fields lying in a small valley below Craig Cnwch, near Elan Village. They provide an outstanding example of a type of herb-rich grassland that is characteristic of the upland fringe of central Wales.

Caeau Troed-rhiw-drain occupies sloping ground on the south west side of Peny-y-garreg Reservoir in the Elan Valley. It supports outstanding examples of herb-rich hay meadows in which a number of rare plant species are well represented. The meadows are variants of a characteristic mid Wales type.

Gweunydd Ty'n-y-llidiart comprises a series of rough pasture fields situated on gently sloping ground to the west of Garreg-ddu Reservoir in the Elan Valley. The site is notable in displaying an excellent example of the range of dry and damp unimproved pasture types once typical of the upland fringe in this part of Wales. More than one hundred species of higher plants are known to occur here.

Rhos yr Hafod is located on the hillside to the north of Penygarreg Dam in the Elan Valley. It is an outstanding example of herb-rich hay meadow and pasture land in which a number of uncommon plant species are very well represented.

Rhosydd Llanwrthwl comprises a series of unimproved wet pastures on level or gently sloping ground in the valley of the Afon Dulas, to the west of Llanwrthwl village. The size and quality of the stands of wet grassland, wet heath and flush vegetation present at Rhosydd Llanwrthwl are exceptional, and represent a significant proportion of the higher quality remnants of this habitat resource left in Brecknock. Several locally scarce plants are present, and nationally scarce invertebrates have been recorded from the site.

Vicarage Meadows are located at Abergwesyn in the upper Irfon valley. They are an important example of an unusual type of unimproved, herb-rich acid grassland. The rich flora includes a number of uncommon plants.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Falco columbarius 0.5% of the GB breeding population 5 year mean, 1987-1991
Milvus milvus 9.3% of the GB breeding population Count, as at 1997

Conservation Objectives

4.8 Conservation Objective for Feature 8: A074 breeding Red Kite *Milvus milvus*

Vision for feature 8

- The SPA area continues to support at least 15 pairs of breeding red kites, or 0.5% of the British population.
- Traditional nest sites within the SPA continue to be used.
- The extent of suitable semi-natural feeding habitat within the SPA is maintained.
- Availability of carrion within the SPA is maintained.
- Roosting sites within the SPA are maintained.
- All factors affecting the achievement of these conditions are under control.

4.9 Conservation Objective for Feature 9: A098 breeding Merlin *Falco columbaris*

Vision for feature 9

- The SPA area continues to support at least 7 pairs of breeding merlins, or 0.5% of the British population.
- Traditional nest sites within the SPA continue to be used.
- The extent of suitable semi-natural feeding habitat within the SPA is maintained.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for incorporating: Elenydd – Mallaen Special Protection Area; Elenydd Special Area for Conservation (SAC); Coetiroedd Cwm Elan / Elan Valley Woodlands) SAC and Cwm Doethie - Mynydd Mallaen SAC (Countryside Council for Wales, April 2008).

Vulnerabilities

The site's primary importance lies in its good population of Merlin and Red Kite. Merlin prey on small birds, which are most numerous in heath and scrub habitats around the hill margins. These areas are vulnerable to damage by over-grazing and excessive burning, which is carried out illegally by some graziers. Enforcement action by WOAD may help to alleviate the problem. Nesting Merlin are vulnerable to disturbance from walkers, mountain bikers and motorcycles. The Welsh Water Ranger Service and local police do their best to prevent disturbance and the local authority are considering traffic regulation orders.

Red Kites scavenge for sheep carrion on the open hill and prey on small mammals and worms on the hill edge. Thus they are vulnerable to a reduction in sheep subsidies and Environmentally Sensitive Area payments are effectively preventing such changes. Red Kites nest in woodland and are particularly vulnerable to human disturbance during the breeding season. The most vulnerable kite nests are watched to prevent intentional and accidental disturbance. Forestry operations could threaten certain nest sites; however liaison with the Forestry Authority and Forestry Enterprise has been effective in protecting most active nests.

Holy Island Coast SPA

Overview

Glannau Ynys Gybi (South Stack)

This site is of special interest for its geological and biological features, including heathland and maritime grassland communities, coastal cliffs and ledges, its assemblages of vascular plants and birds, invertebrates and its solid geology. The site lies on the north west corner of Holy Island and includes the most westerly point on Anglesey. Holyhead lies immediately to the east.

The cliffs support important seabird colonies; guillemots, razorbills and puffins combine to create one of the largest colonies of breeding auks in North Wales. Fulmar and kittiwake also nest on these cliffs together with peregrine and chough, the latter using the heathland and adjacent areas extensively for feeding. Within the heathland stonechat, skylark, linnet and whitethroat all breed regularly.

The site supports a good range of invertebrates including the silver studded blue *Plebejus argus*. Marsh fritillary *Eurodryas aurinia* has been recorded here in the past.

Tre Wilmot

This is a large area of acidic, lowland heath overlying a series of rocky ridges and intervening depressions, which give rise to a range of heathland vegetation communities. The well drained heath on the ridges is dominated by ling *Calluna vulgaris* and western gorse *Ulex gallii*, with spring squill *Scilla verna* and, on rock outcrops, English stonecrop *Sedum anglicum*.

The lower-lying areas support wet heath or peatland communities, with species such as crossleaved heath *Erica tetralix*, purple moor-grass *Molinia caerulea*, common cotton grass *Eriophorum angustifolium* and creeping willow *Salix repens*. Of particular note is a very large population of marsh gentian *Gentiana pneumonanthe* and, in small open water areas, pillwort *Pilularia globulifera*; both these species have decreased markedly over the country as a whole with progressive reclamation of their habitats. Three lobed water crowfoot *Ranunculus*

trilobata also occurs here.

Glannau Rhoscolyn

Extending along the west coast of Holy Island, Anglesey for approximately 6.5 km (from Porthygaran to Silver Bay) and covering an area of approximately 157 ha, Glannau Rhoscolyn SSSI is an area rich in biological and geological features. This site is selected for its botanical, ornithological and geological features and has substantial marine biological interest.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Pyrrhocorax pyrrhocorax 6.4% of the GB breeding population Count: RSPB 2001

Over winter the area regularly supports:
Pyrrhocorax pyrrhocorax 7% of the GB population Count: RSPB 2001

Conservation Objectives

4.6 Conservation Objective for Feature 7: Chough

The vision
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The breeding population of Chough within the SPA is at least 18 pairs, of which at least 12 should be within the Glannau Ynys Gybi / Tre Wilmot SSSI and at least 6 should be within the Glannau Rhoscolyn SSSI.
- The non-breeding population of Chough is at least 18 individuals or 2.5 % of the GB wintering population.
- Sufficient suitable habitat (including Atlantic sea cliffs, maritime grassland, maritime heath, wet heath and dry heath) is present and in appropriate condition to support the breeding populations.
- All factors affecting the achievement of these conditions are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the

conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Glannau Ynys Gybi SAC & Glannau Ynys Gybi SPA (Countryside Council for Wales, April 2008).

Vulnerabilities

Glannau Ynys Gybi is a spectacular coastal heath and cliff site, with ornithological, botanical and geological interest. Part of the site is an RSPB reserve however; there are heavy recreational pressures which require careful management. This is partly achieved by a policy of restricting parking spaces and a long standing voluntary ban on climbing in key areas during the nesting season. Chough breeding numbers have increased in the reserve in recent years partly due to control of disturbance. However, winter survival of chough appears to be low and the regional chough population is stubbornly static despite good fledging success. This is being addressed through research programmes but may be dependent on wider regional land management factors. The heathland habitat (away from the cliff top) is dependent upon periodic fires, which are carried out in a controlled (and sometimes uncontrolled) manner and partly on maintaining traditional pastoral practices.

Lavan Sands, Conway Bay SPA

Overview

Traeth Lafan / Lavan Sands is located in Conwy Bay lying between Bangor and Llanfairfechan in north-west Wales. This large area of intertidal sand- and mud-flats lies at the eastern edge of the Menai Strait. The area has a range of exposures and a diversity of conditions, enhanced by freshwater streams that flow across the flats. The site is of importance for wintering waterbirds, especially Oystercatcher (*Haematopus ostralegus)* and Curlew (*Numenius arquata*). In conditions of severe winter weather, Traeth Lafan acts as a refuge area for Oystercatchers displaced from the Dee Estuary. The site is also an important moulting roost for Great Crested Grebe (*Podiceps cristatus*) in late summer/early autumn.

Qualifying Features

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:
Haematopus ostralegus (Europe & Northern/Western Africa) 1.4% of the population in Great Britain 5 year peak mean 1991/92-1995/96
Numenius arquata (Europe - breeding) 1.1% of the population in Great Britain 5 year peak mean 1991/92-1995/96

On passage the area regularly supports:

Podiceps cristatus (North-western Europe - wintering) % of the population in Great Britain No count period specified.

Conservation Objectives

4.1 Conservation Objective for Feature 1: Oystercatcher (*Haematopus ostralegus*)

Vision for feature 1
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The 5 year mean peak of the number of wintering oystercatchers is at least 4,000.
- The abundance and distribution of cockles of 15mm or larger and other suitable food are maintained at levels sufficient to support the population with a 5 year mean peak of 4,000 individuals.
- Oystercatchers are not disturbed in ways that prevent them spending enough time feeding for survival.
- Roost sites, including high tide roost sites, remain suitable for oystercatchers to roost undisturbed.
- The management and control of activities or operations likely to adversely affect the oystercatchers, is appropriate for maintaining the feature in favourable condition and is secure in the long term.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Traeth Lafan/Lavan Sands, Conway Bay SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

There have been concerns that the sporadic cockle suction-dredging may deplete oystercatchers' food source. CCW have developed a protocol with the North Wales Sea Fisheries Committee (NWSFC) to allow an assessment of applications for licences to harvest cockles. NWSFC will now only invite applications for licences if cockle stocks are considered to be relatively high. CCW is commissioning research to quantify cockle stocks in relation to their depletion by foraging oystercatchers.

Liverpool Bay SPA

Overview

Liverpool Bay is divided between England and Wales at the border running through the Dee Estuary. In England it borders the county of Lancashire, the Unitary Authority area of Blackpool and the Metropolitan Districts Sefton and Wirral. In Wales, it borders the unitary authority

areas of Flintshire, Denbighshire, Conwy, Gwynedd and Anglesey. The seaward boundary of the SPA is mostly within the 20m depth contour and marginally (off the coast of north Wales) extends beyond the 25m depth contour.

The seabed of Liverpool Bay consists of a wide range of mobile sediments. Sand is the predominate substrate with a concentrated area of gravelly sand off the Mersey Estuary. Sandbanks off the English coast of the Bay include East Hoyle Bank (largely within the Mersey Narrows and North Wirral Foreshore SPA), parts of Great Burbo Bank (off the mouth of the Mersey). West Hoyle Bank (at the mouth of the Dee Estuary), Dutchman Bank and Chester and Rhyl Flats, are amongst the sand banks off the Welsh coast of the Bay.

The tidal currents throughout the Bay are generally weak and do not exceed 2m/sec. This combined with a relatively extended tidal range of 6 to 8m along the Lancashire coastline facilities the deposition of sediments, encouraging mud and sand belts to accumulate.

Liverpool Bay is one of the most important sea areas around the UK for populations of wintering seabirds, particularly common scoter and red throated diver, which arrive in large numbers in the autumn from their breeding sites in Northern Europe and sub-Arctic areas.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:
Gavia stellata (North-western Europe - wintering) 5.4% of the GB population 5 year peak mean 2001/02 - 2006/07 (N.B. Insufficient data recorded for period 2003/2004)

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:
Melanitta nigra (Western Siberia/Western & Northern Europe/North-western Africa) 3.4% of the population 5 year peak mean 2001/02 - 2006/07 (N.B. Insufficient data recorded for period 2003/2004)

ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS

In the non-breeding season the area regularly supports:
55597 waterfowl 5 year peak mean 2001/02 - 2006/07 (N.B. Insufficient data recorded for period 2003/2004)

Including: *Gavia stellata, Melanitta nigra.*

Conservation Objectives

3.3.1 The conservation objective for Liverpool Bay / Bae Lerpwl SPA Interest feature 1: Internationally important non-breeding population of red-throated diver (*Gavia stellata*)

Subject to natural change, maintain or enhance the red-throated diver population and its supporting habitats in favourable condition.
The interest feature red-throated diver will be considered to be in favourable condition only when both of the following two conditions are met:

- The size of the red-throated diver population is at, or shows only non-significant fluctuation around the mean population at the time of designation of the SPA. to account for natural change;
- The extent of the supporting habitat within the site is maintained.

3.3.2 The conservation objective for Liverpool Bay / Bae Lerpwl SPA Interest feature 2: Internationally important non-breeding population of common scoter (*Melanitta nigra*).

Subject to natural change, maintain or enhance the common scoter population and its supporting habitats in favourable condition.
The interest feature common scoter will be considered to be in favourable condition only when each of the following two conditions is met:

- The size of the common scoter population is at, or shows only non-significant fluctuation around the mean population at the time of designation of the SPA to account for natural change;
- The extent of the supporting habitat within the site is maintained.

In addition there are also explanatory notes which should be read in conjunction with the Conservation Objectives above. The notes are contained within Liverpool Bay / Bae Lerpwl Special Protection Area - Advice under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended) (Natural England, countryside Council for Wales and Welsh Assembly Government: October 2012).

Vulnerabilities

The site is subject to commercial fishing. The sandbanks of Liverpool Bay support the nursery and feeding grounds for many fish species. The distribution and concentrations of red-throated divers will at least partly be determined by the presence, abundance, and availability of their prey species. The site holds various fish of commercial importance, and extraction of the red-throated diver's main fish prey, as either target and/or by-catch species, or through recreational fishing could impact the population. Entanglement in static fishing nets is an important

cause of death for red-throated divers in the UK waters however the extent of this impact in Liverpool Bay is not known.

Commercial and recreational fishing could directly affect both the food source and feeding grounds used by common scoters and in addition a number of ports undertake navigational dredging and disposal both in, and adjacent to, the site. Dredging for bivalves has been shown to have significant negative effects on their benthic habitat.

Red throated divers and common scoters are sensitive to non physical, (noise and visual) disturbance by both commercial and recreational activities, for example disturbance by moving vessels - the larger the vessel, the greater disturbance distance expected.

Aggregate extraction presents some risks of disturbance and also changes to sediment structures which may, in particular, impact on common scoter through changes to their benthic feeding grounds. However, aggregrate extraction tends to be temporary and localised and so is not anticipated that moderate and targeted extraction will present a significant risk to either of the qualifying species.

Liverpool Bay is an attractive location for the off-shore renewal energy industry and there is evidence that red-throated divers and common scoters are displaced by the presence of the turbines and the associated activities of construction and maintenance vessels. A number of wind farms in the site are currently in operation, under construction or consented.

There are a number of areas along the coast where marine tourism and leisure activities are common, with existing marinas and partially completed and proposed marina developments. As a result of these leisure users of the area, in combination with the whole suite of commercial activities, including those outlined above, the site is a very active boating and shipping site. However, most vessel activity is restricted to well-established areas which the birds already tend to avoid.

Migneint - Arenig - Dduallt SPA

Overview

Migneint-Arenig-Dduallt is a large upland site that stretches between Ysbyty Ifan and Penmachno in the north down to Rhydymain in the south, and from Trawsfynnydd in the west to just east of Llyn Celyn. It ranges in altitude from 300 m to 712 m. The northern section encompasses a high peatland plateau centred on Migneint and extending to Tomen y Mur in the west and Cwm Hesgyn in the east, with higher points such as Arenig Fach around the rim. The southern section, south of the Afon Lliw, also comprises a high plateau surrounded by higher ground and dominated by Dduallt mountain. The central section, lies south of Cwm Prysor and Llyn Celyn and includes Moel Llyfnant and Moel y Slates as well as the Arenig Fawr mountain ridge which is the highest part of the whole site.

The SAC habitats are blanket bog, dry heath, wet heath, lakes and woodland.

The site is also SPA for its breeding populations of hen harrier *Circus cyaneus*, merlin, *Falco columbarius* and peregrine, *Falco peregrinus.*

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Circus cyaneus at least 2.1% of the GB breeding population 5 year mean 1993/94 to 1997/98
Falco columbarius at least 0.7% of the population in Great Britain 5 year mean for 1993/94 to 1997/98
Falco peregrines at least 1% of the population in Great Britain 5 year mean 1993/94 to 1997/98

Conservation Objectives

4.5 Conservation Objective for SPA Feature: Hen harrier *Circus cyaneus* (EU Code: A082)

Vision for feature 5
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The size of the population is at least 8 breeding pairs (SPA form 2003 10-12 pairs) and preferably increasing. (2007 –11 pairs)
- Hen Harrier nesting distribution within the site is maintained or expanded, so that breeding occurs in all appropriate habitats.
- Hen Harrier breeding success is at least one young fledged per nest.
- There is sufficient nesting and roosting tall heather habitat to support the population in the long-term.
- There is sufficient hunting habitat, often in mosaic and including areas of grassland, bogs, flushes, short heath and bracken with low trees/scrub present. There is an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding. Prey supply cannot be easily monitored or assessed but may be an important attribute, for research and study, if productivity is low.
- All factors affecting the achievement of these conditions are under control.

4.6 Conservation Objective for Feature: Merlin *Falco columbarius* (EU Code: A098)

Vision for feature 6
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The size of the population is at least 9 breeding pairs (SPA form 2003 9-12 pairs, 0.7-0.9% GB) and preferably increasing.
- Merlin nesting distribution within the site is maintained or expanded, so that breeding occurs in all appropriate habitats.

- Merlin breeding success is at least one young fledged per nest when sample monitoring is carried out.
- There is sufficient nesting and roosting tall heather, individual trees often with crows' nests and forestry edge habitat to support the population in the long-term.
- There is sufficient hunting habitat, often in mosaic and including areas of grassland, bogs, flushes, short heath and bracken with low trees/scrub present. There is an adequate supply of prey species in the form of small birds (commonly meadow pipit and skylark) and large insects to maintain successful breeding. Prey supply cannot be easily monitored or assessed but may be an important attribute, for research and study, if productivity is low.
- All factors affecting the achievement of these conditions are under control.

4.7 Conservation Objective for SPA Feature: Peregrine *Falco peregrinus* (EU Code: A103)

Vision for feature 7: Peregrine

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- The size of the population is at least 9 breeding pairs (SPA form 2003 9-12 pairs, 0.7-0.9% GB) and preferably increasing.
- Peregrine nesting distribution within the site is maintained or expanded, so that breeding occurs in all appropriate nest sites.
- Peregrine breeding success is at least one young fledged per nest when sample population monitoring is carried out.
- There are sufficient cliff and crag with ledges suitable for nesting usually known traditional nest sites to support the population in the long-term.
- There is a sufficient hunting habitat and prey. Prey supply cannot be easily monitored or assessed but may be an important attribute, for research and study, if peregrine productivity is low.
- All factors affecting the achievement of these conditions are under control.

In addition, each Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Migneint-Arenig-Dduallt SAC/SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

Inappropriate grazing/burning/drainage management has damaged the feeding/breeding habitat of hen harrier and merlin, and damaged the feeding habitat of peregrine falcon, the three SPA features. This is being addressed in some areas through S15 Management Agreements and Tir Cymen/Tir Gofal agreements. Afforestation of blanket bog has also reduced breeding/feeding habitat in the past, but this is being addressed to some extent by a joint RSPB/Forestry Commission/CCW habitat restoration project.

The feeding/breeding habitats of all three species are also vulnerable to acidification due to atmospheric pollution being compounded by the high rainfall and acidic geology/pedology of the site.

This site has also been significantly affected in the past by quarrying operations which have resulted in the destruction of habitats used by breeding birds, including the three SPA species.

The recreational pressure from walkers is currently fairly low and diffused across the site, but the SPA features could be affected if usage were to increase significantly close to breeding sites, for example following the implementation of CROW Act legislation or increased publicity through guidebooks. Persecution has been a problem in the recent past, with birds being shot at the nest. It is hoped that this threat will be reduced by greater vigilance and by raising public awareness.

Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal SPA

Overview

The coast here is exposed to the prevailing south-westerly winds, and the soft cliffs which back the bays are continually eroded and provide the mosaic of bare sediment, seepages and flower-rich maritime and dune grassland habitats. These are important for an impressive assemblage of rare invertebrates, including one of only two British populations of the endangered mason bee *Osmia xanthomelana*, the adults collecting mud for their nest cells from seepages and visiting bird's-foot trefoil *Lotus corniculatus* flowers in the dune grassland for pollen and nectar.

The area is particularly important for a population of chough *Pyrrhocorax pyrrhocorax*. The site is regularly used by 3% of the Great Britain population of this charismatic bird throughout the breeding and non-breeding season. The sea cliffs and caves provide breeding and roosting sites, while the cliffs, heath, maritime grassland, and adjacent pasture and arable fields provide feeding sites throughout the year for these specialist invertebrate feeders.

The resistant rocky headland of Mynydd Cilan is dominated by dry heath with heather *Calluna vulgaris* and western gorse *Ulex gallii*. Other heathland species present include bell heather, cross-leaved heath, squill, red fescue, thrift and buck's horn plantain, with small pockets of European gorse and bilberry. There is also a distinct area of wetter heath communities and associated shallow pools which contain a number of rare plants including bog hair grass *Deschampsia setacea* at its only remaining site in Wales, chamomile *Chamaemelum nobile,* pillwort *Pilularia globulifera*, pale dog-violet *Viola lactea* and three-lobed water-crowfoot *Ranunculus tripartitus*. The headland cliffs also support dotted sedge *Carex punctata*, Portland spurge *Euphorbia portlandica*, ivy broomrape *Orobanche hederae* and lanceolate spleenwort *Asplenium obovatum*.

The rocky areas around Porth Ceiriad and the St. Tudwal's islands are of special marine biological interest for their specialised rock pool and overhang habitats, the presence of complete community zonation over the wave-exposed face of Mynydd Cilan, the presence of the nationally rare sponge *Stelletta grubii,* and two nationally important communities: tide-swept rock with serrated wrack *Fucus serratus,* sponges and sea-squirts, and tide-swept rock with oarweed *Laminaria digitata*, sea-squirts and bryozoans.

This coastal site provides outstanding exposures of rocks formed during the Cambrian and early Ordovician periods, some of which contain important fossils that have enabled accurate dating and international comparison of the rocks. The cliffs at Porth Ceiriad are also important for understanding the complex glacial events that took place on Llŷn during the last Ice Age. At Porth Neigwl the geomorphology of the cliff-beach system is determined by wave action on the soft cliffs, while the glacial and fluvioglacial sediments exposed in the cliffs provide further information on the glacial events that took place on the Llín during the last Ice Age.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Pyrrhocorax pyrrhocorax at least 9 pairs which represents 2.6% of the population in Great Britain RSPB 2000

Over winter the area regularly supports:
Pyrrhocorax pyrrhocorax at least 18 individuals which represents 2.6% of the population in Great Britain RSPB 2000

Conservation Objectives

4.1 Conservation Objective for Feature 1: Internationally important population (1% or more of the Great Britain population) of breeding and non-breeding season Chough *Pyrrhocorax pyrrhocorax.*

Vision for Feature 1: Chough
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
- The breeding population of Chough is at least 9 pairs
- The non-breeding population of Chough is at least 18 individuals
- Sufficient suitable habitat is present to support the populations

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the

conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Mynydd Cilan, Trwyn Y Wylfa Ac Ynysoedd Sant Tudwal SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

The choughs depend on the proximity of several sea cliff nesting sites to maritime heath, grassland and farmland feeding sites. The integrity of such feeding sites and their diverse invertebrate and plant assemblages depend on medium grazing pressures twinned with low intensity traditional farming methods that do not involve the use of agrochemicals. The cliff nesting sites are vulnerable to disturbance from climbers, a problem which seems to have been successfully overcome by means of a voluntary climbing ban between February and July, mediated by British Mountaineering Council.

Puffin Island SPA

Overview

Ynys Seiriol / Puffin Island is located just off the eastern tip of the Isle of Anglesey in North Wales. It is a Carboniferous limestone block rising to 55 m with steep cliffs on all sides. A layer of heavily guano-enriched soil masks the limestone over much of the surface, leading to impoverished vegetation dominated by a dense mat of grasses (mainly Red Fescue *Festuca rubra* and Cock's-foot *Dactylis glomerata*), Common Nettle *Urtica dioica*, Bramble *Rubus fruticosus* and Alexanders *Smyrnium olusatrum*. Dense woodland of Elder *Sambucus nigra* has developed, particularly in the past 40 years since the loss of rabbit grazing. The sea-cliffs support a typical maritime flora including sea spleenwort *Asplenium marinum*.

The site is of European importance for its breeding population of Cormorant *Phalacrocorax carbo*, which feed in the surrounding waters outside the SPA. The island is also of interest for other nesting seabirds breeding both on its sea-cliffs and open grassland areas. These include the four auks, (puffin, guillemot, black guillemot and razorbill), together with shag, fulmar, kittiwake, eider duck, herring gull, greater black-backed gull and lesser black-backed gull. The breeding puffin population, which formerly numbered several thousand pairs, has declined significantly to currently number less than a hundred pairs. However, old records suggest substantial population fluctuations in the past.

The island is used as a hauling out ground by Atlantic grey seals. The cave spider, *Meta bourneti,* has been recorded here at its only Welsh location.

Qualifying Features

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Phalacrocorax carbo (North-western Europe) 1.35% of the breeding population 5 year mean for 1996 - 2000

Conservation Objectives

4.1 Conservation Objective for Feature 1: Breeding population of cormorant *Phalacrocorax carbo*

Vision for feature 1
The conservation objective for the Cormorant is to achieve and maintain favourable conservation status, in which all the following conditions are satisfied:

- The number of breeding cormorants within the SPA is stable or increasing.
- The abundance and distribution of prey species are sufficient to support this number of breeding pairs and for successful breeding.
- The management and control of activities or operations likely to adversely affect the Cormorants, is appropriate for maintaining the feature in favourable condition and is secure in the long term.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Ynys Seiriol/Puffin Island SPA (Countryside Council for Wales, March 2008).

Vulnerabilities

The site is protected from most disturbances by its isolation and the policy of the landowner. However, brown rats may have impinged on the breeding bird population. Eradication in 1998 appears to have been successful but requires monitoring and mink are now a significant threat. Growth of scrub and brambles may restrict nesting sites and calls for the reintroduction of grazing animals.

Ynys Feurig, Cemlyn Bay and the Skerries SPA

Overview

The SPA of Ynys Feurig, Cemlyn Bay and The Skerries is located on the north and west coast of the Isle of Anglesey, North-west Wales. The SPA comprises three separate areas. Ynys Feurig lies on Anglesey's west coast close to Valley Airfield, with Cemlyn Bay, also a SAC, situated on the

north coast about 20 km away. The Skerries lie 3 km off Carmel Head to the north of Anglesey (see Figure 1).

Ynys Feurig consists of a series of low-lying islands extending about 1 km out to sea from a sandy shore. There is little vegetation, except on the highest outer islands. At Cemlyn Bay, a shingle storm beach forms a bar between a tidal lagoon and the open shore. The shingle habitats, together with saltmarsh developing around the lagoon and brackish pools further inland are an unusual combination of habitats. The Skerries are a group of sparsely vegetated islets, 17 ha in extent. They are protected by strong currents but are very exposed to strong westerly and northerly winds.

The SPA site is of importance for four species of breeding terns. The three separate areas are treated as a single site as a consequence of regular movement by birds between the component parts.

The SAC site is of importance for its lagoon and associated species and the shingle ridge and its vegetation.

Other areas of importance to the SPA and SAC sites are areas of scrub, marshy grassland, coastal grassland, saltmarsh, ditches, intertidal, maritime cliff and associated ledges and crevices.

Qualifying Features

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:
Sterna dougallii (Europe - breeding) 4.7% of the GB breeding population 5 year mean, 1992-1996
Sterna hirundo (Northern/Eastern Europe - breeding) at least 1.5% of the GB breeding population 5 year mean, 1992-1996
Sterna paradisaea (Arctic - breeding/Southern Oceans - wintering) at least 2.9% of the GB breeding population 5 year mean, 1992-1996
Sterna sandvicensis (Western Europe/Western Africa) 3.3% of the GB breeding population 5 year mean, 1993-1997

Conservation Objectives

4.1 Conservation Objective for Feature 1-4: Breeding population of Terns (Feature 1: Arctic Tern *Sterna paradisae*; Feature 2: Common Tern *Sterna hirundo*; Feature 3: Roseate Tern *Sterna dougallii*; and Feature 4: Sandwich Tern *Sterna sandvicensis)*

Vision for features 1-4
The vision for these features is for them to be in a favourable conservation status, where all the following conditions are satisfied:

- The number of breeding terns within the SPA is stable or increasing.
- The number of chicks successfully fledged in the SPA and beyond is sufficient to help sustain the population.
- The range and distribution of terns within the SPA and beyond is not constrained or hindered.
- The extent of supporting habitats used by terns is stable or increasing.
- Supporting habitats are of sufficient quality to support the requirements of terns.
- There are appropriate and sufficient food sources for terns within access of the SPA.
- Actions or events likely to impinge on the sustainability of the population are under control.

In addition, this Conservation Objective has a number of performance indicators attached to it. The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators. The performance indicators can be found within the Core management Plan including Conservation Objectives for Ynys Feurig, Cemlyn Bay and The Skerries SPA, Cemlyn Bay SAC, Ynys Feurig SSSI, The Skerries SSSI and Cemlyn Bay SSSI (Countryside Council for Wales, March 2008).

Vulnerabilities

These three isolated locations are used at various times as breeding sites by the Irish Sea roseate tern populations, though may be deserted for a period of years while other sites are more favoured, for reasons unknown. Currently Rockabill Island in Dunlin Bay is the favoured breeding location. The three islands within the SPA continue to support important colonies of arctic, common and sandwich terns.

Roaseate terns spend much of their lifespan away from these breeding colonies and are therefore vulnerable to pressures beyond the control of the site managers; including factors affecting food supply, winter survival etc.

Recreational pressure at Cemlyn arises from the promotion of the coastal footpath which passes close to the colonies and requires 24 hour management by wardens to guide the public below the skyline. Other colonies suffer occasional disturbance from inadvertent public access, requiring constant management by wardens. Ground predators (stoat and fox) require regular control at Cemlyn Bay and Ynys Feurig and mink are now a threat. Peregrine falcons and rogue gulls have caused mortality and desertion of colonies on some occasions. Theft of eggs by collectors continues to be a threat.

Ramsar

Anglesey and Llyn Fens Ramsar

Overview

An internationally important suite of base-rich fens comprised of six component sites, supporting a range of associated floral and faunal rarities. The six wetlands occupy valley heads and former lake basins which have mostly in filled with marl and peat deposits, with open water persisting at two of the sites. Calcareous springs from limestone and calcareous drift aquifers irrigate the fens and result in distinctive vegetation. These fens are notable as the best sites in Wales for stoneworts.

Ramsar criterion 1

The site supports a suite of base-rich, calcareous fens which is a rare habitat type within the United Kingdom's biogeographical zone.

Habitats Directive Annex I features present on the SAC include:

H3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.
H4010 Northern Atlantic wet heaths with *Erica tetralix*
H6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
H7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*
H7230 Alkaline fens
S1013 *Vertigo geyeri*
S1044 *Coenagrion mercuriale*
S1065 *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia*

Qualifying Features

Ramsar criterion 3

The site supports a diverse flora and fauna with associated rare species and is of special value for maintaining the genetic and ecological diversity of the region.

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- Vegetation succession
- Drainage/land-claim: (unspecified)
- Eutrophication
- Pollution - agricultural fertilisers

Conservation Objectives

A summary of the Conservations Objectives has been provided for the Anglesey sites under the Anglesey Fens SAC (Pages 22–28 above) and for the Llyn sites under the Llyn Fens SAC (Pages 62-64 above).

Cors Fochno and Dyfi Ramsar

Overview

A bar-built estuarine complex, comprising the Dyfi estuary, two calcareous dune systems, and a large raised mire. The Dyfi is one of the best examples in north-west Europe of a small, drying, nutrient poor estuary, which has been relatively unaffected by industrial development. A wide range of estuarine habitats are present, including rare transitions to peatland. Cors Fochno is of international importance being the type locality for estuarine raised mire and one of the largest active raised mires in the United Kingdom. The geomorphology, flora and invertebrate faunas are of national importance. The site supports the only regular wintering flock of Greenland white-fronted geese in England and Wales, and is a key site in Wales for breeding waders. The site supports significant tourist trade, recreational and educational usage.

Qualifying Features

Ramsar criterion 1

The site contains the largest expanse of primary raised mire in lowland Britain; the largest estuarine raised mire, and third-largest `active` raised mire in Britain. Habitats Directive Annex I features present on the SAC include:

H7110 Active raised bogs
H7120 Degraded raised bogs still capable of natural regeneration
H7150 Depressions on peat substrates of the *Rhynchosporion*

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

No factors identified.

Conservation Objectives

Information can be found within the Core management Plan including Conservation Objectives for Cors Fochno SAC (Countryside Council for Wales, February 2011).

Llyn Idwal Ramsar

Overview

A relatively shallow oligotrophic lake, with a species-rich flora with nearly all species typical of such waters in Britain being represented. These include six-stamened waterwort *Elatine hexandra*, pillwort *Pilularia globulifera* and awlwort *Subularia aquatica*. There are small areas of emergent vegetation. Biologically it is a relatively rich lake.

Qualifying Features

Ramsar criterion 1

A small, shallow, oligotrophic corrie lake. The semi-circular rock basin (or cwm) containing the lake is one of the finest examples in Snowdonia.

Ramsar criterion 2

Species-rich plant community, including almost all of the species typical of oligotrophic waters in Britain. Notable species include *Elatine hexandra* and *Subularia aquatica* (both nationally scarce) and *Pilularia globulifera* (vulnerable at a European level).

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

No factors identified.

Conservation Objectives

Information can be found within the Core management Plan including Conservation Objectives for Eryri SAC (Countryside Council for Wales, March 2008).

Llyn Tegid Ramsar

Overview

Llyn Tegid is the largest natural lake in Wales. The lake bed is owned by Snowdonia National Park Authority although the water is the property of the Environment Agency. It is important for its internationally rare plant species, particularly floating water plantain *Luronium natans* and its unique fish fauna, including the endemic whitefish or gwyniad, *Coregonus lavaretus*. The glutinous snail *Myxas glutinosa* was considered to have been lost from this locality, as it had not been found in Llyn Tegid since 1953. However it was rediscovered in the lake in summer 1998.

Qualifying Features

Ramsar criterion 1

Largest natural lake in Wales, lying deep in a formerly glaciated trough.

Ramsar criterion 2

Plant species growing in or beside the lake are mudwort *Limosa aquatica*, six-stamened waterwort *Elatine hexandra*, water sedge *Carex aquatilis* and floating water plantain *Luronium natans*, all of which are scarce in Britain. The latter species is regarded as vulnerable on a global scale. This site is also one of only six sites in Britain for the whitefish or gwyniad *Coregonus lavaretus;* the Welsh population of this fish is genetically distinct. Llyn Tegid is also an unusual habitat for the normally riverine fish grayling *Thymallus thymallus*. The Nationally Rare glutinous snail *Myxas glutinosa* has been rediscovered in the shallow gravels of the lake shore.

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- Pollution - domestic Sewage

Point source pollution from sewage outfall accounts for less than 10% of the total phosphate & nitrate in-put. Intermittent & seasonal blue-green algal blooms. Some improvements to sewage treatment works.

- Pollution - pesticides/agricultural runoff

Diffuse pollution continues to contribute to the eutrophication of the lake waters. Phosphate & nitrate levels in the lake are fairly constant.

Conservation Objectives

Information can be found within the Core management Plan including Conservation Objectives for River Dee And Bala Lake/Afon Dyfrdwy A Llyn Tegid SAC (Countryside Council for Wales, April 2008).