



**DEPARTMENT OF THE ENVIRONMENT FOR NORTHERN IRELAND**

**DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT BALLYCASTLE COALFIELD, COUNTY ANTRIM. ARTICLE 24 OF THE NATURE CONSERVATION AND AMENITY LANDS (NORTHERN IRELAND) ORDER 1985.**

The Department of the Environment for Northern Ireland (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area delineated and described on the attached map (the area) is of special scientific interest by reason of the flora and geological features and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'Ballycastle Coalfield area of special scientific interest'.

The Ballycastle Coalfield covers some 3 km of coastline and represents the best exposure of a coalfield sequence in Ireland. It contains a series of sedimentary rocks of Carboniferous age together with contemporary lavas and younger, Tertiary, igneous rocks. The geology of the area corresponds more closely to the Machrihanish Coalfield in Kintyre, 40 km to the north-east, than with any location in Ireland. The Carboniferous series range from the Asbian to the Pendleian stages, dating respectively from 335 M.y. (million years old) to 330 M.y. The Tertiary igneous rocks are some 60 M.y.

The area also contains important evidence of early industrial activity. Coals within the coastal cliffs have been worked from at least the sixteenth century with deeper and more extensive mining subsequently. Ironstone, present in places within the rocks, was worked as an iron ore in the mid-nineteenth century. The remains of these activities form an important part of the area's interest.

The Carboniferous sedimentary rocks were deposited in an embayment formed in the Dalradian North Antrim ridge. This ridge would have formed part of the adjoining land of that time and it is on these older rocks that the coalfield series rests. Ballycastle Coalfield represents a relatively shallow basin which, by the time of the formation of the coals, would have existed as a well vegetated coastal habitat, subjected to periodic flooding by the sea. There is also evidence of freshwater lagoons also being present at various times.

The oldest rocks presently exposed are the lavas, seen at the western end of the site, and the volcanic tuffs at the eastern. The younger sedimentary series consists mainly of sandstone with shale, limestone and the coal series also present. Notable horizons include the uppermost fossiliferous marine horizon, McGildowney's Marine Band, which can be traced through the site. Its marine origins are shown by the characteristic fossil marine fauna that it contains. While the

geology is easily accessible throughout the site, the rock succession is particularly well displayed in the cliffs below the Gobbs sill.

Despite extensive geological interest in the Ballycastle Coalfield, the first goniatites were only recently recorded and all come from one unique horizon and locality within the site. This is particularly significant as, in rocks of this general age, more precise dating through use of fossils is most reliably based on the distribution of this fossil group. This then provides an accurate datum level upon which to judge other biostratigraphical information in the site. The type of sandstone in which the goniatites occur is notable, as it suggests a close proximity to volcanic activity.

Recent research has revealed further features of great significance. A series of ironstone nodules within oil shales have been found to contain fish droppings and, more importantly, fish remains. This is the only occurrence of the Carboniferous Oil Shales in Ireland and it is one of only three localities in Northern Ireland, of any age, which has yielded articulated fish remains. Another site within the coalfield has yielded evidence of fossil soil horizons, together with the stumps of Lycopod, or giant clubmoss, preserved in the positions in which they grew. Examination of the material infilling the stumps has revealed the world's first known extensive terrestrial arthropod remains of Lower Carboniferous age.

A more recent phase of volcanic activity, during the Tertiary period, has also left its mark. The Carrickmore dyke is an irregular volcanic intrusion composed of dolerite which has affected the adjoining Lower Carboniferous shales through thermal metamorphism. It is a unique occurrence of a small laccolithic or blister intrusion into Carboniferous shales. The high temperature of the intrusion has locally baked the shales to porcellanite and also altered the mineralogy to produce mullite as well as cordierite, spinel, and corundum, which characterise these altered rocks. The intensity of this thermal alteration at the margin of Carrickmore Dyke is in marked contrast to that seen at other dykes of similar or greater width which have also invaded this Carboniferous series. For this reason it is thought that the dyke at Carrickmore may have been a feeder to the nearby Fair Head and Gobb sills.

The most notable of the simple dykes seen in the coastal sections is the North Star Dyke which is 5m wide. This intrusion, also of dolerite, shows a fine-grained marginal selvedge on both sides against the local calcareous shales. Gobbs Sill caps the Carboniferous sediments at the eastern end of the site and shows a typical columnar structure in the dolerite.

The slopes and cliffs of Ballycastle Coalfield also support some notable plant communities. The underlying geology and waste materials from past industrial activity have given rise to a range of habitats reflecting the varied soil conditions. Acidity tends to be greatest in the coal spoil areas due to the sulphide component in those wastes, while the calcareous nature of some of the sandstones has resulted in more base-rich soils.

The maritime heath is well developed over some of the coal spoil. This typically contains Heather *Calluna vulgaris*, Bell Heather *Erica cinerea*, Sheep's-bit *Jasione montana*, the grasses Red Fescue *Festuca rubra*, Mat-grass *Nardus stricta* and the moss *Hypnum cupressiforme*. Other species associated with these free draining soils include Eyebright *Euphrasia officinale*, Harebell *Campanula rotundifolia* and Common Bird's-foot-trefoil *Lotus corniculatus*.

Grass dominated sections usually have wetter and less acidic soils than those supporting the heath. They generally have high cover of Red Fescue *Festuca rubra*, Yorkshire Fog *Holcus lanatus* and Creeping Bent *Agrostis stolonifera* but are otherwise species-poor. The few herbs include Tormentil *Potentilla erecta* and White Clover *Trifolium repens*, while the mosses *Rhytidiadelphus loreus* and *Pseudoscleropodium purum* form an extensive ground carpet in places. Meadowsweet *Filipendula ulmaria* is locally extensive and Scots Lovage *Ligusticum scoticum* is a notable species in more open areas within this habitat type.

The base-rich flushes are a notable component of the site with very frequent Grass-of-Parnassus *Parnassia palustris*, Marsh Willowherb *Epilobium palustre*, Marsh Horsetail *Equisetum palustre*, Glaucous Sedge *Carex flacca* and the moss *Calliargon cuspidatum*. Less frequently, Dioecious Sedge *Carex dioica* and the moss *Cratoneuron commutatum* are present.

Many of the drier slopes are covered with Bracken *Pteridium aquilinum*. Due to dense shading, there is generally a more limited number of associated species in this habitat. Those typically present include Wood-sorrel *Oxalis acetosella*, Common Sorrel *Rumex acetosa* and Tormentil *Potentilla erecta*.

Limited saltmarsh occurs in some of the sheltered beach heads. While not extensive, it contains species typical of such habitat including Sea Club-rush *Bolboschoenus maritimus* interspersed with Sea-milkwort *Glaux maritima*, Sea Arrowgrass *Triglochin maritima* and Saltmarsh Rush *Juncus gerardii*.

## SCHEDULE

**The following operations and activities appear to the Department to be likely to damage the flora and geological features of the area:**

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land, including ploughing, rotovating, harrowing, reclamation and extraction of minerals, including rock, sand, gravel and peat.
2. Any change in the present annual pattern and intensity of grazing, including any change in the type of livestock used or in supplementary feeding practice.
3. Any change in the established method or frequency of rolling, mowing or cutting.
4. Any change in the annual pattern of application of manure, slurry or artificial fertiliser.
5. The application of herbicides, fungicides or other chemicals deployed to kill any form of wild plant, other than plants listed as being noxious in the Noxious Weeds (Northern Ireland) Order 1977.
6. The storage or dumping, spreading or discharge of any material not specified under paragraphs 4 or 5 above.
7. The destruction, displacement, removal or cutting of any plant, seed or plant remains, other than for

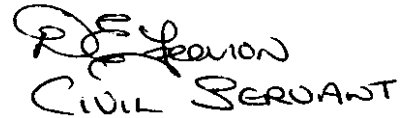
- i) plants listed as being noxious in the Noxious Weeds (Northern Ireland) Order 1977;
  - ii) normal cutting or mowing regimes for which a consent is not required under paragraph 3 above.
8. The release into the area of any animal (other than in connection with normal grazing practice) or plant. 'Animal' includes birds, mammals, fish, reptiles, amphibians and invertebrates; 'Plant' includes seed, fruit or spore.
  9. Burning.
  10. Introduction of tree or woodland management, including afforestation and planting.
  11. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.
  12. Alteration of natural or man-made features, the clearance of boulders or stones and grading of rock faces.
  13. Operations or activities which would affect wetlands (including streams), e.g.
    - i) change in the methods or frequency of routine drainage maintenance;
    - ii) modification to the structure of any watercourse;
    - iii) lowering of the water-table, permanently or temporarily;
    - iv) change in the management of bank-side vegetation;
    - v) changes in field drainage or boundary field drainage.
  14. The following activities undertaken in a manner likely to damage the interest of the area:
    - i) educational activities;
    - ii) research activities;
    - iii) recreational activities.
  15. Sampling of rocks, minerals, fossils or any other material forming a part of the site, undertaken in a manner likely to damage the scientific interest.
  16. Use of vehicles or craft likely to damage the wildlife or geological features of the area.

Sealed with the Official Seal of the  
Department of the Environment for  
Northern Ireland on

16 DECEMBER 1997



**ROBERT C MARTIN**  
Assistant Secretary



CIVIL SERVANT

#### FOOTNOTES

(a) Please note that consent by the Department to any of the operations or activities listed in the Schedule does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern Ireland) Order 1991. Operations or activities covered by planning permission are not normally covered in the list of Notifiable Operations.

(b) Also note that many of the operations and activities listed in the Schedule are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is "large" and what is "small", the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would normally give consent, particularly if there is a long history of the operation being undertaken in that precise location.