

EUROPEAN PARLIAMENT

# Working Documents

1982-1983

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7 February 1983

DOCUMENT 1-1188/82

REPORT

drawn up on behalf of the Committee on the Environment,  
Public Health and Consumer Protection

on ~~the~~ protection of the Irish bogs ~~of~~

Rapporteur: Mr M MERTENS

1.2.1



At its sitting of 10 March 1982, the European Parliament referred the motion for a resolution tabled by Mr Muntingh on the protection of the Irish bogs (Doc. 1-1100/81) pursuant to Rule 47 of the Rules of Procedure to the Committee on the Environment, Public Health and Consumer Protection.

At its meeting of 28 April 1982 the committee decided to draw up a report and appointed Mr Mertens rapporteur.

The committee considered the draft report at its meetings of 3 November 1982, 2 December 1982 and 20 January 1983. At the last meeting it unanimously adopted the motion for a resolution.

The following took part in the vote: Mr Johnson, acting chairman; Mr Mertens (deputizing for Mr McCartin), rapporteur; Mr Berkhouwer, Mr Bombard, Mr Del Duca, Mr Forth, Mr Ghergo, Miss Hooper, Mrs Lentz-Cornette, Mr Muntingh, Mr Nordmann, Mrs Schleicher, Mrs Seibel-Emmerling, Mr Sherlock, Mrs Spaak and Mrs Squarcialupi.

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The Committee on the Environment, Public Health and Consumer Protection hereby submits to the European Parliament the following motion for a resolution together with explanatory statement:

MOTION FOR A RESOLUTION

on the protection of the Irish bogs.

The European Parliament

- A - having regard to the motion for a resolution tabled by Mr. Muntingh on behalf of the Socialist Group pursuant to Rule 47 of the Rules of Procedure on the protection of the Irish bogs (doc. 1-1100/81);
- B - having regard to the need for the Community to take adequate measures for the conservation of natural areas;
- C - having regard to the report of the Committee on the Environment, Public Health and Consumer Protection (1-1188/82 );
1. Takes the view that, for ecological reasons, measures to preserve certain of the Irish bogs should be promoted:
  2. Believes in particular that:
    - a) the close cooperation that has now been established between the Irish Ministry of Fisheries and Forestry and the peat extraction corporation Boğ na Móna in the conservation of certain important raised bogs and other types of peat bog should also be extended to the recently founded National Peatlands Preservation Committee;
    - b) all the relevant authorities and institutions and international experts on the subject should cooperate to determine which bogs should be protected and that a calculation should be made of the percentage of the existing areas covered by the various bog types which should be protected in order to preserve these important biotopes in their present form;
    - c) consideration should be given to whether the list of regions drawn up by the National Peatlands Preservation Committee should be used as the basis for deciding on the regions to be protected<sup>2</sup>;

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<sup>1</sup> See Annex II

- d) priorities should be set for the conservation measures to be taken and for the bogs concerned, since certain bogs are more at risk than others;
  - e) it would be desirable if at least single bogs of sufficiently large area and typical of each of the various categories described in this report could be conserved;
3. Considers it desirable for:
- (a) particular support to be given to the endeavours of the National Peatlands Preservation Committee to acquire the endangered bogs; and for
  - (b) the Community to support this committee's protection and surveillance measures and information activities;
4. Urges that total protection be given immediately to Raheenmore in County Offaly and Carburymore in County Kildare by transferring them to the abovementioned committee;
5. Requests the Commission
- (a) to ascertain whether, if other resources prove to be inadequate, financing can be made available from the Environmental Fund for the purchase, inspection and supervision of bogs which require protection;
  - (b) to ensure that a parallel research programme on the 'natural' changes in protected bogs is initiated and financed;
6. Requests its committee to ascertain whether, if necessary, 10% of the appropriation earmarked for industrial and agricultural development projects could in future be set aside for nature conservation as advocated in connection with all drainage projects for Ireland during the debate on the 1983 budget.
7. Requests the Commission also to ascertain as already proposed in Mr Faure's report (doc.1-648/81), what appropriations could be allocated from the Social and Regional Fund to measures for the creation of jobs and the development of less-favoured boglands:
8. Considers that, even under adverse economic conditions, adequate funds must be made available for nature conservancy with a view to preserving an ecosystem which is of interest to the international community.
9. Instructs its President to forward this resolution to the Council and Commission.

EXPLANATORY STATEMENT

1. Bogs of the type that still occur in many different forms in Ireland today were once common throughout north-west Europe. They have now totally disappeared in north-west Germany and Holland as a result of increasing industrial and agricultural development and have almost disappeared in south-west Scandinavia and England.
2. Ireland is therefore the only country in north-west Europe where this very specific ecosystem still exists in various forms. It may be claimed without exaggeration that Ireland is the only country, not only in Europe but in the entire world, where such a wide variety of raised bogs occurs in such a small area. In particular, the blanket bogs are unique in the world, surviving only in Western Ireland and Western Scotland. Comparable examples of specific bog types are found in North America but they are not identical.
3. Reputable scientists and conservationists calculate that the unique ecosystems of the Irish bogs will vanish completely in the next five years unless effective preventive measures are taken very soon.
4. Bogs cover 17.2% of the total land area of the Irish Republic, that is to say 1.17 million hectares (R.F. Hammond, 'Peatlands of Ireland', 1979). These include:
  - 311.000 hectares of raised bog
  - 92.500 hectares of fenland
  - 137.000 hectares of lowland blanket bog
  - 436.000 hectares of mountain and highland blanket bogA total of 50,000 - 60,000 hectares of raised bogs, i.e. 1.5 - 2%, have remained undisturbed and in their natural state. Nevertheless, they continue to be endangered. If the blanket bogs are taken into account 5% of all Irish bogs have survived in their original state. In this case, the term 'natural and undisturbed' is used to designate an area which has remained untouched by man, has not been drained, has not been burned off in the last 25 years or so and has not been overgrazed and laid bare by livestock (cattle or sheep)

5. It is only since about 1978, that the acute danger to these last remnants of a typically Irish landscape of great scientific interest has been recognised. Not only the raised bogs, but also the fens are in jeopardy. The fens, which constitute 4 - 5% of the total area of bogland and are the precursors of bogs as they exist today, are considerably wetter and contain water which is rich in minerals.
6. Ireland is particularly rich in bogtypes. These can be classified fairly generally but the outstanding feature of the region is the occurrence of many very specific types of bog each with its own specific flora and fauna, each forming an ecosystem in itself. This gives some idea of why it is difficult to preserve sufficiently large areas in their original state when the bogs are commercially exploited.
7. Among the areas under threat a distinction must be made between the bogs and fens. Bogs can be divided between raised bogs and blanket bogs. To take account of all characteristic features, intermediate bogs should be included between these two types. Blanket bogs cover very large areas and are about two metres thick and as the name suggests, the peat covers the land like a blanket. Raised bogs by contrast cover a fairly limited often very small area, but they reach much greater heights, sometimes as much as 15 metres. Blanket bogs can be subdivided into mountain blanket bogs, highland blanket bogs and lowland blanket bogs.
8. In Ireland there are very significant variations in surface morphology. The characteristic tussock and marsh configurations differ widely between the individual bog types, reflecting the specific formative process which each has undergone. The differences in bog type are due largely to differences in rainfall; there is a distinct transition from east to west; raised bogs predominate in the east, blanket bogs in the west.



9. The same phenomenon accounts for the differences in the types of flora. Towards the west, the ocean climate influences plantlife and precipitation is richer in chemical and physical nutrients. The height of the plants, shrubs and heather declines from east to west.
10. These differences are also reflected in the quality of the peat. The peat in the raised bogs is most suitable for extraction. The peat in the blanket bogs is less suitable because it is wetter and the layers are thinner.
11. Overall, the Irish bogs and peatlands are characterized by wide variations in their macromorphological features, surface structure and vegetation. They are of particular interest to scientists inasmuch as they provide an opportunity to study the influence of climate on vegetation and the relationship between climate and ecosystem. Also of interest is the preservation of certain plant species which are unique to Ireland and the raised bogs: these species have now become very rare and are seriously at risk.
12. Particularly rare types of *Sphagnum* are to be found in the fens, and the unusual *Sphagnum* hummocks are especially notable. The following plants are characteristically to be found in the raised bogs: sedge (*Cladium mariscus*), common reed (*Phragmites australis*) and peat mosses (*Sphagnum*). *Erico-Sphagnetum magellanice* is the name given to the still intact vegetation, which is characterised by *Calluna vulgaris* (Ling heather), *Erica tetralix* (cross-leaved heather), *Andromeda polifolia* (bog rosemary), *Caccinium oxycoccus* (cranberry), Cyperaceous species, the *Eriophorum vaginatum* (tussock forming bog cotton) and *Scirpus caespitosus* (deer sedge). In addition, many different types of *Sphagnum* occur together with *Narthecium ossifragum* (bog asphodel).

In the blanket bogs the remaining flora is referred to as *Leuzio purpureae-Ericetum tetralicis*. The characteristic types are the atlantic mosses, *Pleurozia purpurea*, *Campylopus atrovirens* and also *Schoenus nigricans* (black bog rush) and many wet heath species, for example *Polygala serpyllifolia* (milkwort), *Pedicularis sylvatica* (lousewort) and *Potentilla erecta* (tormentil), Lusitanian butterwort (*Pringuicula Lusitanica*) is also found. In addition, much of the vegetation consists of different Ericaceous, Cyperaceous and *Sphagnum* types, while rare arctic-alpine plant species, for example *Prenaria cilata* and *Saxifraga nivalis* are to be found in the highland blanket bogs.

13. Of all the bog types listed above, the raised bogs of eastern and central Ireland are now under the greatest threat, and these are particularly interesting because of their unique drainage system. The only surviving raised bog with this specific drainage system is now in serious danger.
14. Many foreign scientists have made detailed studies of the bogs in Ireland. Around 1970 the country was involved in an international biological programme selecting a western blanket bog ecosystem as a subject for interdisciplinary studies.
15. Today the main danger to these bogs lies in the intensification of industrial and private peat extraction. To this end the bogland is drained and burnt off, after which the peat is cut. In addition to the peat extraction itself the subsequent redevelopment of the land in whatever form, even re-forestation, is also harmful. The ministry responsible has taken measures to have numerous bogs drained in order to make these areas fertile by means of phosphate fertilisers for the purpose of re-forestation. Unlikely as it might appear, this endangers the remaining bogs, in particular when non-indigenous tree types are planted.
16. Peat has been used for heating purposes in Ireland for hundreds of years. It used to be cut by hand in amounts that would cover immediate requirements. The first extraction company to produce peat on a fairly large scale was founded in 1934. In 1946 this company was replaced by Bord na Móna which sees itself expressly as a profit-making undertaking.

Since 1946, 80,000 hectares of bog land have been drained, developed and given over to peat extraction. On this basis, Bord na Móna's overall production volume for the intervening years works out at around 90m. tonnes. In 1978, alone 5m. tonnes were cut, covering 25% of the nation's energy requirements for that year. The equivalent in imported oil would that year have cost £ir.60m. Today, only 15% of energy is produced by peat, which nevertheless represents a value of £ir.100m. Peat is the only indigenous source of energy available for use, although gas has recently been discovered in the Irish sea. Between now and 1990 some 400 hectares of peat bog will be cut every year. Recently Bord na Móna has been acquiring an annual average of 2,500 hectares of land for subsequent extraction. If this trend continues major peat resources will have been exhausted in 50 years.

17. Even today peat is still used mainly for heating purposes in peat-fired power stations and peat briquettes. However, the use of peat to fire power stations is extremely uneconomical given the very unfavourable ratio of energy input to energy output. Peat is also used to make fertilizer. A substantial quantity of the peat-based products is exported. The importance of this for an economy as weak as that of Ireland is clear.
18. As a result of the expansion of the peat industry, the peat company provides some 5,000 - 6,000 jobs where they are most urgently needed. It would be very difficult for any other industry to operate in these remote and inaccessible areas where the social problems are very great because of the low standard of living of the inhabitants. Any environmental measures must take this fact into account.
19. Peat extraction is carried out not only on a large scale by Bord Na Móna but also by local and smaller undertakings and by individuals for their daily requirements. This year saw the development of a new machine which makes it possible to work fairly small bogs on a commercially viable basis. This particularly affects the eastern and central raised bogs which have so far been safe because exploitation would have been uneconomic.
20. It will be clear from the above that any Irish Government faces something of a dilemma: on the one hand it has to bear in mind the economic potential and requirements of the peat industry, on the other hand the question of nature conservation areas.
21. It should be pointed out here that conservation requirements have been taken into account for quite some time. In 1977 a committee was set up expressly to ensure that depleted or 'cutaway' peatlands were redeveloped and used in the best national interests. Bord Na Móna is represented on this committee.
22. In the course of a series of research programmes on land reutilization, investigations have been carried out into sowing the areas concerned with grass for agricultural use, planting them with cereals or vegetables and using them for forestry purposes, for the cultivation of energy crops, for tree nurseries or for redevelopment for recreational purposes.
23. A large number of research programmes are still in progress, but it has already been shown that redevelopment as grassland is very promising and that satisfactory yields are possible. The same applies to the cultivation of cereals and the reutilization of the land for forestry

purposes. So far the growing of vegetables and fruit on redeveloped areas has not been satisfactory. Under Bord na Móna's development programme four cutaway bog areas totalling 318 hectares have now been planted out to grass and two areas totalling 24 hectares have been given over to wheat.

24. As the Committee states in an interim report, all the research and development programmes are to be continued and intensified, with particular emphasis on redevelopment of land for recreational purposes. However, reference is made throughout the report to 'optimal use', which is to say that in this instance environmental considerations count for less than economic factors, although the redevelopment measures concerned are also beneficial from the point of view of environmental protection.

The Committee can act only in an advisory capacity; the final decision lies with the Irish Government.

25. Since 1976 Ireland has received loans of £ir 19 million from the EIB to open up peat bogs and set up briquetting plants and £ir 20 million for the modernization of peat-fired power stations. In addition £ir 16 million has been provided out of NCI funds to promote investment in peat extraction and briquette production.
26. Broadly speaking, the Irish government, the state extraction company Bord na Móna and the competent government departments, that is to say the Ministry of Fisheries and Forestry together with its Forest and Wildlife Service are sympathetic to the idea of nature conservation, though the funds for the protection and conservation of bogs have so far been limited. Only 1% of the Forest and Wildlife Service's total budget is spent on bog conservation and only a few of the Service's officials are working on the subject.
27. The demands and wishes of national and international nature conservancy associations and individual scientists interested in the subject led to the founding at the beginning of 1982, of the National Peatlands Preservation Committee. Until then 'An Taisce', a private organization, had been the only body to campaign vigorously for the conservation of raised bogs. The main aim of this committee is to secure possession of endangered bogs - through purchase or transfer - and thus to protect

them from commercial exploitation and preserve them in their natural state. As a major first step it has drawn up a list of mixed bogs of widely varying types whose conservation is absolutely essential. The bogs listed make up about 4% of the existing peatlands.

28. A similar list was drawn up by the Council of Europe in 1980. In 1976 the Irish Ministry of Fisheries and Forestry, working in conjunction with the Wildlife Advisory Council, also drew up a list which included some raised bogs. Bord na Móna has placed certain areas of three bogs under protection and has undertaken not to extract peat from another three. The company has also said that it is willing to transfer certain areas to the newly founded National Peatlands Preservation Committee. No firm offers of financial assistance have yet been received and the only venture started so far is a pilot project to investigate and preserve three selected bogs, representing three different types, over the next five years. This project will cost US\$450,000. This amount was requested from the IUCN-WWF which, while specifically acknowledging the importance of this project was unable to supply the full sum. However, an interest-free loan of US\$ 100,000 was made available. The European Community has provided 40% of the £ir 4.4 million required for the research project on the cultivation of biomass crops on cutaway bogs. It will be clear from the above that considerable funds are necessary for the preservation of certain typical areas of bogland.
29. The European Community, then, has already provided financial assistance through the EIB for the development of peat extraction and is also making funds available for the research project on the potential for growing biomass crops on cutaway bogs. Consideration must now be given to the question of what scope exists for helping to preserve at least a proportion of the various bogs in Ireland.
30. Ireland, which has always had to contend with severe economic and financial problems and has virtually no raw materials of its own, has particular difficulties in this respect. The European Community should give serious consideration to the question of how, in this case equal weight could be given to the needs of nature conservancy and the requirements of the population.

MOTION FOR A RESOLUTION (Doc. 1-1100/81)

tabled by Mr MUNTINGH  
on behalf of the Socialist Group

pursuant to Rule 47 of the Rules of Procedure

on the protection of the Irish bogs

The European Parliament,

- having regard to its resolution of 20 May 1980 on the World Conservation Strategy,
  - having regard to the resolution of the European Parliament of 17 June 1980 on the conservation of European wildlife and natural habitats,
  - having regard to its resolution of 19 December 1980 on turf peat,
  - having regard to Council Regulation No. 2195/81 of 27 July 1981 relating to a special programme for drainage work in the problem areas of Western Ireland,
  - having regard to the steady reduction in wilderness areas and their frequently declining value for natural science,
  - having regard to the need for the Community to pursue an effective policy for the conservation of wilderness or undeveloped areas,
  - whereas the Irish peat areas could, until recently, be regarded as extremely varied and relatively unspoilt examples of this type of wilderness area,
  - whereas of the previous number of ombrotrophic (irrigated by rain and poor in nutritious substances) peat-bogs in Ireland, not more than 1% are still in their original unspoilt state,
  - whereas according to recent data (Council of Europe, M.G.C. Schouten, A. Whilde) even those peat-bogs which have remained in their natural state are seriously threatened,
  - whereas peat extraction constitutes a serious threat to these uncultivated areas,
  - whereas drainage also represents a serious threat to peat-bogs which are still in an unspoilt state,
1. Welcomes the growing cooperation between the Irish Department of Forestry and Bord na Mona (Peat Board) in relation to the preservation of a number of important peat-bogs and fens,
  2. Considers it urgent for a programme to be drawn up to ensure that sufficient samples of environmentally and scientifically significant peat areas are protected and preserved,
  3. Considers that the Community should provide Ireland with both financial and technical assistance for this purpose,
  4. Urges the Irish Government to draw up and implement such a programme as quickly as possible,
  5. Again expresses the view that a landscape restoration plan must be an integral part of any peat extraction programme,
  6. Points out that according to Article 1(3) of Regulation (EEC) No. 2195/81, any drainage programme should guarantee that the measures envisaged are compatible with the protection of the environment,
  7. Instructs its President to forward this resolution to the Irish Government and Parliament, the Council and the Commission.

PEATLAND SITES CONSIDERED WORTHY OF CONSERVATION

(The major criteria for selection are vegetation, morphology, hydrology and the absence of major interference)

RAISED BOGS

These are the classical 'red bogs' described in the literature. They are deep peat deposits of up to 19 m in thickness. They have developed in the last eight or nine thousand years and are found in basins or in river flood plains. Profiles through such bogs reveal that the deposit generally commenced in a postglacial lake as indicated by clays and marls at the base, over which alkaline fen peat accumulated. The macrofossil remains of characteristic fen plants such as the saw sedge (cladium mariscus) and the common reed (phragmites australis) are perfectly preserved in the lower peat of raised bogs. Acid peat, composed mainly of the partially decomposed remains of peat mosses (sphagnum) lies on top of the fen peat and supports the present-day vegetation, which forms a relatively thin but resilient crust that maintains the bogs integrity.

Intact raised bog vegetation is classified as the Erico-sphagnetum magellanicum. This vegetation was once common in the Atlantic sector of western Europe but is now widespread only on Irish raised bogs. The vegetation is characterized by the ericoid shrubs calluna vulgaris (ling heather), erica tetralix (cross-leaved heather), andromeda polifolia (bog rosemary) and vaccinium oxycoccus (cranberry); cyperaceous species including eriphorum vaginatum (tussock forming bog cotton) and scirpus caespitosus (deer sedge); and the massive occurrence of sphagnum (peat moss) in the ground layer. Narthecium ossifragum (bog asphodel) is especially common on the oceanic Irish raised bogs. Obvious hummocks and hollows are formed by the various sphagnum species and are a particular feature of undisturbed raised bog vegetation. The presence of well developed hummock/hollow systems is a major reason for conserving the raised bogs listed below, which represent the last intact examples of their type in Europe.



CARBURY BOG, COUNTY KILDARE (N 68 36), 273 ha

This is considered the best and most intact example of a raised bog in the eastern part of the midlands. It has developed a basin and is 273 ha in area. It supports hummock and hollow systems and wet areas with pools. It is listed as of national importance among sites of scientific interest by An Foras Forbartha.

The bog is immediately threatened by private commercial peat-cutting and by burning. Bord na Móna is attempting to acquire the area for fuel extraction.

RAHEENMORE, COUNTY OFFALY (N 44 32), 240 ha.

Bord na Móna has decided to hand over this bog to the Irish Forest and Wildlife Service to be protected as a nature reserve. It is considered to be of international scientific importance. The area to be preserved includes only some 190 ha of deep ombrotrophic peat, with conspicuous hummocks and hollows, tearing patterns and well developed pools.

The surrounding wetlands have not been acquired, and the bog is threatened by extensive drainage operations at its edges. These are carried out by the Office of Public Works as part of their arterial drainage scheme, and by local farmers. The integrity of this most impressive raised bog will be maintained only if these drainage channels are immediately dammed. If this is to be achieved at least a further 50 ha of the adjoining lands will have to be acquired.

MONGAN BOG, COUNTY OFFALY (N 030 306), 215 ha.

Much of this bog has been handed over by Bord na Mona to An Taisce. It has developed in the Shannon flood plain and has very well developed hummocks and hollows and surface tearing patterns. It has not been burned for a number of years and as a result has well grown calluna bushes which support an important group of epiphytic species. The part of the bog owned by An Taisce will be preserved. Like Raheenmore, the adjacent wetlands and cutaways will have to be preserved if the ombrotrophic area is to remain intact.

CLARA BOG, COUNTY OFFALY (N 26 30), 420 ha.

This well developed raised bog is the last remaining which has an extensive surface drainage or 'soak' system. These were a striking feature of the larger raised bogs throughout the midlands. The preservation of this particular raised bog is of prime importance. It is the property of Bord na Móna.

SCREGGAN COUNTY OFFALY (N 287 L 95), 54 ha

This small raised bog is colonized by *Pinus sylvestris* (scot's pine). This colonization may be sub-spontaneous and the site is an interesting area for the study of tree establishment and growth on peat. There are no immediate threats to this bog.

CARROWBEHY, COUNTY ROSCOMMON (M 570 835), 240 ha.

This raised bog has unusual tearing patterns on the surface and a well developed hummock/hollow system. There are some elements of the western blanket bog flora in the vegetation. The area is listed for development by Bord na Mona.

WOODLOUGH, COUNTY GALWAY (M 625 325), 174 ha.

This is a very wet raised bog with some western elements in its flora. The sphagnum growth patterns are extremely interesting. The area is owned by Bord na Móna and is scheduled for drainage in 1982.

ARHASCRAUGH, COUNTY GALWAY (M 840 380), 210 ha.

This raised bog which has developed in a flood plain, has extensive hummock and hollow systems and surface tearing patterns. It is owned by Bord na Móna and is to be developed in 1982.

ADDERGOOL, COUNTY GALWAY (M 31 33), 520 ha.

This is one of the most westerly raised bogs, located on the shores of Lough Corrib. It again has the typical hummock/hollow system and tearing patterns of the classical raised bog. It is listed as of potential interest to Bord na Móna.

## FENS

Fens are peatlands fed by mineral rich waters. They have peats which are neutral to alkaline in reaction and support a characteristic fen vegetation.

### POLLARDSTOWN FEN, COUNTY KILDARE (N 775 155), 225 ha.

This fen is widely referred to in scientific literature and is of international scientific importance. It is a calcareous fen fed by mineral rich waters flowing through a number of springs from the Curragh. It is partially drained but is to be acquired by the Forest and Wildlife Service for preservation as a nature reserve.

### SCRAGH BOG, COUNTY WESTMEATH (N 421 594), 16 ha.

This is an interesting quaking fen, which is again of international scientific importance. There are areas in its centre where sphagnum hummocks are developing and initiating acid bog development. Several rare species have been found on this site. It is not threatened at present.

### ROUNDSTONE, COUNTY GALWAY (L 70 45) 44 ha.

This poor fen is located in a valley on Errisbeg Mountain. This is included in the larger area described under western blanket bog below. A rare sphagnum species has recently been reported from this fen.

### BUCKRONEY FEN, COUNTY WICKLOW (T 295 805) 90 ha.

This is a spring and flood-plain fen with interesting vegetation types which is found directly behind a scientifically important sand-dune area. Part of the area is drained. The remainder is also threatened with drainage.

### BALLYEIGHTER, COUNTY CLARE (R 340 917), 1,220 ha

This site is a complex of lakes and fens. The fen area is approximately 860 ha, the lakes 360 ha. There are no known threats.

BELLACORICK, COUNTY MAYO (G.005.242), 30 ha.

This famous 'iron-flush' site supports a unique flora with several rare species. It has been recently handed over by Bord na Mona to An Taisce and will be preserved as a nature reserve.

WESTERN BLANKET BOG

Western blanket bog is the extreme oceanic bog form, confined to the west coasts of Ireland and Scotland. It reaches its most impressive development on the Galway/Mayo peninsula where it stretches over much of the coastal plains forming the unique landscape of these most popular tourist areas.

The blanket peat is ombrotrophic, but richer in nutrients than other acid peats in Ireland, as additional mineral material reaches the bog surface in sea spray from the Atlantic. The pH of the surface peat is relatively high as a result (pH 4.2) and a characteristic flora and fauna has developed. The vegetation is called the *Pleurpie purpurea-ericetum tetralicis* and has a number of interesting floral elements. The character species of the vegetation include the Atlantic mosses *pleurozia purpurea* and *campylopus atrovirens*. *Schoenus nigricans* (black bog rush) which is usually found in alkaline fens in the rest of Europe is also characteristic of western blanket bog. Numerous scientific papers have been written on the occurrence of this species in the blanket bogs of western Ireland, but as yet there is no satisfactory explanation of its presence there. A number of wet heath species also occur on deep peat in these areas. These include *polygala serpyllifolia* (milkwort), *pedicularis sylvatica* (lousewort) and *potentilla erecta* (tormentil). The lusitanian butterwort (*pinguicula lusitanica*) is also found in this vegetation. Ericaceous, cyperaceous and *sphagnum* species are the other important elements of the vegetation. There are numerous pools and lakes in many areas which also support an unique flora.

OWENDUFF, COUNTY MAYO (F96 07), 9,600 ha.

This is the largest remaining tract of intact blanket bog in the country. The area presents a typical blanket bog landscape with extensive areas of lowland (Atlantic) blanket bog, mountain blanket bog, heath, lakes, swamps and a moderate sized river. The area is considered of international scientific importance by An Foras Forbartha.

The main threat to this area is at present from afforestation by the Forest and Wildlife Service.

GLENAMOY, COUNTY MAYO (F89 35), 4,800 ha.

This extensive area of lowland (Atlantic) blanket bog includes the area studied during the International Biological Programme. The latter area was the subject of extensive scientific study and as a result is of international importance. The area also includes numerous bog pools and lakes, streams, subterranean drainage channels and swallow holes, small areas of mountain blanket bog, heath and sea cliff on the north Mayo coast. This area is threatened with development for turf production by Bord na Móna.

BANGOR ERRIS, COUNTY MAYO (F 84 20), 328 ha.

This blanket bog area is owned by the Forest and Wildlife Service. It has very fine sphagnum growth patterns. It is apparently threatened by transfer to a private individual for peat cutting.

ERRISBEG, COUNTY GALWAY (L 70 45), 4,250 ha.

This large area of low level (Atlantic) blanket bog is celebrated in scientific literature and has numerous oligotrophic, oligo-mesotrophic lakes and swamps, poor fens, flushes, rivers and heathlands associated with blanket bog. The bog area has tearing patterns and well developed hummock, and hollows. Errisbeg (300 m), formed of a basic rock, presents mineral rich substrates which support a contrasting flora to the surrounding acid peatlands. The area includes a complete river catchment and is the best known site for a number of rare plant species. The area is at present threatened only by private peat cutting.

NEALACCOAN, COUNTY GALWAY (M 085 272), 1,000 ha.

This blanket bog area contains well developed sphagnum growth areas and interesting lake systems. There appears to be no immediate threat to this area.

LETTERCRAFFROE, COUNTY GALWAY (M 070 387), 600 ha.

Part of this area of mid-altitude upland blanket bog is owned by the Forest and Wildlife Service. It is considered a very good example of this upland blanket bog type and is one of the few areas where it is still to be found.

TOOREENNACCOONA, COUNTY GALWAY (L 832 555), 205 ha.

This area of low altitude blanket bog has very striking drainage systems both above and within the peat. It is not immediately threatened.

EASKEY, COUNTY SLIGO (G 42 36), 974 ha.

This is one of the few areas in the country where 'upland' blanket bog (at intermediate altitudes) is associated with well developed low altitude western blanket bog. It is considered of national scientific importance by An Foras Forbartha. The area has very interesting slippage patterns, drainage systems on the surface and below ground, numerous pools, lakes and streams. Study of air photographs indicates that no other area has such well developed slippage pools. This area has been recently acquired by Bord na Móna and is scheduled for development.

DUNRAGH LOUGHS BOG (H 02 74)

This area near Pettigo contained a large expanse of blanket bog in a remote location and had interesting pool systems. It was listed by An Foras Forbartha as of national importance as representative of a northern area of blanket bog. Part of the area has been damaged by operations of the Forest and Wildlife Service. The remainder will have to be carefully assessed to ascertain whether there is sufficient reason to recommend its preservation.

LOUGH BARRA, COUNTY DONEGAL (B 92 10), 700 ha.

This area is considered of international scientific importance and is listed as the best example of blanket bog in Donegal by An Foras Forbartha.

MOUNTAIN BLANKET BOG

These are extensive blanket bog systems. The peat varies in depth from 1 - 7 m and supports bog vegetation mainly composed of cyperaceous species (eriphorum and scirpus, ericaceous shrubs (calluna vulgaris, erica tetralix, andromeda polifolia and empetrum nigrum), and sphagnum and other bryophyte species. The vegetation is called the vaccinio ericentum tetralicis moore 1968.

SLIEVELEAGUE, COUNTY DONEGAL (G 55 78), 2196 ha.

This famous mountainous region has excellent areas of high altitude blanket bog, wet heathland, lakes, cliffs and sea-cliffs. The area is renowned for the presence of rare arctic-alpine species. It is listed as an area of international scientific importance by An Foras Forbartha. There are no apparent threats to this area at present.

MOUNT BRANDON, COUNTY KERRY (Q 46 11), 3,000 ha.

This is an impressive area with mountain blanket bog, heathland, wet heathland, sea cliffs, lakes and streams. This is an area renowned for mountain species and is considered of national scientific importance. There are no immediate threats to this area.

MANGERTON MOUNTAIN, KILLARNEY, COUNTY KERRY (V 97 81), 1,500 ha.

Part of this area in the National Park is protected, but we consider that a further 1,000 ha. is needed to preserve an adequate representative area there. The area contains impressive mountain blanket bog and wet heathland. There is no immediate threat, but the area has been suggested by the ESB as a possible location for a pumped storage scheme.

SLIEVE BLOOM, LADLE AND DEEVALY (N 25 10), 2,100 ha.

Part of this area is protected and under the management of the Forest and Wildlife Service of the Department of Forestry and Fisheries. There is a considerable area of intact ombrotrophic mountain blanket bog with associated wet heathland.

SALLYGAP (LIFFEY HEAD) BOG, COUNTY WICKLOW (Q 14 13), 1,700 ha.

This is one of the few extensive mountain blanket bogs in the east of the country which is not badly eroded. It has all the interesting characteristics of mountain blanket bog vegetation with interesting pool systems and flushes. It is of international scientific importance. The area is increasingly threatened by the recent expansion in private peat cutting.

MAUMAKEOGH PLATEAU, COUNTY MAYO (F 985 185), 2,000 ha.

This is an excellent example of mountain blanket bog in the west of the country, which is otherwise rare. It is not presently threatened but forestry operations by the Forestry Division are proceeding close by.

COMERAGH MOUNTAINS, COUNTY WATERFORD (S 29 11)

This area includes extensive blanket bog, heathland, cliffs and lakes including Coumshingaun, which is of national scientific importance. A pumped storage station is proposed for this lake : this development would negative the scientific interest of the lake and destroy some of the surrounding bog.

BEN BULBEN, SLIGO AND LEIRIM (G 73 46), 1,400 ha.

This renowned area contains extensive blanket bog, heathland and cliffs. The cliffs and adjacent areas are notable for their very rare arctic-alpine species including arenaria ciliata and saxifraga nivalis. The area is considered of international scientific importance. The area is not immediately threatened, but mining operations are in progress close to the interesting scientific areas.



## INTERMEDIATE BOGS

These intermediate bogs are transitional types with morphological and/or vegetational characteristics of both blanket bog and raised bog.

### KNOCKA, COUNTY GALWAY (M 176 280), 21 ha.

This is a small, very wet bog with both morphological and floristic characteristics transitional between raised and western blanket bog. There is a well developed hummock and hollow pattern and peat shows peat slippage and pool formation. The area may be under threat from private development.

### CULICAGH BEG, COUNTY GALWAY (L 890 600), 31 ha.

Another small, wet bog. It has the morphology of a raised bog, but vegetation remarkably similar to western blanket bog. It also has a rare surface tearing pattern. There appear to be no immediate threats to this area although private exploitation may occur in future.

### MAAM CROSS, COUNTY GALWAY (L 970 465), 100 ha.

This interesting bog supports western blanket bog vegetation but is morphologically similar to the raised bogs. It is dangerously threatened by turf cutting and burning.

### BELLACORRICK, COUNTY MAYO (F 985 185), 30 ha.

The morphology and flora of this area is of the intermediate type. *Schoenus nigricans* (black bog rush) grown over the surface, while *Molinia caerulea* (purple moor grass) is confined to the margins. The bog has a combination of sphagnum growth patterns and erosion areas. The site is under threat from fuel development and is presently being surveyed by Bord na Móna as part of its expansion programme for the Bellacorrick Power Station.

EIRK, COUNTY KERRY (V 861 758), 83 ha.

The vegetation of this bog is intermediate between raised and blanket bog. There are remnants of fen vegetation present on this bog which is considered of international importance by AFF. No threats known at present.

NEWFOUNDLAND BOG, KILLARNEY (V 92 82), 44 ha.

Another transitional bog with raised bog morphology and western blanket bog vegetation. It is located in the Killarney National Park and is considered of regional scientific importance.

OWENBEAGH, COUNTY DONEGAL (C 00 18), 17 ha.

This small bog has a raised bog morphology and western blanket bog vegetation. It is located within the Glenties National Park.