Annex 2 Bog biodiversity and peat extraction for horticulture in the Irish Republic

1. The peatland resource

1.1. Peatlands cover an estimated 1.17 million hectares in the Republic of Ireland, amounting to about 17.2% of the land area (Douglas, 1998). It is divided into types, depending on the conditions at formation and geographical location: low-level Atlantic blanket bog; montane blanket bog; fen peat; and raised bog.

1.2. The categories of bog condition found in Ireland are similar to those described by Lindsay & Immirzi (1996) for Great Britain. Bogs are more numerous, and a greater proportion still retains primary uncut areas than in England. The ‘cutaway’ (secondary bog, regenerating or not) is an extremely common and widespread feature on Irish bogs, and may occupy part or the whole of each bog. No information has been found showing what amount of ‘archaic’ bog there may be under agriculture or forestry. The emphasis in Ireland is on the protection of existing bogs, particularly primary ones. There is less emphasis for designation on cutaways and cutover bogs and on the restoration potential of industrially-cut bogs because those with at least some primary surfaces are well-distributed geographically.

1.3. Commercial peat extraction for horticulture occurs primarily on the raised bogs of the Irish Midlands. They have deep deposits of *Sphagnum*-rich peat in the upper layers, and more humified peat of mixed origin lower down the profile. The bogs have the dual suitability for high-quality horticultural media in the upper strata and, if required, for energy production in the lower. As in the UK, the worked-out bog is likely to be left with no peat or with a thin, discontinuous residue.

1.4. Similarly to the peat-rich areas of the UK, peat has been extracted for fuel under rights of turbary for centuries. Cutting usually commences at the edge of the bog and may take the full thickness of the peat. While it may leave the centre of the bog physically intact, it has a strong influence on its ability to lay down peat post-extraction by lowering the watertable and increasing drainage from the bog surface *(pers. comm. J Ryan, National Parks & Wildlife Service (NPWS), March 2009)*. The slope towards the edge becomes more pronounced because the peat volume is reduced by loss of water and by loss of the carbon dioxide to the atmosphere. The bog may become unstable and slump onto the cutaway edge and surrounding land.

1.5. As in Northern Ireland, the problems for bog biodiversity in the Republic of Ireland (RoI) caused by cutting under turbary rights are considered by the NPWS to be greater than extraction for horticulture or for energy. This is because reliable ways of shoring up the edge of a bog once cut away have not yet been developed and the only remedies lie in preventing further cutting, making wet large areas of bog hinterland, and trying to reduce the rate of water loss on the over-steepened surface using dams and bunds (e.g. Raheen Moor). It means that, although the centre may retain primary active bog vegetation it is vulnerable to chronic slumping and erosion over a long period.

1.6. The national site designation is Natural Heritage Area (NHA). Many sites are also designated as Active Bog SACs. Douglas *et al.* (2008) of the NPWS write: “Based on the NPWS surveys”… c. 50,000ha (16% of original area) of uncut bog now remains. Only 1,945ha of this is now peat forming, i.e. can still be considered as the priority habitat Active raised bog, as the remainder has dried out due to drainage, cutting and...
burning.” In the 48 sites monitored by the NPWS, the area of Active raised bog has decreased by over 35% between 1995 and 2005 (Fernandez et al., 2005). Ireland’s Conservation Assessment Report NPWS (2007), prepared under Article 17 of the Habitats Directive, gives Active raised bog conservation the lowest ranking of success.

1.7. Hammond (1981) recognises six categories of bog in Ireland, two of which are man-modified types of “unmodified” raised bog (a third category). The other categories are: low-level Atlantic blanket bog; montane blanket bog; and fen peat (man-modified). Each has a characteristic geographical distribution.

2. Habitats found on Irish raised bogs

Table A2.1 Habitats and plant communities found on cutover raised bogs.
(Source: Farrell, 2008)

<table>
<thead>
<tr>
<th>Habitats</th>
<th>*Plant community after White &amp; Doyle 1982</th>
<th>Plant community after Fossitt 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open water/emergent vegetation</td>
<td>Isoeto-Litorelletea</td>
<td>FL1 Dystrophic lakes (3160)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FL2 Acid oligotrophic lakes (3110)</td>
</tr>
<tr>
<td></td>
<td>Charetea</td>
<td>FL3 Limestone/marl lakes (3140)</td>
</tr>
<tr>
<td></td>
<td>Scirpo-Phragmitetum</td>
<td>FS1 Reed and large sedge swamps</td>
</tr>
<tr>
<td></td>
<td>Typhetum latifoliae</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Caricetum paniculatae</td>
<td></td>
</tr>
<tr>
<td>Peatland communities</td>
<td>Oxycocco-Sphagnetae</td>
<td>PB Bogs</td>
</tr>
<tr>
<td></td>
<td>Pioneer Eriophorum angustifolium community</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sphagnum cuspidatum-Eriophorum angustifolium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calluno-Sphagnion</td>
<td>Embryonic bog community</td>
</tr>
<tr>
<td>Flush and fen</td>
<td>Pioneer Juncus bulbosus community</td>
<td>PF2 Poor fen and flush</td>
</tr>
<tr>
<td></td>
<td>Pioneer Juncus effusus community</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sphagneto-Juncetum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+Caricion davalliance</td>
<td>PF1 Rich fen and flush (7210)</td>
</tr>
<tr>
<td>Heathland</td>
<td>Calluno-Ericetum</td>
<td>HH1 Dry siliceous heath (4030)</td>
</tr>
<tr>
<td></td>
<td>Narthecio-Ericetum</td>
<td>HH3 West heath (4010)</td>
</tr>
<tr>
<td>Grassland</td>
<td>Filipendulion ulmiae</td>
<td>GM1 Marsh (6430)</td>
</tr>
<tr>
<td></td>
<td>Junco-Molinietum</td>
<td>GS4 Wet grassland</td>
</tr>
<tr>
<td></td>
<td>Centaureo-Cynosuretum</td>
<td>GS1 Dry calcareous and neutral</td>
</tr>
<tr>
<td>Woodland</td>
<td>Salicion cinereae</td>
<td>WN7 Bog woodland (birch)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WS1 Scrub (willow)</td>
</tr>
<tr>
<td>Disturbed soils</td>
<td>Tussilaginetum</td>
<td>ED3 Recolonising bare ground</td>
</tr>
</tbody>
</table>

Table notes: Plant communities establishing on industrial cutaway bogs: the classification systems are the Braun-Blanquet (European) and Heritage Council (Irish) system, with the Natura 2000 codes in brackets where appropriate.

*The plant communities are generally rudimentary forms or early successional stage of vegetation types and are therefore classified to the nearest recognisable class, order and/or alliance, and the association level in instances where defined stands have established.

+Cladium mariscus fen has been recorded from one cutaway raised bog in Kildare. This is a priority habitat under Annex 1 of E.U. Habitats Directive.
3. Statutory designations and peat extraction in Ireland
(Source: J Ryan, NPWS, March 2009)

3.1. A total of 139 bogs have been designated in 128 sites (53 SACs and 75 NHAs) containing 21,500ha of uncut bog (43% of the total uncut area and 7% of the original resource). This includes all known areas of Active raised bog. Since the early 1990s NPWS has acquired c. 7,000ha of raised bog, mainly from Bord na Móna, Ireland’s major peat extractor, which is partly owned by the Irish Government.

3.2. Since designation most obvious commercial cutting operations have been phased out but domestic cutting for fuel has been allowed to continue for 10 years under Government policy. In 2003 domestic cutting was ongoing on 117 of the 139 designated bogs. It is estimated that over 20,000 turbary rights exist on these bog of which over 2,500 were exercised in 2003 (Fernandez et al. 2006). Efforts to purchase turbary rights through the use of the voluntary NPWS Turbary Cessation Schemes have had very limited success with only about 5% of turbary rights purchased since the schemes commenced in 1999.

3.3. The damage caused by the exercising of turbary rights is not relevant to the UK’s requirement for peat in horticulture as the product is either used in the home or within a small internal market. The potential for peat imported into the UK to impact Irish bogs lies in the effects of industrial scale extraction. There is the potential to impact sites operated now and those worked in the future, and how they are restored. Industrial peat extraction affects c. 73,500 ha of raised bog (Douglas et al., 2008).

Table A2.2 Horticultural peat extraction on SACs and NHAs. (Source: IPCC and NPWS)

<table>
<thead>
<tr>
<th>Site name</th>
<th>NHA</th>
<th>SAC</th>
<th>Area (ha)</th>
<th>Habitats</th>
<th>extraction</th>
<th>restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lough Forbes Complex</td>
<td>Y</td>
<td>Y</td>
<td>1180</td>
<td>Western raised bog</td>
<td>ceased</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ballyduff/Clonfinane</td>
<td>Y</td>
<td>Y</td>
<td>269</td>
<td>Midland raised bog</td>
<td>ceased</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shankhill West Bog</td>
<td>Y</td>
<td>Y</td>
<td>136</td>
<td>Western raised bog</td>
<td>ceased</td>
<td>unsure</td>
</tr>
<tr>
<td>Mouds Bog</td>
<td>Y</td>
<td>Y</td>
<td>550</td>
<td>Midland raised bog</td>
<td>ceased</td>
<td>no</td>
</tr>
<tr>
<td>All Saints Bog Esker</td>
<td>Y</td>
<td>Y</td>
<td>387</td>
<td>Midland raised bog</td>
<td>ceased</td>
<td>no</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbury Bog/Ballina</td>
<td>Y</td>
<td>N</td>
<td>413</td>
<td>Midland raised bog</td>
<td>ongoing</td>
<td></td>
</tr>
<tr>
<td>Bog</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kilballyskea</td>
<td>Y</td>
<td>N</td>
<td>70</td>
<td>Midland raised bog</td>
<td>ongoing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Woodland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clonydonnin Bog</td>
<td>Y</td>
<td>N</td>
<td>100</td>
<td>Midland raised bog</td>
<td>unsure</td>
<td>unsure</td>
</tr>
<tr>
<td>Nure Bog</td>
<td>Y</td>
<td>N</td>
<td>68</td>
<td>Midland raised bog</td>
<td>unsure</td>
<td>unsure</td>
</tr>
<tr>
<td>Scohaboy Bog</td>
<td>Y</td>
<td>N</td>
<td>240</td>
<td>Midland raised bog</td>
<td>ceased</td>
<td>yes</td>
</tr>
<tr>
<td>Arraghmore</td>
<td>Y</td>
<td>N</td>
<td>-</td>
<td>Midland raised bog</td>
<td>ceased</td>
<td>no</td>
</tr>
<tr>
<td>Ballinderry</td>
<td>Y</td>
<td>N</td>
<td>-</td>
<td>Midland raised bog</td>
<td>ceased</td>
<td>yes</td>
</tr>
</tbody>
</table>

Y = yes; N = no; - = figure not available

3.4. At least five SACs have recent industrial peat extraction either on, or next to them. Extraction has ceased on all five and restoration is known to have commenced on two (Table A2.2). Twelve bogs are NHAs: extraction still occurs on two; and restoration is known to have commenced on two on parts where extraction has ceased; the status of some of the sites is unsure.
4. Planning controls and licensing in the Irish Republic

4.1. Article 24 of the Environmental Impact Assessment Regulations, 1989, says that 'peat extraction' which would involve a new or extended area of 50 hectares is 'specified development'. This means that it cannot be exempted. The 1989 regulation amended the 1963 Planning and Development Act, to include peat extraction as prescribed and stated that it 'shall not be exempted development'. This hectare has been reduced to 30 for Environmental Impact Assessment (S.I. no 538 of 2001) and the planning permission threshold to 10 hectares (Source: Friends of the Irish Environment website, http://www.friendsoftheirishenvironment.net/index.php?do=friendswork&action=view&id=29).

4.2. New proposals for peat extraction over 10 ha require planning consent under the Planning and Development Act, 2000. They require an environmental impact assessment under the 1989 Environmental Impact Assessment Regulations. There were no controls on peat extraction prior to the 1989 Environmental Impact Assessment Directive. Existing developments require a licence under the Minerals Development Act, 1999 if operating on a designated site (NHA, SAC).

4.3. Consents for peat extraction include conditions on working and afteruse. There is no in-built periodic review of minerals planning consents, though county development plans are reviewed every five years.

5. Irish National Biodiversity Action Plan

5.1. The National BAP for the whole of Ireland includes peatlands under the heading of wetlands. Action 84 states: Draw up a strategy for the use of machine cutaway and cutover raised bogs as wetland or woodland habitats. Detailed plans for sites are being drawn up at local level in conjunction with Ireland's major peat extractor, Bord na Móna.

5.2. The Proceedings of the 2008 IPS Conference at Tullamore (http://gorse.fns.fi/asiakkaat/peatsociety/node/104) include papers on the biodiversity opportunities of cutover bogs in Ireland. Farrell (2008) calls for a national peatland policy to identify the significance of these areas in terms of ecological and biodiversity value. This has now commenced as the BOGLAND initiative or Protocol for Sustainable Peatland Management in Ireland, which is a broad partnership of statutory and private bodies.

5.3. The range of possible habitats on worked-out cutover bogs is wide. These compete with other non-habitat uses such as forestry and public amenity. Bord na Móna currently aims for 50% of its sites to be restored for biodiversity, but this may increase (pers. comm. C Farrell, Bord na Móna, March 2009) in the future as the debate over the value of peatlands as a carbon store develops.

5.4. About 810,000 ha of peatland is undesignated, and consists of a mix that Farrell (2008) describes as: degraded bog still capable of natural regeneration (Natura 2000 code 7120), degraded blanket bog, cutover bog, cutaway bog and afforested bog. The biodiversity opportunities are clearly immense. There is a very large resource of damaged bogs currently outside of commercial peat extraction; and another very large resource within it, and available for restoration. Bord na Móna pledges not to extend its peat extraction activities to new sites (see below).
5.5. The biodiversity priority for habitat creation is seen as peat-forming wetland rather than raised bog *per se*. This is because the peat layer left after extraction, often breached and revealing the mineral soil beneath, is not considered suitable for immediate raised bog restoration. Rather, the aim is to create Natura 2000 code 7140 Transition mires and quaking bogs, and for wet woodland. It is interesting to note that Natura 2000 habitat type 7210 Calcareous fen with *Cladium mariscus* and species of the *Caricion davallianae* is included. Cutover sites lacking any residual peat clearly have great potential for Natura 2000 wetland types other than Active bog. This may be due to the varied geology underlying peatlands in Ireland. Monitoring the outcomes of these restorations will make a valuable contribution to our understanding of the habitat creation possibilities on severely degraded peat deposits.

5.6. The approach to raised bog restoration described by e.g. Wheeler & Shaw (1995) and by Blankenburg & Tonnis (2004) involves retaining a minimum thickness of peat. No requirement for this was detected from discussion with a representative of the IPCC (as an independent conservation body; *pers. comm.* S Malone, IPCC, March 2009) and so there is likely to be little incentive to forego the extraction of commercially important peat in the interests of a conservation (biodiversity) afteruse. This contrasts with the UK approach, in which there is a presumption that everything possible will be done to ensure that the fastest possible active bog restoration is able to take place on cutover sites.

6. **Producers’ and retailers’ codes of conduct in Ireland**

6.1. Peat extraction is carried by a number of companies, the largest of which is the part state-owned Bord na Móna. This company publishes commitments not move into new bogs and to restore with regard to biodiversity (see below). Some of the remaining companies also belong to the Growing Media Association, (http://www.growingmedia.co.uk/) but there is no longer a code of conduct on their website for members in managing their peatlands1, as there was with their predecessor the Peat Producers’ Association.

6.2. Peat imported to the UK is subject to the same codes of practice applied to UK peat by the major UK retailers. These mostly require the peat not to have come from designated sites, and go as far as to require that the harvesting has not been to the detriment of a designated site. Producers unable to provide these assurances will mostly be at a disadvantage. The codes ensure that exporting the UK’s demand for peat to the Republic of Ireland will not exacerbate the difficulties outlined above on designated sites.

**Bord na Móna** (http://www.bnm.ie/horticulture/) describes its approach to peatland conservation:

- Bord na Móna owns and operates 85,000 hectares of peatland in the centre and west of Ireland. Most of this is raised bogland. The total acreage of peatland in Ireland is 1.18 million hectares or 17% of the land area of the state. Thus, Bord na Móna’s holding represents some 7% of peatland reserves in the Republic of Ireland. The pattern of ownership is skewed towards the commercially viable raised bogs of the Irish Midlands where Bord na Móna’s holding represents approximately 25% of this category.

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1 It is not covered in a specific document but is covered by the GMI and the BOPP audit (*pers. comm.* C. Hill, Defra, November 2010).
• Bord na Móna recognises the unique systems which are peatlands, the main physical resource of the company. In this context, the policy adopted by the Board in 1987 states "Bord na Móna fully recognises and accepts the need to preserve representative examples of different bog types, as well as areas of special natural beauty and significance". Bord na Móna has implemented this policy through a variety of actions as follows:

  o The conservation of 6,500 hectares of peatlands which have been transferred to conservation organisations or the Irish State. Approximately 45% of these sites are raised bog. In 1987 the Government set a target to conserve 10,000 hectare of raised bog.
  o The decision that Bord na Móna will not acquire any additional peatlands, for production purposes, in Ireland.
  o Investment in peatland research to overcome technical problems of rehabilitation and conservation.
  o The development and implementation of long term plans for the use of cutaway bogs to include forestry, grassland and a diversity of microhabitats which will enrich biological diversity.

7. Synoptic view of bog conservation in Ireland

7.1. The keynote speech to the Special Session on Irish Peatlands at the 2008 Tullamore IPS Conference was given by Matthias Schouten (Schouten, 2008). Schouten has had a long association with Irish peatlands through the Dutch-Irish raised bogs LIFE project, and, has undertaken a thorough review. Relevant direct quotations from Schouten (2008), as a bona fide informed observer, are given below and provide a valuable cross-reference with the conclusions drawn from other sources:

1. "Legal protection does not guarantee that the ecological values of the peatland sites concerned are safeguarded. Commercial exploitation and afforestation has ceased in the peatland reserves, but in the majority of the legally protected sites the State does not hold ownership and there it has entered management agreements with the private owners. This is not always a secure basis for conservation as the integrity of the reserves remains to a certain extent dependent on the goodwill of the owners”.

2. “Moreover, a large proportion of the conserved peatland sites has suffered damage in the past and is deteriorating further. Virtually all raised bog reserves have been affected by past marginal peat cutting and associated drainage.” “After designation in 1999, domestic cutting for fuel in protected peatland sites has been allowed to continue for 10 years. In 2003, domestic cutting was ongoing in over 80% of the designated raised bogs (Douglas et al., 2008). Efforts to purchase turbary rights through the use of voluntary Turbary Cessation Schemes initiated by the National Parks and Wildlife Service have had very limited success.”

3. “The ongoing domestic peat cutting in SACs and NHAs needs to be urgently addressed and large scale restoration works need to commence aiming at restoring ecosystem functions. At the same time, a peatland acquisition programme is required. All this will involve considerable funds, but if Ireland wants to fulfill the international obligations under the EU Habitats Directive, there is no time to waste.”