noticenature
take action on biodiversity loss

Peatlands

Peatland habitats are particularly well represented in Ireland. They originally covered more than 17% of the land area of Ireland - a higher proportion than any other European country with the exception of Finland. Ireland possesses 8% of the world's blanket bog and is one of the few countries where a wide range of peatlands still exists in a near natural state. However, peatlands, together with their unique assemblage of plants and animals, are a seriously endangered western European habitat.

Raised Bog

In Ireland over 80% of their former extent has been lost.

Peatland habitats are broadly subdivided into two main types, *bogs* and *fens*. *Bogs* are rain-fed (ombrotrophic) peatlands where almost all inputs of water are derived from precipitation whereas *fens* are peatlands that, in addition to precipitation, are fed by groundwater or moving surface waters (minerotrophic).

How do Peatlands Form?

Peat is a soil that is made up of the partially decomposed remains of dead plants which have accumulated on top of each other in waterlogged places for thousands of years. Areas where peat accumulates are called peatlands. Peat is brownish-black in colour and in its natural state is composed of 90% water and 10% solid material. Peat accumulates in areas where the rate of plant production exceeds the rate of plant decomposition as a result of poor microbial activity due to waterlogged anaerobic conditions in soils and also due to the acidity of groundwater. The more acidic the soil water, the less suitable it becomes for micro-organisms to grow causing plant remains to accumulate at a faster rate.

Bogs have fewer solids in them than milk. By weight, a raised bog may be up to 98% water and only 2% solid peat. Blanket bogs are rather more solid, with up to 85% water. This great volume of water is held within the dead Sphagnum fragments. This ability to retain water is one of the properties which makes Sphagnum peat such a prized horticultural material.

Types of Bogs and Fens

The two main categories of bog in Ireland are raised bog and blanket bog. Within these categories five types of bog are recognised as habitats in Ireland. These are raised bog, upland blanket bog, lowland blanket bog, eroding blanket bog and cutover bog. Raised Bogs, are dome-shaped bogs which have developed in former lake basins and they occur mostly in our midland counties. Although

it is usual for bogs in Ireland to be devoid of tress, raised bogs can occasionally be home to small stands of woodland in wet areas on the bog dome. These tree covered areas are called bog woodland and represent and important and rare habitat type. Blanket Bogs more typically consist of a shallow layer of peat extending over large areas of land. The lowland blanket bogs are found in low-lying areas in our western counties while the upland blanket bogs occur in mountainous areas throughout the country.

Irish fens can be divided into three main habitat types:

- **rich** fens that are fed by alkaline water – typical species include blunt-flowered rush, black bog rush and grass of Parnassus;
- **poor** fens, fed by moderately acidic water – typical species include white sedge and star sedge;
- and transition mires or quaking bogs that typically occur as floating mats of vegetation – typical species include tussock sedge and slender sedge..

Fens are found around lake margins and in waterlogged areas where there is a supply of mineral-rich waters. They occur throughout the country, most commonly in the West and Midlands of Ireland. Some of the better known fenlands are Pollardstown Fen, Co. Kildare and Scragh Bog, Co. Westmeath.

Typical Flora and Fauna

Bogs are home to many rare and protected plants. Typical bog plants include sphagnum mosses, rushes and sedges, bog cotton, ling heather bog rosemary, bog asphodel and sundew. Bog land vegetation where Sphagnum mosses are actively growing develops a system of hummocks and hollows with flat areas or lawns in between. The average difference in elevation between hummock and hollow is about 30cm.

Bogs are also home to many rare and protected animals, including the common frog, Irish hare, otter, hen harrier, Greenland white fronted goose, peregrine falcon, golden plover and merlin.

Blanket Bog in Co. Mayo

Importance of Peatlands in Global Warming

Peatlands are carbon sinks holding the bulk of Ireland's carbon store as peat. It has been estimated that peatlands contain in the order of 5000 tonnes of carbon per hectare and in its undisturbed state, peat accumulates carbon from the air at a rate of up to 0.7 tonnes per hectare per year. Over the long-term, Peatlands are considered to be the most effective carbon sinks only surpassed by our Oceans.

Disturbance of peat can upset the balance of this process leading to the release of quantities of carbon dioxide. In the order of 8 tonnes of carbon dioxide per hectare per year are released from drained peatlands. In Ireland 40% of peatlands have been modified by man, have stopped accumulating peat, and are actively decomposing. Every year decomposing peatlands contribute at least 3.7 million tonnes of carbon dioxide to the atmosphere, thus making a significant contribution to

global warming. Even peatlands that have been afforested, in the long run release large amounts of carbon dioxide (EPA 2000).

Importance of Peatlands as a Palaeoecological Archive

Peatlands are archives of information about the past. They support distinctive animal and plant communities and are the only terrestrial ecosystems that lay down a continuous three-dimensional record of their own growth and developmental history, as well as that of the surrounding animal and plant communities.

The archives also contain valuable information on human impact on the environment, human activity in general and record the effects of climate change. The palaeoecological archive thus has immense scientific value and there are crucial links between peatland palaeoecology and the conservation of peatland ecosystems and their biota. Many of the sites that provided insights on the history of farming and the impact of man on the Irish landscape have already been destroyed by development and their evidence cannot be re-created.

Threats

Despite their unique status, our peatlands remain under threat from several fronts including domestic turf cutting (especially raised bogs), large-scale mechanised turf-extraction schemes, afforestation of upland areas, drainage, over-grazing, dumping and repeated burning.

Horticultural peats, commonly known as moss peat, is used as compost in gardening and landscaping and is derived mainly from the top layer of a raised bog. 66% of moss peat mined from raised bogs is bagged and used in private gardens. Using peat compost is one of the most environmentally damaging activities that the gardener can undertake. Although Irish moss peat is taken from bogs that are not designated for conservation, the area of actively growing raised bog in the designated areas has decreased by one third in the last ten years.

Commercial Turf Cutting

Legislation

The most important piceces of legislation related to conservation of peatlands are the Wildlife Acts 1976 to 2000, the EU Habitats Directive(92/43/EEC) and the EU Birds Directive (79/409/EEC).

Under the Wildlife Acts, in the order of 148 raised and blanket bog sites have been designated as NHAs.

Under the terms of the EU Habitats Directive, (EC Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, Directive 92/43/EEC) EU member States are required to establish a network of Special Areas of Conservation (SACs). The Directive identifies certain species and habitats as "priority" because they are particularly threatened in global terms, and the European Community contains a significant proportion of their natural range. Ireland has a responsibility to designate SACs for a total of 61 habitat types and 26 species, listed in Annex I and Annex II of the Directive.

The Department of the Environment, Heritage and Local Government have set up a compensation scheme for cessation of turf cutting in Special Areas of Conservation (cSAC's) and Natural Heritage Area's (NHA). More information can be found www.npws.ie under Conservation Sites / Implications of site designation.

What can I do?

- If you are a gardener or landscape designer, why not consider a peat-free compost alternative. Peat free composts can be found in garden centres all over the country.
- Switch from using turf as a solid fuel source
- Recycle garden/kitchen waste to make your own compost. If your local authority provides a 'brown bin' for collecting kitchen waste, use it! If you don't have a brown bin, why not try home composting. You can have a compost heap at the end of your garden or you can make or buy your own compost container. You can find out more about composting on many local authority websites or at www.raceagainstwaste.com under Take Action / At Home
- Support conservation groups working to Save Bogs
- Consider selling (or donating!) bog plots you may own to the National Parks and Wildlife Service (DoEHLG) or the Irish Peatland Conservation Council.
- For more information on bogs, go to www.ipcc.ie

The preserved remains of tree roots, commonly oak and pine are found threw out bogs in Ireland. They can date from 4,000 to 7,000 years ago.

Case Study

Clara bog has long been recognised as a site of international importance, being the largest remaining intact raised bog in Ireland. Clara covers an area of 665 hectares. It is bounded on the north by a glacial esker ridge and to the south by cut-away bog. On the eastern edge, it grades into fen and a small ash woodland. The surface topography is undulating with the peat reach depths of over 10m in places. The site is been divided into a western and an eastern section by a road. The eastern part of the site was damaged by previous drainage attempts, however, restoration work is in progress. Continuing peat extraction from the southern margins is also damaging and has potential effect upon much of the internal bog, including the soak system. An area of 465 hectares has now been declared a National Nature Reserve. Research into aspects of the geology, hydrology and ecology of the bog is being jointly undertaken by Dutch and Irish scientists.

Other interesting links….

www.ucd.ie/boglands
www.ipcc.ie