

# nature's

 An Taisce  
The National Trust for Ireland

 2011-2020  
United Nations Decade on Biodiversity

# way THE WONDER OF PEATLANDS

**ORIGINS & HISTORY  
OF PEATLANDS**

**PLANT, ANIMAL  
& BIRD LIFE**

**PEAT EXTRACTION  
& THREATS**

**CLIMATE CHANGE**

**PROTECTING OUR PEATLANDS**

# Peatlands

There are 3 main types of 'peatlands' in Ireland.

**Raised bogs** are dome shaped peatlands that have grown out of lake basins in the central lowlands over the last 10,000 thousand years. **Blanket bogs** take the shape of the underlying land forming a 'blanket' over soil or rock on many of Ireland's mountains and on western lowlands. Bogs are fed by rainwater. **Fens**, however, are fed by groundwater; sometimes from springs rising up from underground water reserves or sometimes from slow moving surface water.

Ireland's bogs are very special places. They are cherished and valued by many including walkers, artists, historians and those traditionally dependent on them for fuel. Waterlogged soils, low nutrients and acidic conditions mean that plants have to be specially adapted to life on a bog. The downside of being so specialised means that it can be difficult to survive in other habitats where there are more plants and animals to compete with. Many of the special plants and animals associated with bogs in Ireland are facing severe population declines due to habitat loss. One bog plant, **Rannoch Rush**, is thought to have become extinct in Ireland in recent decades due to loss of it's raised bog.

Bogs are also vital in allowing us to piece together the jigsaw of Ireland's history since the glaciers retreated 10,000 years ago. They have preserved cultural and scientific information that has helped us to understand important developments in history and to build a better picture of what life was like in Ireland thousands of years ago.

## What are bogs?

Bogs are made up of peat. Peat is the same material as turf - hundreds and thousands of years' of partially broken down plants, especially **Sphagnum** mosses. The reason why they don't fully decompose is because the waterlogged conditions mean there is so little oxygen available that the bacteria, which normally break things down, don't grow well there.

Sphagnum mosses also release chemical compounds which slow decomposition even further. Plant material, instead of decomposing, accumulates and becomes peat. It can take as long as 1,000 years for a peatland to produce as little as 10 centimetres of peat!





**The word Bog** is derived from the Irish word **Bogach**, which means soft! Anyone who has walked across a bog will know how wobbly and soft they are.

# Origins

## How were Fens and Raised Bogs Formed?

Many fens have grown from lake basins that were left behind when the last glaciers melted, around 10,000 years ago. The first layer to form at the bottom of the lake is known as marl. This is a white, lime-rich mud that can often be seen at the very bottom of the bog when it has been cut away.

Floating plants and reeds then grew around these lakes. As the plants died, they fell to the bottom of these lakes but never fully decomposed. They formed a layer of partially decomposed matter known as *fen peat*. When this layer of *fen peat* becomes thick enough, the plants growing on it no longer have contact with groundwater and plants that can survive on rainwater alone take over. This is how fens become *raised bogs*. Fens support a wide range of plants many of which are tall marsh plants growing closely together. Fens are also home to many insects, birds and other animals.

Rainwater has less nutrients than groundwater and so limits the plants that can live on bogs. However, Sphagnum mosses are specially adapted and if many are found in a fen it is a good indication that the fen is changing to bog. Sphagnum can hold up to 20 times their dry weight in water so bogs can absorb and store huge amounts of water. As the bog grows the spongy Sphagnum ensure the water table keeps rising, which keeps the surface of the bog wet. Ultimately, the peat in a raised bog grows upwards and outwards beyond the margins of the original lake basin. A raised bog can grow up to 15 metres thick!



## Where would you find a Blanket Bog?

Bogs that 'blanket' hills and mountains, 'blanket bogs', are not as deep as raised bogs and only grow where there is lots of rain. They need at least 1250mm of rain per year spread out over at least 250 days. Blanket bogs occur on nearly all of Ireland's mountains but only in the West, where rain is plentiful, are they also found in the lowlands.

# Ancient Treasures preserved in Bogs

## Boats, weapons, jewellery and more!

The secrets of Ireland's past are kept in its bogs. Ancient barrels of 'bog butter', early Christian manuscripts, and even an ancient canoe are just some examples of what has been discovered in Ireland's bogs. The 'Lurgan Logboat' in the National Museum of Ireland is the oldest surviving dugout canoe ever discovered. Found in Addergoole Bog, Lurgan, County Galway it was made in the Early Bronze Age around 4,500 years ago. Other treasures found in bogs include gold neck ornaments, rings, brooches, armlets, swords and shields. The same conditions that prevent plants from decaying fully in a peatland also preserve these treasures for thousands of years. Even tiny wind-blown pollen grains from the surrounding landscape have been preserved in the layers of growing peat. These pollen grains can be studied to give us a very detailed picture of which trees and plants grew in Ireland at any point of history over the last 10,000 years.

## Bog Bodies

Since 1750 over 80 bog bodies have been found in Irish bogs. Many of these are thought to have been buried in the bog after ritual sacrifice. Two examples are 'Croghan Man' and 'Clonycavan Man'. 'Croghan Man' was found in a bog in Offaly in June 2003. He lived in the Iron Age and is thought to have died somewhere between 362 BC and 175 BC, making his body over 2,000 years old! Even the contents of his stomach were preserved so we can tell that his last meal was wheat and buttermilk.

'Clonycavan Man' was found in a bog in Meath in March 2003. He also lived in the Iron Age and his body is around 2,300 years old. He is best known for having gel in his hair. The gel was keeping his hair in a Mohawk style. This may have helped him to look taller as he was only 5ft 2in. The gel was made of plant oil and pine resin, which would have been imported from either Spain or France. This shows that Ireland was trading with southern Europe over 2,000 years ago!

## Bog Roads

Just before the Iron Age, 4,000 years ago, there was a long period of very wet weather, which made the bogs grow quicker than before. As the ground got wetter and wetter people made 'floating' roads to travel over the bogs. They laid wooden planks or sections of woven branches over the bog. These bog roads were called 'tóchars'. As the bogs were still growing, they swallowed up and preserved these roads. In places, excavation has shown that the roads were laid again and again, layer upon layer. Nearly 1km of a road from the Iron Age (from 148 BC) has been excavated and protected, and it can be visited, in Corlea Bog in County Longford.



# Plants that live in Peatlands

## Fen Plants

Fens support many different kinds of plants from tiny mosses and liverworts to tall sedges, flowering plants, including orchids, and even small trees.

The **Early Marsh Orchid** is a beautiful tall orchid. A particular type or 'subspecies' of this orchid is 'endemic' to Ireland, meaning that it is found only in Ireland and nowhere else. The flowers of **Fly Orchids** look just like flies! This tricks the flies.

However, the plants also use scent to attract male flies, who mistake the flower for females flies. In their attempts to mate with the flower, they pollinate them. Fly Orchids are rare in Ireland and only grow in wet and lime-rich soils as found in fens.

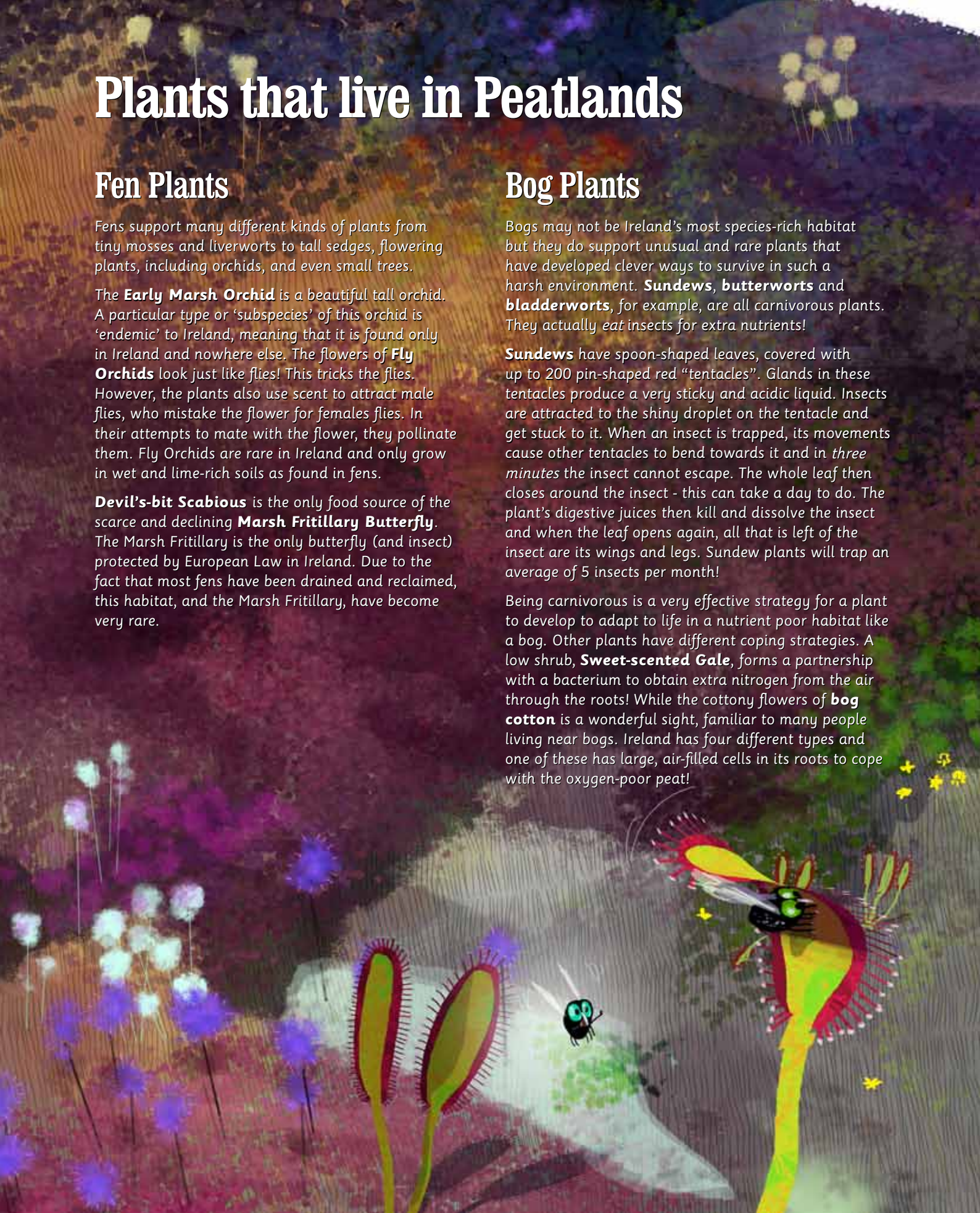
**Devil's-bit Scabious** is the only food source of the scarce and declining **Marsh Fritillary Butterfly**. The Marsh Fritillary is the only butterfly (and insect) protected by European Law in Ireland. Due to the fact that most fens have been drained and reclaimed, this habitat, and the Marsh Fritillary, have become very rare.


## Bog Plants

Bogs may not be Ireland's most species-rich habitat but they do support unusual and rare plants that have developed clever ways to survive in such a harsh environment. **Sundews**, **butterworts** and **bladderworts**, for example, are all carnivorous plants. They actually *eat* insects for extra nutrients!

**Sundews** have spoon-shaped leaves, covered with up to 200 pin-shaped red "tentacles". Glands in these tentacles produce a very sticky and acidic liquid. Insects are attracted to the shiny droplet on the tentacle and get stuck to it. When an insect is trapped, its movements cause other tentacles to bend towards it and in *three minutes* the insect cannot escape. The whole leaf then closes around the insect - this can take a day to do. The plant's digestive juices then kill and dissolve the insect and when the leaf opens again, all that is left of the insect are its wings and legs. Sundew plants will trap an average of 5 insects per month!

Being carnivorous is a very effective strategy for a plant to develop to adapt to life in a nutrient poor habitat like a bog. Other plants have different coping strategies. A low shrub, **Sweet-scented Gale**, forms a partnership with a bacterium to obtain extra nitrogen from the air through the roots! While the cottony flowers of **bog cotton** is a wonderful sight, familiar to many people living near bogs. Ireland has four different types and one of these has large, air-filled cells in its roots to cope with the oxygen-poor peat!





**Heathers** are a common feature of bogs. **Ling heather** and **Cross-leaved heath** occur on raised bogs and blanket bogs, while **Bell heather** grows on upland peaty soils. In the past **heather** was used for fuel, thatching, bedding, floor mats, insulation, fences, rope, and even brushes!

Berried plants often feature on bogs. **Cranberry** has a beautiful red, edible berry and grows mainly on raised bogs and **Bilberry** (Fraochán), which produces dark, tasty, edible berries, can be plentiful on shallow areas of upland blanket bog, as can **Crowberry**.

The bright yellow flowers of **Bog Asphodel** and its flame-coloured seed heads are found on both raised and blanket bogs, as is **Bogbean**, which grows in pools and has frothy, white flowers and leaves that resemble big Shamrocks!

## **Sphagnum mosses**

Depending on how wet or dry it is, different **Sphagnum** mosses grow in various parts of the bog. Each are adapted to slightly different conditions and occur in a range of wonderfully rich colours; deep reds, oranges, ochres, yellows and greens. The bright green **Sphagnum cuspidatum**, sometimes called 'drowned kitten moss' means that the area is particularly wet.

Because they are so absorbent and are said to have antiseptic properties, dried **Sphagnum** was used in wounds to soak up blood. It is said to be more absorbent than cotton wool!

# Animals that live in Peatlands

**The Irish Hare** is Ireland's fastest native land mammal. Unlike the related Arctic and Mountain Hares, the Irish Hare rarely develops a white coat. Hares look like rabbits but are bigger and have longer ears. Hares prefer to live in open areas, so bogs suit them well. Unlike rabbits, hares do not make burrows but a *form*. This is an oval shaped hollow in long, thick grass or in a moss hummock. They are thus very vulnerable to predators as they shelter above ground. The main threat to the Irish Hare is habitat loss and damage, including peatlands. It is essential to protect their peatland habitat so they reach 'favourable' conservation status.

**The Common Frog** is the only frog found in Ireland. They eat insects which they catch with a very quick flick of their long, sticky tongues. Frogs need wet areas to live in so bogs and fens are ideal. They breed in ponds and pools but feed on land. The eggs are called spawn and are laid in water and develop into tadpoles. Tadpoles need to remain in water to develop into young frogs. As adults they spend more time moving about and feeding on land. Frogs absorb water through their skin so they don't need to drink! They have very long hind legs with webbed toes, making them excellent jumpers and good swimmers.

**Dragonflies** and **Damselflies** are among the largest and most colourful insects found in bogs and fens. They breed in ponds and pools where the larvae will remain for up to four years, until they emerge during the summer for a few weeks. Dragonflies are very acrobatic in flight and so catch their food on the wing. Damselflies are small and dainty and only fly short distances.







# Birds

Bogs are home to many different types of birds, both breeding resident and birds that come from afar to winter here. During the summer months **Meadow Pipit** and **Skylark** are by far the most numerous bird species breeding on the peatlands. These birds can form an important part of the diets of birds of prey that hunt these areas.

**Red Grouse** is a typical bird of raised and blanket bogs. Males have a deep red-brown plumage, white feathered legs and a bright red comb above the eye. Ling heather growing on bogs is crucial for the survival of Red Grouse. The birds nest and shelter in tall heather and feed on the younger shoots so it is very important for them that both younger and older heather are growing in the same places. They also feed to a lesser extent on bilberries and some insects. Grouse populations are declining because such a large area of peatland has been lost or degraded.

**Hen Harriers** are big birds of prey that are up to 50cm long, have a wingspan over 1 meter wide, with the females being larger than the males. Hen Harrier nests are just hollows in the ground, protected by the tall heathy vegetation on upland blanket bogs. They prey on small mammals such as the short-tailed field vole, and a wide range of birds, particularly Meadow Pipit. There are less than 200 confirmed breeding pairs of Hen Harrier left in Ireland. To save this bird from further decline and possible extinction, some areas of blanket bog in the upland areas where they breed are protected and managed as 'Special Protection Areas' specifically for this majestic bird.

**Golden Plover, Lapwing, Curlew, Merlin, Snipe, Skylark, and Greenland White-fronted Goose** are all found on peatlands at different times of the year. All are either red or amber listed species of conservation concern in Ireland, which means their populations or ranges are in decline. Unless peatlands are protected to better effect than they are currently, we may record further declines of these special birds.

# Threats to raised bogs

Raised bogs covered lots of the midlands and mid-west of Ireland. There was once approximately 310,300ha of raised bog however, today it is estimated that only 21,519ha of uncut raised bog habitat of conservation value remains. This represents a 93% loss of the original area of raised bogs in the Republic of Ireland. This decline is largely the result of harvesting peat for household fuel, and in more recent times for electricity production and for horticultural peat moss.

## Turf Cutting

Since Ireland lost most of its timber sources through deforestation it became common in the 17<sup>th</sup> Century to cut turf to heat homes. Each family generally had a turf bank which would be cut through the spring and early summer, using a special kind of spade called a **sleán**. The turf was placed in little heaps, and left to dry for several weeks before being collected up at the end of summer.

Many people still own turf banks although, very little turf is now cut with a sleán as machinery cuts much

more turf than is possible by hand. When a bog is cut, water drains away from the surface of the bog. The bog then dries and shrinks and the special plants and animals can no longer survive there and are replaced by more common species.

## Industrial Extraction of Peat

Bord na Móna has extracted peat, mainly from raised bogs, at an industrial scale since the 1940's. The peat is finely milled and burned to produce electricity or compressed into briquettes and sold as domestic heating fuel. In the 65 years since Bord na Móna was set-up it has exploited approximately 80,000ha of bog and approximately 3 million tonnes of milled peat are harvested every year for electricity and briquettes by Bord na Móna.

In 2009, peat accounted for 38% of Ireland's indigenous energy supply. The peatlands must first be drained before they can be harvested as un-drained peat is 90 to 95% water and only 5 to 10% solid matter. As peat dries out decomposition occurs and some of the carbon stored in the peat is released into the atmosphere. The remainder is released when the peat is burned as fuel.

Between 2009 and 2010 Bord na Móna also extracted approximately 1.8 million cubic metres of peat for horticultural purposes. 90% of this is exported as peat moss for gardening.



# Threats to blanket bog

Blanket bogs are thought to have originally covered around three quarters of a million hectares in the Republic of Ireland. Blanket bogs are easily damaged by over-stocking, turf-cutting, afforestation, burning and building of roads or other structures including wind turbines. Blanket bog may also 'move' considerable distances in 'bog bursts' or landslides sometimes caused by some of the above activities.

## Turf-cutting

Over the centuries turf-cutting using the sleán has removed extensive areas of blanket bog habitat but more recent use of machines has accelerated the loss and damage.

## Over-stocking

Sheep numbers on western and upland bogs rose to very high numbers in the 1980's and resulted in extensive loss of heather and erosion of peat. Efforts to reduce stock numbers is ongoing but recovery is slow, and erosion is still a problem in many western uplands.

## Burning

Frequent or uncontrolled fires on blanket bog removes vegetation and may even burn away peat soil that grew so slowly over thousands of years. This reduces the diversity of bog plants and animals in several areas.

## Afforestation

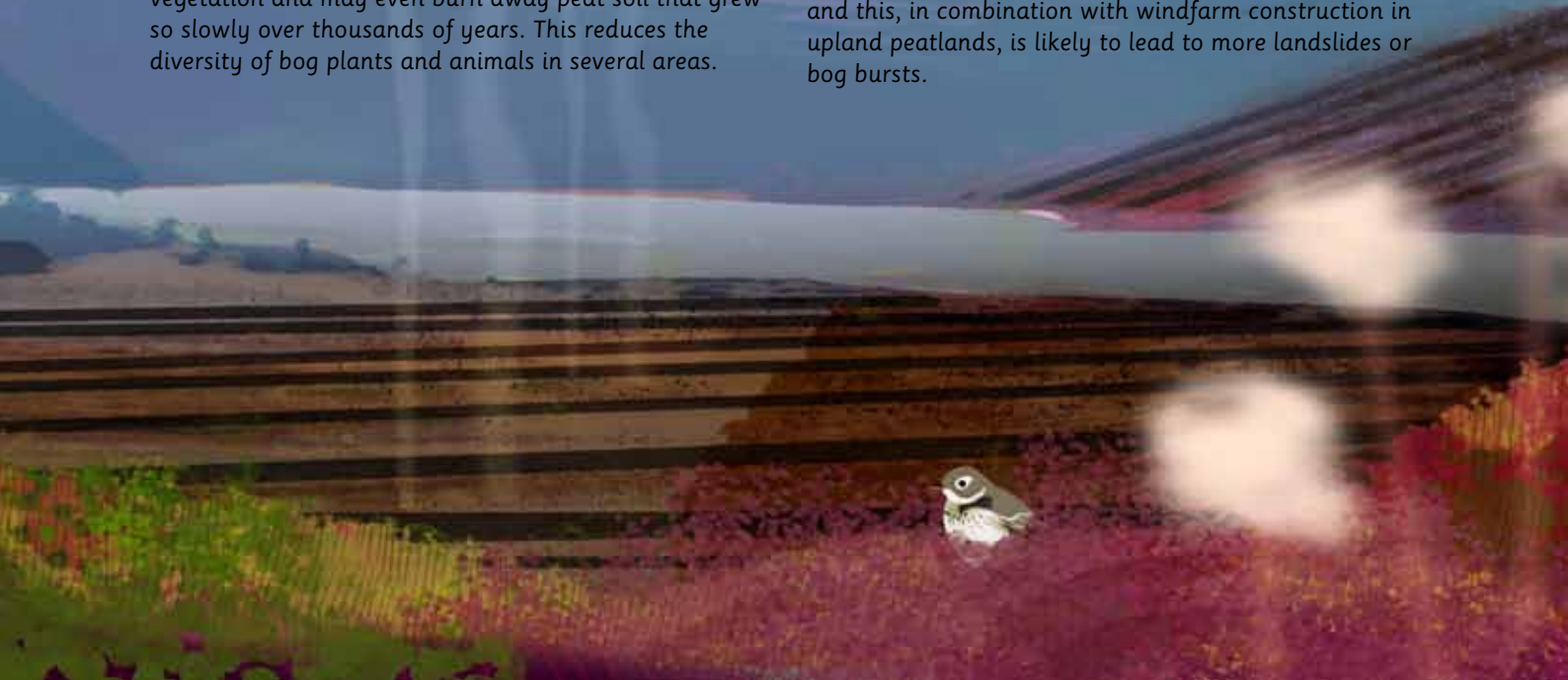
One of the main losses of blanket bog is due to tree planting, usually conifer plantations. To date, 28% (218,850ha) of Ireland's blanket bogs have been afforested. When bogs are afforested, they are first drained and this causes the peat to dry out, releasing stored carbon into the atmosphere. The growing trees also dry out the peat, which may then erode causing rivers and streams to fill with peat. Harvesting of the trees can also damage bogs. This can be very negative for local water quality and can ruin the habitat for many of the invertebrates and fish that live or spawn in these streams, such as Trout and Salmon and the very sensitive Freshwater Pearl Mussel which feed by filtering water.

## Construction of wind farms

The building of windfarms on upland peatlands is likely to increase in an effort to reduce dependence on burning fossil fuel however the roads and deep foundations needed for each wind turbine can disturb and damage peatland habitats.

## Landslides or 'Bog Bursts'

Landslides or 'bog bursts' happen when a big swathe of peat breaks away and slides downhill. Bog bursts may happen naturally but can be triggered by human activity such as drainage, over-stocking, turf-cutting, or the construction of roads on deep bog for example for wind farms. Bog bursts can cause loss of life, extensive land damage and very serious water pollution. Climate change is set to lead to more extreme weather events and this, in combination with windfarm construction in upland peatlands, is likely to lead to more landslides or bog bursts.



# Climate Change

The Earth's climate is constantly changing between long periods of warmth, such as the period we are living now, and long periods of cold, otherwise known as *ice-ages*. However, human activities are currently interfering with this natural system. The Earth is getting warmer because people are releasing heat-trapping gases into the atmosphere, mainly by burning fossil fuels. These gases are called *greenhouse gases*.

Human activity is releasing more greenhouse gases into the atmosphere than what would naturally occur. Climate Change caused by elevated levels of greenhouse gases in the atmosphere has led to rising air and ocean

temperatures, more severe droughts, melting ice caps, rising sea levels, increased rainfall and greater flooding. These changes are happening because the Earth's air, water, and land are all linked to the climate. While the Earth's climate has changed before, this time people are causing these changes. The changes are happening faster and in a more extreme way than before. Many people, plants and animals are not able to cope with the changes that are happening so quickly.

The main greenhouse gases are *carbon dioxide*, *methane* and *nitrous oxide*. Carbon dioxide is the greenhouse gas talked about the most as more of it is produced than any other greenhouse gas. However, methane and nitrous oxide are also very dangerous as they trap more heat in the atmosphere compared to the same amount of carbon dioxide.



Peatlands are important in regulating the climate and this role is becoming increasingly recognised. An undamaged and actively growing peatland will accumulate carbon over the long term. In Ireland, our peatlands may absorb around 57,000<sup>1</sup> tonnes of carbon every year and currently store 1,566<sup>2</sup> million tonnes of carbon! But most of Ireland's peatlands have been damaged, and as a result they are releasing their stored carbon to the atmosphere instead of absorbing more.

Of all fuel sources used to generate electricity and heat in Ireland, peat is the most damaging to the climate. For this reason we urgently need to focus on alternative energy sources and move away from carbon rich fossil fuels. Four<sup>3</sup> million cubic tonnes of carbon dioxide are released every year from burning peat in Ireland. Instead of protecting these hugely valuable carbon stores and locking away carbon long term, we continue to degrade our peatlands and make them sources of greenhouse gases. Wet, undamaged bogs are also likely to be less sensitive to the impacts of climate change than drained or damaged bogs.

<sup>1, 2, 3</sup> These figures were kindly provided Renou-Wilson et al, 2011. See further Reading section for more information.



# Conservation of Peatlands

Ireland has a large proportion of the remaining raised bog habitats in the western part of the European Union, and contains one of the most significant areas of blanket bog habitat in the world! Thus, Ireland has obligations to protect the best of these under international, European, and Irish law. A major national effort is required to successfully protect even the designated raised bogs and blanket bogs, which are a very small portion of the original national resource.

Around 85% of Ireland's bogs and fens have been lost or damaged due to activities such as turf-cutting and industrial peat extraction, over-stocking, planting of conifer forests, as well as drainage and reclamation for agriculture. There are no intact peatlands left as all have been damaged to varying degrees and the areas selected for conservation are a very small proportion of the peatlands that once occurred here. Many of those that do remain are of international importance and many are protected under the EU Habitats Directive as Special Areas of Conservation (SACs), and as Natural Heritage Areas (NHAs) under the Irish Wildlife (Amendment) Act, 2000.

**128 raised bogs** have been designated for protection in Ireland. **53** of these are SACs and **75** are NHAs. There are also **123 blanket bog** sites designated, **50** as SACs and **73** as NHAs.

Peat extraction and other damaging activities are no longer allowed to take place on the 53 raised bog SACs, and is to be phased out on sensitive areas of blanket bog SACs. The policy in relation to turf-cutting in NHAs is currently under active review. This is in order to comply with legal conservation requirements for protected bogs. A number of options are being provided by the Government to turf cutters within protected bogs, including compensation for the cessation of turf-cutting and relocation to other, non-designated bogs. This is to protect designated bogs from further loss and to rehabilitate damaged areas to conserve the plants and animals that live there. This will also have many environmental benefits for us and for future generations.

Some fens have also been designated for protection as SACs. However there is a serious lack of information on the conservation value and management requirements of fens in Ireland and much more work will be required to identify and protect valuable sites



# What you can do to protect Ireland's peatlands

With the vast majority of raised bogs lost through centuries of turf-cutting and decades of intensive industrial extraction, only a tiny proportion of them remain. Some have been protected as Special Areas of Conservation and Natural Heritage Areas but 'protected' bogs are still being damaged through drainage and turf-cutting. Let your friends, family and politicians know that you wish to see a representative sample of Ireland's raised bogs, blanket bogs and fens conserved effectively and managed properly, so that we and future generations of plants, animals and people can also enjoy their benefits.

If you buy in turf to heat your home, look into more environmentally friendly ways of heating your home.

Insulation will also reduce the amount of heating needed and will save you money.

Avoid peat-based gardening products like peat moss, which mostly come from industrially harvested Irish bogs. Instead, use peat-free composts or else make your own compost heap.

Go out and explore a bog or fen near you, with permission from the owner, and enjoy the fascinating habitat but be careful as they can be very wet and swampy. You can easily sink into soft wet ground so it is important to go with somebody who knows the bog and how to walk safely on them.

Visit the **National Museum** in Kildare Street, Dublin where many of the wonderful treasures preserved in the bogs can be seen - even the bodies of *Croghan Man* and *Clonycavan Man* are there.

If you live in the east or midlands you could also visit the **Clara Bog Visitor Centre**, Co. Offaly and get a guided tour of the bog nature reserve, or else visit the **Irish Peatland Conservation Council (IPCC) Centre** at Lullymore, Co. Kildare. In the West you could visit some of the National Parks that have peatlands in them such as Glenveagh, (Donegal), Ballycroy (Mayo), Connemara and Killarney.

If you are in school you could ask your teacher to take your class out and get to know what grows on a peatland, and make a record of the plants, insects and birds you see. Visit regularly; record your findings and you may even come to learn something new about your chosen peatland. You can submit records and observations online to interested organisations (*see contacts and further information*).

Become a member of Irish environmental NGO's such as An Taisce, the Irish Peatland Conservation Council and BirdWatch Ireland, who are working to protect our fens and bogs.

Booklet by Camilla Keane of An Taisce with the assistance of Anja Murray and the National Parks and Wildlife Service (NPWS), Department of Arts, Heritage and the Gaeltacht. Part-funded by NPWS.

Illustrated by Marie Thorhauge of Cartoon Saloon

Designed by Public Communications Centre



## Contacts and Further Information:

An Taisce: An environmental charity with a focus on conserving Ireland's built and natural heritage - [www.antaisce.org](http://www.antaisce.org)

Bat Conservation Ireland : A charity working for the conservation of Ireland's bat populations - [www.batconservationireland.org](http://www.batconservationireland.org)

BirdWatch Ireland: An NGO committed to the conservation of wild birds and their habitats throughout Ireland - [www.birdwatchireland.ie](http://www.birdwatchireland.ie)

Biology.ie: A web based resource for people interested in biodiversity in Ireland – [www.biology.ie](http://www.biology.ie).

BirdTrack is a free website where you can make online records of the birds you see and allows others to see and study your records. [www.bto.org/volunteer-surveys/birdtrack](http://www.bto.org/volunteer-surveys/birdtrack)

Coastwatch Ireland: An NGO active in the planning, protection and management of Ireland's coastal zones – [www.coastwatch.org](http://www.coastwatch.org)

ECO-UNESCO: Ireland's environmental education and youth organisation – [www.ecounesco.ie](http://www.ecounesco.ie)

Friends of the Irish Environment: A network dedicated to protecting Ireland's environment – [www.friendsoftheirishenvironment.net](http://www.friendsoftheirishenvironment.net)

Heritage in Schools Scheme: A Heritage Council initiative to bring heritage experts in to primary schools – [www.heritageinschools.ie](http://www.heritageinschools.ie)

Irish Environmental Network: A network of Irish non-governmental environmental organisations - [www.ien.ie](http://www.ien.ie)

Irish Peatland Conservation Council: A charity founded to protect a representative sample of Irish fens and bogs – [www.ipcc.ie](http://www.ipcc.ie)

Irish Wildlife Trust: An environmental charity for wildlife conservation and education – [www.iwt.ie](http://www.iwt.ie)

Irish Seed Savers Association: Research, locate and preserve traditional varieties of fruit, vegetables and grains – [www.irishseedsavers.ie](http://www.irishseedsavers.ie)

National Biodiversity Data Centre: Collects, manages and analyses data and provides information on Ireland's biodiversity – [www.biodiversityireland.ie](http://www.biodiversityireland.ie)

National Parks and Wildlife Service: A statutory body responsible for the conservation of habitats and species in Ireland – [www.npws.ie](http://www.npws.ie)

Notice Nature: A campaign to increase public awareness of the importance of Ireland's biodiversity – [www.noticenature.ie](http://www.noticenature.ie)

Sustainable Energy Authority of Ireland (SEAI) was set up by the government in 2002 as Ireland's national energy authority. SEAI aim to play a leading role in transforming Ireland into a society based on sustainable energy structures, technologies, and practices – [www.seai.ie](http://www.seai.ie)

The Heritage Council: A statutory body who promote interest, education, knowledge and pride in our national heritage – [www.heritagecouncil.ie](http://www.heritagecouncil.ie)

Tree Council of Ireland: A voluntary organisation formed to promote the planting, care and conservation of trees – [www.treecouncil.ie](http://www.treecouncil.ie)

## Further Reading

Renou-Wilson F., Bolger T., Bullock C., Convery F., Curry J. P., Ward S., Wilson D. & Müller C. 2011. BOGLAND - Sustainable Management of Peatlands in Ireland. STRIVE Report No 75 – [www.epa.ie/downloads/pubs/research/land/strive75-bogland-for-web.pdf](http://www.epa.ie/downloads/pubs/research/land/strive75-bogland-for-web.pdf)

The IUCN UK Peatland Programme has produced a report which reveals the enormous importance of peatlands for people and wildlife – [www.iucn-uk-peatlandprogramme.org](http://www.iucn-uk-peatlandprogramme.org)

