

My Raised Bog



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Cover images: Girley Bog, Co. Meath
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Raised Bogs are wetlands made of peat, plants and water combined together. They occur in the midland counties and in the Bann River valley of Ireland. Peat is the result of the accumulation of partially decayed plants over thousands of years. The dead plants don't rot because they grow in waterlogged conditions where there is little oxygen.



Cloncrow Bog, Co. Westmeath © C. O'Connell

How Raised Bogs Grow



Raised bogs formed in lakes left behind after the Ice Age 10,000 years ago in the Irish midlands. Bacteria and fungi - the agents of decay were prevented from working in the waterlogged conditions found in such lakes. The lakes slowly filled with un-decomposed plant material which thickened into peat to fill the lake basin. Sedges invade the surface peat to form a fen. Groundwater feeds the plants in the fen and a rich alkaline wetland habitat develops. Eventually the plants lose contact with the groundwater and rainwater becomes the main water source which means the peatland becomes acidic pH 4. In the mineral poor wetland *Sphagnum* mosses establish and grow rapidly laying down peat each year until it thickens to 10m depth or more. All of this peat is stored carbon and as long as the

bog remains wet, that carbon is not released to the atmosphere as greenhouse gas.



Peat is forming in a lake basin

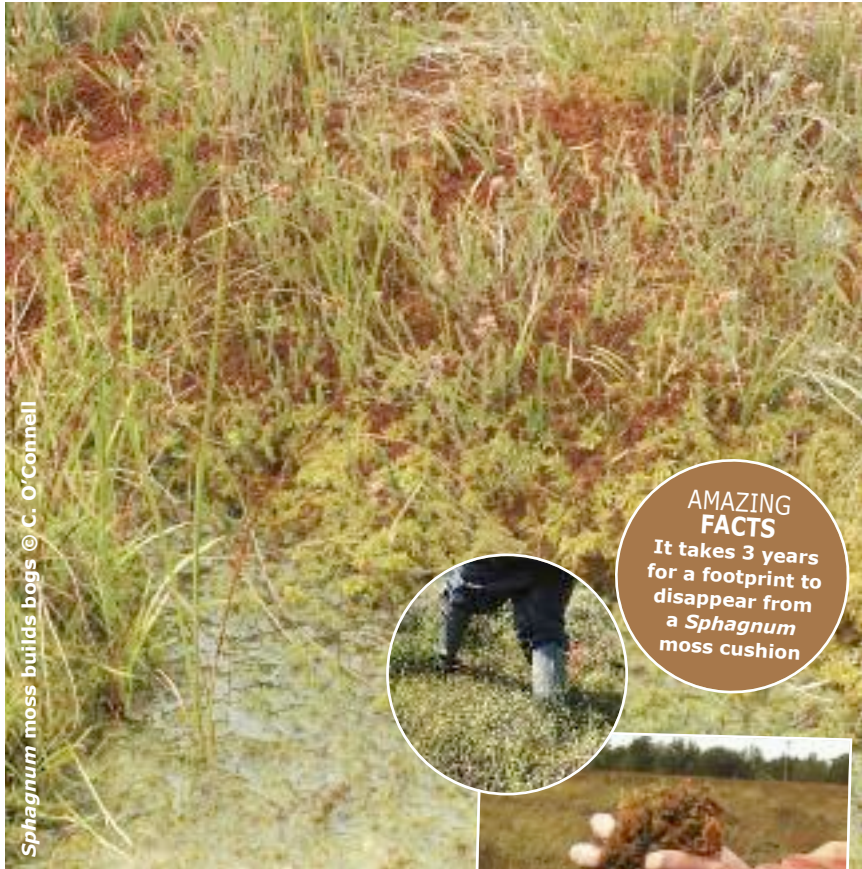


Lake basin filled with fen peat



Raised bog with 10m of peat

Walking on Water



Walking on a raised bog is the closest you might ever get to being able to walk on water. This is because a raised bog is 90% water and only 10% solid earth. The ground is so soft that it takes three years for your foot print to disappear from the moss cushions. If you jump up and down on the bog you can feel and even see it move, proof that it is really wet.

All of this water is stored in a very powerful bog moss known as *Sphagnum*. It grows quickly and



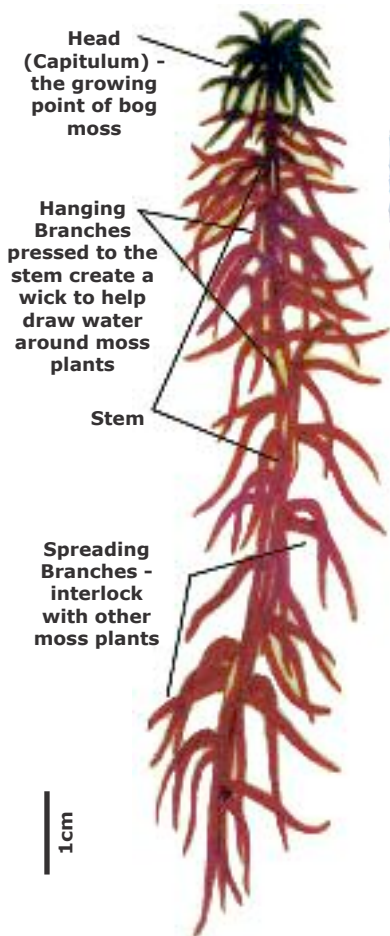
can hold up to 20 times its own weight in water. When *Sphagnum* mosses die their remains do not decay but collect as peat or turf.

Sphagnum Moss

Without *Sphagnum* mosses there would be no raised bogs in Ireland. Bogs have a living surface which is made of a thin carpet of *Sphagnum* mosses. This is floating on a thick layer of partly rotted plant material or peat that is soaking wet. This is why when you walk across the surface of a bog it feels bouncy.

The carpet of *Sphagnum* mosses is not flat. Some *Sphagnum*

mosses grow tightly packed together to form hummocks or cushions. These can be up to 1m high on the bog and can be chocolate brown or orange in colour. Scientists have counted 50,000 *Sphagnum* plants in a hummock measuring one square metre. Other *Sphagnum* form loose mats in colours of pink, red, copper and yellow. Still others grow as single plants surrounded by water in bog pools. These ones are bright green.



Structure of a *Sphagnum* Moss Plant

A single *Sphagnum* plant is very small but has an interesting structure. The head or capitulum is the growing point of the moss. Attached to the stem are two types of branches - the spreading branches stick out to interlock with other plants. The hanging branches are pressed to the stem and help to draw up water. Water is trapped between plants in a hummock, but it is also stored inside the plant itself in special containers called cells.

A peat core from a raised bog showing the living *Sphagnum* layer above the peat layer.

© C. O'Connell



A leaf of a *Sphagnum* magnified to show the water storing cells and the green food-making cells inside.

© S. Anderson

Structure of a *Sphagnum* Moss Plant

What lives in a Bog?



Clara Bog, Co. Offaly © C. O'Connell



Large Heath Butterfly © C. O'Connell



Curlew © D. Camier



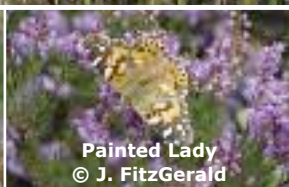
Emperor Moth © C. O'Connell



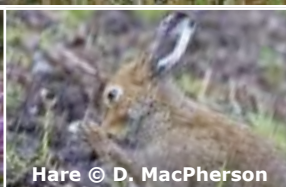
Emperor Moth © C. O'Connell



Red Grouse © F. Doyle



Painted Lady
© J. FitzGerald



Hare © D. MacPherson



Merlin © F. Doyle

The endangered Large Heath Butterfly depends on raised bog plants such as cross-leaved heath and bog cotton for its food.



Fox Moth Caterpillar © C. O'Connell

The Emperor Moth flies in daylight and could be mistaken for a butterfly. You may find the caterpillars (called hairy mollies) of the Fox moth or Oak Eggar Moth or a pure silk Emperor moth cocoon on the bog.



Skylark © F. Doyle

Frogs hunt on the bog surface but breed in bog pools laying clumps of frog spawn in spring. The Viviparous Lizard may be seen sunning itself on hummocks on warm days.



Fox © É. de Buitléar

Snipe, curlew, skylark and meadow pipit breed on bogs. With no trees these birds nest on the ground in hummocks. Some feed on insects while others probe the peat for food with their long beaks. Even birds of prey such as kestrel, buzzard or merlin will patrol the bog looking for small birds, freshly hatched chicks or other animals. Red grouse feed on Ling Heather. They have a distinct "go back, go back" sounding call. Look for clumps of their sausage like droppings on the bog.



Viviparous Lizard © P. Foss

You are most likely to see the Irish Hare running away from you on the bog. Its droppings are straw coloured oval balls. Hare's feed on bog cotton. Foxes, Badgers and Shrews make foraging journeys to the bog but they don't live there.

Some plants go to extremes to live in bogs. Sundews are carnivorous and they trap insects in sticky fluid found at the tips of tentacles on their tiny leaves. The tentacles move to enclose the insect on the leaf surface so that it can be eaten.

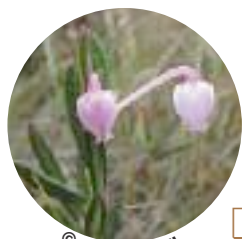
My Raised Bog - How Many Plants Do You Know?



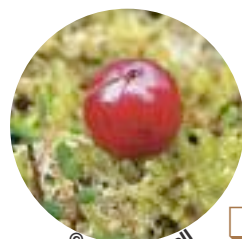
© C. O'Connell
Ling Heather
Calluna vulgaris
Fraoch Coiteann



© C. O'Connell
Crossed Leaved Heath
Erica tetralix
Fraoch Naoscaí



© C. O'Connell
Bog Rosemary
Andromeda polifolia
Andraiméid



© C. O'Connell
Cranberry
Vaccinium oxycoccus
Mónóg



© C. O'Connell
Long Leaved Sundew
Drosera anglica
Drúchtín Móna



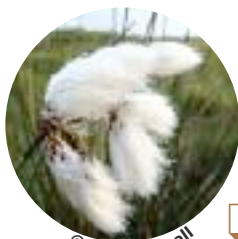
© C. O'Connell
Round Leaved Sundew
Drosera rotundifolia
Drúchtín Móna



© C. O'Connell
Bog Asphodel
Narthecium ossifragum
Sciollam na Móna



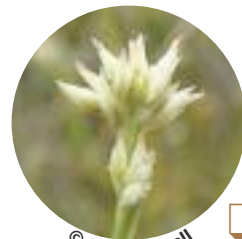
© C. O'Connell
Bog Bean
Menyanthes trifoliata
Báchrán



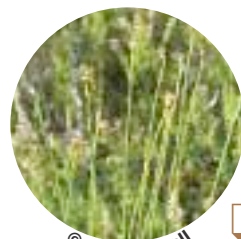
© C. O'Connell
Many-flowered Bog Cotton
Eriophorum angustifolium
Ceannbhán



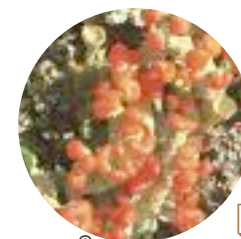
© C. O'Connell
Single-flowered Bog Cotton
Eriophorum vaginatum
Ceannbhán Gaelach



© C. O'Connell
White Beak Sedge
Rhynchospora alba
Gobsheisc



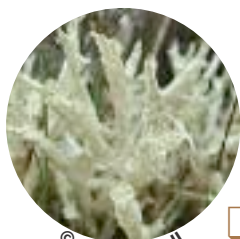
© C. O'Connell
Deer Sedge
Trichophorum cespitosum
Cíb Cheannghéal



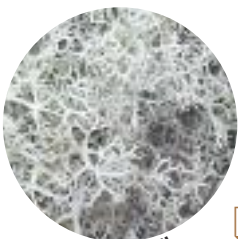
© P. Farrell
Matchstick Lichen
Cladonia floerkeana
Caipín Dearg



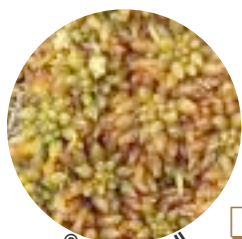
© C. O'Connell
Pixie Cup Lichen
Cladonia pyxidata
Cupán Móna



© C. O'Connell
Antler-Horn Lichen
Cladonia uncialis
Léicean



© P. Farrell
Bearded Lichen
Cladonia portentosa
Léicean



© C. O'Connell
Austin's Bog Moss
Sphagnum austinii
Sfagnam



© C. O'Connell
Red Bog Moss
Sphagnum capillifolium
Sfagnam



© C. O'Connell
Feathery Bog Moss
Sphagnum cuspidatum
Sfagnam



© C. O'Connell
Rusty Bog Moss
Sphagnum fuscum
Sfagnam



© C. O'Connell
Soft Bog Moss
Sphagnum tenellum
Sfagnam



© C. O'Connell
Lustrous Bog Moss
Sphagnum subnitens
Sfagnam



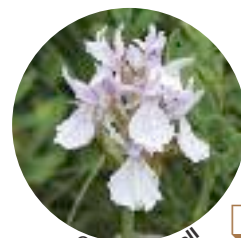
© C. O'Connell
Magellanic Bog Moss
Sphagnum magellanicum
Sfagnam



© C. O'Connell
Papillose Bog Moss
Sphagnum papillosum
Sfagnam



© C. O'Connell
Heath Plait-Feather Moss
Hypnum jutlandicum
Cleitchaonach



© C. O'Connell
Heath-Spotted Orchid
Dactylorhiza maculata
Na Circíní



© C. O'Connell
Purple Moor Grass
Molinia caerulea
Fionnán



© C. O'Connell
Tormentil
Potentilla erecta
Néalfartach

Bog Pool Dipping

Carnivorous flying insects, such as dragonflies and damselflies, hunt over bogs catching midges and mosquitoes. They lay their eggs under water in bog pools. The larvae spend three years developing in the pool. They are ferocious predators. After this time they emerge from the pond to become a flying insect and exploit a new habitat for food. Within bog pools there is a rich diversity of mini beasts for

example: water scorpion, water beetle, water boatman, hoglouse, shrimp and tadpoles. Other mini beasts inhabit the surface water of the pool such as pond skaters and the hunting raft spider (*Dolomedes fimbriata*).



Raft Spider © C. O'Connell



Large Red Damselfly © C. O'Connell



Back Swimmer © C. O'Connell



Water Scorpion © C. O'Connell



Pond Skater © C. O'Connell

Pond dipping for mini beasts © C. O'Connell



Dragonfly Larva
© N. Madigan



Four-spot Chaser
Dragonfly © T. Whyte



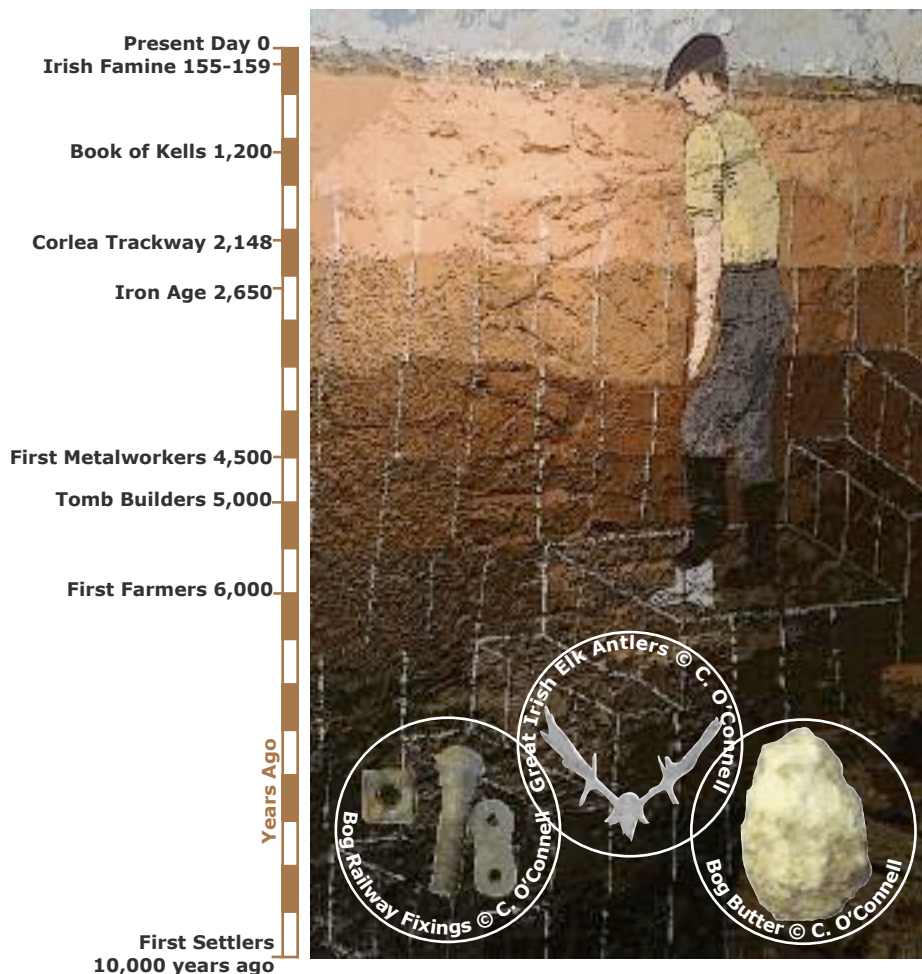
Great Diving Beetle
© N. Madigan

The Bog Archive

More than peat is preserved in bogs. Stumps of trees and wooden or leather artefacts such as tools, clothing and boats have been preserved; even the bodies of people who lived thousands of years ago. The wetness of the peat and the lack of oxygen are the reason why perishable items are preserved. Another great example is bog butter which farmers of old stored in the bog to

keep it fresh for use at a later stage. Under the peat the remains of the Great Irish Elk have been found. Millions of seeds and pollen grains are also preserved in the peat. By analysing these we can see when the first farmers arrived in the midlands and how the forests colonised the land after the ice age. Even volcanic ash or tephra from the Islandic Hekla eruptions is found in bogs.

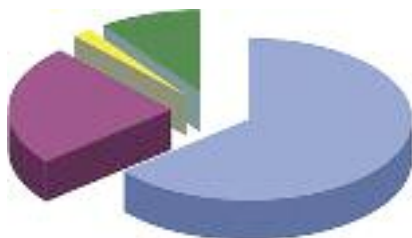
Steps in Time from 0 to 10,000 years ago and Peat Depths



Why are Raised Bogs Important?

Raised bogs are (or were) common in Ireland and scarce in Europe. They occur in few other places in the world. Raised bog habitats need protecting, just like the tropical rainforests.

When raised bogs disappear, we lose more than a source of fuel, moss peat and a unique habitat: we lose a natural environmental regulator. Bogs hold rainwater (just like a sponge), which reduces floods. The water is released during droughts. As they grow bogs store carbon and have a vital role to play in helping to tackle the climate crisis.



Raised Bog Utilisation Chart 300,000ha

■ Turf Cut for Home Use 46% ■ Forestry 2%
■ Industrial Peat Extraction 24% ■ Conservation Value 10%

Originally there was 300,000ha of raised bog in Ireland. Today only 10% of that area has a value for nature conservation. Sites are protected through conservation designation. Land owners are compensated for not cutting turf in the designated sites and for assisting with their restoration. Communities are advised on how to safeguard raised bogs and on how best to use them for recreation and education.

What has it to do with me?

People use peat. Turf is cut and dried for a home fuel - a tradition carried on for hundreds of years in Ireland. At first turf was cut and dried by hand but today machinery is used to cut the turf which is then spread out to dry. About 60 years ago the peat industry began. Machines were invented to mill peat which is used to make electricity. On top of that peat, rich in *Sphagnum* moss is bagged and sold to people to use in their gardens. We need to stop depending on peat and turf if we are to protect the last of the raised bogs. It's time to use energy produced from renewable sources and to compost organic waste instead of using moss peat in gardening. With the climate in crisis we need to rewet any peat reserves remaining to prevent them leaking greenhouse gases which damage our environment.



Action You Can Take for Bogs

Get Stuck In - Help Block Drains

Rewetting damaged raised bogs means bringing the water table back up to the surface. This is achieved by blocking up old



Volunteers blocking drains on Girley Bog © T Ó Corcora

drains and removing any trees that can suck water from open parts of the bog. Even forestry plantations on raised bogs are being felled so that the bogs can be allowed to grow again. Some work needs special machinery but small jobs can be carried out by trained volunteers. Contact your local youth group or your local bog group through the Community Wetlands Forum to see what you can do to help.

Citizen Scientists Wanted

Each year the Irish Peatland



conservation Council record frogs and frogspawn seen on raised bogs and other wetlands. Records can be submitted

on line at www.ipcc.ie. Join the Hop to It Irish Frog Survey.

Bog Habitat Transplant

Re-introducing *Sphagnum* moss to areas of raised bogs that have no plant cover helps their restoration. *Sphagnum* moss is transplanted from a donor site onto freshly prepared peat. The plants are covered with living



Sphagnum moss transplant - Spot the differences after 3 years.

© C. O'Connell

strands of moss and protected with a layer of straw. After 3-5 years the moss regenerates covering the bare peat and preventing further loss of the peat soil (which is carbon) and wildlife. By volunteering on community projects you can help with bog transplants.

AMAZING
FACTS
For incredible
bog facts and
information
visit
www.ipcc.ie

Like Raised Bogs

Spread the word about how great raised bogs are for you.

Remember

My Raised Bog = Water

My Raised Bog = Wildlife

My Raised Bog = Carbon Store

My Raised Bog = Flood Control

My Raised Bog = A Day in the Wild



describes the work that needs to be done to bring the bogs back to good health. Read more at www.npws.ie and www.raisedbogs.ie.



Save the Bogs Campaign

The campaign to save a representative sample of Ireland's peatlands for people to enjoy now and in the future began over 35 years ago. It is run by the Irish Peatland Conservation Council (IPCC) - an environmental NGO. IPCC

Bringing Raised Bogs Home

Composting household waste cuts out the need to purchase bags of moss peat from a garden centre for use in your garden.

Moss peat is harvested from raised bogs and this removes the carbon and greenhouse gas store that took thousands of years to build in the bog.



Planning for the Future

The National Parks and Wildlife Service of the Department of Culture, Heritage and the Gaeltacht have developed a plan to protect raised bogs for Irish people. This document sets a target area for conservation of raised bogs and



- Protect biodiversity and fight the climate crisis by restoring, managing and conserving peatland habitats and wildlife.
- Help Irish people save bogs and live sustainably through education, training and fundraising for essential projects. Read more at www.ipcc.ie.

What Raised Bogs Can I Visit?

Because of their waterlogged nature, access to raised bogs can be difficult; however several bogs have boardwalks or walking tracks to help protect the

sensitive bog surface from trampling. Respect wildlife and privately-owned lands. Leave No Trace. Above all enjoy your experience.



Abbeyleix Bog, Laois © C. O'Connell



Clara Bog, Offaly © C. O'Connell



Carn Park Bog, Westmeath © www.life04.raisedbogrestoration.ie



Cloonshanville Bog, Roscommon © L. Scott



Corlea Bog, Longford © www.tourireland.com



Girley Bog, Meath © C. O'Connell



Griston Bog, Limerick © C. O'Connell



Lodge Bog, Kildare © C. O'Connell



Scohaboy Bog, Tipperary © P. Foss

My Raised Bog Challenges

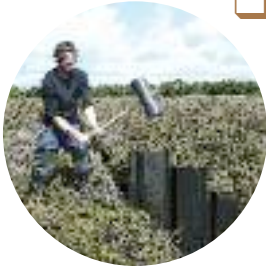
- ☐ I took part in International Bog Day



- ☐ I've decided not to use moss peat in my garden and to recycle organic material to make my own compost



- ☐ I volunteered to help restore my local raised bog



- ☐ I shared my raised bog experience on social media



- ☐ I went pond dipping to discover wildlife in bog pools



- ☐ I gave a talk about my raised bog to



- ☐ I'm going to use less electricity to help reduce my carbon footprint

- ☐ I've worked out the age of my raised bog



- ☐ I found frogs and frogspawn in my raised bog and sent my records to the Hop To It Frog Survey