

My Raised Bog



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Cover: Girley Bog, Co. Meath © C. O'Connell
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Bog of Allen Nature Centre, Lullymore,
Rathangan, Co. Kildare R51 V293.
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Raised bogs are wetlands comprising a combination of peat, plants and water. In Ireland, they occur in the midland counties and in the Bann River valley. Peat is the result of the accumulation of partially decayed plants over thousands of years. The dead plants do not rot because they grow in waterlogged, oxygen-poor conditions.



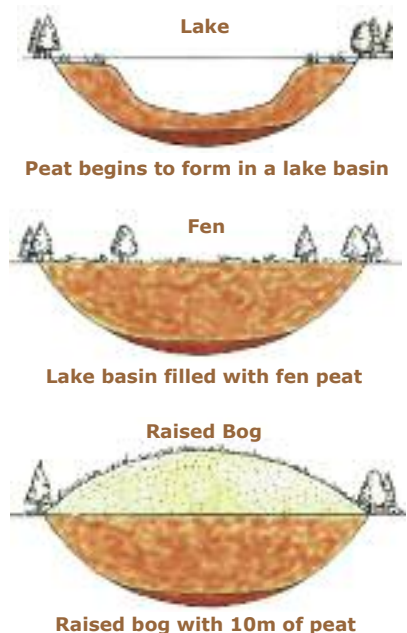
Cloncrow Bog, Co. Westmeath © C. O'Connell

How Raised Bogs Grow

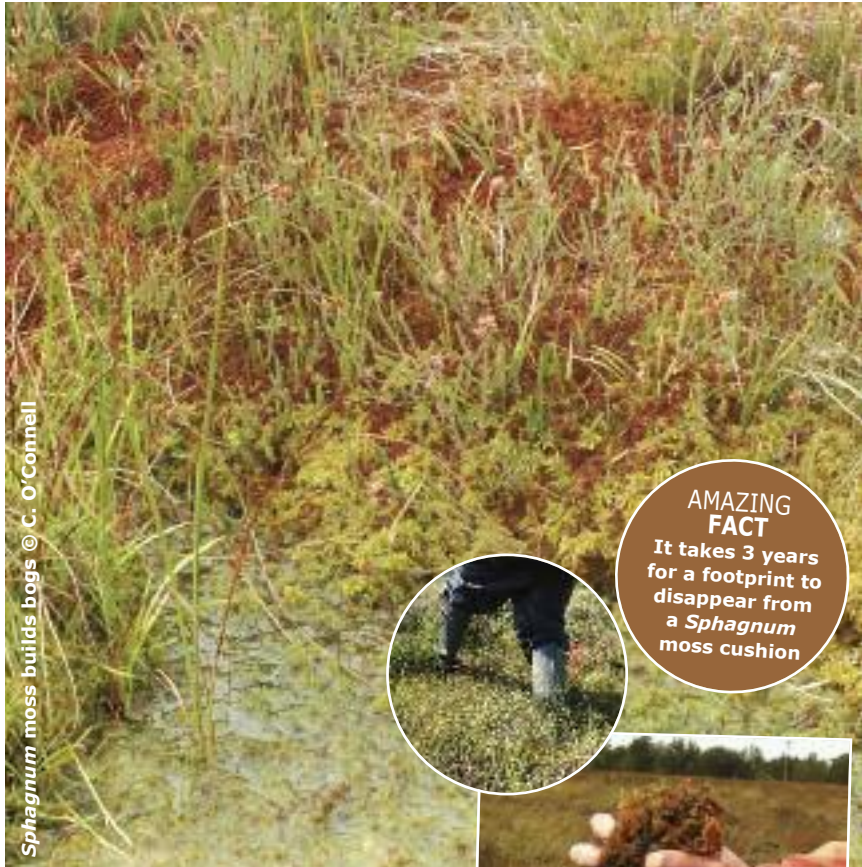


The raised bogs present in the Irish midlands formed in lakes created at the end of the last Ice Age, 10,000 years ago. The waterlogged conditions found in such lakes prevented bacteria and fungi - the agents of decay - from decomposing dead plant material. Consequently, the lakes slowly filled with un-decomposed plant material, which thickened into peat that eventually filled the lake basin. Sedges then invaded the surface peat to form a fen. In fens, groundwater feeds the plants and a rich alkaline wetland habitat develops. Eventually, however, the plants lose contact with the groundwater and rainwater becomes the main water source, resulting in the peatland becoming acidic (obtaining a pH value of at approximately 4). In these mineral-poor wetlands, *Sphagnum* mosses establish and grow rapidly, creating more peat

each year. All of this peat represents stored carbon, and as long as the bog remains wet, that carbon is not released into the atmosphere as greenhouse gas.



Walking on Water



Sphagnum moss builds bogs © C. O'Connell

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% dead plants. The ground is so soft that it takes three years for your footprint 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 1mm a year



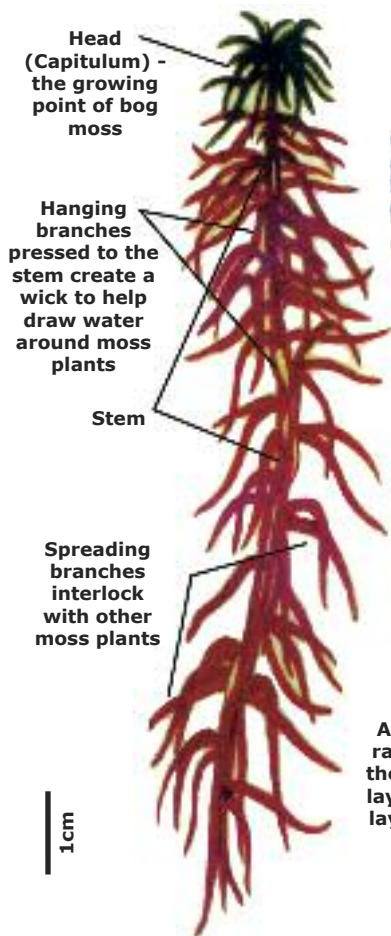
and can hold up to 20 times its own weight in water. When *Sphagnum* mosses die, their remains do not decay, but collect as peat or turf.

Sphagnum Moss

Without *Sphagnum* mosses there would be no raised bogs in Ireland. Bogs have a living surface comprising a thin carpet of *Sphagnum* mosses. This carpet floats 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 *Sphagna* form loose mats with colours of pink, red, copper and yellow. Some grow in bog pools as single plants surrounded by water. These mosses are bright green.

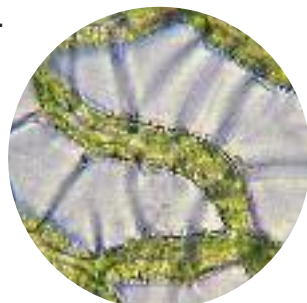


Structure of a *Sphagnum* Moss Plant

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

What lives in a Bog?



Clara Bog, Co. Offaly © C. O'Connell



Frog © C. O'Connell



Curlew © D. Camier



Emperor Moth © C. O'Connell



Large Heath Butterfly © 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 can be mistaken for a butterfly. On the bog, you may find the caterpillars (called hairy mollies) of the fox moth or oak eggar moth, or a pure silk emperor moth cocoon.



Skylark © F. Doyle

Frogs hunt on the bog surface and 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. As there are no trees on the bog, 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 and merlin will patrol the bog looking for small birds, freshly hatched chicks or other animals. Red grouse feed on ling heather and 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. Hares feed on bog cotton. Foxes, badgers and shrews make foraging journeys onto the bog, but do not 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 and leaf wrap around the insect and then it is digested.

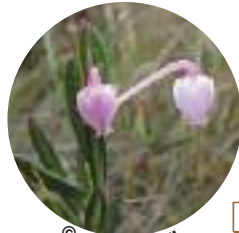
My Raised Bog - How Many Plants Do You Know?



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



© C. O'Connell
Cross 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



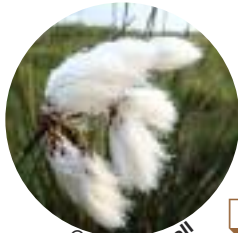
© C. O'Connell
Round Leaved Sundew
Drosera rotundifolia
 Drúchtín Móna



© 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
 Sfgnam



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



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



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



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



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



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



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



© 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 underwater in bog pools. The larvae spend three years developing in the pool and are ferocious predators. After this time, they emerge from the pond to become flying insects and exploit new habitats for food. Within bog pools, there is a rich diversity of invertebrates; for

example, water scorpions, water beetles, water boatmen, hoglice, shrimp and tadpoles. Other invertebrates 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

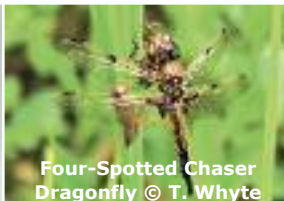


Pond Skater © C. O'Connell

Pond dipping for invertebrates © C. O'Connell



Dragonfly Larva
© N. Madigan



Four-Spotted Chaser
Dragonfly © T. Whyte



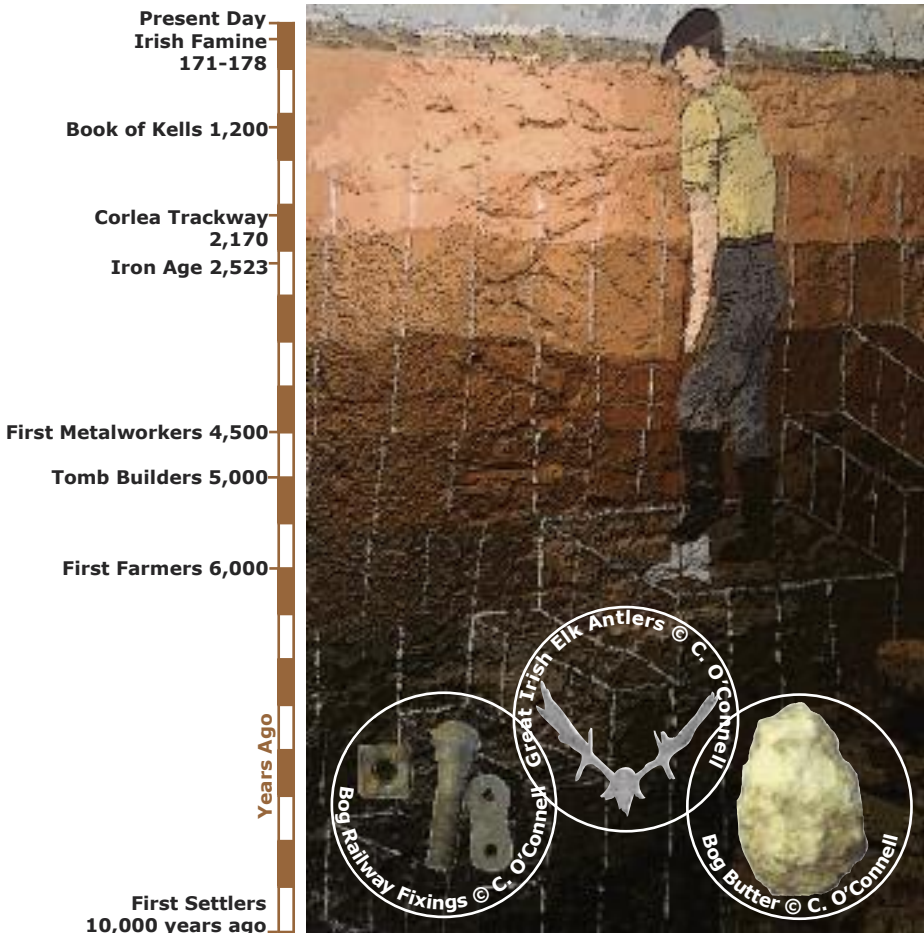
Great Diving Beetle
© N. Madigan

The Bog Archive

Bogs preserve more than just peat. They can preserve stumps of trees and wooden or leather artefacts such as tools, clothing and boats, the remains of prehistoric animals such as the Great Irish Elk, and even the bodies of people who lived thousands of years ago. Perishable items are preserved because of the wetness of the peat and the lack of oxygen. Another great example is bog

butter, which farmers of old stored in the bog to keep it fresh for use at a later stage. Millions of seeds and pollen grains are also preserved in the peat. By analysing these we can determine 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 historic eruptions of Hekla, an Icelandic volcano, have been found in bogs.

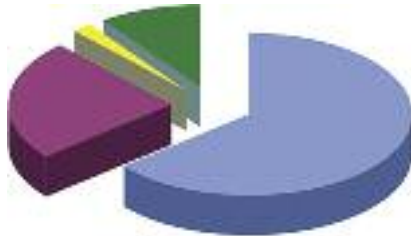
Steps in Time from 0 to 10,000 years ago and Peat Depths



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 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. Consequently, they sequester water during heavy rainfall, thereby reducing flooding, and release water during droughts. As they grow, bogs store carbon and, thus, have a vital role to play in helping 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. Some sites have been protected through conservation designation.

Landowners 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 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 home fuel - a tradition hundreds of years old in Ireland. At first, turf was cut and dried by hand, but today machinery is used to cut the turf.

Approximately 75 years ago, industrial peat-harvesting commenced in Ireland. Milled peat was used to make electricity.

Further, peat rich in *Sphagnum* moss is sold for use as make electricity.

Further, peat rich in *Sphagnum* moss is sold for use as compost. We need to stop harvesting peat if we are to protect the last of the raised bogs. It is time to compost organic waste instead of using moss peat in gardening. With the climate crisis we need to rewet remaining peat reserves to prevent them from leaking greenhouse gases that damage our environment.

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Actions 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 drains and



Volunteers blocking drains on Girley Bog © T Ó Corcora

removing trees, which 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 requires special machinery, but small jobs can be performed 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

online at www.ipcc.ie as part of the IPCC's 'Hop To It' frog survey.

Bog Habitat Transplant

Restoration of raised bogs that have no plant cover can be facilitated through re-introducing *Sphagnum* moss to the area. In this process, *Sphagnum* moss is transplanted from a donor site onto freshly prepared peat. The



Sphagnum moss transplant - From bare peat to strong vegetation within three years. © C. O'Connell

plants are then covered with living 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 would release carbon) and the associated impacts on

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

wildlife. By volunteering with community projects you can help with bog transplants.

Like Raised Bogs

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

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



Bringing Raised Bogs Home

Composting household waste

removes the need to purchase bags of moss peat from a garden centre for use in your garden. Moss peat is harvested from raised bogs, which

destroys the carbon and greenhouse gas store that took thousands of years to build in the bog and contributes to the further release of carbon.

Planning for the Future

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

raised bogs and describes the work that needs to be done to bring 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 40 years ago. It is run by the Irish Peatland Conservation Council (IPCC) - an environmental NGO. The IPCC:

- Protects biodiversity and fights the climate crisis by restoring, managing and conserving peatland habitats and wildlife.
- Helps 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.



Other sites you might also like to visit include:

- * Cloncrow Bog, Co. Westmeath
- * Ferbane Bog, Co. Offaly
- * Carrownagappul Bog, Co. Galway

My Raised Bog Challenges

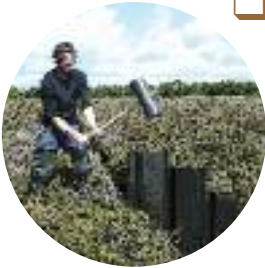
I took part in International Bog Day



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've worked out the age of my raised bog



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

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

