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Bogs for Bugs

What is a bog?

Peat bogs (or mires) are wetland habitats formed in damp, acidic, nutrient-poor conditions, which favour the growth of Sphagnum mosses. Cushions of Sphagnum moss act like sponges and can hold large volumes of rainwater.

In water-logged, low-oxygen and low-nutrient conditions, dead Sphagnum moss shoots only partially decompose. Their slow accumulation leads to a build up of the organic material that we call peat. An active healthy bog accumulates up to 1 mm of peat per year. Peat depth varies from site to site, but some bogs are over 8 m deep and have been accumulating peat for over 8,000 years!

Blanket bogs and raised bogs

In upland areas, high rainfall can leach nutrients out of the soil. In these areas, extensive mats of blanket bog can form. Blanket bog is a globally rare habitat, but constitutes 23 % of land cover in north-west Scotland.

In lowland areas, raised bogs can form in marshy, flat areas or over acidic, nutrient-poor vegetated lochs and lakes that slowly fill with peat-forming Sphagnum mosses. Over time, a characteristic dome of water-saturated peat can form above the surface of the surrounding, nutrient-enriched land. Raised bogs are generally rainwater-fed (ombitrophic).



Ditches and damaged bog at Fannyside Muir © Scott Shanks

Bog life

Our peatlands support a diversity of species adapted to the unique conditions found there.

Sphagnum mosses are the foundation of bogs, and many species can be found growing together or in specific habitat niches within the bog. Some mosses prefer dryer areas and others tend to be found submerged in bog pools. Fungi and grey-green *Cladonia* lichens also do well on bogs. Plants including Cross-leaved heath (*Erica tetralix*), Cotton grasses (*Eriophorum* sp.), Cranberry (*Vaccinium oxycoccus*), Bog rosemary (*Andromeda polifolia*) and Bog asphodel (*Narthecium ossifragum*) can be found in these damp, acidic peatland habitats. Insectivorous sundews (*Drosera* sp.) thrive in nutrient poor bogs by using sticky blobs of honey-dew on their leaves to catch small invertebrates, and absorb nutrients from their decaying bodies!

Many invertebrates can be found on bogs including habitat specialists such as the Large heath butterfly (*Coenonympha tullia*) and the Bog sun-jumper spider (*Heliophanus dampfi*). Other invertebrates found on bogs include the Heiroglyphic ladybird (*Coccinella hieroglyphica*), the Emperor moth (*Saturnia pavonia*), which is the UK's biggest moth, and the Green hairstreak butterfly (*Callophrys rubi*). Lots of aquatic bugs can be found in in pools and ditches on bogs

including the Four-spotted chaser (*Libellula quadrimaculata*), the Azure hawk (Aeshna caerulea) and the Northern emerald dragonfly (*Stomatachlera arctica*) which will all breed in bog pools.

Bogs are an important habitat for many species of ground-nesting birds including Hen harriers (*Circus cyaneus*), Skylark (*Alauda arvensis*) and Meadow pipits (*Anthus pratensis*). The wet ground and open views afforded across bogs means that they provide relatively safe roosting sites for winter-visiting wildfowl including rare Taiga bean geese (*Anser fabialis fabialis*). Common lizards (*Zootaca vivipara*) and Adders (*Vipera bera*) can often be found on bogs, and amphibians such as Palmate newts (*Lissotriton helveticus*) and Common frogs (*Rana temporaria*) will breed in bog pools.

Bog treasures

The acidic, low-oxygen conditions that favour the accumulation of peat also ensures that other ancient organic matter is preserved, including fallen trees and pollen from plants in nearby habitats. Pollen from different layers of bogs can provide a wealth of information about changes in climate and the environment over thousands of years.

The preserved remains of ancient human bodies have been discovered in bogs in the UK and Ireland. The acidic conditions of bogs means that bog bodies are often leached of calcium, and therefore bones are lost, however, clothing, skin, hair and soft tissues are often well preserved, but stained brown by tannins in the peat.



Hieroglyphic ladybird (*Coccinella hieroglyphica*) © Steven Falk

Why are bogs important?

Protecting our remaining peatlands is essential. Raised bogs and blanket bogs are not just important habitats for rare and threatened wildlife, they also play a role in the storage and regulation huge amounts of carbon and water, helping to reduce green house gas emissions and prevent local flooding.

Globally peatlands are estimated to hold up to one third of the Earth's terrestrial carbon, despite only covering about 3% of the world's surface!

The loss of lowland raised bog habitat

In the past 200 years there has been a dramatic decline in the area of lowland raised bogs. In Scotland, it is estimated that over 80 % of raised bog habitat has been lost due to agricultural intensification (drainage), afforestation and commercial peat extraction.

Scotland currently holds 80% of the UK's peatlands, with most of the remaining raised bogs being in the Scottish Central Belt. Unfortunately, the majority of these bogs have been damaged and left in poor condition. Drained and damaged bogs are a major source of greenhouse gas emissions, as thousands of years of accumulated, partly-decomposed Sphagnum moss resumes the process of decay.

Without intervention and restoration, further habitat loss is likely due to the gradual desiccation of bogs which have been fragmented from each other and damaged by previous attempts at drainage.



Small pearl-bordered fritillaries (*Boloria selene*) © Scott Shanks

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