

The Story of 'Peat' the Bog



photo-www.countrylife.co.uk

This is a story about change, as change can be positive and negative for a bog called Peat.....

Match up the key words to the definitions:

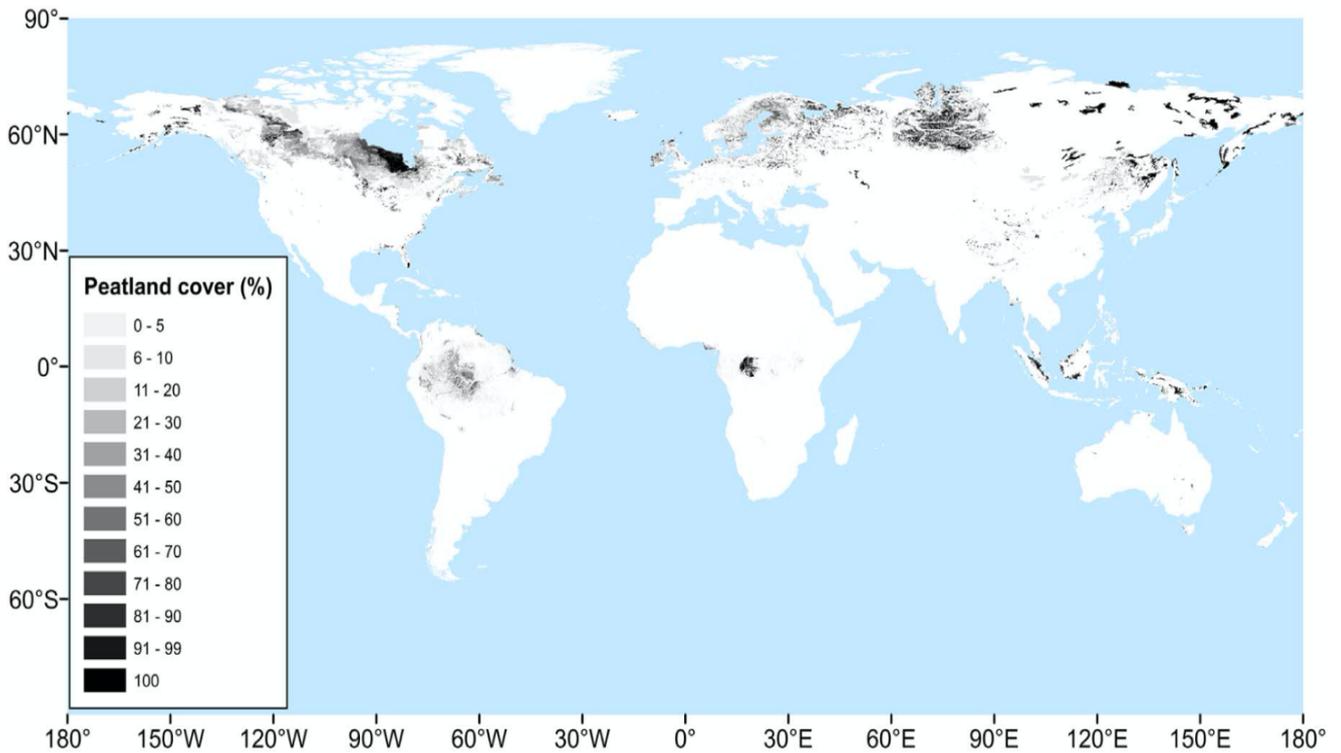
Carbon Sink	A type of moss that grows only in wet acid areas where their remains become compacted with other plant debris to form peat.
Carbon Source	A place or environment where more carbon is absorbed and/or stored that is given out/emitted e.g. wet peatlands, tropical rainforest.
Peat Bog	A long-term change in the average weather patterns that have come to define Earth's local, regional and global climates.
Climate Change	Actions taken to help reduce or eliminate long-term risks.
Mitigation	Wetlands with accumulation of a considerable amount of decomposed moss (mostly Sphagnum) and vegetation matter. There are both natural and exploited peat bogs.
Histosols	A place or environment where more carbon is given out / emitted than is taken in/absorbed e.g. most cities, melting permafrost.
Sphagnum Moss	Soils that consist primarily of organic materials.

Read through the information below, highlight/underline links to the water cycle in **blue** and carbon cycle links in **green**. Also, think about what examples of positive and negative feedback you can find in the story:

Once upon a time, there lived a peat bog, named Peat, who lived in blissfully moist conditions. Peat is a dark, wet soil, composed of about 90% water. Peat formed by layers of partially rotted plants building up slowly over thousands of years, becoming the main components of Peat's soggy soil, known as histosols. This made him very happy indeed, and even more so, as this meant that Peat was able to keep a large amount of carbon locked up inside him. This is because plants decay slowly in peat bogs, the moist conditions and flooding prevents a healthy flow of oxygen from the atmosphere. Peat the bog's soil was

both oxygen and nutrient-poor, and much more acidic than other soils. Peat was very happy living life as a carbon sink.

- 1) There are many other bogs like Peat all around the world. **Analyse** (AO3) the data below, which will help you to understand where peat bogs are found globally:



source-www.peatlands.org

Remember, when analysing, you need to really *absorb* yourself in the data. It is a very different skill to describing, 'start big (big picture) then go small'. Avoid any explanations as to why data is a certain way (do not use 'because'), for example, 'There are peatlands clustered around the equator, slightly lower percentages in South America and 71%+ in the DRC in Africa, this is because of the moist and wet conditions, with waterlogged soil found here that peat bogs favour' (the red is explanation, which is not required for an analysis question).

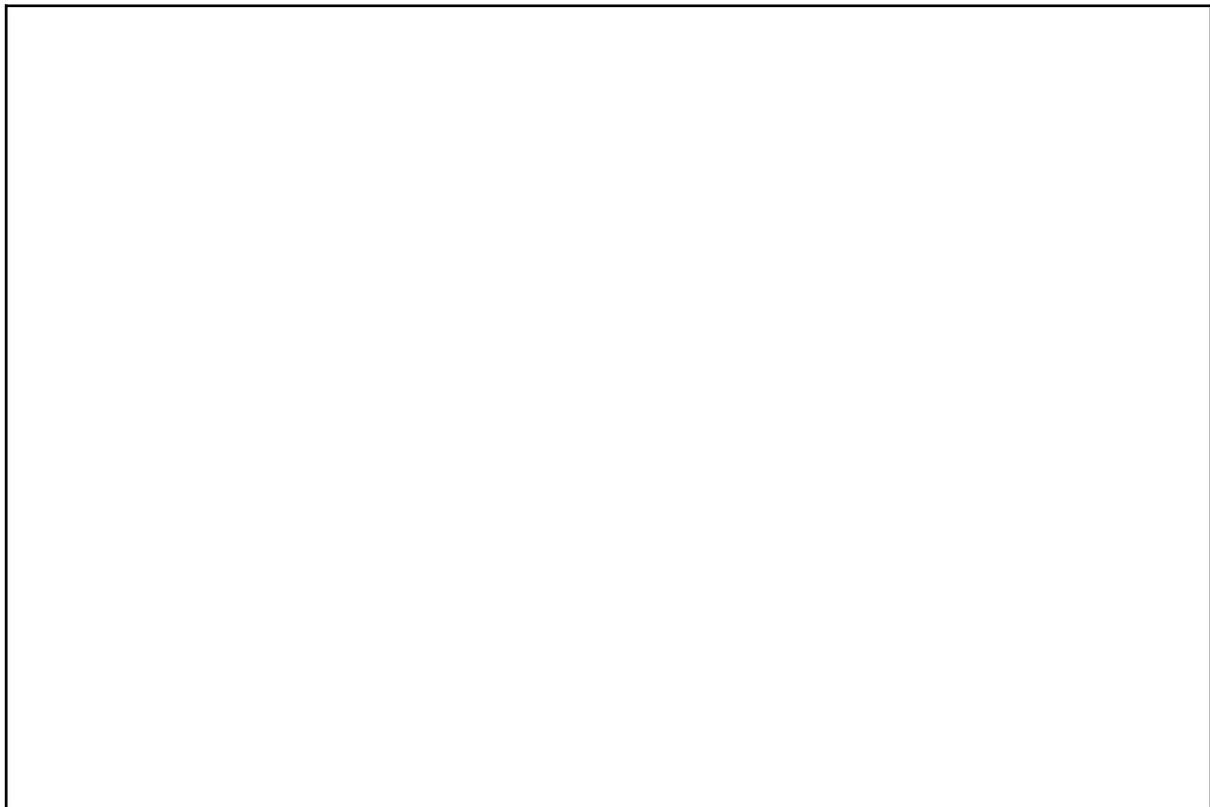
Trends/patterns/proportions

Use the map/graph/data well, and refer to it with specific examples.

Correlations and relationships between data sets or areas on a map, or not....

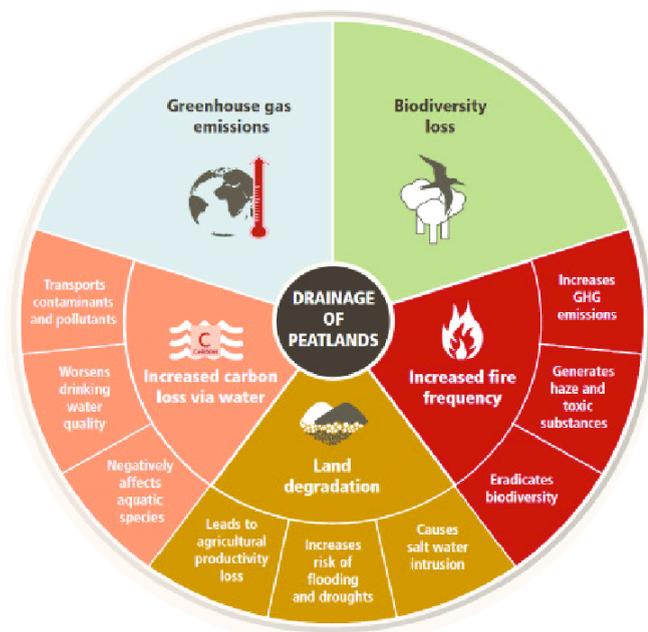
Anomalies, what 'sticks out' as being different?

Manipulate the data, *do* something with it, an average, total, range....where appropriate!



But, one day, Peat was dug up, drained and dilapidated. Peat was used for gardeners to add to their soil or to burn as fuel, and his home for agricultural uses and other land use change. This left Peat FUMING. Fuming carbon dioxide. It was released from Peat, and into the atmosphere, contributing to climatic changes. Peat had become a carbon source.

- 2) Use the data and image below, and your own knowledge, to assess the impact that draining peat bogs has on both the carbon and water cycles (6) AO1/2:

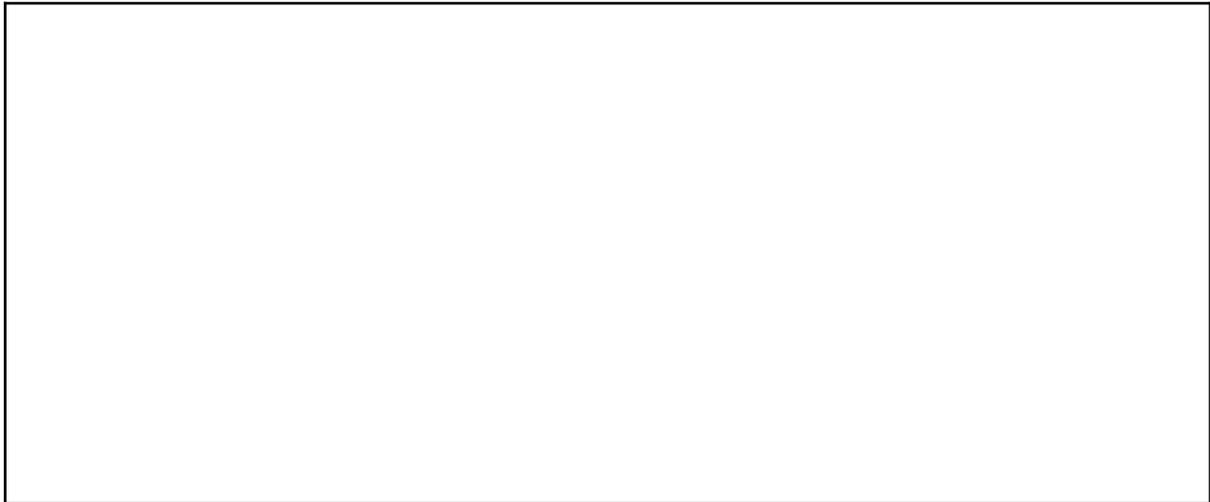


source-https://www.researchgate.net/figure/Environmental-and-social-impacts-of-peatland-drainage-C-FAO-2017_fig1_322755210 photo-www.irishtimes.com



Drained and destroyed, Peat was not a happy bog. But, there was hope on the horizon! People realised that Peat was a wonderful thing, and that we needed to keep him as wet as possible, and restore him in order to lock in carbon dioxide and prevent it from being released. Bare Peat was covered in vegetation, in particular, the magical Sphagnum Moss, a moss that works miracles! Drains were blocked to raise the water table again, returning the conditions for Peat back to waterlogged. This did not cost much, but required cooperation and understanding, in order to mitigate the impacts of climate change and restore Peat to his natural, wet self. Peat was happy again, the carbon locked in, and this made Peat feel very neat indeed.....

3) Outline the role of peat bogs in the carbon cycle (4) AO1



Write down the reasons we want to *restore* and *redrain* peat bogs in the space below:



What do you remember about peat bogs? Do not look back at the story or your notes, just write bullet points or notes:



