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The Washington Post

Serious about climate change? Get serious about peat.

By [William Booth](#)

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GARSTANG, England — Moor, bog, fen, mire, flush, swamp, slough. Peatlands have gotten a bum rap. They're inhospitable, useless. Too wet to plow, too dry to fish, the old farmers say.

Slagged off as anaerobic wastelands, dissed in the popular imagination, imagined as the eerie Dead Marshes in "The Lord of the Rings" or the forbidding Grimpen Mire in "The Hound of the Baskervilles." When bad things go down in Charles Dickens, the scene is set in a forbidding moor.

All slander, said Christian Dunn, wetlands scientist at Bangor University in Wales. "Peat is the superhero of the natural world," he said.

These waterlogged, acidic, low-nutrient ecosystems are the most carbon-dense lands on Earth. You want to safely store carbon for a thousand years? Nothing beats peat. It's nature's vault.

From the boreal north to the tropical south, from Scotland's [grouse moors](#) to the vast tracts recently discovered in the [Congo Basin](#), the Earth's peatlands store twice as much carbon as all the planet's forests combined — though they cover only a tenth of the landmass.

"If you're serious about slowing climate change," Dunn said, "you must get serious about peat." Most people, if they think about peat at all, might think, meh, garden mulch?

(Dunn begs you: "Do not buy peat to [feed your petunias](#)." Its sale is being [phased out](#) in Britain. In America, availability remained unrestricted.)

Climate scientists have long appreciated the role oceans and forests play to store mega-amounts of carbon. But only now is the power of peat coming into sharper focus — along with the need to preserve the pristine bogs that remain and restore what's been damaged.

'Carbon bombs'

Alongside this new respect comes anxiety among researchers that the carbon buried within these mires can be rapidly released in a warming world.

Peatlands are only 3 percent of the land surface but store as much as 30 percent of all the carbon locked in the soil. Release that, and the greenhouse gas concentrations in the atmosphere will go kaboom, accelerating the Earth on its trajectory toward catastrophic warming. It's scary enough that climatologists have a term for the scenario: a "carbon bomb" hidden in all that peat.



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“For centuries, we’ve drained peatlands,” said Dunn. “We’ve degraded the peat — trashed it, burned it, bagged it — and released just staggering amounts of carbon into our atmosphere.”

[An enormous missing contribution to global warming may have been right under our feet](#)

Long before the industrial revolution began, farmers were emitting carbon by turning over the peat to plant crops. Investigators at France’s Laboratory of Climate and Environmental Sciences have found that this mass conversion could have added 250 billion tons of carbon dioxide into the atmosphere, equivalent to seven years of [current emissions](#) from the burning of fossil fuels.

Huge amounts of peat still exist: in Canada, Russia, Finland, Europe, Alaska and around the tropics. But it is estimated that worldwide, about [15 percent of peat](#) has already been lost.

In the modern era, farmers have even been paid by governments, encouraged by tax breaks and cash subsidies, to convert peatlands.

There’s a reason Indonesia is one of the top five greenhouse gas emitters in the world — and it is not just coal. It is the clearing of peat for [palm oil](#) plantations, with farmers setting [fires that burn](#) deep in the fibrous soil and smolder for months.

“It’s an almost criminal amount of carbon,” Dunn said.

Not too late?

Preserving peat is now considered a powerful tool to counter climbing emissions. It is among what the United Nations considers legitimate “nature-based solutions” — the buzzwords for using woodlands, mangroves, marshes, [kelp forests](#) and bogs to soak up carbon.

The idea is that humanity’s greatest ally against climate change can be the Earth itself.

Britain is one of the first countries to put peat at the center of its strategy to reach net-zero emissions by 2050. At the U.N. climate summit in Glasgow, Scotland, the British government is highlighting its pledge to spend more than \$1 billion by 2025 on peat restoration, woodland creation and the management of the two habitats. Prime Minister Boris Johnson in October promised to restore at least 86,000 acres of degraded peatlands in England by 2025 — and 690,000 by 2050, an area equal to the size of Rhode Island. The Scottish government is even more ambitious (it has less land, but more peat) and aims to repair 618,000 acres by 2030.

Meet the superhero

Peatlands are wetlands, with a twist. “Watch your step,” said Sarah Johnson, a peat project manager with the Lancashire Wildlife Trust, which protects a bog in northeast England called Winmarleigh Moss. When you tread upon healthy peat, the ground can feel squishy. Your step is bouncy, like walking on a mattress, except that bounce comes from layers of plants and moss that have been laid down, at one millimeter a year, since the last ice age.

Johnson explained that these waterlogged ecosystems are unique, because they slow decomposition way down — and so the dead plants remain, but they don’t really rot, and they keep storing the carbon they removed from the atmosphere via photosynthesis. Unlike a forest, where trees fall and decompose, recycled by bugs and fungi, peat accumulates year after year. It’s like the carbon cycle stops, said Chris Evans, a biogeochemist at the U.K. Center for Ecology & Hydrology.

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“The really interesting thing about peat is that it’s been storing this carbon for thousands of years. It’s been doing this before there were human beings,” he said. “And if you can keep it wet, peat can keep storing carbon for a very, very long time.”

A recent study by [Moors for the Future Partnership](#) in Britain examined a single blanket bog in Derbyshire and found the amount of carbon locked up was equivalent to the annual emissions of eight coal-fired power stations.

Sink becomes source

Britain was once covered in peatlands. London is built on a former one. Now, most lowland peat is gone.

In [Holme Fen](#) north of Cambridge, a landowner in 1848 had a post driven through [22 feet of peat](#) until it hit the clay substrate. As the land was drained over the next 170 years, the surface of the peat subsided by 13 feet — like a shrinking sponge sitting on a kitchen countertop.

Today, just 20 percent of the United Kingdom’s peatlands are considered “near natural.” Much of the disturbed peat is no longer a net sink, storing carbon. It is now a source of greenhouse gases, an emitter.

Scientists calculate that peatlands in Britain are releasing approximately 23 million tons of carbon dioxide equivalent each year, making them one of the top contributors to the country’s greenhouse emissions from land use.

“The first thing you have to do in a leaky spaceship is plug the hole,” said Richard Lindsay, a specialist in peatland ecosystems at the University of East London. Stop draining peatlands and start repairing them by keeping them wet, he said.

Yet, there is an inherent tension in Britain’s strategy to reach net-zero emissions by the middle of the century, in part through [nature-based solutions](#). Until recently, when the government wanted to grow trees in Britain to store carbon, where did it plant them? “On the cheapest, most marginal land,” Lindsay said. On peat. And because waterlogged trees would die, he said, “you have to drain the peat to plant the trees.”

Carbon farms of the future

Out at Winmarleigh Moss, they’re testing a new idea: “carbon farming.” In which the “crop” is the carbon a farmer is locking into the peat. Mike Longden, a peatland initiative officer with the Lancashire Wildlife Trust, stood on a berm and explained the farm.

The team took five acres of an unloved degraded peatland, drained in the 1970s, and rebuilt the dikes, pumps and plumbing. They stripped off the top four inches of nutrient-rich top soil, left over from when sheep grazed the pasture, and planted 150,000 plugs of the new cover crop, sphagnum moss. Then they brought the water level back to the field to re-wet the new moss and existing five feet of unoxidized peat below.

The newly planted moss is looking happy and healthy. As it grows, it will carpet the site, and the bottom of the moss will just sit there in watery acidic conditions, to form — presto! — new peat.

Who will pay for it? Rob Stoneman, director of landscape recovery at the Wildlife Trusts, says very soon the government will probably pay land managers a few hundred dollars an acre to store carbon in a reclaimed peat bog. Corporations, too, might buy even more for credits from the carbon farmers of the future to offset their greenhouse gas emissions.



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“The thinking is, that if you are going to get to net-zero as promised in Britain, somebody is going to subsidize this,” Stoneman said.
For a thousand years?

“At least for a while,” Stoneman said.

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