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Science, Policy and Practice
Edited by Aletta Bonn , Tim Allott , Martin Evans , Hans Joosten , Rob Stoneman
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Peatland Restoration and Ecosystem Services

Science, Policy and Practice

Peatlands provide globally important ecosystem services through climate and water regulation or biodiversity conservation. While covering only 0.4 per cent of the Earth's surface, degrading peatlands are responsible for nearly a quarter of carbon emissions from the land-use sector. Bringing together world-class experts from science, policy and practice to highlight and debate the importance of peatlands from an ecological, social and economic perspective, this book focuses on how peatland restoration can foster climate change mitigation.

Featuring a range of global case studies, opportunities for reclamation and sustainable management are illustrated throughout against the challenges faced by conservation biologists. Written for a global audience of environmental scientists, practitioners and policy makers, as well as graduate students from natural and social sciences, this interdisciplinary book provides vital pointers towards managing peatland conservation in a changing environment.

ALETTA BONN is Professor of Ecosystem Services at the Friedrich-Schiller-University Jena and Head of the Department of Ecosystem Services at the Helmholtz Centre for Environmental Research (UFZ) within the German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig.

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Foreword

Julia Marton-Lefèvre

High on the Andean watershed, a cloud born in the Amazon billows up and over the watershed divide dumping water onto lawns of bright green *Sphagnum* moss, dotted with cushion plants and the tall stems of *Espeletia* plants. These peatlands store huge volumes of water that is filtered through to deep aquifers that daily supply water to the seasonally dry Andean cities of Quito, Bogota, Lima and Medellin. The *paramo* grasslands and wetlands are highly valued for their life-giving waters.

On the moors above Manchester, also sustained by water from upland peatlands, it is another cloudy scene. But this is a Sunday and the moors are full of walkers, enjoying the open scenery far from urban squeeze in the sprawling towns and cities now far below them.

On the other side of the globe, the ‘man of the forest’ – orang-utan – sits towards the top of a thin tree characteristic of this part of the peat swamp forest that stretches many tens of kilometres between the main rivers. His wide cheek flaps and the wisdom in his eyes shows that this animal is old. He shifts his weight to bend the stem of the tree down to a fruit-laden tree across the railway line, seemingly oblivious to the *orang putih*s – ‘white men’ – watching from the logging line that might spell his end.

Far away in Northern Canada, the carpet of *Sphagnum* dotted with shrubs and the odd tree, is unremarkable – part of a vast expanse of peatland stretching over many millions of square kilometres. The *Sphagnum* moss grows slowly in the warmth of the short summer absorbing minute quantities of carbon dioxide with an even tinier amount left in the waterlogged soil as undecayed plant matter – peat. But over time, this vast peat bog absorbs huge quantities of carbon dioxide from the atmosphere: a natural carbon capture and sequestration system that costs society nothing to build.

In 1982, an earth dam within the United States Rocky Mountain National Park collapsed, resulting in the sudden release of nearly one million cubic metres of water. A wall of water up to 10 m in height swept downstream,

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entering Fall River at Horseshoe Park. Fortunately, in this area, wetlands adjacent to the river – including dense stands of reed and willow – slowed the flood wave, which spread out across the wide floodplain. The disaster claimed four lives but without the Horseshoe Park wetlands the catastrophe would have been even worse.

All across the world, 365 days a year, night and day, peatlands perform manifestly important services to society. These ecosystem services are ostensibly free and certainly difficult to fully understand or monetise, until of course they are removed. Only then is the true value of these services understood – often with calamitous consequences.

If only all of Sumatra's coastal peatlands had remained intact to absorb the worst of the December 2004 tsunami, fewer lives would have been lost, both during the tsunami and after, when the peatlands provided a valuable source of freshwater to those ravaged communities. If South East Asian bogs had been exploited in a way that retained the natural vegetation, instead of making way for oil palm plantations, South East Asia would have avoided the several billion dollars of damage caused by peatland burning and perhaps one of the great apes would not now be on the verge of extinction. If upland peatlands in England were still pristine and had not been severely grazed, burnt and eroded, then water treatment costs would be minimised and money spent to treat water could be spent on reducing customer bills. If so many of the world's peatlands were not damaged through agriculture, logging and extraction, they would act as a natural carbon capture system rather than releasing carbon into the atmosphere, thus exacerbating catastrophic climate change. If only...

Yet, as this book shows, it is far from too late. By understanding the true value of peatlands as providers of essential ecosystem services and developing the policies, research and practice to conserve our remaining pristine peatlands and to restore those that have suffered damage, we can safeguard and secure those essential services for all of society.

Julia Marton-Lefèvre

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International Union for Conservation of Nature (IUCN)

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