

JOHN MUIR TRUST

Journal

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Fresh start

Inside the redesigned John Muir Award



JOHN
MUIR
TRUST



Live for
the challenge
the connection
the freedom

Live
for the
line



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Tangible results



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WELCOME to the spring/summer *Journal* 2025. In this issue, I would like to draw your attention to a whole range of interesting articles.

First, a question to ponder as you read. Is the perception of ‘wild’ being shifted by increasing urbanisation? The reason I ask is that, increasingly, I see the commercial world using the term ‘wild’ as a positive marketing tool and individually I hear people talk about ‘wild places’ relative to their own life experiences. I see the cumulative impacts of development on communities, heritage, landscapes, country and the planet, which is undermining the wild places we value.

To help address this shifting baseline, we aim to promote an understanding of ‘wild’ in its various forms and to showcase the best examples of wild places across the UK. We plan to do this through a coalition of support across public, private and third sector bodies, and will be reporting on our progress in future issues of the *Journal*.

To underpin our approach with partners we are developing the Wild Places Index as a tool to help define and provide appropriate social and geographic context to the debate on wild places (see page 22).

In this issue we also have articles written by Trustees. On page 16, Emily Sutton helpfully expands on the importance of recognising the value of nature and natural process by examining the global

context and looks at a world where nature has legal rights. David McKay, another Trustee, zooms in to explore how soil health has huge implications for wild places (see page 26). On page 28 we look at some practical applications for the use of artificial intelligence as the Trust starts to use this technology as a monitoring tool (see page 6), possibly the forerunner for more activity in this area.

In the UK today we are witnessing a massive increase in onshore windfarm applications, driven under the umbrella of ‘net zero’ and financing models that deliver only a fraction of the benefits locally and at huge cost to iconic landscapes. The John Muir Trust is positioning to campaign for directing wind turbines away from sensitive areas and this is the subject of our spring appeal (see page 20).

I am delighted to report that the John Muir Award is up and running again (see page 10). In its redesign, it is now a key part of our wider engagement plan and has at its core a financially sustainable operating model. We have retained the self-determination aspects and brought to the fore a focus on understanding of wild places across the UK’s 45 biogeographic zones to align with our wider strategy.

On another positive note, and with your support, we are now seeing the tangible results of our concerted effort to manage deer on the land in our care. Much of last year’s growth on young trees remains intact, particularly at Quinag and in Knoydart. We will be undertaking detailed monitoring this year to let everyone see the results in graphs and fixed-point photography in future issues of the *Journal*.

Finally, please do read about the transformation of our Kylesku Lodges in our news pages – and see for yourself by taking advantage of a special Members’ offer!

All our work is made possible by the generosity of our Members, and I would like to take this opportunity to thank you very much for all your ongoing support. □

David Balharry
Chief Executive, John Muir Trust

Stalking at
Knoydart

PHOTOGRAPH: JOHN MUIR TRUST

Deer App for stalkers

The Trust is developing a new Deer App that will help stalkers input cull data and observations in real-time – ensuring every cull is logged with precision

Best-practice deer management requires meticulous record-keeping and accounting, statutory cull reporting and long-term monitoring. Recording and managing this data can be a significant administrative burden, but it is crucial to inform our land management activity and help us to restore natural habitats.

On trial since January, the Trust's new Deer App will remove much of that strain. Stalkers in the field will record cull details directly into the app, reducing the risk of lost or mis-recorded entries. Location, age, sex and any relevant observations of the deer are instantly uploaded, allowing the compilation of comprehensive and real-time datasets.

The app will ensure that all necessary details are recorded and formatted in compliance with statutory requirements, easing the burden on stalkers and administrators.

By tracking cull numbers, population trends and ecological impact over time, staff can also make data-driven decisions that enhance habitat recovery. Data from the app contributes to this, providing a powerful tool for assessing the success of culling efforts and refining strategies accordingly.

The transition to a digital system also saves countless hours previously spent on manual data entry and accounting. This is good news for Trust staff as it releases more time to spend on delivering vital restoration work.

Utilising technology is one way in which the Trust can improve the quality and efficiency of its work. In time, the ambition is to expand the app's capabilities including, for example, the recording of habitat monitoring data.

Considering CELT

The policy team was recently invited by the Scottish Land Commission to two round table meetings in Inverness and Edinburgh to discuss the Trust's Carbon Emissions Land Tax (CELT) proposal with commissioners and stakeholders.

These round tables signal the start of the Scottish Government's commitment to consulting on the

Trust's proposal to tax large, polluting estates to encourage land use change that will soak up carbon, boost biodiversity and strengthen rural communities.

The Scottish Land Commission will work in close collaboration with the Scottish Government to conduct additional research and produce a roadmap to implement a carbon land

tax. The Commission expects the roadmap to be published over the next 12 months.

The Trust warmly welcomes the involvement of such a well-respected organisation on matters related to land use and looks forward to working alongside commissioners and the Scottish Government over the coming months.



PHOTOGRAPH: JOHN MUIR TRUST

A festival celebration

In February, Nevis Property Manager Alison Austin and John Muir Award Officer Steph McKenna attended the weekend-long Fort William Mountain Festival during which they shared news about the Trust's work in the Nevis area.

Alison and Steph also worked together with the Scottish Rainforest Education Centre to lead a Discover the Scottish Rainforest walk aimed at helping families learn about a hidden natural wonder in nearby Glen Nevis that they may never have encountered before.

To complement the family walk, the Trust's stall included samples of lichen, moss and liverwort found in Glen Nevis, with Alison and Steph explaining their functions within the rainforest ecosystem.

As well as being invited to share their favourite wild places with us, attendees were asked to sign up for the Trust's newsletter for a chance to win a bottle of Schiehallion edition gin, generously donated by corporate member, Ben Lomond Gin.

Alison (pictured left, above) also presented the 2025 John Muir Trust Wild Places Film Prize to filmmaker Rachel Sarah for *Finding Bo* – a short film that documents photographer Karen Miller's winter visits to the Monadhliath Mountains to track a mountain hare she nicknamed Bo.

For many, the film was a reminder that revisiting familiar places is as important as searching for the next big thing or epic adventure. "There is joy in getting to know a place or wild creature intimately," commented Alison. "This film shows us that with patience and love this is possible."

Nature champions

The Trust is delighted to be involved in Nature Champions, an initiative developed by Scottish Environment LINK to encourage members of the Scottish Parliament (MSPs) to champion Scotland's threatened species and habitats.

By becoming a Nature Champion, each MSP champions one or two species or habitats for the duration of that Parliamentary session. The species are usually present within an MSP's constituency or region, or the MSPs may simply have a particular interest in the conservation of their chosen species or habitat.

The Trust currently supports four Nature Champions: Maree Todd for the lesser butterfly orchid; Anas Sarwar for upland birchwoods; Jackie Dunbar for sea trout; and Christine Grahame for the golden eagle.

Christine Grahame has been especially vocal, providing a strong supporting voice in Parliament for the South of Scotland Golden Eagle Project (SSGEP), which has seen the number of pairs increase from three before the project started to 17 in 2024.

Christine actively brings the species into relevant debates, including a recent Parliamentary debate on electricity infrastructure consenting. This kind of advocacy is exactly what the initiative is all about, and the Trust is grateful for Christine's and all of our champions' ongoing efforts.



A pair of young eagles before release

PHOTOGRAPH: SSGEP

Trustee call

The Board of Trustees has four vacancies for three-year terms in 2025. We're looking for Trustees who share our values and will bring fresh ideas as we work to deliver our new three-year strategic plan. We'd like nominations for candidates from diverse backgrounds and especially welcome those with experience in:

- Natural heritage, ecology and land management
- Community engagement
- Finance and fundraising
- Environmental legislation
- Organisational development and project management
- Nature connection, green prescribing and outdoor education.

Anyone who has been a Member of the Trust for more than 12 months is welcome to stand. The nomination process will close at noon on Friday 6 June 2025. The results will be announced at our online 2025 AGM, being held online on 15 September 2025.

Find out more at johnmuirtrust.org/trusteecall. We hope you will also be able to join us for our in-person Members' and Supporters' Gathering, near Loch Lomond on Saturday 13 September.

Speaking up

It has been a busy start to the year for David Fleetwood, the Trust's new Director of Policy.

Having a seat in the heart of government is crucial if the Trust's voice is to be heard by decision-makers. David Fleetwood (pictured) ensured just that when he gave evidence to the Rural Affairs and Islands Committee deer management round table in January.

During the discussions, David reported how current high deer densities continue to have a negative impact on habitat recovery and carbon sequestration on Trust properties. He argued that the national cull should be increased substantively until it becomes possible to measure positive habitat responses instead of relying on fixed deer target densities.

David noted that the proposed Deer Management Nature Restoration Orders (DMNROs) could have an immensely positive impact at the scale and pace required. The proposed purpose of a DMNRO is to enable deer management actions to secure restoration of nature across a specified area of land, covering one or more landholdings, under a single legally enforceable direction.

David also pressed home the Trust's views that the Deer Working Group recommendations must be implemented in full, that the Deer Act would benefit from reform, and



that partnerships to deal with deer at landscape scale are valuable and should be supported.

Later, in February, David was joined by representatives from other environmental NGOs to give evidence on the Scottish Government's Land Reform Bill to the Net Zero and Transport Committee. During the session, he set out the Trust's view that land reform is needed in Scotland as the track record of many large landowners shows that their approach is not achieving the outcomes required to help tackle the joint nature and climate emergencies.

This view was supported by evidence from work published by Scottish Land & Estates on activities of its landowning members. The report highlighted that 54 per cent of estates do not restore rivers, flood plains or

riparian habitats; 57 per cent do not plant and maintain hedges for wildlife or implement natural solutions to manage flood water; while 66 per cent are not involved in managing or creating woodland.

While engaging in these activities may not be possible for all estates due to the nature of their landholdings, the Trust would still like to see these figures become far higher in future. For example, most estates should be in a position to support hedgerow or native woodland creation on some of their holdings.

The Trust's advice to the committee was that it should consider reinstating a Public Interest Test, ensuring that Land Development Plans deliver in the public interest and reducing the size thresholds to qualify as a large landholding to 1,000ha.

PHOTOGRAPH: DAVID FLEETWOOD

Granting adventure

The Trust's Des Rubens Bill Wallace Grant - which commemorates two former presidents of the Scottish Mountaineering Club - gave four more people the opportunity to seek out life-changing experiences in wild places in 2025.

This year the grant funded adventures with a scientific or education focus that will lead to a commitment to practical action to conserve wild places.

Currently training to be mountain leaders, Megan Bellamy and her partner Miles plan to walk the Via Dinarica from Slovenia to Albania, documenting the native forests en route to promote conservation and restoration in the countries they pass through.

Working alongside rangers and scientists, filmmaker Aleksander

Domanski and writer Yvonne Reddick will make a film about the people and specialist animals that are adapting to climate change in the boreal and Sequoia forest habitats of California's Sierra Nevada mountains.

Closer to home, student and climber Hannah Mason is keen to give Leading Lassies - the women of Stirling University's climbing community - a positive environment in which to improve their climbing skills. The group will enable members to transition from indoor to outdoor climbing by providing affordable access to accredited instructors, while promoting the ethos of 'leave no trace'.

Finally, following two hip replacements and years of chronic pain, Glasgow filmmaker and presenter Christina Sinclair (pictured) plans to solo hike 200 miles across

Scotland. She will document her journey on YouTube, telling a story of nature connection, biodiversity and resilience as she walks the East and West Highland Ways from Milngavie to Fort William and on to Aviemore.

For more on the Des Rubens Bill Wallace Grant, visit johnmuirtrust.org/whats-new/grants



PHOTOGRAPH: CHRISTINA SINCLAIR

Kylesku transformation

Despite inclement and blustery weather this spring, local teams of painters, decorators, carpenters and roofers have been hard at work transforming the Trust's lodges at Kylesku – renovations that are perfectly timed to celebrate 20-years of stewardship of our nearby property at Quinag.

The work has included installation of additional insulation, new flooring, plumbing and electrics and sleek external cladding. Talented joiners have also custom-crafted some exquisite pieces to elevate the already beautiful interior of our newest lodge, which offers uninterrupted views over Loch a' Chàirn Bhàin.

All nine lodges now look stunning, with an appeal that promises to provide a regular income that will help the Trust protect these beautiful wild places and support local communities.

The Trust would like to thank all contractors on-site for their dedication and expertise: Zucconi Ltd Carpentry & Roofing, Ross & Co Painters & Decorators, Gilham Flooring, Jake Pirie Plumbing, Ally Pest Control, Assynt Upkeep, Northern Carpets and Denholm Environmental.



Gateway to the refurbished Kylesku Lodges

PHOTOGRAPH: JOHN MUIR TRUST

Members' offer!

Why not make Kylesku Lodges a base for your next adventure in the Scottish Highlands? Members enjoy special discounts, with 10 per cent off a three-night stay (code: JMT3) and 20 per cent off a seven-night stay (code: JMT7). Be quick though – availability for this season is filling up fast. Book at: kyleskulodges.co.uk



Isaac (second from right) chats with volunteers at Thirlmere

Thirlmere reflections

In 2020, the Trust entered a partnership with United Utilities, Natural England and Cumbria Wildlife Trust to manage land around Thirlmere reservoir to create a resilient water catchment and boost biodiversity.

During the two years of the partnership in which Isaac Johnston has been employed as the full-time Thirlmere Resilience Project Officer, the Trust has undertaken detailed survey and monitoring work, delivered 30 volunteer days, and planted more than 2,500 native trees.

Meanwhile, volunteers continue to grow a range of native trees and shrubs at a dedicated nursery

which opened on site last year – with the first saplings due to be planted out this year. With pine martens recently released at two sites in south Cumbria as part of a population recovery project, there are high hopes that some will find a new home in the restored woodland at Thirlmere.

“Looking back on our efforts to date, a real highlight of the project has been the monitoring and survey work,” said Isaac. “Apart from being enjoyable work, it gives us vital evidence of improvements being made to the site and is a good indicator that we’re doing the right thing for nature in this beautiful location.”



Receive our monthly Members' News!

We would love to share our news and keep you updated on our progress throughout the year, with the most sustainable way being via email. As such, we have moved from the bi-annual printed Members' News to a monthly email version, which Members will receive automatically as long as we have an email address. If you have not yet received your digital Members' News, please get in touch with our Membership Team at membership@johnmuirtrust.org

Fresh start

Eagerly awaited, the redesigned John Muir Award is now open for submissions. **Julie Gough** explores what has changed

LAUNCHED in 1997, the John Muir Award has always been non-competitive, inclusive and accessible, with the aim of fostering engagement between people and wild places. Over the past 27 years, more than half a million people throughout the UK have completed their John Muir Award – with a host of life-affirming and, in many cases, life-changing experiences along the way.

To align the Award with the Trust’s strategic objectives and ensure its financial sustainability, the team undertook a wide-ranging review that saw them consult extensively with the more than 1,200 organisations that have historically delivered the Award to participants.

After listening to feedback and carefully considering how to make the Award more sustainable and impactful, a number of fresh ideas and exciting changes have been incorporated. One aspect is a redesign of the previous Discovery level of the Award, with the launch of a new Wild Places Guardian level that sees participants learn about what a wild place is, why it is so special and how to help it thrive.

As with the original Award, the intention is to inspire people of all ages and backgrounds to help protect and conserve wild places while also encouraging a sense of adventure and exploration.

Most participants complete their Award as part of an organised group with a leader from organisations such as schools, community groups and outdoor learning centres. But the Award can also be completed in a self-guided capacity by families and individuals. There’s no upper age limit and adults are encouraged to get involved.

AWARD ETHOS

The overall ethos of the Award remains unchanged. Whether participants are new to wild places or already enjoy spending time in them, achieving the Wild Places Guardian Award helps cement that relationship. It also recognises participants’ achievement towards the protection, restoration and conservation of wild places, and their understanding of what natural processes look like.

The redesign is about creating a deeper, lasting connection between people and the wild places they care about. Whether through flexible challenges, fostering inclusivity or encouraging participants to take ownership of their conservation efforts, the redesigned Award remains accessible and engaging for all.

“What’s key is that it meets people wherever they are on their journey with wild places,” comments Emily Hanton, John Muir Award Officer. “For some, the Award can be their first experience of a wild place.”



PHOTOGRAPH: MONKEY BUSINESS IMAGES

In the background, Trust staff have streamlined and updated systems, processes and overall content, with personalised support available for all Award leaders. Key resources such as the Award Handbook, ‘how to’ videos, resource guides and case studies have all been updated, while there is also now a Facebook group for Award leaders and a redesigned record book in which participants can note their experiences.

“The Award’s learner-led approach provides an inclusive way of encouraging everyone to learn about the benefits of wild places,” says David Balharry, the Trust’s Chief Executive. “The Award sets the bar for



The new-look Award encourages participants of all ages to foster a lasting connection with wild places

accessible conservation learning and is a lynchpin in the academic year for many schools, outdoor centres and a host of other providers across the UK.

“Our team has updated all aspects of the Award to ensure that it continues to offer high-quality outdoor learning for the future. We look forward to introducing all the exciting new content through our many partners who offer the Award.”

HOW IT WORKS

The Award retains a framework that has set criteria but with flexibility on how those criteria are met. Crucially,

it also remains free at the point of use for participants.

Participants must meet the Award criteria, which include the Four Challenges – see box overleaf – spending at least 25 hours completing their Award and taking an active role in decision making and the planning of their activities.

“We were clear from the beginning that we wanted to retain all the great things about the Award that staff and leaders value,” explains Emily. “Participants will still Discover, Explore, Conserve their wild place and Share their experiences.

“I’m confident that the improvements we’ve made will

PHOTOGRAPH: SOLSTOCK



The Four Challenges

Here's a little more detail on the Four Challenges of the redesigned Award:



Discover Challenge is about being immersed in a wild place, experiencing it fully and recognising its special qualities.

Explore Challenge is about taking practical steps to learn about and understand a wild place, enjoying spending time there and deepening a personal connection with it.



Conserve Challenge is about looking after a wild place and considering how specific activities will have a positive impact. The aim is to conserve, protect and restore a wild place in a way that enables natural processes to thrive.

Share Challenge is about reflecting on and taking pride in what has been achieved and inspiring others to take action for wild places too.



PHOTOGRAPH: SOLSTOCK

The Award adds many layers to outdoor learning

“The redesign incorporates developing awareness of an inspirational person who has influenced the protection and restoration of wild places”

add value to Award experiences and further benefit wild places. I'm really excited to see the redesigned Award in action.”

For Alison Bucknall, another member of the Award team, the refresh also offers an opportunity to better support Award leaders. “Since joining the Trust in August 2024 and working with the team on the Award redesign, I'm eager to support leaders to deliver the Award and read about all the great things their groups are doing to protect and conserve wild places,” she says.

“On a personal level, I know how important spending



time in nature is for me, and I love that the Award encourages others to do the same.”

BE INSPIRED

The redesign also incorporates developing awareness of an inspirational person who has influenced the protection and restoration of wild places.

It’s an aspect that particularly appeals to Ellie Oakley, the Trust’s Conservation Officer at Glenlude in the Scottish Borders. “I love that participants will learn about people who have inspired, protected or actively restored wild places – real people who have brought positive impact to an environment,” says Ellie.

“This will hopefully inspire participants and demonstrate how they too can make positive impacts, no matter how small. I look forward to working with anyone who would like to use Glenlude as a wild place for their Award.”

“The redesigned Award remains accessible, inclusive and engaging for all”



PHOTOGRAPH: SOLSTOCK



PHOTOGRAPH: SOLSTOCK

While the launch of the Wild Places Guardian level is an exciting development for the Award, it’s really just the beginning. Once the new systems have been embedded and feedback has been received from the first wave of participants and providers, the team will make plans for the next steps. □

Further information

Want to deliver a John Muir Award? Step one is to read the Trust’s Award Handbook, available online. Then, plan your Award activities and submit a proposal form. This can be done as a group, family or self-guided individual. For more, visit johnmuirtrust.org/award

About the author

Julie Gough is the Trust’s Communications Editor

Protecting a finite resource

David Fleetwood, the Trust's new Director of Policy, reflects on the personal experiences that have shaped his sense of wild places – and how they feed into his leading of Trust policy

IT WAS one of those days in early spring when the promise of the change of season was more hope than reality and the cold wind from the northeast bit with an echo of mid-winter. I was tucked up with my back against a drystone wall in a field on the edge of the Peak District National Park, huddling into the collar of my jacket and trying to stay warm. The glow of the family kitchen was just a 10-minute walk away along a rutted track to the tarmac of suburban Sheffield, but I was still out in the cold as I had been since early that Saturday morning.

Looking back, that small network of fields was my wild place; not wilderness by any of the definitions I might apply now, but back then, at nine years old, it was a whole new continent waiting to be explored.

That weekend was the beginning of a new epoch for me. Finally allowed out on my own, I was determined to make the most of my new-found freedom. By mid-afternoon I'd learned where the rabbits hung out in the neglected corner of a field and caught a glimpse of a fox in the margins of the small lane. I'd got to know the blue tits and laughed at their antics as they hung upside down pecking at the emerging buds on the springy willow in the boggy part of the field. Above all else I was happy, free and part of something.

Such childhood experiences are formative. Many more weekend adventures followed: some warmer,

many wetter and all muddy, in my little wild place. Now they happen again with my own children and I see those moments of discovery and the learning about what's smooth or spiky or cold through their curious eyes.

CALL TO ACTION

That wild place, and many others, including those that the John Muir Trust owns and manage are under threat. Sitting in Glasgow Botanic Gardens in late February this year, listening to a call for action and collaboration from the First Minister in front of an invited audience from the nature and climate sectors, my mind wandered back to that childhood wild place.

A finite resource, we as a society need to understand, protect and manage such places in a way that sustains their unique values; and we need to be innovative in our approaches so that we can enhance them within an increasingly challenging context.

Those early experiences of wild places have long influenced my thinking. Through more than a decade of working as a civil servant in the very heart of Scottish Government, in day-to-day contact with the last three First Ministers, I have sustained my own resilience through regular access to wild places. This has included working as a regenerative forester and with a flock of community sheep undertaking conservation grazing.



PHOTOGRAPHY: DAVID FLEETWOOD

Throughout that time the context for wild places where nature can thrive, and for nature in general, has become more challenging. Published in 2023, the landmark *State of Nature* report highlighted the devastating and ongoing decline in UK wildlife: it found that one in six species are at risk of being lost from Great Britain; that numbers of the species studied had, on average, declined by 19 per cent since monitoring began in 1970; and that most of our key habitats are in poor condition.

Added to this is a political and social discourse which is increasingly polarised and pushing back on what



Ice climbing in Coire An Lochain, Cairngorms

“Leading a policy directorate is about harnessing that passion and using our voices at the right time and to maximum effect”

we once thought was accepted wisdom about the impact of humans on our planet and the things we need to do as global, national and local communities in response.

SPEAKING UP

I asked myself what that passionate nine-year-old would have done if the wild place he cherished so much was threatened. I was never shy at that age of having an opinion and using my voice to express it. So, the decision was an obvious one to move to the Trust as a place where I could make that voice heard.

Leading a policy directorate is about harnessing that passion and using our voices at the right time and to maximum effect. It’s about drawing on our breadth of experience as a progressive landowner managing our land for nature and wider public benefit, but also not being afraid to have clear opinions on issues such as deer management and being prepared to stand up for them.

We also occupy a unique position as a large landowner which gives us the opportunity both to protect and enhance the wild places we are responsible for, and also to ensure that they are supported by vibrant and economically viable

communities, demonstrating to partners, opponents and decision-makers that wild places matter and can make a strong contribution to the nation.

More than 30 years after that cold morning in the fields, it is early spring again and I’m huddled back into my collar trying to evade a cold northerly wind. Nearly 300 miles away from the Peak District, I’m watching a golden eagle searching out a thermal to allow it to soar, while below me the beaten pewter of the surface of a loch has a seam soldered across it by the wake of an otter hunting for breakfast.

We must be careful not to overdo the doom. Wild places are under threat, but they are still there if you take the time to look for them and experience their power. And at the Trust, I’m pleased to say, there is a dynamic and motivated team that has their best interests very much at heart. □

About the author

David Fleetwood is the Trust’s Director of Policy. He joins the Trust for two years from the Scottish Government where he most recently served as policy advisor to John Swinney, First Minister of Scotland.

Policy priorities

The goal of the Trust’s policy team is to promote the legislative and societal changes that will support the conservation of wild places throughout the UK, including through statutory protection. We undertake strategic policy engagement, informed advocacy and shape national and local agendas on key issues. This year, we have three main policy priorities:

Wild Places Index

We will create an index to objectively assess the extent to which a landholding is supporting natural processes to thrive and how future management could further support natural processes.

Policy advocacy

We will advocate for policies that enhance environmental protection and restoration, promote sustainable land use practices and address climate change issues that affect natural landscapes and processes. Within this work, we will provide evidence-based insights to inform policy discussions, offering advice and recommendations on environmental legislation, wildlife protection and climate resilience.

Build strategic partnerships

We will work with key partners, including other NGOs, governmental bodies and local communities, to align policy objectives and drive collective action for nature.

Natural law

Reflecting on a growing movement, **Emily Sutton** explores why our legal systems and doctrines must evolve to accommodate a deeper recognition of the value of nature

THE idea of a world in which forests and entire ecosystems have the right to flourish and regenerate, and where rivers are protected by people who could represent them in court and fight to enforce those rights is a fascinating one. It is also an idea that is framed by urgency, because we are losing nature on an epic scale.

A 2021 publication by Professor Sir Partha Dasgupta from the University of Cambridge found that nature is “our most precious asset”, and that the last few decades of human prosperity have taken a “devastating” ecological toll.

The Economics of Biodiversity: The Dasgupta Review highlighted that we would need 1.6 Earths to maintain humanity’s current way of life; that biological diversity is declining faster now than at any time in human history; and that, since 1970, there has been, on average, almost a 70 per cent reduction in the populations of mammals, birds, fish, reptiles and amphibians globally.

While nature has inherent and incalculable worth, it’s also true that it provides natural dividends or ecosystem services to us. But because nature has not been represented on the balance sheet, it has suffered.

A leading idea to increase environmental protection is to reconstruct economics to include nature as an ingredient – as suggested by Professor Dasgupta and advocated by Kate Raworth in her bestselling book *Doughnut Economics*. This idea is supported by Sir David Attenborough who wrote the foreword to the *Dasgupta Review* and has similarly recognised economics as a discipline that shapes decisions of the utmost consequence.

Published in autumn 2024, Natural England’s *State of Natural Capital Report for England* found that the economy and society are intimately dependent on the health of the natural environment. And given that interdependence, the report questioned why, if nature is so important, is it still declining?



PHOTOGRAPH: ADOBE STOCK

It found a critical reason to be that nature is often missing in decision making, even when it is highly relevant.

NATURE JURISPRUDENCE

The development of ‘nature jurisprudence’, the legal philosophy that emphasises a non-anthropocentric relationship with nature, is complementary in my view to Dasgupta’s thinking because it gives nature an enhanced legal platform from which to advocate.

Many naturalists will prefer nature jurisprudence to the next-gen economics approach, because it shows nature to have inalienable rights independent of humans. My own view is that we need the combination of many approaches to protect the natural world effectively. We need global institutions to focus on nature loss, companies and investors to respond and



The Whanganui River in New Zealand's North Island became a 'legal person' in 2017

a community-led movement to confer legal personality on certain elements of nature.

It's interesting to see the paradigm shift that is happening in the corporate sphere to reflect the nature rights movement, with some companies making nature protection a central part of their business and giving nature a voice in the boardroom.

Spearheaded by the organisation Lawyers for Nature, the cosmetics company Faith in Nature has appointed a 'nature director'; the idea being to consider the impact of decisions on nature, and ask the question 'what would nature say'?

More than 400 companies have adopted a voluntary risk management and disclosure framework for organisations to assess, report and act on evolving nature-related dependencies, impacts, risks and opportunities – the Taskforce on Nature-

related Financial Disclosures. In some cases, executive remuneration has been tied to performance on environmental issues.

LEGAL PERSONALITY

There are now examples from around the world of courts having granted legal personality to bodies of water and forests. Nature has also gained rights via legislation. In 2021, joint resolutions issued by the regional municipality of Minganie and the Innu Council of Ekuanitshit granted the Magpie River in Canada nine legal rights in accordance with Innu customary law, following a decade long community-led campaign.

The river flows almost 300kms across northern Quebec and has great cultural significance for the Ekuanitshit community. These nine legal rights include the right to

flow, to maintain its natural biodiversity, to regenerate and be restored, and the right to sue. We don't yet know how the court will interpret the law but many are hopeful that this approach will be effective.

In 2016, Colombia's Constitutional Court recognised the Atrato River in the northwest of the country as a legal subject. Since then, other decisions have granted legal personality to further Colombian rivers, but also to other ecosystems such as Lake Tota, the Pisba Highlands and parts of the Colombian Amazon. While research on the material impacts of the ruling on environmental governance and protection is hard to find, it is argued that the indirect impacts of these court decisions are significant.

Elsewhere, under Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, Te Awa Tupua, the Whanganui River, in New Zealand's North Island, has been declared as "a legal person [that] has all the rights, powers, duties, liabilities of a legal person", and a board (Te Pou Tupua) established as the human race of the river.

Based on Te Ao Māori, the indigenous Māori world view, the legislation acknowledges the interrelationships between humans and nature, and recognises the intrinsic value and cultural significance of the river. While the river has rights, these are impacted by existing rights and interests of others and various statutory schemes.

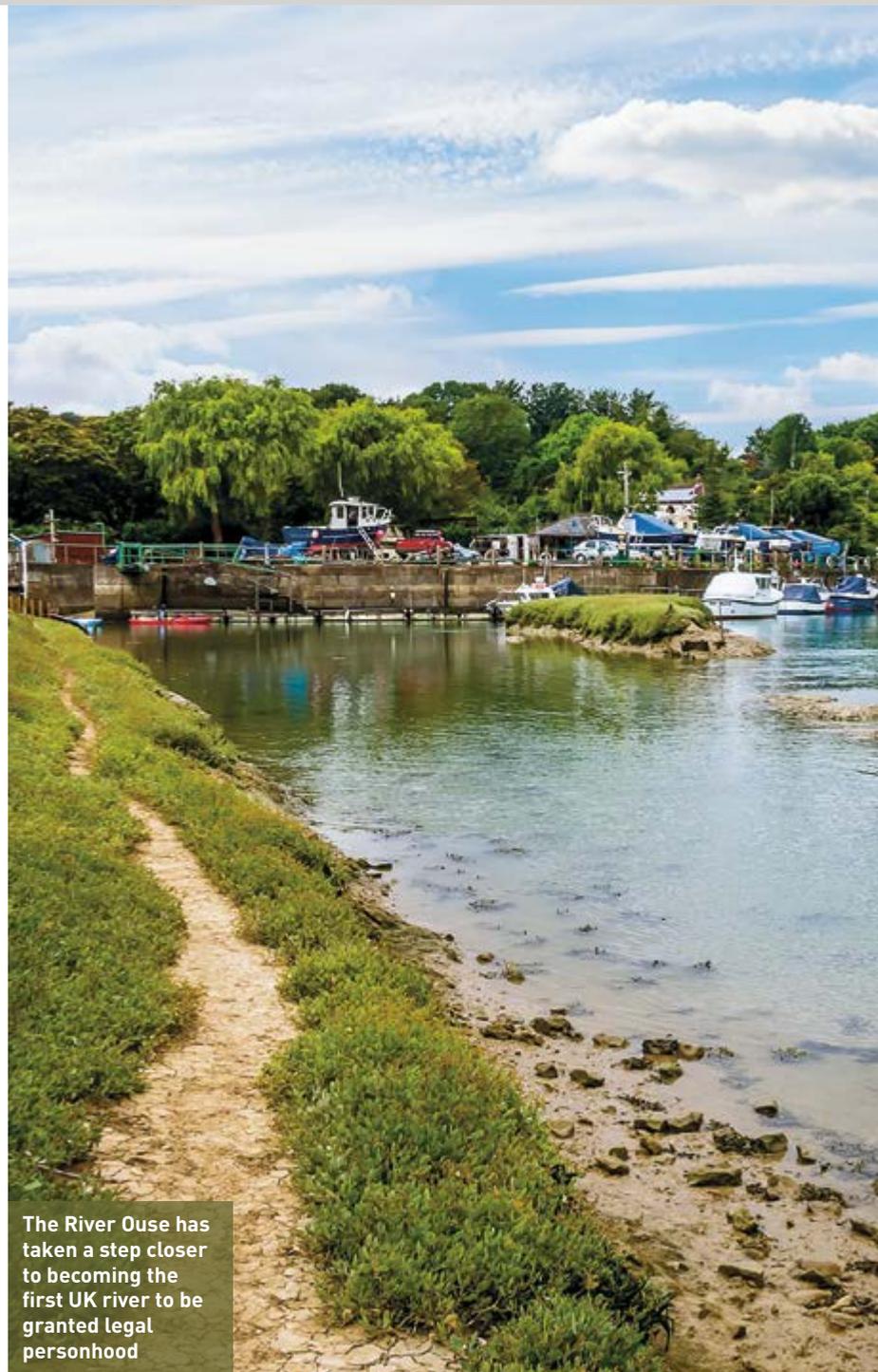
Te Urewera – a large area of forested land – has also been granted rights using a similar approach, with the relevant legislation setting out a framework for governance and management of the forest.

BUILDING STRENGTH

Recently, the rights of the River Ouse, which flows through West and East Sussex, have been formally recognised by Lewes District Council – bringing it a step closer to becoming the first UK river to be granted legal personhood.

Since the announcement of the council's Rights of River motion, many other river-focused groups, wildlife trusts and other local authorities in England have shown interest in working towards implementing rights for their rivers.

On a much grander scale, a new bill introduced in New York aims to protect the largest freshwater ecosystem in the world – the Great Lakes. Although the Great Lakes provide water for 40 million people across the US and Canada, they are badly affected



The River Ouse has taken a step closer to becoming the first UK river to be granted legal personhood

by sewage, industrial waste, plastic pollution and toxic algae blooms.

If made law, the bill would grant the Great Lakes and other freshwater ecosystems in New York State fundamental rights such as the right to 'exist, persist, flourish, naturally evolve, regenerate, and be restored'.

"All people deserve healthy ecosystems and clean water, and recognising the inherent rights of nature to exist and flourish is the best way to protect this," comments Assemblyman Patrick Burke who introduced the bill.

What these examples demonstrate is that



“There is a paradigm shift in the corporate sphere that reflects the nature rights movement, with companies making nature protection a central part of their business”

PHOTOGRAPH: ADOBE STOCK

nature can have legal rights, and that a rights-based discourse is developing. We need to pull every lever available to evolve our law and economics in order to protect the natural world. □

About the author

Currently with the UK civil service, Emily Sutton has worked in the private, public, and third sectors here and in New Zealand as a senior legal adviser, advocate and organiser on climate and environmental issues. Emily is also a Trustee of the John Muir Trust

The Trust's stance

In Scotland, the right to a healthy environment (including substantive and procedural rights) was the subject of a rights-based conversation in 2023 on a stronger framework for environmental accountability, but this has not progressed into law.

Other countries, such as Iceland, provide models for this approach and it is something the Trust may consider in future, for example as the Scottish Government considers the future of the National Performance Framework and a possible Future Generations Commissioner.

The Trust is working to establish a Wild Places Index (see page 22), which has been devised to measure the attrition of wild places over time. This could also support the legal designation of wild places. The goal is to ensure that future generations will inherit lands where we can witness the freedom of nature with minimal human intervention given social and geographical constraints.

Launched in March, the redesigned John Muir Award (see page 10) provides inclusive, flexible learning for children, young people and adults – encouraging all to connect with, enjoy and care for wild places throughout the UK. The Award's four challenges focus on gaining an awareness of how vital wild places are and learning that is underpinned with meaningful, practical actions.



Emily Sutton

PHOTOGRAPH: EMILY SUTTON

Fighting back

Wendy Grindle introduces a new appeal that aims to increase the Trust's ability to push back on industrial developments in wild places

AS MANY Trust Members will be aware, Scotland's renowned landscapes and nature are under significant threat from a renewables industry that is meant to provide solutions to the climate and biodiversity crises rather than add to them.

While renewable energy is essential in tackling climate change, it must be developed in the right locations. The continued siting of large-scale wind farms in wild places risks further damaging these irreplaceable landscapes, harming biodiversity and degrading already vulnerable natural carbon sinks.

The speed and scale of wind power development is pushing these areas towards a tipping point. If left to the current regulatory system and economic interests, Scotland's wild places will become industrial landscapes generating power for export at increasing cost to the natural environment.

It is with this threat in mind that the Trust has launched a new appeal to help build a fighting fund to help us campaign against the industrialisation of wild places with increased vigour.

MULTIPLE THREATS

Large-scale wind farms threaten in ways that go well beyond just their visual impact. The extensive access roads, transmission lines and other infrastructure required can result in severe habitat degradation and fragmentation, affecting the movement and behaviour of wildlife. Bat and bird strikes can also be an issue, especially for migratory species.

Meanwhile, the construction of industrial-scale, onshore wind energy developments on and around peatland is the very definition of questionable green energy: while the carbon costs of development on

areas of peatland are, at best, underestimated, the permanent natural carbon and rare habitat loss is both certain and irrecoverable.

Peatlands are among the world's most important natural carbon stores, capable of storing up to 10 times more carbon per hectare than the equivalent area of forests. According to the International Union for the Conservation of Nature, peatlands store more carbon than all the world's vegetation combined – despite covering only 3 per cent of the Earth's land surface.

And Scotland has more of this habitat than most, with peatland covering more than a fifth of the country's total land mass. Collectively, it holds the bulk of Scotland's carbon store – estimated to be the equivalent of 140 years' worth of total annual greenhouse gas emissions.

The Scottish Government's carbon calculator, which is used to support the process for determining the siting of wind farm developments, may underestimate the actual emissions from damaged peatlands. First published in 2008 and most recently updated in 2016, the calculator was designed to give decision-makers a better understanding of the carbon pollution caused by a development and to weigh up whether the carbon savings could justify the harm done to the landscape.

However, as scientific understanding of how built development impacts the structure of peatland and its carbon storing ability has improved, there have been calls for the Scottish Government to update the calculator further so that it generates a more accurate assessment of a development's overall emissions.

In the meantime, the Trust's position is clear: to protect such valuable ecosystems and maximise their carbon sequestration potential,



Sunset at Whitelee Wind Farm

PHOTOGRAPH: LUCA DIMA

there should be a presumption against large-scale onshore wind development on peatland.

CLIMATE GOALS

There is no doubt that onshore wind development has played a vital role in decarbonising Scotland's power sector and reducing greenhouse gas emissions. However, achieving Scotland's climate change targets requires a comprehensive approach that goes beyond just expanding renewable energy capacity.

While onshore wind power remains important, the primary gains in reducing emissions come from decarbonising other sectors



consumption from renewable sources outstripped other domestic sources. This was a hugely significant success in decarbonisation of the energy sector. Scotland is now more than self-sufficient in electricity, which begs the question as to why more of its wild places should be sacrificed for the development of wind power for export elsewhere.

LOCAL COMMUNITIES

Rural communities have lived in harmony with wild places on their doorsteps and with pride in their environment for generations. It is unlikely that local communities want towering wind turbines in the landscape as a legacy for future generations. What's important is that future generations are able to continue to live in these landscapes.

To oppose the threats to wild places, we are working on how we can better objectively assess the state of wild places and the threats which they face at national, regional and local level.

Our new appeal will help us deliver this work. With support, we will be better able to make the case that developments for further wind power should not come at the cost of Scotland's wild places. We will also be able to raise awareness of the threat to land in our care and wild places across the UK from inappropriately sited industrial developments, and build the case for wild places with an index that will provide an objective assessment of their health throughout the UK, the threats they face and evidenced strategies and management plans to improve their condition.

Please help us by joining this fight to protect wild places because, once they are gone, they cannot be replaced. ☐

Further information

For more on the Trust's Fighting Fund Appeal and to donate, visit johnmuirtrust.org/fightingfund

About the author

Wendy Grindle is the Trust's Director of Communications, Engagement and Marketing

such as transport, buildings and agriculture. A holistic approach is essential to achieve Scotland's climate goals and address the interconnected challenges of climate change and biodiversity loss.

Repowering existing wind farms offers the potential to increase onshore wind capacity without harming Scotland's wild places. This involves replacing older turbines with taller and more efficient ones, which can generate more electricity. Repowering just 2.5GW of existing capacity could gain Scotland an additional 5-7.5GW of new capacity.

By prioritising repowering in areas where infrastructure already exists

and coordinating efforts through energy clusters, it will be possible to minimise the need for new developments in wild places. This approach ensures that Scotland can achieve its renewable energy targets without compromising its precious natural assets.

According to Scottish Renewables, Scotland is already home to 48 per cent of the UK's wind power capacity, which provides over 30 per cent of the UK's national power supply. Following the recent leasing rounds for offshore wind, Scotland will install an additional 11GW of capacity by 2030.

In 2023, Scotland's energy



PHOTOGRAPH: CHRIS PUDDIPHATT

Indexing wildness

David Fleetwood provides an update on the ongoing development of the Trust's Wild Places Index

AS A SPECIES, humans do not have a good track record of protecting the natural world. Yet deep down, most of us instinctually value the preservation of wild natural places – areas where nature can thrive undisturbed.

The Trust's developing Wild Places Index is devised to measure the attrition of wild places over time and to address the vulnerability that they face through lack of definition. It is a tool to help better understand what constitutes a 'wild' place, to guide the recovery of these areas and inspire a network of protected regions, from urban centres to remote mountains.

Overall, the goal is to ensure that future generations will inherit lands where they can witness natural processes with minimal human intervention (albeit within social and geographical constraints).

The index is designed to be the tool to guide humans to leave a lasting

legacy of protected and thriving wild places across the UK. As these areas recover, they will become symbols of ecological resilience, offering future generations the chance to experience areas on the planet where nature leads the way.

STRATEGIC PLANNING

The development and rollout of a Wild Places Index will support the Trust's strategic aims in two main ways. Firstly, it will provide an objective mechanism through which the quality of wild places can be assessed and understood. This will allow for the relative quality of wild places across the UK to be articulated and for the Trust to demonstrate the erosion seen in wild places over recent decades, which in turn supports our advocacy for their protection.

Secondly, the index will provide an understanding of the threats and pressures which a landholding is

under, for example, from invasive non-native species or inappropriate development plans. This will allow for forward management plans to be developed which have a positive impact on the landholding's ranking on the index, promoting land management practices that support wild places and nature.

Future development will allow for the index to be rolled out more broadly, including internationally and used to influence national and international frameworks for protection of wild places, including at a UN level.

Work so far has focused on establishing objective measures through which a landholding could be assessed for ecological integrity and presence of human features, plus establishing a methodology for assessing threats and pressures on the site, then managing this through a weighted decision-making process.

In addition, the Trust has worked



Wildness great and small: the imposing bulk of Quinag, Northwest Highlands (main); a mountain waterfall



PHOTOGRAPH: ADOBE STOCK

“Future development will allow for the index to be rolled out more broadly, including internationally and used to influence national and international frameworks for protection of wild places”

to identify sites against which the indexing proof of concept can be tested with an initial focus on our own properties, as well as development of a network of potential partner landowners who may be interested in site testing.

NEXT STEPS

The next steps will see us finalise the data sources’ objective assessment of wild places as well as the process for quantifying threats and pressures. We will then test the prototype index on the land in our care.

Of course, wild places are not just defined by their physical characteristics, they also affect humans on an emotional level (see

page 24). This is why the Trust will in time be developing a second tool that focuses on perceptions within society and their intergenerational change. It will measure the perceptual and experiential elements of a wild place.

Together, the Wild Places Index and this second tool will enable the Trust to populate a Wild Places Register and monitor the state of wild places across the UK over the coming years. □

About the author

David Fleetwood is the Trust’s Director of Policy

Being human

Thomas Widrow explores how just being in a wild place reflects what it means to be human

IN THE Trust's policy team, we spend a lot of time convincing those with power that they should protect wild places. To do so, we put together many arguments to support our case. But there are also very personal reasons why wild places deserve to be protected and restored.

Here's an example. Recently, I was on an adventure with friends, hiking to the remote Shenavall bothy in Wester Ross in the Northwest Highlands. While making our way through the hills, we had a discussion that really struck me. Yes, wild places help us tackle the nature and climate crises. Yes, they clean our water and filter our air. But they also do something else, just as important and arguably much more powerful.

We should protect and restore wild places because they connect us to something so fulfilling, so necessary, that living without them just cannot be an option. In the wild, we remember our place in the only network that truly matters – the web of life.

One friend recalled how last summer they reached a watershed moment when they went on an expedition crossing the Knoydart peninsula, some of which is cared for by the Trust. They talked about the deep sense of relief and sheer joy that came with completing that journey through one of the UK's most remote and wild areas.

As we rambled through another breathtaking landscape in a different season, admiring the imposing ridges of An Teallach and Beinn Dearg Mòr, we agreed that joy couldn't be produced – or unlocked – in any other way.

Away from the screens and the



PHOTOGRAPH: THOMAS WIDROW

The warm glow of Shenavall bothy

“In the wild, we remember our place in the only network that truly matters – the web of life”

news with nothing to worry about but the path ahead, our minds were free to grow. In this wild place, we found space to talk about a thousand and one things.

Following a great night spent by the roaring fire of Shenavall bothy in the company of some Irish adventurers, we set off to complete our walk. We stumbled on what looked like badger tracks and fantasised about coming across lynx tracks in the future. How wonderful would it feel if the landscape was truly alive, with fully functioning ecosystems?

I realised, while resting against a veteran tree listening to the river and feeling the sun on my skin, that the

outdoors had, as always, rekindled flames of hope. I remembered that one of the most powerful reasons of all for protecting wild places is that we belong in them.

When we are disconnected from nature, we forget some of the things that bring us together and that truly matter, such as friendship, beauty and peace. These are the elements that make us human. And in wild places, we experience them like nowhere else. □

About the author

Thomas Widrow is the Trust's Head of Campaigns

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Soil for life

David McKay explores the importance of soil for day-to-day life – and how the protection of wild places can have huge implications for overall soil health

WHEN walking in the hills and exploring Scotland's wild places, how often do we look down and think about the soil beneath our feet? It can be easy to forget when marvelling at our beautiful landscapes, but soil is critical to all terrestrial life.

It is estimated that half of all species on earth live in the soil. One gram, about a quarter of a tablespoon, can harbour up to 10 billion organisms. Nearly everything that we eat – 95 per cent of food – comes from the soil.

Our soils also perform a huge range of other vital functions, including purifying water, capturing carbon and mitigating flooding and drought.

But why is this important when thinking about protection of wild places? Firstly, soil provides life to all wild plants which in turn provide sustenance for small animals which are then eaten by predators. In this way, soil is an integral part of the food web.

It is also hugely relevant to the ongoing debate around deer management in Scotland. A study by researchers at the University of Edinburgh and Yale University in 2024 calculated annual nutrient losses from the removal of deer carcasses. Using available data on culls in Scotland, scientists estimated that essential nutrients – calcium, nitrogen and phosphorus – are lost in large quantities each year.

This could, the study concluded, have “widespread implications for ecosystem recovery”. The loss of calcium was seen as having the biggest environmental impact, with deer culling stripping the land of more calcium than sheep farming. We know that low calcium levels in soils can impact upon native woodland regeneration and the health of commercial forestry. Meanwhile, nitrogen and phosphorus are the two vital ingredients for plant growth, so any such nutrient losses will have a significant impact.

The John Muir Trust has made the case for leaving deer carcasses on the hill where appropriate. This can mimic what happens in a natural system, where large predators would, after killing and feeding on a deer, leave most of the carcass in situ. This then attracts scavenging animals, insects, bacteria and fungi.

Scientists found that the carcasses are used by a range of vertebrate species, including fox, otter, pine marten and golden eagle, while ravens were the most common. Even species such as mountain hare and red grouse were often recorded feeding close to carcasses.

The ecological significance of carcass removal is clear. Soils benefit from all of those nutrients that are so often being lost, with a knock-on impact in terms of natural ecosystem restoration.



PHOTOGRAPH: LISA INGLASSES

“Scientists found that deer carcasses are used by a range of vertebrate species, including fox, otter, pine marten and golden eagle, while ravens were the most common”

CLIMATE ROLE

Soils also have a key role in tackling climate change – and even more acutely so in Scotland. One of the main differences between Scotland's soils and elsewhere in the UK is that they contain vast quantities of organic matter – living and dead material from plants and animals. These organic-rich soils form a significant carbon store – and the more carbon there is in the soil, the less there is in the form of greenhouse gases in the air.

Partly as a result of Scotland's relatively cold and wet climate, organic material doesn't break down as quickly as it does in warmer and drier parts of the world, so it builds up in the soil. NatureScot, the Scottish Government's nature agency, reports that Scotland's soils contain more than 3,000 megatonnes of carbon – or around 60 times the amount held in the country's trees and plants.



Full of it: soil is the root of all terrestrial life

Peatlands are said to hold the bulk of that carbon store (53 per cent). Such figures have powerful implications for how land is managed in the future – with perhaps a few surprises thrown in.

There is much discussion about the relative merits of various approaches to land management, including rewilding, regenerative farming, peatland restoration, commercial forestry and native woodland regeneration. But when it comes to soils and, in particular, soil carbon, there is uncertainty about the impact of some of these management options often cited in terms of the UK and Scottish ‘net zero’ emissions reduction targets.

For example, a recent academic study cast doubt on assumptions about the carbon benefits of natural regeneration on heather moorland. This followed previous research by scientists from the University of Stirling and The James Hutton Institute that found planting birch and Scots pine trees in heather moorland ecosystems with carbon-rich soils was linked to soil carbon losses that were akin to the amount of carbon captured in the trees. Overall, the study suggested, there may be no net carbon capture in the first few decades following tree planting.

In the latest study, scientists at the Hutton, in collaboration with the University of Edinburgh and Forest Research, focused on natural colonisation of heather

moorland, where trees were established from parent trees via seedfall without any human intervention.

After 25 years, the carbon captured in the small, sparsely growing trees did not exceed the carbon lost from the soil, meaning no carbon was captured following the colonisation of these previously unforested ecosystems by trees.

There will be more research done in this space, but it demonstrates again the need to be careful about assumptions on land use change and carbon capture.

SOIL HEALTH

Of course, there are many other good reasons to plant trees and to encourage natural regeneration of woodland, not least for increased biodiversity and better water infiltration in soils that can help mitigate the risk of flooding. However, depending on the soil type and location, it may not always be guaranteed to deliver on the UK and Scottish governments’ net zero emissions targets.

More broadly, the political focus on climate change and nature restoration has prompted increased interest in the health of soils. We already know that some land management practices erode and degrade soils, and when in poor health, soils lose their ability to support plant growth.

A review published last year by Environmental Standards Scotland demonstrated the scale of the challenge. Degradation of soil takes its toll on the economy, with erosion and compaction estimated to cost £75m per year. Meanwhile, a sum in the region of £16-49m per year is lost due to reduced crop yields from a lack of water retention.

Scotland, which is home to world-leading expertise in soils, adopted a Soils Framework in 2009, which at the time was ahead of the curve. However, this framework was not developed with the intention of being enacted into law, as has been the case in other countries.

In the EU, for example, a proposed Nature Restoration Law includes requirements for setting a satisfactory level for soil carbon stocks and targets for the restoration of peatland soils, while proposals for a Directive on Soil Monitoring and Resilience are also at an advanced stage.

At present, however, no political party in Scotland, or indeed the UK, is proposing such legislation. With a Scottish Parliament election coming up next year, now is perhaps the time to consider whether a new law is needed to offer protection in statute for soils in the same way that we have legal directives for water and air quality.

Whether that happens or not, there is enough reason for us to think much more about the soils underfoot, how they are managed and how best to protect this crucial asset in the face of a changing climate. □

About the author

David McKay is Co-Director of Soil Association Scotland, where he leads on research, development and advocacy of the charity's positions on food, farming and land use. He is also a Trustee of the John Muir Trust

Speed at scale

Rich Rowe explores the growing role of artificial intelligence in conservation and its implications for the protection of wild places

A DEEPLY divisive subject, the mere mention of artificial intelligence (AI) can elicit an extreme response. While some believe that the development of computers and robots that behave in ways that mimic, and even step beyond, human capabilities can help improve lives immeasurably, others have a deep concern that such a development poses an existential threat to humanity itself – a nightmarish scenario depicted in so many ‘rise of the machines’ sci-fi films down the years.

However, those who occupy the middle ground suggest that AI, in and of itself, is neither inherently good nor bad. Instead, it is how humans develop and utilise the technology – and what safeguards are put in place – that really matter.

What is clear is that AI has long left the lab and already touches almost every aspect of our daily lives, from healthcare and finance to manufacturing and agriculture.

Nature conservation is no different. Today, AI and machine learning – a pathway to AI that uses algorithms to recognise patterns from data and inform smarter decisions – is used by thousands of conservation organisations around the world.

It is now considered a vital tool for understanding how best to protect the natural world at a time when the planet faces what is being referred to as the sixth mass extinction event – one driven by human activity rather than natural phenomena.

The use of AI in conservation covers everything from enhanced species and habitat monitoring to pattern recognition and predictive modelling. Offering speed at scale, AI algorithms perform tasks in a fraction of the time it takes humans, analysing vast datasets to identify trends in wildlife populations and highlight the impacts of specific environmental changes.

VARIED APPLICATIONS

For organisations such as the UK Centre for Ecology & Hydrology (UKCEH), which works with partners around the world on the use of automated biodiversity monitoring stations, AI has a crucial role to play in tackling the biodiversity crisis.

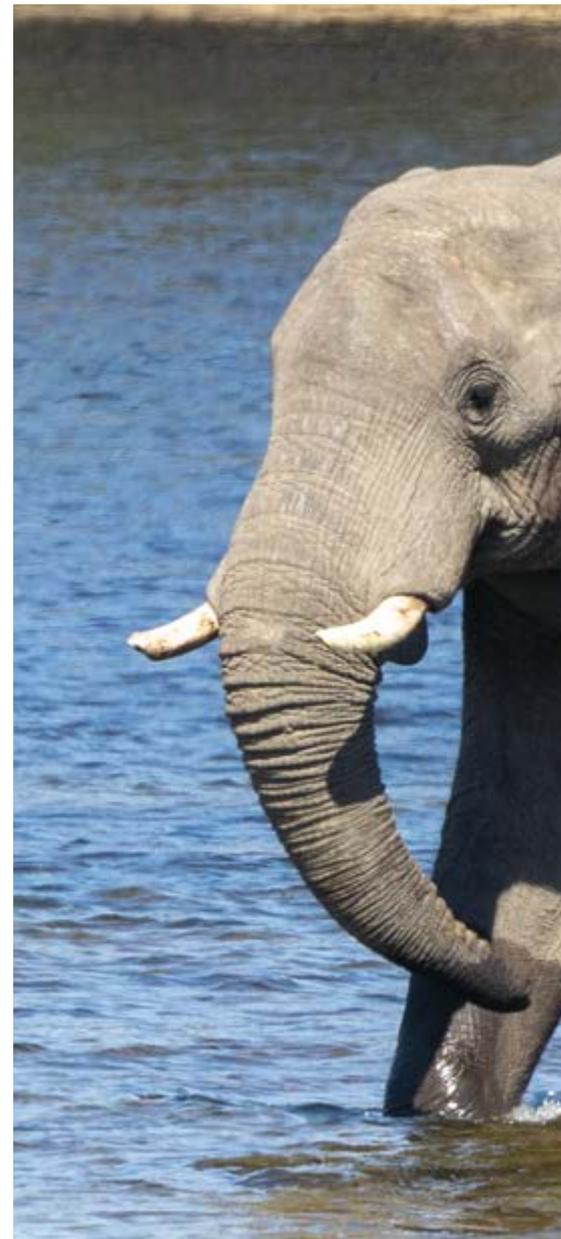
“The widespread deployment of automated sensors combined with identification of species using AI can transform our understanding of the impacts of environmental change on wildlife and measure progress towards national and international biodiversity targets,” notes Professor David Roy, UKCEH and University of Exeter ecologist.

“This will enable us to identify where biodiversity is under threat, the main drivers of change and to inform solutions to guide local habitat management.”

“The use of AI in conservation covers everything from enhanced species and habitat monitoring to pattern recognition and predictive modelling”

AI’s applications in conservation are almost limitless. In Alaska, where salmon populations – so crucial to the local economy as well as wider biodiversity – are monitored using sonar technology, AI helps automate the process of detecting, counting and tracking the fish that swim upstream to spawning sites.

In Zambia, AI is being used to enhance conventional anti-poaching efforts by creating a 19km-long virtual fence across Lake Itzhi-Tezhi



– an entry point used by poachers to access the nearby Kafue National Park and its population of elephants. A network of thermal imaging cameras records every boat crossing in and out of the park with automated alerts meaning that only a handful of rangers are now needed to provide round-the-clock surveillance.

Elsewhere, AI is helping track water loss across Brazil’s portion of the Pantanal – the world’s largest tropical wetland – protect koala bears in Australia, restore damaged coral reefs, identify the movement of whales through acoustic monitoring and inform policy decisions around wolf management in the US.



AI is used to protect elephants from poachers in Zambia's spectacular Kafue National Park

PHOTOGRAPH: BIGGESTLEAF TRAVEL

RAPID DEVELOPMENT

The application of AI in conservation is not as new a development as many might think. Its use dates back to the 1990s when machine learning was first applied in remote sensing and data analysis, with researchers using AI algorithms to classify land cover and identify species from satellite imagery.

There have, however, been significant advances, especially over the past decade when AI-powered tools designed specifically for conservation first began to emerge. Increasingly sophisticated, there are now AI-driven predictive models for biodiversity trends, habitat mapping and even for understanding

behavioural trait variability of individual species and how those traits are changing over time.

AI modelling can aid habitat restoration, predict suitable habitats for species translocations and analyse genetic data to highlight population viability and extinction risk – levels of detail that can inform highly targeted conservation strategies for species and entire habitats.

The use of AI even touches public services in the UK. Satellite images and machine learning are being used by Natural England to build a detailed map of 'Living England' showing the current extent of natural habitats across the country and

predicting their change. Far removed from the manual surveys of the past, the aim is to speed up decisions around planning and land use while better protecting nature.

SAFEGUARDS

However, while new applications of AI are accelerating our ability to understand the world around us, there are very real challenges, and responsibilities, which accompany them. Scientific inaccuracies, misinformation and misrepresentation all have the potential to undermine public understanding and support for conservation efforts.

There is also AI's significant environmental footprint to consider. Requiring large datasets to ensure high levels of accuracy, the training and running of AI models consumes huge amounts of energy-intensive computing power, resulting in high carbon emissions.

Writing for the World Economic Forum in 2024, Metolo A. Foyet, Founding Curator at Global Shapers Hubs in Florida, emphasised that the "responsible integration of AI should prioritise inclusive learning, community involvement and AI's environmental cost, to ensure that [it] supports and enhances conservation efforts while respecting human values and environmental and ethical standards".

It was perhaps another way of saying that AI must serve conservation and humanity rather than the other way around. The tail must not wag the dog. Get that right and AI has the power to make a very real, positive difference to wild places around the world. □

About the author

Rich Rowe is Contributing Editor for the Journal

Male ring ouzels have a distinctive white bib on their chests

PHOTOGRAPHY: ADOBE STOCK/SHUTTERSTOCK



Mountain mover

An upland specialist, ring ouzels return to breed in spring but are often only spotted by other mountain goers

SPRING heralds the return of many species of bird to breed in the uplands of Britain, although some manage to fly in and live their summer lives on these shores a little under the radar.

The ring ouzel is one such bird. Having wintered in the mountains of southern Spain and northwest Africa, this slim-looking member of the thrush family arrives around mid-March to breed in favoured spots from Dartmoor to the far north of Scotland.

With a liking for rocky gullies and steep-sided valleys, this is a bird really only visible to those who themselves spend time in the hills. But even when not seen, the male bird's strong, fluty and rather desolate song can often be heard while they are perched on rocks.

Although a type of thrush, this striking bird is often mistaken for a blackbird – so much so that it is often referred to as the 'mountain blackbird'. Slightly smaller, and with black plumage, it is similar in looks, but the distinctive white bib of the

male and creamy bib of the female together with a pale, silvery wing panel set the ring ouzel apart.

Breeding begins in mid-April, with two broods common. Built by the females out of plant material bound together by mud, the bird's cup-like nests are usually located on or close to the ground in vegetation (heather being a favourite), on rocky ledges and sometimes in small trees.

The young are fed a diet of earthworms, insects, leatherjackets and spiders, while moorland berries – blaeberry, crowberry and rowan – are important food sources later in the year.

Like many species, the ring ouzel has been known by a variety of names in different areas. In Dorset, they were traditionally known as the Michaelmas thrush due to the timing of their arrival on their southward

migration. Meanwhile, an old Scots name for the bird is aiten chackart or chat of the juniper (from *aitionn*, Gaelic for juniper, and *chackart*, Scots for chacking bird).

Today, ring ouzels are on the UK Red List of birds of conservation concern due to severe breeding population decline – numbers fell 71 per cent between 1990 and 2012 – and moderate breeding range decline in recent decades.

It is believed that possible causes include afforestation, changes in grazing regimes, climate change and problems in wintering and migration areas. □



Further information

Ring ouzels have been recorded at several Trust properties, including Schiehallion, Nevis, Quinag and Strathaird. They also breed high above Thirlmere in the Lake District



“Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wildness is a necessity..” *John Muir*

In care of the John Muir Trust:
Quinag in Assynt, North West Scotland.

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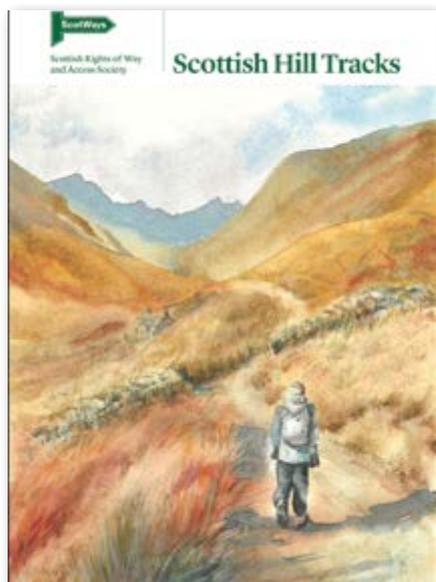
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***Scottish Hill Tracks (Sixth Edition)*, produced by ScotWays**

Derek Sime pores over the latest edition of a guide that dates back almost eight decades

THE first edition of *Scottish Hill Tracks* was published in 1947. That has now been superseded by this current, sixth edition – the result of five years’ work by the ScotWays team of 130 volunteers to review and update every route.

Printed in A5 format, this latest edition is slightly larger than its predecessor, published in 2011, and comes beautifully illustrated with photographs of the routes. It’s chunkier too, with 396 pages compared with the previous 252, but is still compact enough to fit in a rucksack. The foreword is written by Paul Murton, well-known for his BBC television series *Grand Tours of Scotland*.

As before, it is divided into sections, each dealing with an area of Scotland from the Scottish Borders to the far north, with a new section covering Harris and Lewis.

The introductory sections have been expanded considerably, with much more on access rights, practical information and place names. The general map showing the location of each area now highlights main roads, although it omits the section boundaries – a curious omission.

This is described as a guidebook to the best 350 routes (plus 175 variants) that traverse the hills from

one public place to another, covering 7,600km and 194,000m of ascent. Some are paths, while others are tracks or pathless terrain, although specifically not poorly constructed, bulldozed hill roads.

Times are not given for the walks, with readers being advised to apply Naismith’s Rule – something that perhaps other guidebooks should adopt, since times are very much dependent on underfoot conditions, weather and ability.

Route descriptions start with the OS Landranger map number, grid references, total distance in km and the height difference for ascent and descent, followed by a comprehensive route description, including variants, and references to historical context (drove routes, military roads etc.).

Where suitable car parks or public transport opportunities exist, these are mentioned, such as the classic route from Corroul station to Dalwhinnie station (Route 155).

The ScotWays team have done a superb job, and I found this to be an excellent book which will be appreciated by all those who enjoy linear routes through the hills, getting immersed in the wild places they pass through. It is a very worthy addition to the bookshelves of walkers, hill runners, mountain bikers and horse riders alike.

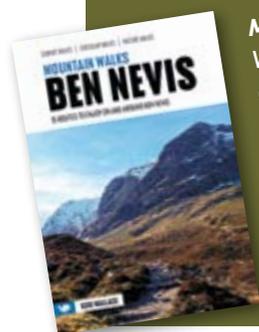
£25.00

scottishmountaineeringpress.com

About the reviewer

Derek Sime is a volunteer at Wild Space in Pitlochry

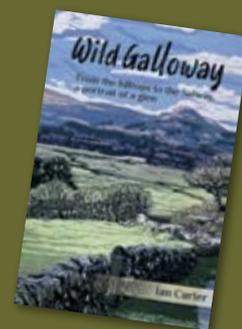
Others we like



Mountain Walks: Ben Nevis, by Keri Wallace
Written by Keri Wallace, a run guide and founder of Girls on Hills, this pocket-sized book is an enticing guide to 15 walking routes on and around Ben Nevis. The classics are all there, such as the grade 1 scramble on the Càrn Mòr Dearg Arête, but so too are lower-level routes that are perfect for when the weather closes in or for those new to mountain walking. Even

those familiar with the area will likely find a few new routes to explore.
£14.95. adventurebooks.com

Wild Galloway: from the hilltops to the Solway, a portrait of a glen, by Ian Carter.
When author and ornithologist Ian Carter moved from Devon to Galloway in search of a little more wildness, he wasted little



Outpost – A Journey to the Wild Ends of the Earth, by Dan Richards

Natalia Barbour finds inspiration and adventure on a wet February weekend

PUBLISHED a few years ago now, Dan Richards opens *Outpost* by telling readers about his childhood fascination with a polar bear pelvis. His father, an explorer himself, brought the pelvis back from his final Arctic expedition to Svalbard, where he and his companions sheltered from the harsh conditions in a shed dubbed 'Hotel California'.

Young Dan was transfixed not just by the pelvis, but also by Hotel California, the standalone shelter that was able to provide his father with some respite in an unforgiving landscape. It would become the inspiration for his own adventure seeking out the most remote and far-flung shelters around the world.

In entertaining style, Richards takes readers on a journey that includes huts in Iceland, fire-watch lookouts in Washington state – looking out for bears as much as wildfires – the surface of Mars in Utah, a lighthouse in the North Atlantic, a writer's cabin once used by Roald Dahl and various bothies in Scotland.

Along the way, he explores what these landscapes have meant to writers, artists and musicians, and wonders out loud why we are drawn to wilderness.

This was the perfect book to read over a rainy February weekend. I felt both envious of his travels and

grateful to be wrapped up in a house with central heating, as Richards described his nights in cold, draughty sheds with only a sleeping bag as protection.

The author's witty and heartfelt writing kept me laughing all the way through as we travelled from continent to continent, and one weather extreme to another in search of wildness and isolation. In one chapter, he describes the sheer amount of rain he encountered during his time in Scotland, remarking on a particularly damp day where "even the stream looked uncommonly wet".

The author's vibrant descriptions really make the landscapes he travels through come to life. I felt like I was out there with him, teetering between exhaustion and excitement while scaling Japan's Mount Mitoku, battling the elements while hungover in the Cairngorms and revelling in the icy solitude of Svalbard.

It is a book that revels in the fact that our crowded planet is still full of wild places to explore, although there is a clear message throughout: enjoy them, but leave no trace. This lesson is paramount for anyone looking for their own adventure in the wilderness, and I will certainly be adding more than one of Richards' stops to my travel bucket list.

£10.99

canongate.co.uk

About the reviewer

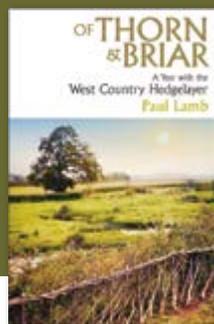
Natalia Barbour is the Trust's Digital Communications Officer



Both books are available to buy from our online shop at johnmuirtrust.org/shop/books

time in getting to know his new patch. Gentle, thoughtful and sensory, this account of exploring the landscape found within walking distance from his home reveals the remarkable variety of wildlife and habitat in this often overlooked part of Scotland. A better introduction to this glorious area is hard to imagine. £17.99. whittlespublishing.com

Of Thorn & Briar: A Year with the West Country Hedgelay, by Paul Lamb. Beautifully



illustrated, this book offers a beguiling look at the ancient art of hedgelaying, through the eyes of a master of his craft.

From late summer to early spring, Paul Lamb devotes his time to restoring the green corridors that once defined the British countryside. Paul lives in his wagon, travelling throughout the south-west corner of England, using traditional methods to help preserve these centuries-old living boundaries. A delight.

£20. simonandschuster.co.uk

Nell Pates

Matthew Coathup speaks with Nell Pates, a PhD student in the Department of Life Sciences at Imperial College London, about some of the next generation research that is informing the protection of wild places

You made a career switch from the military to biological sciences – why such a move?

I moved into science because it felt like the best place to make a difference. Some of the biggest problems we're facing – climate change and the biodiversity crisis – seem impossible to tackle, but I hope that I can make a small contribution in the right place.

What specifically are you working on?

I am looking at practical and effective ways to monitor and evaluate progress in UK rewilding projects. We don't really know how to say what 'good' looks like in rewilding. As a scientific community, we just don't have the measures and metrics yet to say how much progress is being made. I think that contributes to some of the unease people feel around rewilding. It's a gap I want to address.

What does your research involve?

Every year, I conduct fieldwork to collect data from as many areas as I can, from ex-agricultural projects to upland sites. We can focus too much on individual sites and that makes it difficult to say how restoration is affecting the landscape at a larger scale. I want to build a data set that reflects the work being done across the UK, then compare across projects to look for trends that we can use to measure success. Last year, as well as plant community data, I also collected soil samples



PHOTOGRAPH: NELL PATES

“Some of the biggest problems we’re facing – climate change and the biodiversity crisis – seem impossible to tackle, but I hope that I can make a small contribution in the right place”

so I can do a parallel analysis of how the underground community changes alongside the aboveground plant one. Sometimes we fall into the trap of getting too focused on well-studied taxa – like mammals and plants – and we need to shift a bit of attention to other groups to get a fuller picture of how the landscape is changing as a whole ecosystem.

How might your research be relevant to the work of the Trust?

I want to change the way we study restoration in the UK. In general, we need methods that allow us to look at the bigger picture, to measure more consistently and to be more

collaborative. I hope my research will inform evidence-based restoration and conservation action by providing methods and metrics to evaluate rewilding. That way, when we say: ‘we should be doing more of this,’ we can say why and show the benefits.

What is the most critical aspect for nature restoration to be successful?

For me, the most critical ingredient here in the UK is buy-in. That means restoration projects need to be understood, accepted and supported. The UK simply does not have huge expanses of pristine habitat, and I don't believe we should be removing people from our landscapes. So, people here will always need to be involved as stewards and beneficiaries of nature restoration if it is to have any chance of long-term success. If we get that right, we stand a much better chance of securing beautiful wild spaces for generations to come. □

About the interviewer
Matthew Coathup is the Trust's Regional Delivery Manager (North) and Head of Ecology

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