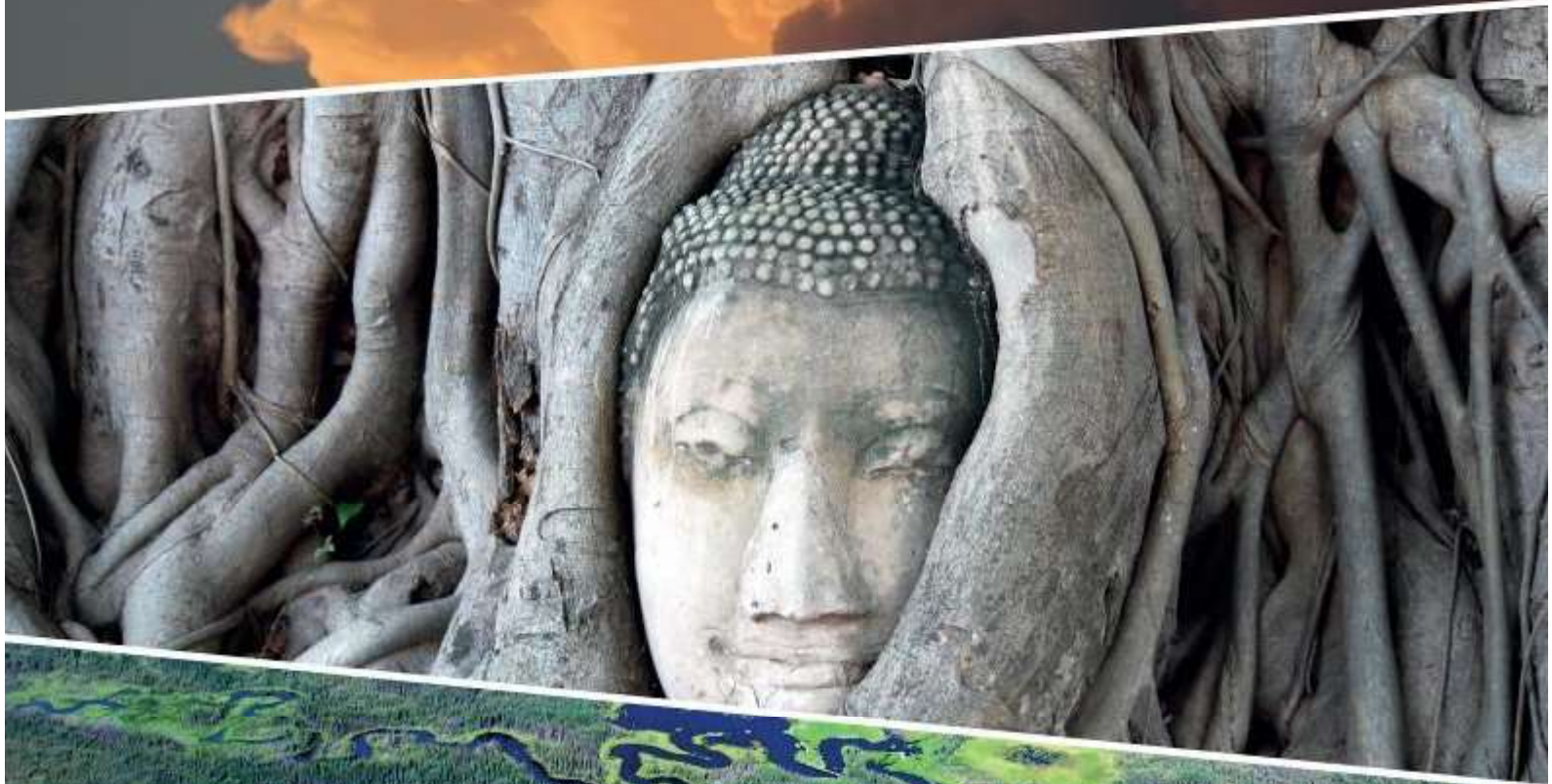
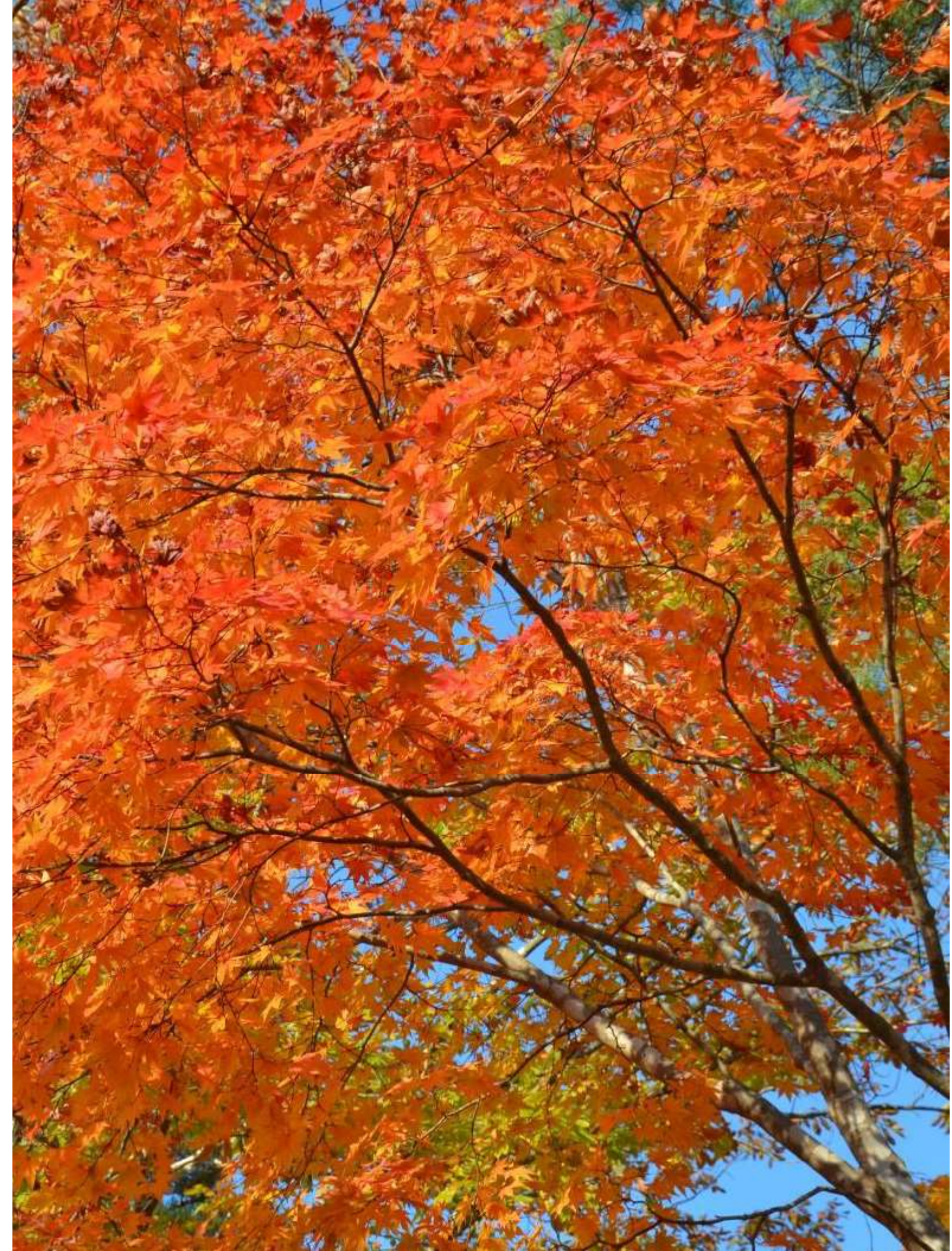


**Practical solutions
to conservation challenges**

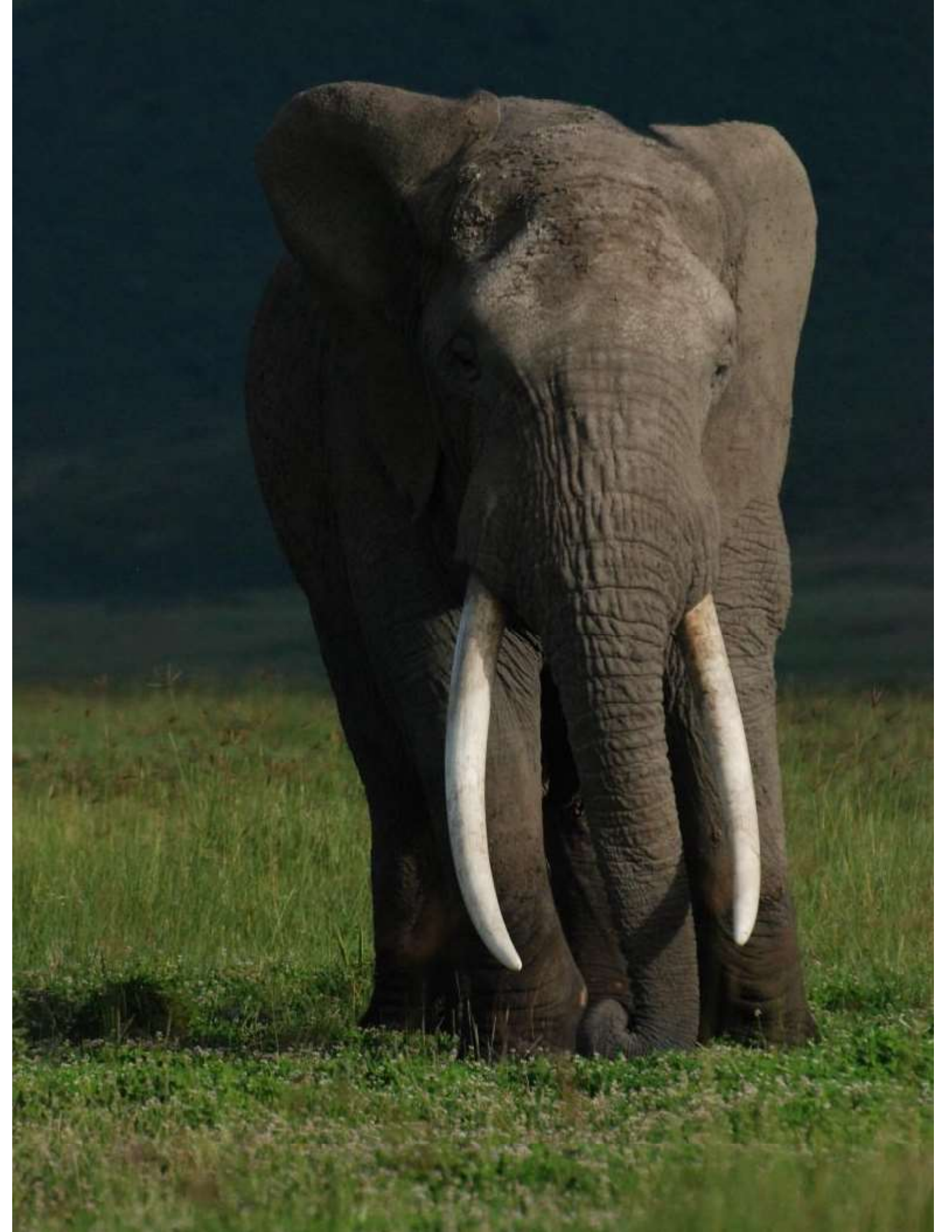


**30 years making waves...
and into the future**



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Preface

Equilibrium Research began in a small way in the early 1980s, but has existed in its current two-person incarnation since 1990, three years before the Earth Summit in Rio de Janeiro, which produced policies that have shaped so much of our work. We offer a consultancy but also to an increasing extent develop and implement our own projects. Equilibrium is primarily an action research organisation, carrying out a mixture of desk and field-based projects throughout the world. We have worked on a wide range of issues and in many countries, finding unifying themes that run through the environmental and social issues which we are passionate about. Where possible, we also mentor younger professionals.

Our work falls naturally into three main areas: strengthening the world's protected areas network, various approaches to broadscale conservation and a

deeper analysis of how conservation affects and intersects with human cultures through work on society and environment. We increasingly look to the landscape approach as a framework in which many questions can be most usefully addressed. Our 30th anniversary has given us a chance to look back over our work and here we present a concise overview of some highlights, organised around 21 themes, and identify future priorities. At the end we include our main publications, organised around the same themes.

Little of what is documented here would have been possible without a vast number of collaborators, from the clients who have contracted us, to the colleagues who have worked with us. They are far too numerous to thank in person—but please accept our heartfelt thanks to you all.

Nigel Dudley and Sue Stolton, April 2020



An overview of our work



Some milestones

One website: www.equilibriumresearch.com

Two people: Sue Stolton and Nigel Dudley

Working for 70 organisations and a dozen governments

In over 90 countries around the world

And over a hundred protected areas worldwide

Plus forestry concessions, plantations, organic farms, urban wild spaces...

Progress is seldom achieved by one person or organisation alone. But here are some initiatives we have been closely involved with:

The first major technical overview of acid rain in the United Kingdom

The development of a new IUCN protected area definition and revised management categories

The Management Effectiveness Tracking Tool, used in over 4,000 protected areas

The first definition and measurement of criteria for forest quality

The concept of authenticity applied to natural and semi-natural ecosystems

Linking the timber trade and development assistance with tropical forest loss

The first global overview of conservation issues in temperate and boreal forests

The first conservation guidelines for organic agriculture

The first species-focused protected area management standards, for tigers

Identification of the ecosystem services from protected areas

Explanation and promotion of the CBD's work on protected areas

First comprehensive study of health and environmental risks from garden pesticides

The definition of and technical guidance for privately protected areas

State of the Parks reporting from five countries from Bhutan to Colombia

Monitoring and assessment methodologies for natural World Heritage sites

Development and explanation of the concept of Forest Landscape Restoration

First editions of the *Global Land Outlook* and *Global Wetland Outlook*

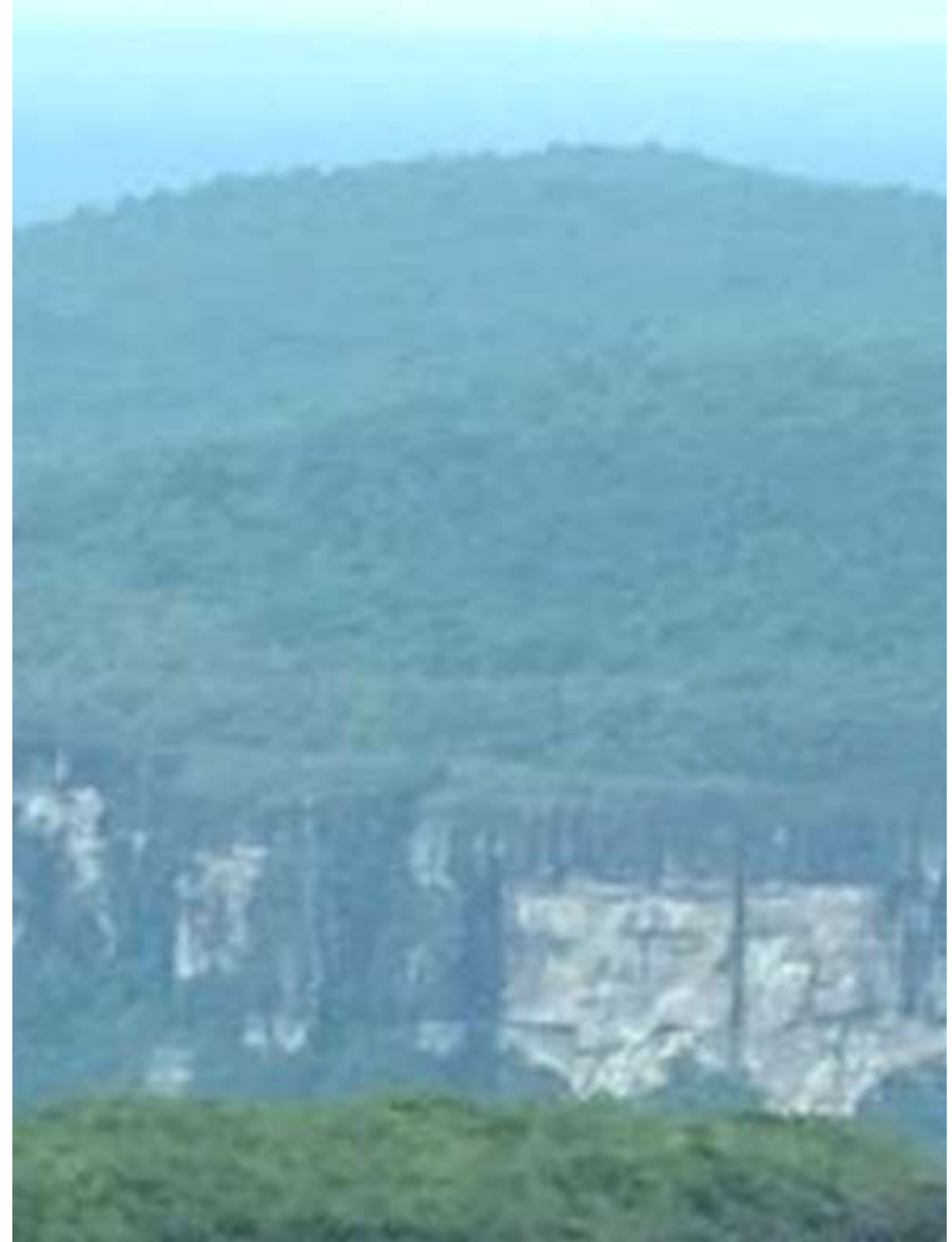
The first global review of links between sacred natural sites and biodiversity conservation

Identification of global deforestation fronts

Development and application of the Protected Area Benefits Assessment Tool

Transformation of the IUCN WCPA journal *PARKS* into an open access, peer reviewed journal

PROTECTED AREAS



Section 1

Protected area policy



Issue: The modern protected area system is so new that governments and others struggle to keep up with what is expected or needed; carving out realistic policies at national and international level is a continuing process involving intense efforts by multiple people.

Action: When the Convention on Biological Diversity (CBD) agreed its Programme of Work on Protected Areas (POWPA) in 2004, we identified key parts of this Programme as priorities for Equilibrium for the following decade. The edited book *Partnerships for Protection* (2002) laid out many of issues. The CBD's 2010 Aichi Biodiversity Targets, which to some extent succeeded the POWPA, persuaded us to maintain this focus. For the CBD we produced a guide to implementation of POWPA *Towards Effective Protected Area Systems* (2005) and an issue paper on futures of POWPA, for an international workshop hosted on the Isle of Jeju in South Korea in 2010. We have written multiple protected area policy documents for WWF, IUCN and most recently the Wildlife Conservation Society. With Stephanie Mansourian, we

surveyed *Public Funds for Protected Areas* (2008) looking at financing needs and shortfalls. Equilibrium also attends, on a needs basis, key meetings where such policies are set and has served on many IUCN and WWF delegations for the last twenty years. In 2014 we coordinated a stream at the Sydney World Parks Congress, pulling together experts from around the world focused on ecosystem services from protected areas. Since 2015, our work has focused on links between the Sustainable Development Goals and area-based conservation. And we recently completed a book, *Leaving Space for Nature*, on key issues impacting current and future protected area policy.

Results: The conservation policy arena has developed dramatically over the last thirty years, and is continuing to change on a day to day basis; it has been exhilarating to be part of this process. Major developments include a far greater emphasis on governance, human rights and social aspects of conservation than hitherto, a dramatic increase in the variety of conservation tools on offer and far greater attention by the international community.

Futures: The Sustainable Development Goals have laid out future pathways for action; whilst far from perfect they are a good enough starting point for action. The 2020 meeting of the CBD will also be a critical decision point and much of our immediate work is focused on getting a strong and equitable set of conservation targets in place.

Section 2

Protected area definitions, strengthening the network



Issues: The objectives and sheer scale of the worldwide protected area network represent something unique in human history. And something new: most protected areas have been set up during our lifetimes and the global community is still working out how best they can be maintained.

Action: Equilibrium Research has been centrally involved in the questions of what defines a protected area and what kinds of management are suitable inside their borders. We spent four years working with the University of Cardiff, analysing the [impacts of the protected area categories](#) drawn up by IUCN in 1997. We worked with Grazia Borrini-Feyerabend in applying these ideas in the field in Madagascar and Senegal in 2005. Nigel then chaired a task force for the IUCN World Commission on Protected Areas (WCPA) to consider the future of the protected area definition and management categories, looking first at use in forest protected areas with Adrian Philips. Revised [Guidelines for Applying Protected Area Management Categories](#) were published in 2008, eventually appearing in

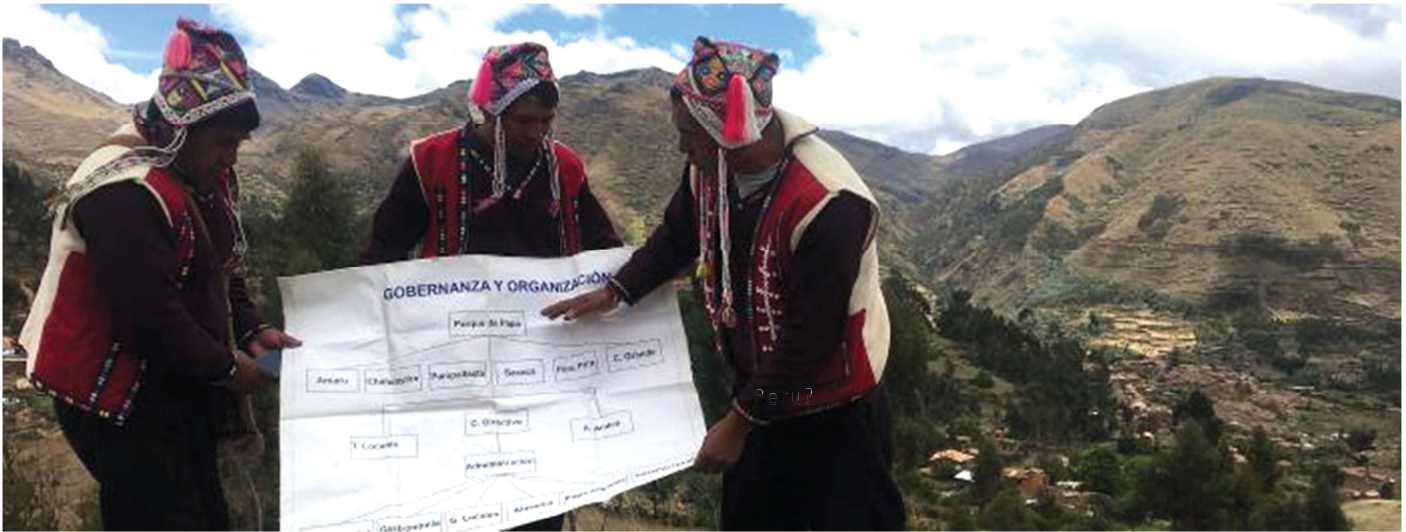
eight different languages, followed by [guidelines on the assignment of the categories](#) (in 2013) and guidance tailored to [marine protected areas](#) in 2012 (revised 2019). We continue to be involved in these questions through work in a range of countries, including for example in China, Croatia, Denmark, Iceland, Russia, South Korea and the United Kingdom, in the latter case working with IUCN's National Committee to re-examine the whole protected area system through the [Putting Nature on the Map](#) project. We have worked closely with the UN World Conservation Monitoring Centre on implications for the World Database on Protected Areas and on improving data on protected areas, in particular in a project reviewing data across the whole of Africa.

Results: The new definition of a protected area is now being applied throughout the world.

Futures: There is still much to do to build capacity to both apply the protected area definition and to understand, record and implement the various management strategies encapsulated in the categories. Issues related to governance and questions of equity are growing in importance, as is an understanding of the significance of diversity of governance.

Section 3

Protected area governance



Issue: Most people regard protected areas as institutions run by governments, but in addition to state-run protected areas IUCN also recognises private, indigenous and community and shared governance types. The emergence of wider and more flexible approaches to protected area governance has been one of the major developments in the field since 2000.

Action: Equilibrium became deeply involved in governance during the revision of the protected areas definition and categories, and helped to write IUCN's best practice guidelines on *Governance of Protected Areas* (2013). WWF commissioned us to write a paper on company reserves, one of the least considered types of area-based conservation. We have since developed a particular interest in the opportunities for privately protected areas. In 2008 we carried out an early analysis of privately protected areas in Africa for the UN World Conservation Monitoring Centre. With Kent Redford, and funding from the Linden Foundation, we analysed *The Future of Privately Protected*

Areas (2014), bringing in experts from around the world to look at definitions and strategies. We then carried out a survey of privately protected areas in Africa with the International Institute for Environment and Development (2015). Sue serves as deputy chair of WCPA's specialist group and has worked with the group to secure resolutions and text supporting privately protected areas at IUCN's World Conservation Congress and in decisions of the CBD. In 2018 the group published [best practice guidelines on privately protected area management](#) and from 2019 has been carrying out 'conservation campus' events building capacity around this guidance.

Results: Governance of protected areas has expanded as a key these. We now have a clear global definition of a privately protected area and up-to-date guidance on management. The particular opportunities presented by privately protected areas are increasingly being recognised by governments and the NGO community.

Futures: Much of our protected area work is focused on privately protected areas, the governance type that has received the least attention. Providing guidance to managers, a clear global reporting framework and stronger recognition from the international community remain important aims. Governance quality and issues of equity are also vitally important across all governance types and we remain committed to further involvement with these issues.

Section 4

Protected area benefits



Issues: Along with their nature conservation role, protected areas provide a wide range of ecosystem services for both local populations and the global community. As natural ecosystems are degraded and destroyed ecosystem services from protected areas become proportionately more important, but are often underestimated and ignored.

Action: We identified wider benefits in a series of seven reports for WWF and a book *Arguments for Protected Areas* (2010), in collaboration with the World Bank and many other partners. We considered food and water security, disaster risk reduction, health benefits, climate mitigation, spiritual and cultural values and poverty reduction. This led to a *Protected Area Benefits Assessment Tool* (2009, revised 2020) to identify benefits, since applied in many countries: for instance in the [Western Balkans](#) where 58 national parks were assessed, facilitating spin-off projects and initiatives. We collaborated with Marianne Kettunen and Patrick ten Brink on their book [assessing protected area benefits](#). Nigel co-chairs the [natural solutions theme](#) of the IUCN World

Commission on Protected Areas, working to understand better how protected areas provide ecosystem services. This includes handbooks for managers, collaboration on *Tools for Measuring, Modelling and Valuing Ecosystem Services* (2018) and capacity-building material and online courses. Recent work focuses on recognising the ecosystem service role of protected areas in the Sustainable Development Goals and collaboration with the Nature Based Solutions group of IUCN's Commission on Ecosystem Management. We have also looked at ecosystem services from the ranges of large, iconic species ([tigers](#) for WWF in 2017, for the [Lion Recovery Fund](#) in 2019 and initial work on jaguar landscapes for UNDP—the last two in collaboration Kings College in London).

Results: Awareness of the wider benefits from protected areas is now higher than when we started this work. But governments still rarely commit to these options either in policy or financial support. Stronger case studies, better collaboration with partners outside the conservation world and more technical advice for managers are all needed.

Futures: A report on area-based conservation and the Sustainable Development Goals is underway. We are investigating a unified measure of ecosystem services to facilitate global reporting. And a major focus is in building links with sectors that benefit from area-based conservation, but are not generally involved with conservation.

Section 5

Protected area effectiveness



Issue: Protected areas are only effective if well and equitably managed; establishing a protected area is seldom enough on its own to make it secure. Management effectiveness has therefore come to be one of the major priorities for protected areas over the last two decades.

Action: Our report *Squandering Paradise?* (2000) with Christine Carey highlighted threats to protected areas. But pinpointing effective management is tricky. IUCN WCPA set up a management effectiveness specialist group in the 1990s, chaired by Marc Hockings, and we have worked with Marc ever since. For WWF and the World Bank we carried out an early survey; then collaborated on [IUCN best practice on assessment](#) (two editions, 2000 and 2006). We helped develop a series of tools, such as the METT or *Management Effectiveness Tracking Tool* (2003 plus) now used in thousands of protected areas by the World Bank, Global Environment Facility and others. More recently, with support from WWF UK, we wrote a [best practice manual in applying the METT](#) (2016). For Vilm Academy in Germany we contributed to a report on [management effectiveness in Europe](#). The *Enhancing our Heritage* project developed a

detailed assessment system for UNESCO natural World Heritage, collaborating with sites in Africa, South Asia and Latin America and later advised on implementation in Europe and in cultural World Heritage sites. Sue worked with UNESCO to help develop the *World Heritage Periodic Reporting Format* and with IUCN as an adviser on the *World Heritage Outlook*. Equilibrium has undertaken state of the park reports in [Finland](#), [South Korea](#), Myanmar (planned), Colombia and [Bhutan](#); assessed all biosphere reserves in Viet Nam; assessed or built capacity in countries such as Cambodia, Kazakhstan, Kenya, Malawi, Tanzania and Turkmenistan. With Conservation Assured, we surveyed management needs of over 100 tiger reserves, published as *Safe Havens* (2018). We have worked with the CBD to bring protected area assessments into global policy and most recently, been a small part of efforts at the UN World Conservation Monitoring Centre to define a paper park.

Results: The importance of management effectiveness is now almost universally accepted by governments and a core part of international conservation policy.

Futures: We continue to work with national governments and individual protected areas to assess management effectiveness, to develop and refine assessment systems and in the critically important issue of applying the results.

Section 6

Protected area management



Issue: Management effectiveness assessment explains if a protected area is working or not, but does not necessarily provide clear guidance on what to do to improve management. Managers are asking what is being expected of them – needs and wants that have also been changing over time – and institutions responsible for protected areas have been trying to respond.

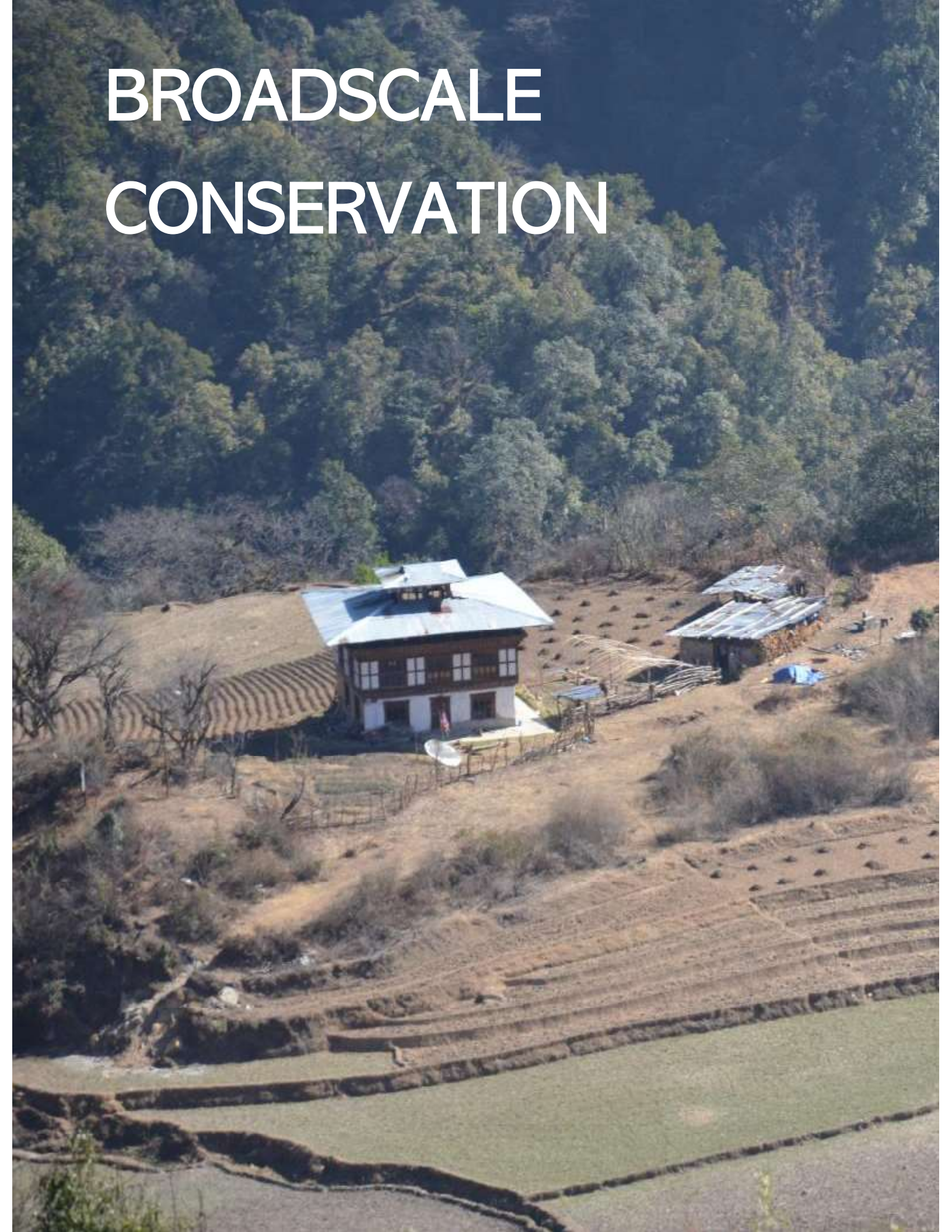
Action: IUCN and UNESCO commissioned us to produce *Managing Natural World Heritage* (2012), a guide for site managers of these globally important areas. We have been involved in practical protected area management planning in many countries: for instance Madagascar, Senegal, Saudi Arabia, Tanzania and Kuwait. Sue served as one of the editors of a three volume series from IUCN and GIZ on protected landscapes (IUCN category V) and we edited one of the volumes on the role of [protected landscapes in biodiversity conservation](#). Nigel chaired a WCPA task force on options for certification of protected areas, including an analysis for the IUCN Environmental Law Centre, and Equilibrium identified preliminary management standards for WWF in 2005. There have

been increasing calls for clear guidance on minimum standards of management and a growing interest in ways of verifying if such standards are being met in practice. Since 2011, we have been closely involved in CA|TS—[Conservation Assured | Tiger Standards](#) working with multiple partners to develop, apply and accredit best practice in the world's tiger reserves, with a [CA|TS Manual](#) and 70 tiger areas signed up for the process throughout the tiger range. These ideas are now being considered for other species; we have worked with the Zoological Society of London regarding potential application to rhinos and WWF in Mexico for jaguars. Equilibrium has also been involved in discussions relating to IUCN's Green List of Protected and Conserved Areas, the first global standard of best practice for area-based conservation .

Results: Standards for effective management and governance, as opposed to just assessment of management effectiveness, are now increasingly recognised, and adopted by protected area practitioners.

Futures: We will build on our experience to help ensure that initiatives such as CA|TS continue to evolve and work with other jurisdictions / species to contribute to the increasing effectiveness of site-based conservation.

BROADSCALE CONSERVATION





Section 7

Landscape approaches



Issue: Site-level responses seldom solve wide-ranging socio-environmental problems. National action is important, but often too remote to address complex local issues. The “landscape” is recognised as a useful scale to work in and landscape approaches are increasingly popular; but putting these ideas into operation remains challenging.

Action: Equilibrium has been involved in landscape-level conservation since the early 1990s, when work on forest conservation highlighted the need to look beyond the individual forest management unit and balance needs and wants within a forest mosaic. Early work included compiling two reports for the Forests and People in Rural Areas initiative in Scotland. These ideas were developed through a series of workshops, site visits and projects, investigating scales of operation, reaching consensus amongst multiple partners and the tricky issues surrounding trade-offs. The triple concept of protect-manage-restore developed as a result. For The Nature Conservancy, we developed a monitoring system for how progress on a landscape scale might be approached. More recently with WWF we co-

authored a paper on the [elements of a successful landscape approach](#) (2016) and compiled a report *Impacts in the Forest* (2016) on potential contributions from business approaches in addressing deforestation in large forest landscapes. And recently we have been working once again with the WWF Landscapes Lab and partners on a report on landscape approaches and the role of landscape sourcing in moving towards sustainable management.

Results: The landscape approach is widely discussed but still only occasionally practised; unfortunately it is also sometimes used as a convenient catchphrase for what is often virtually business as usual. But where real attempts have been made, experience shows that a balance between different interests is often possible to achieve, albeit time-consuming and sometimes frustrating along the way.

Futures: After years of focusing primarily on protected areas as tools for conservation we see our work increasingly focused on broader landscapes and seascapes. Many of the subjects addressed in this report contribute to this wider vision. Building effective, integrated landscape approaches is a key priority for the next decade.

Section 8

Conservation beyond protected areas



Issue: Experience shows that biodiversity and ecosystem services continue to decline in the wider landscape and seascape. Successful expansion of conservation beyond protected areas will therefore involve considerable effort in identifying existing conservation-friendly management options and in changing management in other land and water uses the better to support wild species and ecosystems.

Action: Most of Equilibrium's early work was outside protected areas, investigating pollution impacts in the wider landscape, many aspects of organic and low-input agriculture and sustainable forest management; much of this experience can now be applied to landscape approaches. Drawing on this, we co-authored a series of mini guides for The Nature Conservancy and the Convention on Biological Diversity on filling gaps in the conservation estate and creating linkages such as biological corridors and steppingstones, working with Madhu Rao and José Courrau. Understanding clearly what such areas can and cannot provide is a key step in

broad-scale conservation planning. Most recently, Equilibrium has served on the task force and editorial group for standards for Other Effective Area-Based Conservation Measures (OECMs); sites with long-term benefits for biodiversity but where conservation is not necessarily the management priority. This important new type of conservation designation emerged as a concept from the Convention on Biological Diversity (CBD) in 2010 but took some years to become operational. [Technical guidelines](#) were published in late 2019. Our forthcoming book *Leaving Space for Nature* outlines a vision for how area-based conservation might usefully develop in the future.

Results: A definition of OECMs was agreed by signatories to the Convention on Biological Diversity in November 2018 and is now slowly being adopted and used by governments around the world.

Futures: A huge amount of work remains to do in operationalising OECMs and other management systems supportive of conservation aims; at the moment this new designation could either revolutionise conservation in a very positive way or provide an excuse for governments to pay lip-service to conservation aims while doing little concrete to achieve them.

Section 9

Conservation planning – how things fit together



Issue: Most conservation planning is literally making space for nature: setting aside protected areas or modifying management to increase the chances that wild species and habitats can flourish. Agreeing the optimal land and water use mosaic means understanding both human and ecosystem needs, and managing the resulting trade-offs.

Action: Equilibrium has been involved in planning at all levels, from global theory to field application. The Nature Conservancy commissioned guidelines for national protected area gap analysis, written with Jefe Parrish, published by the CBD as [Closing the Gap](#) (2006) and widely used around the world. We adapted TNC's own Conservation Action Planning methodology for use in protected area planning and carried out a global analysis of its application. For WWF we developed a tool for assessing the suitability of mining, [To Dig or Not to Dig](#) (2002). At a more local scale, the High Conservation Values (HCV) methodology is used at site level to set aside biodiversity rich areas, for example in certified forests or plantations. Nigel was a co-editor of [Common](#)

[Guidance for Identification of HCVs](#) published by ProForest and we ran a workshop in South Africa which helped draw up criteria and indicators for identifying HCV in grasslands. We collaborated with IUCN to develop the Key Biodiversity Areas (KBA) concept, [surveying opinions of potential users](#), working on guidance for industry users and on the editorial board for the [standards](#) (2016).

Results: These conservation planning tools are increasingly being used by a wide variety of stakeholders; concepts like HCV areas and gap analysis are now increasingly part of standard industry practice.

Futures: Important issues to investigate include better understanding of the role of small reserves – often dismissed by conservation biologists but a key part of the conservation landscape in many developed countries – and at a different scale the effectiveness of protected landscapes in conserving wild plant and animal species.

Section 10

State of the forest



Issue: Forests are the richest terrestrial ecosystems and also some of the most threatened; huge areas of tropical forests have disappeared over the last half century and many temperate and boreal forests have been progressively degraded by pollution, climate change and mismanagement.

Action: Early work for Friends of the Earth International and WWF looked at the role of the European, Russian and East Asian timber trade in logging tropical forests, with a series of papers, field reports and books including *A Hard Wood Story* (1984), *The Death of Trees* (1985) and *Bad Harvest* (1995) and a submission to WWF's Expert Panel on Trade and Sustainable Development. We also coordinated a UK Forest Memorandum (1994), a consensus statement from a wide range of NGOs. Our analysis of the UK's role in tropical forest loss for WWF UK, *Importing Deforestation* (1989) argued for a certification scheme to ensure sustainable management, which was one of the steps leading to creation of the Forest Stewardship Council. Equilibrium led a major study on temperate and boreal forests for WWF International,

Forests in Trouble (1992) and a short issues paper on the impact of forest fires in *The Year the World Caught Fire* (1997). The *UK's Forest Footprint* (2001), again for WWF, looked at ways in which the country impacted forests throughout the world. We analysed data on remnant natural forests in Europe published by the UN Economic Commission for Europe and served on UNECE's Forest Resource Assessment technical panel. More recently, we worked with WWF and IIASA on the *Living Forests Report*, five "chapters" produced over four years looking at future forest scenarios and steps towards zero net deforestation and degradation. This included the identification and assessment of 11 "deforestation fronts"; areas of the world most at risk from forest loss up until 2030. For WWF and IUCN we devised and for six years edited *arborvitae*, a regular newsletter of forest policy and conservation.

Results: Concern about forests moved from a sole focus on the tropics to a movement that concerned all forests. Forest quality and risks of degradation are now as of much concern as overall land use change and forest loss.

Futures: Important priorities for the next few years are to improve understanding of the extent of and trends in forest degradation and to continue our work on identification and better management of global deforestation fronts.

Section 11

What kind of forest?



Issue: Our work on temperate forests convinced us that a focus on the quantity of forest was not sufficient; forest quality is equally important. But whose quality are we talking about? Someone interested in timber production may have a different perspective to a naturalist or an indigenous person living a subsistence lifestyle.

Action: We drew up a series of criteria of forest quality, embracing indicators for authenticity, environmental benefits and social and economic values, and refined these through a series of workshops, field projects and discussions, leading in time to a three-year project with IUCN, WWF and the Ecole Polytechnique de Lausanne. Identifying what different stakeholders view as important criteria of forest quality is essential to agreeing how forests should be managed and conserved; while it is generally difficult to reconcile everyone's needs and wants in any single site it is feasible within a landscape mosaic.

The book *Forest Quality: Assessing forests at a landscape scale* (2006) described the thinking behind forest quality and a method for participatory assessment, which had been tested in Guatemala, Cameroon and Wales. With

WWF France, we wrote a guide to the importance of [deadwood in forest management](#) (2004) and for WWF and the UK Forestry Commission wrote a joint paper with Mike Garforth on next steps for the UK Forest Industry (2002). This work also led to a lengthy examination of the role, costs and implications of the rapid growth in wood pulp plantations, initially published as *Pulp Fact* (1996), and including environmental assessments in Kalimantan, Indonesia and Uruguay and work for the New Generation Plantations Project in Colombia and China. It also led to us coordinating WWF and IUCN's *Forests for Life Strategy* (1995), a multi-year strategy for the institutions' work on these issues that started to tackle the reconciliation of multiple aims within a single global forest estate.

Results: Forest quality is recognised as being of critical importance, initially in temperate forests but increasingly around the world.

Futures: Many of the ideas about forest quality apply equally to other ecosystems and we have been applying similar concepts to grasslands.

Section 12

Restoration



Issue: Many conservationists remain wary of restoration, arguing that we can never restore wilderness or pristine ecosystems. But in the face of widespread loss and degradation restoration can help us regain a significant proportion of what might otherwise be lost; some of the world's richest ecosystems exist in places that were formerly lived in, farmed, mined or otherwise altered.

Action: Equilibrium worked with IUCN and WWF in developing the concept of forest landscape restoration, first brought together at a workshop in Segovia, Spain in 2000. This led to consulting on restoration projects in several countries, for example Vietnam (where we developed a comprehensive monitoring system, in 2003), Costa Rica, Malaysia and China, and working with WWF to review what did and did not work in terms of NGO restoration programmes. The evidence led to editorship of a book, with Stephanie Mansourian and Daniel Vallauri, *Forest Restoration in Landscapes* (2005). With the quarrying company Lafarge we worked in France, Kenya and the UK to develop indicators for ecological restoration following their operations (2007). We were part of a

team led by Karen Keenleyside of Parks Canada to produce best practice guidelines on *Ecological Restoration for Protected Areas* (2012). Equilibrium more recently organised workshops in the UK and Ghana to bring together expertise on ways in which abiotic and biotic indicators could be used to measure return of ecosystem *services in restored forests* and worked with IUCN on concepts of *stepwise restoration* (both published 2018), and we worked with FAO and partners in developing further concepts of monitoring. In 2017 we trained protected area staff in the *ecological restoration concept in Myanmar* and have been examining further the links between forest landscape restoration and protected areas, including a workshop in Banff, Canada in early 2019.

Results: The idea of forest landscape restoration has gone from strength to strength since the early days of our engagement, with major international targets and multiple projects on the ground.

Futures: Equilibrium will continue working on monitoring restoration and the wider social implications of restoration policies. The forthcoming Decade of Restoration is likely to be a major focus.

Section 13

Agriculture



Issue: Unsustainable agriculture is eating up huge tracts of land, poisoning the environment and contributing to a wasteful, resource intensive and unsustainable food system, posing major threats to food security.

Action: We collaborated for many years with organic bodies such as the Soil Association, International Federation of Organic Agriculture Movements (IFOAM) and Elm Farm Research Centre (now the Organic Research Centre), and as a founder board member of the Pesticide Trust (now PAN UK). Sue edited the Soil Association magazine *Living Earth*, IFOAM's *Ecology and Farming* journal, the *Elm Farm Research Bulletin* and three volumes of conference proceedings on links between [organic agriculture and nature conservation](#) and co-edited with Dorothy Myers a book on organic cotton. Back in the 1980s, Nigel wrote an early paper on the conservation implications of using biomass for energy. Along with work on agricultural pollution, described elsewhere, we collaborated on a major report on organic agriculture for the UK Countryside Commission and produced the first

guidelines on conservation management for organic farmers. With Elm Farm Research Centre, we drew together a report on the many aspects of food quality. Sue was one of the editors of a volume for IUCN and GIZ on the role of [protected landscapes in conserving agrobiodiversity](#) (2000) and we collaborated with the University of Birmingham on a report on crop [wild relatives in protected areas](#) for WWF. More recent work has focused on the impacts of plantation agriculture, including acting as lead researchers for a major WWF report on [soy](#) (2014) and collaborating with the UN Food and Agricultural Organization on their massive study on [biodiversity for food and agriculture](#) (2019).

Results: The two key elements of our engagement with agriculture were a heightened awareness of the wider effects of agrochemicals, particularly through spray drift, and contributions to recognition of the significance of organic farming for nature conservation.

Futures: The interface between agricultural production and expansion and land use change is perhaps the single most important management issue for landscape scale conservation and we aim to apply our previous experience within landscape approaches.

Section 14

Species conservation



Issues: Despite half a century of the modern conservation movement, many iconic species continue to be under threat; indeed populations of species like tigers, lions, river dolphins and rhinoceros have collapsed in the last few years and a renewed and professionalised poaching industry threatens to eliminate the remainder.

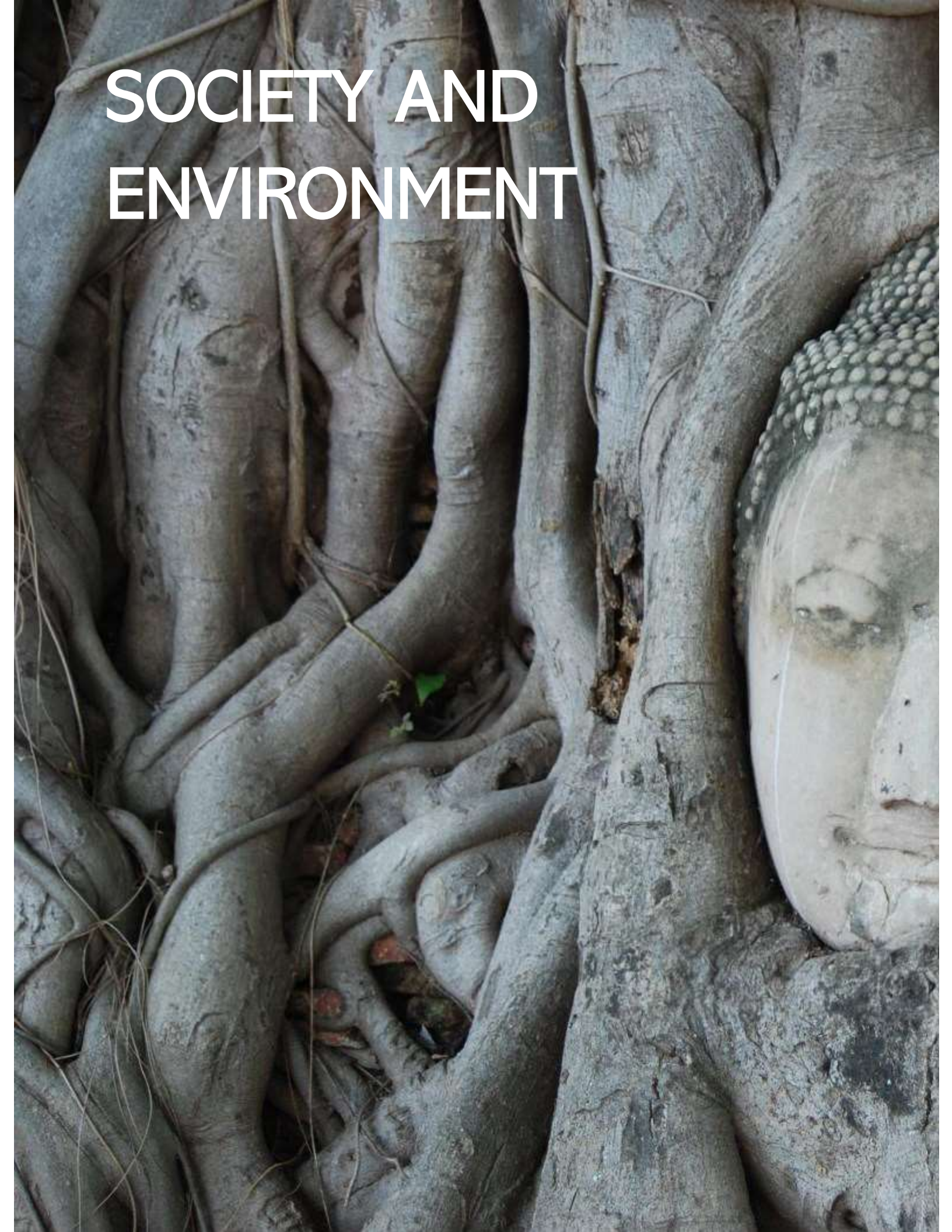
Action: Our work on species has tended to focus on the complexities of human interactions with species and how they impact chances of survival. Nigel's earliest research project was to work with the Marine Action Centre in Cambridge to write a report on what was at that time a highly contentious issue about hunting of bowhead whales by the Inuit communities of Alaska, published as *Thin Ice* (1982). When the Javan rhino became extinct in mainland southeast Asia, WWF commissioned a report on what had gone wrong, which involved multiple interviews in and around Cat Tien National Park in Viet Nam. Through our work with [Conservation Assured | Tiger Standards](#), described earlier, we have had a multi-year involvement in tiger conservation, which has spilled over into similar considerations for rhinoceros and most recently in 2019

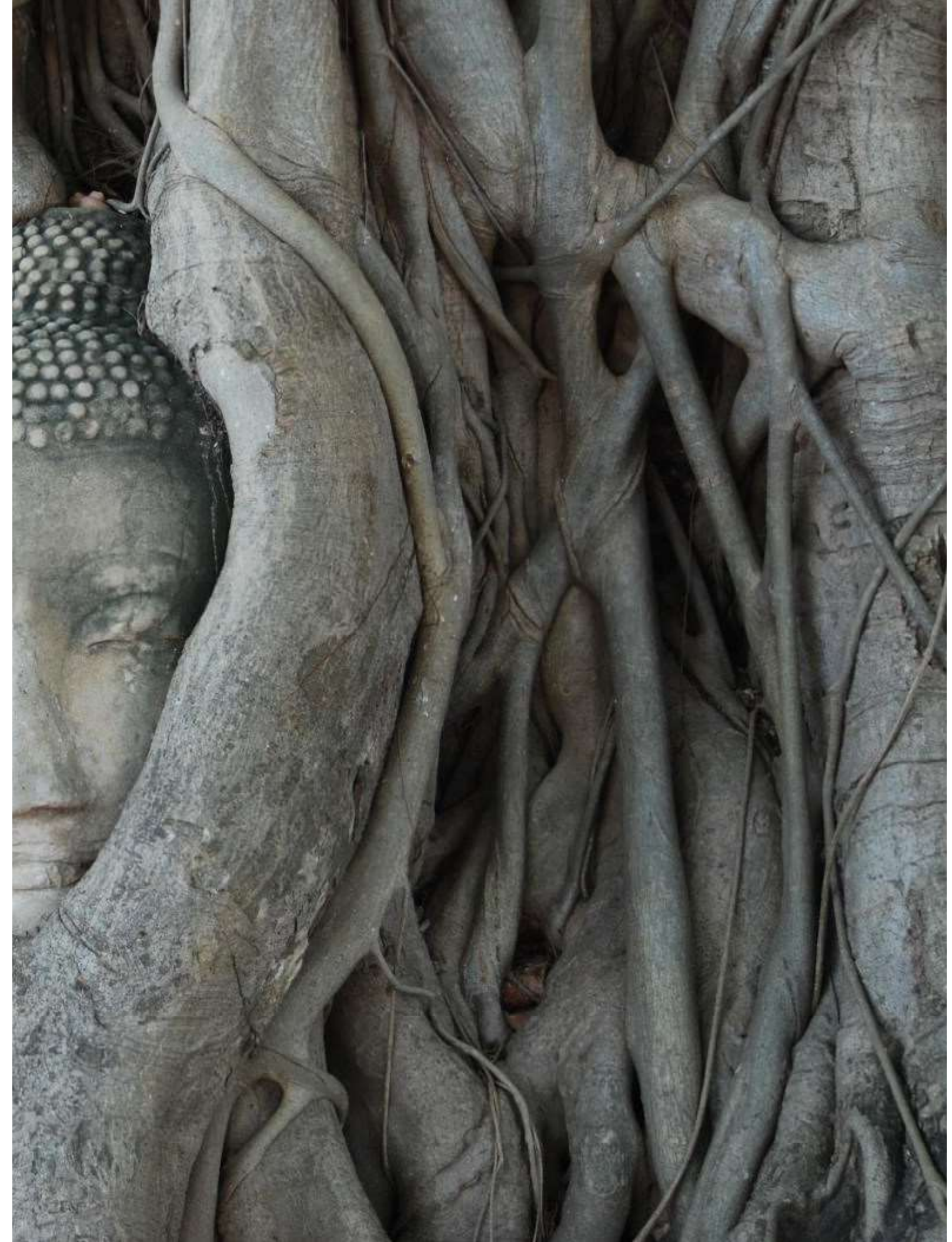
for the jaguar. We have also researched and produced reports on the wider contribution of species conservation to the conservation and development of ecosystem services; *Beyond the stripes: Save tigers, save so much more* for WWF and The *New Lion Economy: Unlocking the value of lions and their landscapes* for the Lion Recovery Fund. More recently, we have been commissioned by Global Wildlife Conservation to carry out a users' survey of the planned IUCN Green List of Species, working with Hannah Timmins.

Results: The major result of our collaborations in these areas has been the development of the Conservation Assured concept, which continue to be taken up throughout the tiger range and be developed for other highly endangered species.

Futures: The Conservation Assured approach is currently being expanded to other species, including the jaguar in Latin America and Equilibrium will continue to support this process as required.

SOCIETY AND ENVIRONMENT





Section 15

Climate change



Issues: Twenty-five years ago, climate change impacts on ecosystems were still largely speculative. Today we know much more and scientists around the world are watching the results unfold in the real world. What, if anything, can be done is now the critical question of concern.

Action: With Adam Markham, we collated information on likely impacts of climate change on biodiversity in *Some Like it Hot* for WWF (1993). We have revisited this several times to check these early projections, which have been generally correct; indeed, some impacts (like increased fire intensity and frequency) are greater than predicted. We assessed climate impacts in UK forests for the Woodland Trust (2001), compiled a special volume of the journal *Policy Matters* (2008), collaborated with FAO on a paper on climate change and wildlife (2012), and edited two workshop volumes on managing protected areas under climate change held on the Island of Vilm in Germany. Recently we have focused more on responses. For the Secretariat of the South Pacific Regional Environmental Programme, we facilitated a workshop in Samoa that led to a major adaptation project. With the [Climate Adaptation](#)

[Methodology for Protected Areas project](#), led by WWF, we helped develop a response methodology for marine protected areas in the Philippines, Madagascar and Colombia. For the Luc Hoffmann Institute, we worked on a project to encourage protected area managers and local communities to consider likely [changes and prioritise management responses in Colombia](#). Equilibrium led a multi-organisational review, *Natural Solutions* (2009) on the potential for protected areas to help mitigate and adapt to future climate change. This message has been taken up globally, particularly in Latin America where 18 countries issued a declaration recognising the role of protected area networks in combating climate change at the historic 2015 climate change meeting in Paris.

Results: Being proven right about the impacts of climate change on biodiversity is a hollow victory. As we move inexorably towards a warmer world, practical advice is one of the things most urgently needed. The “natural solutions” message has taken hold far better than we had imagined.

Futures: We will be taking the natural solutions message around the world over the next few years, aiming to increase recognition of the key role of area-based conservation in both mitigating and adapting to climate change

Section 16

Pollution



Issue: Acid deposition, pesticide spray drift, nutrient leaching, heavy metals, plastics and other pollutants are making fundamental changes to global ecosystems. But reducing pollution threatens hugely powerful interests and change is resisted.

Action: Equilibrium Research has a long history on pollution, particularly acid deposition, ozone depletion and agrochemicals. We set up the Acid Rain Information Group, publishing the first UK booklet on this issue, brought journalists to Norway to see impacts at first hand, and led a report of atmospheric sulphur and nitrogen pollution, *The Acid Rain Controversy* (1984), for Earth Resources Research. Friends of the Earth commissioned research into long-term vegetation change due to air pollution; Greenpeace asked us to investigate the implications of flue gas desulphurisation for limestone quarrying in UK national parks; and WWF commissioned a review of impacts on biodiversity. Results were presented to several UK government Select Committees. Greenpeace asked for evidence on the UK's role in producing ozone depleting chemicals. We researched nitrate pollution for

the London Food Commission, which developed into a book *Nitrates* (1990). For the Soil Association we investigated agrochemical threats including aerial spraying, spray drift and garden pesticides. Two books resulted: *This Poisoned Earth* (1987) and (as co-author) *The Pesticide Handbook* (1991). Norwich Council commissioned a pesticide reduction strategy. Work with the UK Consumers Association led to another book: *Good Health on a Polluted Planet* (1991), giving practical advice about day-to-day pollution hazards. More recently, Equilibrium returned to pollution issues with a paper on how conservation organisations should respond to the newly recognised threats from systemic pesticides.

Results: Regulations on acid pollutants, ozone depleting chemicals, aerial spraying and spray drift have all tightened in Europe, leading to a decline in some early pollution problems. But the overall global situation has worsened, particularly regarding agricultural chemicals and diesel pollution.

Futures: We will be focusing attention on the particular current threats posed by agricultural pollution and various forms of atmospheric pollution within international policy arenas.

Section 17

Faith and nature



Issues: Despite the vast amount of talk and effort expended in quantifying the economic values of nature, decisions about natural resource management are not always driven by economics. Feelings, emotions and beliefs are equally, often more, important. Working with faith groups is increasingly seen as a critical response.

Action: In our work on protected area benefits, Equilibrium produced *Beyond Belief* (2005) and associated papers and assessments on links between spiritual beliefs, religious institutions and protected areas. These links can be major, such as where local communities revere particular sites and have protected them, or where management maintains pilgrimage routes or temples in protected areas that attract thousands of people every year. Colloquial reports have long suggested that sacred natural sites (SNS) – sites regarded as of spiritual importance by major or local belief systems – are often strictly protected by faith adherents and likely to contain high biodiversity values. We collated over a hundred studies and drew some conclusions about the [role of SNS](#) and how they could be incorporated

into wider conservation planning. In Bhutan, we collaborated with Liza Zogib to run a workshop on interactions between faiths of the Eastern Himalayas and nature conservation, bringing together religious and conservation leaders from the region. Although starting from radically different philosophies, the practical implications in terms of how land should be managed were remarkably convergent and described in *The High Ground* (2012). Results were also presented at a major conference considering the role of sacred sites in the Muslim world in Kuwait.

Results: There is now greater awareness of both the role that religion can play in conservation and the particular significance of sites revered as sacred by one or more faith groups, where nature is often also retained in a way that it is not in the rest of the landscape.

Futures: Our particular focus has been on the role of sacred natural sites and other religious sites as direct tools for nature conservation, building evidence and searching for commonalities, and this work is currently continuing with a major new study.

Section 18

Social issues and conservation



Issue: There is an intersection, and sometimes a clash, between biodiversity conservation and human rights. Tensions arise particularly over the impact that protected areas have on people living inside or near their boundaries. This is creating serious splits between some conservation and some human rights groups.

Action: We see this as a critical and growing area of our work. Several of the topics discussed earlier in this report impact on this: governance, effectiveness and the emphasis on participatory approaches in work on forest quality, benefits assessment and landscape approaches. During the 1990s, we wrote a series of reports for WWF and the UN on community approaches to conservation. In 2005, Equilibrium put together a research report, *Safety Net*, on poverty reduction and protected areas, which looked at some of the positive ways in which protected areas can support local communities and followed this up in 2008 with *Natural Security* on use of natural ecosystems to buffer communities against climate-related

disasters. We coordinated draft principles on equitable distribution of ecosystem services from protected areas for the IUCN Commission on Environmental, Economic and Social Policy in 2014, and followed this up with analysis on indigenous peoples, local communities and protected areas in 2019, incorporated into our book *Leaving Space for Nature*.

Results: Conservation has made some major steps forward in this regard since the year 2000. But there is still a long way to go, and worryingly the gap between conservation and human rights groups seems to be widening rather than narrowing.

Futures: We are currently working on a major statement about the intersection between human rights and protected area management and will increase our work in this area in the future. We have been members of IUCN's Commission on Environmental, Economic and Social Policy, and honorary members of the ICCA Consortium for many years and hope to contribute more to these important institutions.

Section 19

Naturalness and authenticity



Issue: None of the world is “natural” if by this we imply that it is as it was before the emergence of *Homo sapiens*. Extinctions of mega-fauna, land use change, pollution, invasive alien species and over-harvesting have created, and continue to create, massive change. Many people question whether naturalness has any meaning in the modern world.

Action: We have spent several decades considering issues of “authenticity”, first in relation to work on food quality with Elm Farm Research Centre, then in far more detail through work on developing a typology of forest quality. Authenticity is also a key concept in UNESCO World Heritage, although currently confined to cultural World Heritage sites. These ideas came together in a series of papers and book chapters and eventually a book *Authenticity in Nature: Making choices about the naturalness of ecosystems* (2011) which looked in some detail at the changes that humans have already made to the planetary ecosystems, what is likely to happen in the future, and how conservationists should respond. Authenticity is presented as one possible term to describe

how the concept of naturalness might still be relevant in a transformed world, and is defined as: *resilient ecosystem with the level of biodiversity and range of ecological interactions that would be predicted as a result of the combination of historic, geographic and climatic conditions in a particular location.*

Results: This issue is still very live. Climate change is forcing a radical rethink about what might be considered natural and the concept of “novel ecosystems” has gained ground. Views range from a passionate belief that we need to retain ecosystems as they once were, to a view that we should just stand back and watch change sweep through the world, being powerless to prevent it. We sit somewhere in between.

Futures: A major project for us in the next few years is to compile a detailed “big history” of how humans have changed the nature of the planet since the emergence of *Homo sapiens* and other now extinct *Homo* species.

Section 20

A global picture



Issue: Understanding the big picture with respect to natural resources and the environment is critical to influencing policies and achieving positive change. There are a plethora of reports and reviews outlining the status of the environment or suggesting ways forward without resulting in any fundamental change in the direction of economic and social development.

Action: The wide sweep of our work puts us in a strong position to make sense of global data and to understand the implications. We have long contributed to large-scale studies of ecosystem status and trends, as reviewers, advisors, contributing authors, lead authors and editors, working with multiple UN bodies and NGOs. Recent examples include editing the *Global Wetland Outlook* for the Ramsar Convention (2018), leading authorship (with Sasha Alexander) of the *Global Land Outlook* for UNCCD (2017) and writing most of the *Living Forest Report* for WWF (completed in 2015). We were among the many advisors to the *State of the World Biodiversity for Food and Agriculture* for FAO (2019) and technical editors of the *Living Planet Report* for ZSL and WWF (2012). Earlier contributions include *Global Megatrends in Forest Quality*

(1997) for WWF, the *UN Forest Resource Assessment* (2000), including a separate paper on natural forests in Europe and GEO-5 from UNEP (2012). We contributed to two volumes of *The Economic of Ecosystems and Biodiversity* (2011 and 2012), the Wildlife Conservation Society's *State of the Wild* (2010), UNEP's *State of the World's Protected Areas* (2008), the *UN List of Protected Areas Supplement* (2018), the *UN World Water Development Report* (2006), the *Global Forest Resource Assessment* from the UNECE and FAO (2000) and FAO's *State of Forests* (1998). At a regional level, we led research for WWF's *Living Amazon Report* (2016), contributed case studies to the OECD's *Africa Economic Outlook* report (2016), and contributed to *Ecosystems in the Greater Mekong* (2013).

Results: We need to know what is happening. It is sometimes depressing to see the number of times that governments can ignore bad news, but at the same time the weight of evidence, for example on climate change, is gradually driving a global shift in perspective.

Futures: There are enough words written already, now is really the time to take action.

Section 21

Whistle-blowing



The issue: While environmental problems spiral out of control, the backlash against conservation actions is intensifying as vested interests make a last-ditch attempt to continue business as usual. Relying on technical solutions are no longer enough; the time for being reasonable is drawing to a close.

Action: In the past we spent much of our time highlighting threats – from the timber trade, polluting industries, bad farming practices and unsustainable sources of energy. We focused particular attention on the role of transnational companies, working with Friends of the Earth, Greenpeace, WWF and, until it was abolished, the pioneering UN Centre on Transnational Corporations. Results are described elsewhere in this report. For the past twenty years our main focus has been on finding solutions. Holding up a metaphorical banner and shouting “stop” isn’t a very fulfilling way of living a life. But the problems haven’t gone away; in many respects, they are worse than ever. As we write this, the Australian government is with a frightening inversion of logic trying to blame environmental interests for the catastrophic fires that the latter have been warning

against for years. Environmental laws are being dismantled in the United States, Brazil and elsewhere. But at the same time interest in the environment is higher than ever before. In the near future we expect to see Equilibrium spending more of its time drawing attention to problems and getting more actively involved in campaigning than has been the case of late.

Futures: Key areas needing greater attention are the pervasive role of pesticides in depressing wildlife populations, the wider impacts of air pollution on natural ecosystems and the ever-increasing runoff of nitrate effluent from intensive agriculture.

How we got here

A part of Equilibrium's story began in an abandoned slate quarry in mid-Wales, where a group of idealists set up the grandly named Centre for Alternative Technology in the 1970s; a community existing off the grid and producing its own energy from renewable sources. Nigel worked there as a student volunteer, whilst completing a joint honours degree in zoology and botany, and later lived on the site full time for several years, writing educational material, building, running a smallholding and existing off intermittent energy from small scale hydropower and what now seem like very primitive aerogenerators. Then the idea of running even a small community from renewable energy was widely dismissed as laughable and we got used to the sneers of the critics; in 2016 for the first time the entire nation of Portugal ran four straight days on renewable electricity alone, and many countries have confident plans to become completely renewable in the near future. A few people still deride renewable energy, but no-one really cares what they think. During a period of political upheaval, pessimism and doubt it is worth recalling that prejudices which seemed to be immovably set can, with effort, skill and a certain amount of luck, be changed around

fundamentally in a few years. Equilibrium doesn't do much work on energy now, although we do keep a watching brief on some of the debates about renewable energy from the perspective of landscape approaches.

The other half of Equilibrium took a slightly different path; after completing an honours degree in social history, Sue started her working life at Action Aid at the time of the Ethiopia famine in the 1980s. The international response to the famine was both massive public attention and action, with funding flooding in from initiatives like the Band Aid concert, but also considerable criticism about the way funding was spent. The famine was rooted in political, social and climate issues—all of which needed long-term solutions as much as short-term aid. It was this experience that led Sue to want to focus on solutions; taking her first to work on social projects in the UK to help the long-term unemployed and then to the environment working for the Soil Association on developing and promoting organic agriculture. It was here that Nigel and Sue met—the rest of our history is documented over the last few pages.



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ity and

Environmental Governance

forests and water

IUCN

ction and
ervation

Edited by
Jan J. Gordon, Herbert H.T. Prins
and Geoff R. Squire

WILDLIFE
KNOWLEDGE

NATURAL SITES

EN WILD MCNEELY OVIEDO

earthscan

Edited by
Ingeborg Baillie and Robinson

WILEY
Blackwell

Performance and Management

IUCN

ANU
PRESS

Strategies for Protected Area Agencies

IUCN

STATE OF THE WILD

2010-2011

ISLAND
PRESS

Ecosystems and Biodiversity
Policy and Management Guidelines

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Gardner

WORLD
WILDLIFE
FUND

forest quality

AUTHENTICITY IN NATURE

Arguments for Protected Areas

Partnerships for Protection

Edited by Sue Stolton and N

Mansourian • Valturi
Dudley Editors

Forest Restoration in Latin America
Beyond Planting Trees

Squandering Paradise?

The importance and vulnerability of 11

WWF - CAMPA 2016

NATURAL SOLUTIONS

Protected areas helping people cope with climate change

Guidelines for priority protected areas

Tools for research, modeling and using ecosystem services: Guidance for Key Biodiversity Areas

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Governance of Protected Areas: From understanding to action

The Future of Privately Protected Areas

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Evaluating Effectiveness: A framework for assessing management effectiveness of protected areas

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THE ACID RAIN CONTROVERSY

Values of Protected Landscapes and Seascapes

Values of Protected Landscapes and Seascapes

Protected L

Issue 22.1: November 2016

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Earth Land is Life Nigel Dudley, John Madeley and Sus

GOOD HEALTH ON A POLLUTED PLANET

THE SOIL ASSOCIATION HANDBOOK N

G is for ecoGarden Nigel Dudle

NITRATES THE THREAT TO FOOD AND WATER NIGEL DUDLEY

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Current Contributions and Future Possibilities

PROTECTED AREA POLICY

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Clients and collaborators

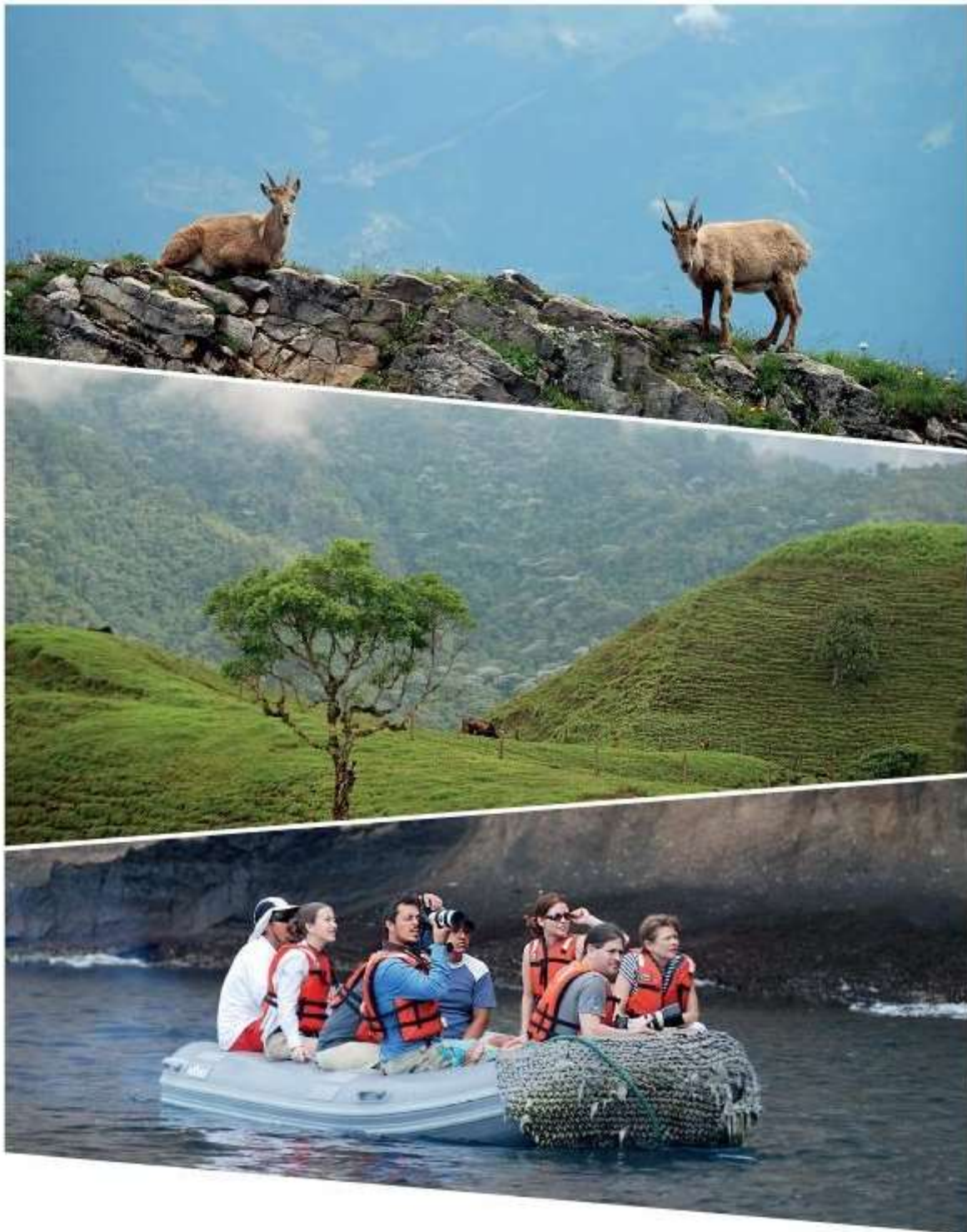
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Our work has taken us to over 90 countries in all the continents except Antarctica.





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