PARKS

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Developing capacity for a protected planet

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IUCN WCPA WORLD COMMISSION ON PROTECTED AREAS

Convention on Biological Diversity

protected planet

IUCN PROTECTED AREA DEFINITION, MANAGEMENT CATEGORIES AND GOVERNANCE TYPES

IUCN defines a protected area as:

A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

The definition is expanded by six management categories (one with a sub-division), summarized below.

Ia Strict nature reserve: Strictly protected for biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values.

Ib Wilderness area: Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition.

II National park: Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.

III Natural monument or feature: Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove.

IV Habitat/species management area: Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category.

V Protected landscape or seascape: Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected areas with sustainable use of natural resources: Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims.

The category should be based around the primary management objective(s), which should apply to at least three-quarters of the protected area – the 75 per cent rule.

The management categories are applied with a typology of governance types – a description of who holds authority and responsibility for the protected area.

IUCN defines four governance types.

Governance by government: Federal or national ministry/ agency in charge; sub-national ministry/agency in charge; government-delegated management (e.g. to NGO)

Shared governance: Collaborative management (various degrees of influence); joint management (pluralist management board; transboundary management (various levels across international borders)

Private governance: By individual owner; by non-profit organisations (NGOs, universities, cooperatives); by for-profit organsations (individuals or corporate)

Governance by indigenous peoples and local communities: Indigenous peoples' conserved areas and territories; community conserved areas – declared and run by local communities

For more information on the IUCN definition, categories and governance type see the 2008 *Guidelines for applying protected area management categories* which can be downloaded at: www.iucn.org/pa_categories

IUCN WCPA'S BEST PRACTICE PROTECTED AREA GUIDELINES SERIES

IUCN-WCPA's Best Practice Protected Area Guidelines are the world's authoritative resource for protected area managers. Involving collaboration among specialist practitioners dedicated to supporting better implementation in the field, they distil learning and advice drawn from across IUCN. Applied in the field, they are building institutional and individual capacity to manage protected area systems effectively, equitably and sustainably, and to cope with the myriad of challenges faced in practice. They also assist national governments, protected area agencies, nongovernmental organisations, communities and private sector partners to meet their commitments and goals, and especially the Convention on Biological Diversity's Programme of Work on Protected Areas.

A full set of guidelines is available at: www.iucn.org/pa_guidelines
Complementary resources are available at: www.cbd.int/protected/tools/
Contribute to developing capacity for a Protected Planet at: www.protectedplanet.net/

PARKS is published electronically twice a year by IUCN's World Commission on Protected Areas. For more information see: parksjournal.com

PARKS is published to strengthen international collaboration in protected area development and management by:

- exchanging information on practical management issues, especially learning from case studies of applied ideas;
- serving as a global forum for discussing new and emerging issues that relate to protected areas;
- promoting understanding of the values and benefits derived from protected areas to communities, visitors, business etc;
- ensuring that protected areas fulfill their primary role in nature conservation while addressing critical issues such as ecologically sustainable development, social justice and climate change adaptation and mitigation;
- changing and improving protected area support and behaviour through use of information provided in the journal; and
- promoting IUCN's work on protected areas.

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PARKS: THE INTERNATIONAL JOURNAL OF PROTECTED AREAS AND CONSERVATION

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EDITORIAL

Marc Hockings, Managing Editor

During a recent visit to IUCN Headquarters in Gland, I was able to obtain back copies of *PARKS*, extending back to the early 1990s. Thanks to the assistance of the University of Queensland Library, these print copies have been digitised and added to the Past Issues section of the *PARKS* website (https://parksjournal.com/back-issues/). There are still some gaps in this collection of *PARKS* so we would welcome contribution of these missing issues. If you have copies of these missing issues and are willing to loan them, we can have them digitised and then return the originals to the owners. Please contact me at editor@parksjournal.com if you can assist.

In reading through some of these early issues of *PARKS*, I came across an editorial from Prof Adrian Phillips who was then Chair of the Commission on National Parks and Protected Areas (now WCPA) in Issue 3.2 published in October 1992. In this editorial he writes "The aim must be to make it [PARKS] an essential part of the professional reading of all protected area planners and managers. To fulfil that role, it needs to contain more substantive and longer articles, perhaps requiring the use of a larger format. Whilst remaining attractive and readable — and not becoming esoteric — we see it evolving into a less newsy and more authoritative publication. It should help expose the professional community of park managers to new concepts and ideas, and familiarize them with current developments relating to protected areas.... It can play a much expanded role in transmitting field experience. By dealing with protected area issues in greater depth than at present, it will complement the CNPPA newsletter, and any regional newsletters on protected areas."

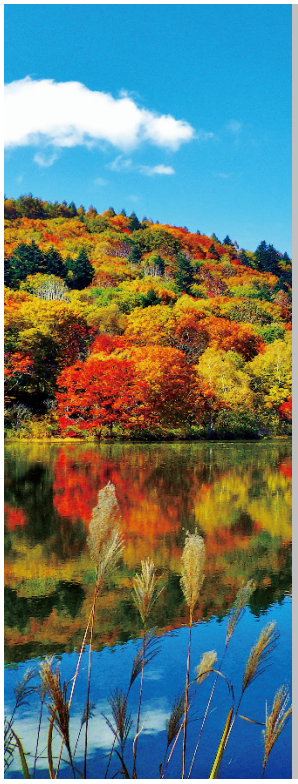
Almost exactly 20 years later (after a gap of four years when no issues of the journal were published), and with with the strong support of the then Chair of WCPA, Nik Lopoukhine, Issue 18.1 was published as a peer-reviewed journal. The new editors, Sue Stolton and Nigel Dudley worked hard over the next five years to establish a journal that, in many respects, fulfils the aims set out by Adrian many years ago in that 1992 Editorial.

This issue opens with an Editorial Essay on behalf of the Global Partnership on Aichi Target 11 reviews progress towards this component of the Convention on Biological Diversity's Strategic Plan. It is followed by two papers, led by Stephen Woodley, on area-based targets that can help inform the discussions on a new post-2020 target for protected areas. In a Short Communication, Jonas and Jonas raise some thought-provoking ideas around the meaning of the term 'conserved areas' that will also contribute to the debate around policies and targets for protected and conserved areas. As this issue goes to press, these topics are being discussed in Montreal at the meeting of the CBD Subsidiary Body on Scientific, Technical and Technological Advice .

In line with aims for the journal set out by Adrian Phillips nearly 30 years ago, two papers in this issue address new concepts and developments supporting protected area management. One paper by Melzer and colleagues describes a simple tool to assess the condition of protected area value and provides examples of its application. A second paper by Hockings and colleagues outlines the new IUCN Green List Standard for protected areas.

Two papers summarise the lessons learnt by practitioners in applying specific tools and approaches developed to support protected area management. Stolton and colleagues review the lessons from 18 years of applying the Management Effectiveness Tracking Tool to assess the effectiveness of management of protected areas, while Garn and her colleagues document the lessons learnt in applying the IUCN Management Categories of protected areas in Denmark.

Finally in transmitting field experience, Kihima and Musila provide a case study from Kenya on community participation in tourism development.



EDITORIAL ESSAY: AN UPDATE ON PROGRESS TOWARDS AICHI BIODIVERSITY TARGET 11

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ABSTRACT

In 2010, Parties to the Convention on Biological Diversity adopted a Strategic Plan for Biodiversity with 20 Aichi Biodiversity Targets expected to be achieved by 2020. Target 11 sets out goals for protected and conserved areas in terrestrial, marine and freshwater ecosystems. This paper, prepared on behalf of the Global Partnership on Aichi Target 11, reports on progress to date in meeting the quantitative and qualitative elements of Target 11 and identifies opportunities for further progress prior to the 15th Conference of the Parties in Kunming in 2020 and beyond.

Key words: Aichi Biodiversity Target 11, coverage, representation, management effectiveness, governance, other effective area-based conservation measures (OECM)

INTRODUCTION

Protected areas are an important approach for the in situ conservation of biodiversity. Parties to the Convention on Biological Diversity (CBD) have agreed to increase both the quantity and quality of global protected area cover. Under the Strategic Plan for Biodiversity 2011-2020, Aichi Biodiversity Target 11 states:

> By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape (CBD, 2010).

Analyses of Target 11 implementation have generally shown improvements for all elements[1] of the Target, though progress has been greater for the quantitative elements, especially marine coverage over the last several years (SCBD, 2014; Gannon et al., 2017; UNEP-WCMC, IUCN & NGS, 2019). To accelerate progress on Target 11, since 2015, the Secretariat of the Convention on Biological Diversity, with partners, has undertaken a range of activities including organising workshops on the status, gaps and opportunities for elements of the Target, as well as national priority actions, and facilitating decentralised implementation of national commitments, among others (Gannon et al., 2017). A Global Partnership on Aichi Target 11 was launched in November 2018, on the margins of the fourteenth meeting of the Conference of the Parties (COP) to the Convention, in Sharm El-Sheikh, Egypt. Its main objective is facilitating accelerated and effective implementation of actions to further progress towards Target 11, including through support for regional implementation support networks.

This paper is submitted on behalf of the Global Partnership to provide an update on the status of the elements of Target 11 as the 2020 end date for the Strategic Plan approaches, and discussions around a post-2020 Global Biodiversity Framework continue. The

following sections present the status of both quantitative and qualitative elements of Target 11, and describe additional opportunities for enhancing progress over the next year.

CURRENT STATUS OF TARGET 11

Target 11 includes both protected areas and other effective area-based conservation measures (OECMs) as means of conserving biodiversity in situ. As the definition of OECM was only adopted in November 2018 (CBD, 2018), there is limited information on the global extent of OECMs or the impact they could have for elements of Target 11. As such, analysis to date has relied primarily on protected areas reported in the World Database on Protected Areas (WDPA). It is likely, however, that the status of several elements of Target 11 will improve substantially as reporting on OECMs advances.

Given the indivisible nature of the Target, for successful achievement, progress is needed on all of its elements, not only the quantitative aspects.

Quantitative elements

As of September 2019, terrestrial protected area coverage had reached 15.0 per cent (UNEP-WCMC, 2019a). Marine protected area coverage for the global ocean was 7.8 per cent (coverage is 18.1 per cent for areas under national jurisdiction [national waters] and 1.2 per cent for areas beyond national jurisdiction [ABNJ]) (UNEP-WCMC, 2019a). These figures represent a modest increase in reported terrestrial protected area cover, and a significant increase in marine coverage, since the start of the current Strategic Plan 2011-2020. Much of this growth in marine protected area coverage has come from the recent designation of very large marine protected areas. Currently, the 20 largest marine sites now account for almost two-thirds of total global marine coverage (UNEP-WCMC & IUCN, 2019). There is some concern that recent marine protected area designations have not adequately targeted under-represented ecoregions (Jantke et al., 2018a) or where they can best abate threats (Kuempel et al., 2019). Though it is likely that both terrestrial and marine quantitative targets will be met globally by 2020, there is a recognised need for increased efforts to address the qualitative elements of Target 11. Issues pertaining to the qualitative elements of Target 11 will be addressed in the following sections.

Ecological representation

Protected area coverage of ecoregions has often been used to assess the ecological representation element of Target 11 (e.g. UNEP-WCMC, IUCN & NGS, 2019). Globally, ecoregions have been mapped for both terrestrial (Olson et al., 2001) and marine ecosystems (Spalding et al., 2007; Spalding et al., 2012). As reported in the Digital Observatory for Protected Areas (DOPA) of the Joint Research Centre of the European Commission (JRC), protected area coverage was at least 17 per cent for 344 out of 823 terrestrial ecoregions, while 102 had less than 2 per cent coverage, as of January 2019 (Figure 1; JRC, 2019a). The marine realm is divided between 232 marine ecoregions covering shallow coastal waters (<200 m in depth) (Spalding et al., 2007) and 37 pelagic provinces (Spalding et al.,

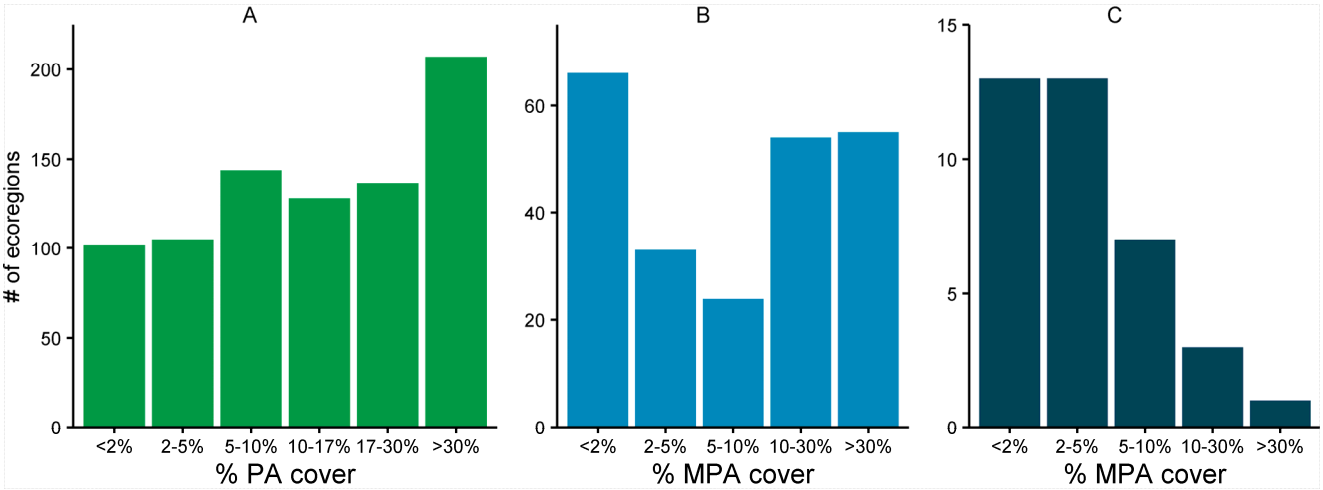

Figure 1. Protected area coverage of terrestrial ecoregions (A), marine ecoregions covering shallow coastal waters <200m (B), and pelagic provinces (C), as of January 2019; showing the number of ecoregions at varying levels of protection (JRC, 2019a).

2012). For the marine realm, 109 out of 232 marine ecoregions, and four out of 37 pelagic provinces have reached 10 per cent coverage, while 66 marine ecoregions and 13 pelagic provinces have less than 2 per cent cover by reported protected areas (Figure 1; JRC, 2019a). There are currently 21 terrestrial ecoregions, eight marine ecoregions, and four pelagic provinces that have no cover by reported protected areas (JRC, 2019a).

Mean target achievement (per Jantke et al., 2018b) ranges from 65 to 92 per cent for terrestrial ecoregions, from 62 to 82 per cent for marine ecoregions, and from 11 to 65 per cent for pelagic provinces, depending on the target applied (whether the 17 or 10 per cent targets for global coverage from the language of Target 11, or considering at least partial coverage – at least 2 per cent – for all ecoregions).

Ecological representation could also be assessed based on the proportion of species' distributions covered by protected areas (e.g. Butchart et al., 2015). For example, only 8.8 per cent of migratory birds are adequately covered across all stages of their annual cycle (Runge et al., 2015), and less than half all species assessed and mapped for the IUCN Red List of Threatened Species have adequate coverage by reported protected areas (Butchart et al., 2015).

Areas important for biodiversity

Protected area coverage of Key Biodiversity Areas (KBAs) provides one commonly used indicator for assessing the coverage of areas important for biodiversity. KBAs are sites making a considerable contribution to maintaining biodiversity, with criteria for their identification provided in the IUCN's Global Standard based on threatened status, geographically restricted distribution, irreplaceability, or other factors (IUCN, 2016). Globally, mean per cent coverage of KBAs is 46.1 per cent for terrestrial sites and 45.7 per cent for marine sites (UNEP-WCMC, BirdLife International & IUCN, 2019). Out of the 14,103 terrestrial KBAs, 19 per cent are fully covered by reported protected areas, while there is no coverage for more than one-third (Figure 2; UNEP-WCMC, BirdLife International & IUCN, 2019). For marine KBAs, 24 per cent of the 3,990 sites are fully covered, while 36 per cent have no coverage (Figure 2; UNEP-WCMC, BirdLife International & IUCN, 2019). Increased recognition and reporting of OECMs would further increase the coverage of KBAs (Donald et al., 2019).

Areas of importance for biodiversity could also include more than just KBAs, which are currently both geographically and taxonomically incomplete. Areas of particular importance for biodiversity could also include Ecologically or Biologically Significant Marine Areas (EBSAs), Ramsar sites and equivalent national priorities. Protected area coverage for these and other types of important biodiversity sites could also be explored. For example, the coverage of species richness hotspots, centres of endemism, or intact wilderness areas. In 2017, marine protected areas covered only 5 per cent of remaining marine wilderness (Jones et al., 2018).

Areas important for ecosystem services

There is currently no single indicator identified for assessing protected area coverage of areas important for ecosystem services at the global level. However, many examples exist from national level assessments, which cover a range of ecosystem services including flood risk reduction, sediment retention, water retention and carbon sequestration, among others (e.g. Xu et al., 2017; Mandle et al., 2017).

More work is needed to identify which areas would be considered as "important for ecosystem services". Maps of various ecosystem services could be overlaid with protected area coverage to identify areas important for multiple ecosystem services, especially those important for biodiversity. Attention should, however, be paid to potential trade-offs between biodiversity and certain ecosystem services, as well as between different ecosystem services.

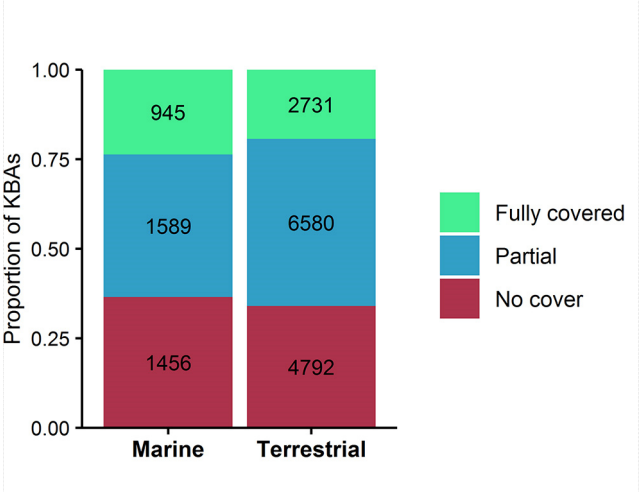

Figure 2. Proportion of marine and terrestrial KBAs fully, partially, and not covered by protected areas, based on the spatial overlap between polygons from the World Database on KBAs and the WDPA (December 2018 release), as reported in the 2019 SDG report (analysed by UNEP-WCMC in collaboration with BirdLife International and IUCN).

Myoko-Togakushi National Park, Japan © Ministry of the Environment, Japan

Given the important role that protected areas can play in ecosystem-based approaches to climate change adaptation and mitigation (Dudley et al., 2010; Gaüzère et al., 2016; Melillo et al., 2016), global carbon storage in protected areas provides one potential option. As of May 2019, over 18 per cent of the global terrestrial carbon stock is covered by reported protected areas (JRC, 2019b).

It is likely that many OECMs are supporting the conservation of ecosystem services, as well as biodiversity. Of the OECMs identified in unprotected KBAs in 10 countries, nearly one-third listed "preserving ecosystem services" as the primary management objective (Donald et al., 2019).

Connectivity

There are two proposed indicators for assessing the connectivity of the global protected area estate, accepted for use through the Biodiversity Indicators Partnership. Protected connected land (ProtConn) applies network analysis to determine the amount of connected habitat in protected area networks, based on the size and spatial arrangement of protected areas (Saura et al., 2018). The Protected Area Connectedness Index (PARC-connectedness) applies a cost–benefit approach (per Drielsma et al., 2007) to assess the permeability to dispersal of the landscapes surrounding protected areas (CSIRO, 2019a). It accounts for the connectivity between protected areas, but also includes areas containing intact primary vegetation in the surrounding non-protected landscape (CSIRO, 2019a).

Recent assessments with both indicators show significant shortfalls in protected area connectivity at the global level (JRC, 2019a; CSIRO, 2019b). Similar shortfalls are noted for connectivity measured at the scale of individual countries or terrestrial ecoregions; in both cases less than one-third are covered by 'well-connected' protected area networks, as measured by ProtConn (JRC, 2019a). However, many individual countries showed an increase in connectivity since 2010, as measured using ProtConn (Saura et al., 2019) or the PARC-connectedness Index (CSIRO, 2019b). To date, the connectivity of marine protected areas has not been assessed globally.

Effectively managed

Reporting of progress on the 'effectively managed' element of Target 11 has generally concentrated on the completion of management effectiveness evaluations, often measured against the 60 per cent target called for in CBD COP Decision X/31. By June 2019, as per information reported in the global database on protected area management effectiveness (GD-PAME), less than one-in-five countries had evaluated management effectiveness for at least 60 per cent of terrestrial protected areas, and less than one-in-six had done so for marine protected areas (UNEP-WCMC, 2019b) (Figure 3). Many countries have no completed assessments currently reported in the GD-PAME (Figure 3; UNEP-WCMC, 2019b).

However, simply reporting on the completion of evaluations is not sufficient. Without information on the adequacy of aspects of management, it will not be possible to properly assess progress for this element of Target 11. Future targets relating to protected area management effectiveness should require that some benchmark of quality is being met. For example, a 2010 study applied a benchmark of two-thirds indicating "effective" management across a suite of indicators, and based on the sample of protected areas included at the time (~6,000 sites, or 6 per cent of all sites reported at the time) less than one-quarter were deemed to have "sound management" (Leverington et al., 2010).

Recent studies have shown that staff and budget capacity are some of the aspects of management most related to conservation outcomes, in both terrestrial (Geldmann et al., 2018) and marine protected areas (Gill et al., 2017). For sites where this data is available (over 2,000 sites, covering 23 per cent of the total extent of terrestrial protected areas), only 22 per cent report both adequate staffing and budget resources, while almost half report inadequate resources for both staffing and budget (Coad et al., 2019). Similar results have been reported from a study of 433 marine protected areas (Gill et al., 2017).

There is also a need for more information on conservation outcomes in protected areas, and a better

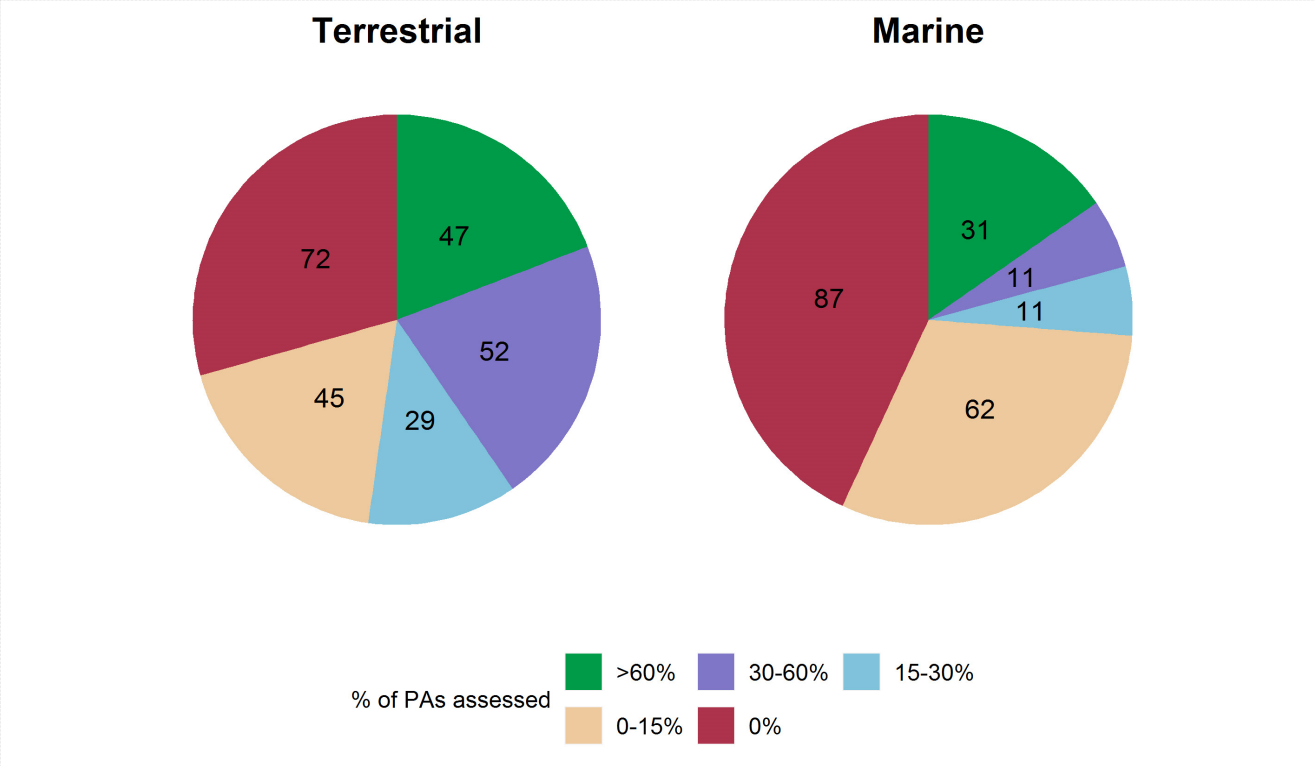

Figure 3. Number of countries or territories with completed protected area management effectiveness evaluations in the GD-PAME for terrestrial and marine areas as of June 2019 (UNEP-WCMC, 2019b). Percentage assessed is based on the area of PAs with reported evaluations.

understanding of their relation to specific management inputs (Geldmann et al., 2018); aspects which should receive greater focus in the post-2020 period.

Equitably managed

Enhancing the diversity, quality, effectiveness and equity of protected area governance is important for the achievement of Target 11 (CBD, 2018). As there is a lack of comprehensive global assessments of governance and equity in protected areas, reporting on this element has often focused on governance diversity as a means for assessing equity at a protected area system level (Bacon et al., 2019). There are four governance types recognised by the IUCN: governance by governments; governance by private individuals or organisations; governance by indigenous peoples and/or local communities (IPLC); and shared governance (e.g. between IPLC and governments or between private individuals and governments) (Borrini-Feyerabend et al., 2013). In 2018, reported protected areas were primarily governed by governments, with less than 4 per cent under shared or IPLC governance (UNEP-WCMC, IUCN & NGS, 2019).

A global survey of stakeholders in over 200 protected areas concluded that significant challenges remain in ensuring socially equitable management (Zafra-Calvo et al., 2019). A majority of respondents felt that few protected areas adequately addressed aspects of social equity such as effective participation in decision-making, statutory and customary rights, access to justice, and transparency (Zafra-Calvo et al., 2019). However, most respondents claimed that the distribution of benefits from the establishment and management of protected areas has generally been fair (Zafra-Calvo et al., 2019).

The IUCN Green List, a voluntary global standard aimed at increasing the number of effectively and equitably managed protected areas delivering conservation outcomes, provides another potential means for tracking progress on the management elements of Target 11 (IUCN & WCPA, 2017). The four components of the Green List Standard (Good Governance, Sound Design and Planning, Effective Management, and Successful Outcomes) are underpinned by 17 criteria (IUCN & WCPA, 2017). Existing approaches for management effectiveness (Hockings et al., 2006), governance (Franks & Booker, 2018) and social assessment (Franks et al., 2018) in protected areas could be used to compile information to address these 17 criteria. This would allow for better estimates of progress in the effective and equitable management of protected areas.

Integrating protected areas in landscapes and seascapes

Indicators for this element are still lacking, and a global assessment of progress has yet to be completed. Voluntary guidance on this element has been developed (CBD, 2018), which offers a range of suggested steps for the integration of protected areas into wider landscapes and seascapes. As of 2016, few countries had identified specific plans or strategies for such integration (UNDP, 2016). It is also important that biodiversity is integrated and mainstreamed within relevant sectoral plans, strategies and programmes, as contradictory policy objectives across different sectors often jeopardise biodiversity conservation and limit the efficacy of protected areas (Ervin et al., 2010). Key sectors with likely impacts on the effectiveness of protected area systems are agriculture, forestry, water resources, mining and energy (Gannon et al., 2017).

One means to assess this element could be to look at ecological spill-over, examining 'leakage' and 'blockage' effects of protected areas on non-target areas in the surrounding landscape. A recent study of more than 3,000 tropical and subtropical forest protected areas reported that less than 10 per cent displayed 'leakage' – where deforestation was simply displaced to the surrounding area, showing limited integration with the wider landscape (Fuller et al., 2019). 'Blockage', where deforestation was also reduced in areas surrounding the protected area, was reported for more than 40 per cent of sites (Fuller et al., 2019). The remaining protected areas showed either negligible spill-over, or did not effectively limit deforestation (Fuller et al., 2019).

Marine spatial planning represents an important tool for integrating marine protected areas with the wider seascape, and with relevant sectors to ensure more sustainable ocean management (Santos et al., 2019). Landscape approaches to biodiversity conservation and sustainable development, like the Socio-ecological Production Landscapes and Seascapes approach of the Satoyama Initiative, offer another opportunity to enable greater integration of protected areas (Leles et al., 2018).

OPPORTUNITIES FOR PROGRESS ON TARGET 11

Commitments to further increase protected area coverage have been made by Parties to the Convention

Kushiro-shitsugen National Park, Japan © Ministry of the Environment, Japan

in their National Biodiversity Strategies and Action Plans (NBSAPs), national priority actions identified through a series of regional capacity-building workshops, 2017 UN Oceans Conference, and various regional initiatives like the Micronesia and Caribbean Challenge Initiatives (Gannon et al., 2017). Many of these protected areas have already been created and reported to the WDPA (Bacon et al., 2019). Achievement of the remaining commitments by 2020 would increase global coverage by over 4 million km² terrestrial protected areas and over 11 million km² for marine protected areas. Terrestrial coverage would thus reach 18 per cent, while coverage of the global ocean would reach 11 per cent (Figure 4), surpassing both quantitative targets. However, further efforts will still be needed to ensure that the qualitative elements of Target 11 are being addressed.

The successful completion of Global Environment Facility (GEF-5 and GEF-6) projects, the recognition and reporting of territories and areas conserved by indigenous peoples and local communities (ICCAs), and especially better recording of data on OECMs, all provide further opportunities for progress on Target 11. For instance, there are 115 approved GEF-5 and GEF-6 projects with clear plans for increasing protected area coverage; together these would add over 300,000 km² in terrestrial (0.22 per cent globally), and over 500,000 km² in marine protected areas (0.14 per cent of the global ocean).

There is no global assessment of the overall contribution of ICCAs to biodiversity conservation, though it is recognised that they are underreported in the Protected Planet databases (Bingham et al., 2019). It is possible that they could cover a large part of the terrestrial environment, including a significant portion of remaining wilderness areas (Garnett et al., 2018). The Global Support Initiative for Indigenous Peoples and Community-Conserved Territories and Areas (ICCA-GSI) is currently being implemented in 26 countries, though there are very few ICCA-GSI sites currently recorded in the WDPA and/or the ICCA Registry. However, progress with the ICCA-GSI is significant in many countries, and data is currently being collected for over 100 ICCAs. For example, the ICCA-GSI projects in Colombia report 13,800 km² (over 1 per cent of Colombia's land area) under community conservation and self-recognised as ICCAs (UNDP, 2019).

As noted above, a definition for other effective area-based conservation measures (OECMs) was adopted at the fourteenth meeting of Parties to the Convention, while the same decision also welcomed scientific and technical advice on OECMs, including criteria for identification (CBD, 2018). As yet there is no global estimate of OECM coverage but it is expected that recognising and reporting on OECMs will make a significant contribution to progress on Target 11. For instance, the more than five-fold increase in marine coverage in Canada has come in large part from the

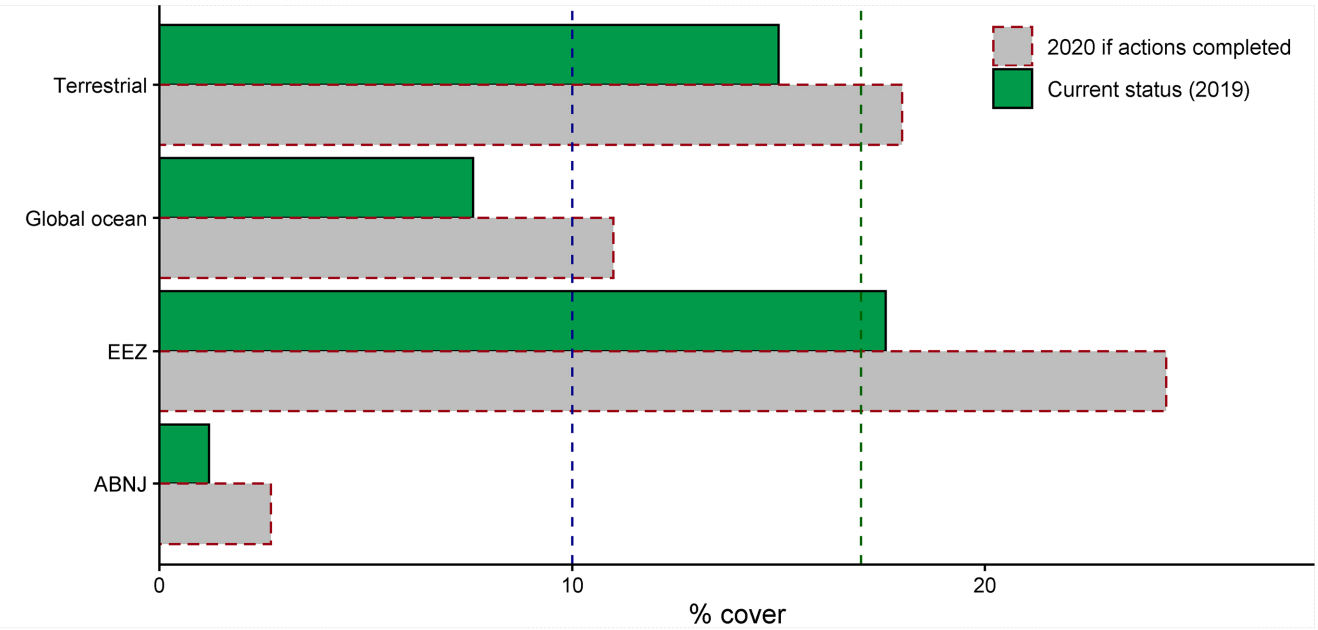

Figure 4. Current global protected area coverage (as of June 2019), and increase that is expected if national commitments are completed as proposed by 2020; dashed lines show the global coverage targets for marine (10 per cent) and terrestrial (17 per cent) areas.

Setonaikai National Park, Japan © Ministry of the Environment, Japan

contribution of marine OECMs (ECCC, 2018). In Russia, a recent analysis showed that existing coverage of terrestrial areas was at least 25 per cent, with more than half of this coming from OECMs (Stishov & Dudley, 2018).

These additions will improve ecological representation and may also have benefits for connectivity and the coverage of areas important for biodiversity, as well as other elements of the Target. Work has recently begun to collect information on OECMs, including spatial data, to assess the impact on these elements of Target 11.

One of the largest gains for Target 11 reporting could come from more accurate reporting and updating information in the WDPA. Preliminary analysis of protected area coverage from the Sixth National Reports of 90 CBD Parties indicates that many are reporting national figures higher than those currently recorded in the WDPA. As much as 1.4 million km² in terrestrial and 480,000 km² in marine protected areas may be missing from the WDPA. Work is ongoing to facilitate updating of records in the WDPA to better reflect the current situation and contribute to 2020 reporting.

CONCLUSION

With just one year remaining until 2020 and the close of the current Strategic Plan for Biodiversity and the Aichi Biodiversity Targets, progress is clear for several elements of Target 11, with especially encouraging progress regarding the coverage of marine areas. Coverage elements are on track to be met by 2020. Delivery of commitments and other opportunities, especially the recognition and recording of OECMs, will also contribute to other elements like ecological representation, connectivity and the coverage of areas important for biodiversity. There is an urgent need to obtain information and spatial data for these sites so that they can be mapped vis-à-vis the relevant qualitative elements of the Target. The Global Partnership is supporting regional and national efforts to collate more accurate data on these elements.

For some elements of Target 11 (e.g. management effectiveness, equity, areas important for ecosystem services and integration into wider landscapes and seascapes), there is inadequate data at the global level to provide a proper assessment of progress. Many of these elements will require more emphasis and capacity building both in the run up to COP15 and as part of any new targets after 2020. Target 11 has been one of the

most successful of the Aichi targets with considerable progress in implementation. Lessons learned over the last decade in delivering Target 11 will be highly relevant to setting realistic and deliverable successor targets for area-based conservation in the post-2020 period.

ENDNOTES

[1]The elements of Target 11 refer to the individual clauses in the language of the target, and include both quantitative elements (at least 17% terrestrial and 10% marine coverage) and qualitative elements (ecological representation, coverage of areas important for biodiversity, coverage of areas important for ecosystem services, connectivity, effective management, equitable management, and integration into the wider landscapes and seascapes.

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RESUMEN

En 2010, las Partes en el Convenio sobre la Diversidad Biológica adoptaron un Plan Estratégico para la Biodiversidad con 20 Metas de Aichi para la Diversidad Biológica que se espera alcanzar para 2020. La Meta 11 establece objetivos para áreas protegidas y conservadas en ecosistemas terrestres, marinos y de agua dulce. Este artículo, preparado en nombre de la Alianza Mundial para la implementación de la Meta 11 de Aichi, informa sobre el avance alcanzado hasta la fecha en el cumplimiento de los elementos cuantitativos y cualitativos de la Meta 11 e identifica oportunidades para un mayor progreso antes de la 15ª Conferencia de las Partes en Kunming en 2020 y más allá.

RÉSUMÉ

En 2010, les parties à la Convention sur la diversité biologique ont adopté un Plan stratégique pour la diversité biologique comprenant 20 objectifs d'Aichi pour la biodiversité qui devraient être atteints d'ici 2020. L'Objectif 11 définit des directives pour les aires protégées et conservées dans les écosystèmes terrestres, marins et d'eau douce. Le présent document, préparé pour le compte du Partenariat mondial sur l'Objectif 11 d'Aichi, fait état des progrès réalisés à ce jour dans la mise en œuvre des éléments quantitatifs et qualitatifs de l'Objectif 11 et identifie des possibilités de progrès supplémentaires avant la 15e Conférence des Parties à Kunming en 2020 et au-delà.

AREA-BASED CONSERVATION BEYOND 2020: A GLOBAL SURVEY OF CONSERVATION SCIENTISTS

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ABSTRACT

We surveyed 335 conservation scientists, from 81 countries, in English, French and Spanish for views on area-based conservation relating to the Strategic Plan for Biodiversity 2011–2020 of the Convention on Biological Diversity and potential future targets, especially a successor to Aichi Target 11. The results can be summarised as follows:

1. Nearly unanimously, area-based or in-situ conservation is considered to be important to conserve biodiversity (99 per cent).
2. All of the qualitative aspects of Target 11 are well supported, with strongest support for areas of importance for biodiversity (e.g. Key Biodiversity Areas); ecological connectivity; integration with broader landscapes and seascapes; and effective management.
3. Future area-based conservation targets should include large-scale conservation networks that include connectivity between protected areas, protection of endangered and threatened species or ecosystems, and ecologically intact wilderness areas.
4. Various methods from conservation biology were considered useful to establish area-based targets, with systematic conservation planning receiving the greatest support.
5. There is very strong agreement (79 per cent) that Target 11, with its current percentage targets of 17 per cent of land and freshwater and 10 per cent of coastal and marine areas, is not adequate to conserve biodiversity.
6. Conservation scientists showed very strong support for large-scale percentage area conservation targets, in the order of 50 per cent of the Earth.

Key words: Aichi Targets, Target 11, area-based conservation, post-2020 global biodiversity framework, systematic conservation planning, protected areas

INTRODUCTION

There is considerable interest in the next generation of conservation targets that will replace the Convention on Biological Diversity's (CBD) Aichi Targets when they are reviewed in 2020, driven by the fact that we face both a global biodiversity crisis and rapidly changing climate. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (Díaz et al., 2019) reports that 75 per cent of the Earth's land surface is significantly altered, 66 per cent of the ocean area is experiencing increasing cumulative impacts, and over 85 per cent of wetlands (by area) have been lost. On average, population sizes of wild vertebrate species have declined precipitously over the last 50 years on land, in freshwater and in the sea, and around 25 per cent of species in assessed animal and plant groups are threatened (Díaz et al., 2019). In situ conservation is most represented by Aichi Target 11. Many of the drivers of biodiversity loss can be addressed through area-based conservation (Díaz et al., 2019), with protected areas being the backbone of area-based conservation (Wuerthner et al., 2015).

One hundred and ninety-five countries and the European Union have ratified the United Nations Convention on Biological Diversity (CBD), which has the conservation of biological diversity as a main goal. The

Strategic Plan for Biodiversity 2011–2020 and its Aichi Targets are a framework for international collective action on biodiversity conservation (SCBD 2010). A conference of the CBD parties will be held in China in 2020 with the intention of agreeing on a new post-2020 strategic plan for global biodiversity. The preparatory work for that agreement is well underway.

Area-based conservation (termed in-situ conservation under the CBD) refers particularly to protected areas (PAs), and other effective area-based conservation measures (OECMs) are a central strategy under the current CBD Strategic Plan, primarily centred on Aichi Target 11: "By 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other-effective area-based conservation measures, and integrated into the wider landscape and seascapes."

This target includes both quantitative (percentage area targets on land and sea), qualitative elements (effectiveness, equity, connectivity, representation, areas of importance for biodiversity and ecosystem services) and area-based actions (PAs and OECMs).

There is a recent history of setting conservation targets for protected and conserved areas, with conservation targets changing with evolving ideas on biodiversity and ecosystem services and the emergence of sustainable development and conservation biology (Locke, 2013; Sala et al., 2018, Wright et al., 2019). For example, the well-known targets of 10 or 12 per cent of geographical areas were based on representing samples of the Earth's ecosystems and did not include requirements for the persistence of species or ecological processes (Rodrigues & Gaston, 2001). A 12 per cent target was developed in 1987 with the goal of protecting a representative sample of Earth's ecosystems (WCED, 1987). These targets were to further a policy agenda and were never based in science. Woodley et al. (2019) provide a discussion of science-based vs. policy-based targets.

To assist the global discussion on the next generation of global conservation targets, the International Union for Conservation of Nature's (IUCN) World Commission on Protected Areas (WCPA) established the Beyond the Aichi Targets Task Force (https://www.iucn.org/protected-areas/wcpa/what-we-do/beyond-aichi-targets). Its remit includes conducting global scientific consultations and evidence reviews to seek a consensus on new global conservation targets for area-based conservation that would be meaningful for achieving the CBD's basic purpose, which is the conservation of biological diversity. As part of that effort, we conducted a global survey of conservation scientists to determine their views on the adequacy of the current Target 11 and its elements and the required elements of future conservation targets focused on area-based conservation.

METHODS

With inputs from global colleagues at a scoping meeting, we generated a survey based on the elements of Target 11, as well as considerations of other issues of importance to biodiversity conservation. They included important themes from the conservation literature, such as key ecological processes and functions; large conservation core areas for ecological integrity and resilience; ecologically intact wilderness areas; large-scale conservation networks that include connectivity; geographically restricted species; species aggregations that occur during breeding and migration; threatened and endangered species; ecological processes; and calls for higher percentage targets for area-based conservation. This list was consistent with criteria used in the Key Biodiversity Area Criteria (IUCN, 2016) as well as calls in the literature for conserving intactness and processes (Watson & Ventor, 2017), conservation networks (Mogg et al., 2019) and more ambitious percentage targets (Noss et al., 2012; Locke, 2013; Wilson, 2016). We pre-tested the survey on a group of 20 conservation scientists to reduce any error that could arrive from lack of clarity.

In order to focus on the views of conservation scientists, the survey was sent to membership lists of the Society for Conservation Biology (https://conbio.org/). The society is a global group of conservation professionals and students dedicated to facilitating, promoting and advancing the scientific study and conservation of biological diversity. It has members in almost every country in the world and the survey was sent out by email as part of regional newsletters. Respondents could take the survey in their choice of three languages, English, French and Spanish. We used the professional version of SurveyMonkey software (https://www.surveymonkey.com/).

There were 16 questions designed to be completed in 20 minutes (a copy of the questionnaire is available in supplementary online materials). Of the 16 questions,

eight asked for ratings of agreement with a statement based on a Likert scale response. The first four questions were designed to understand the experience and geographic location of the respondent. Seven questions included open comment fields and one question was only an open comment question asking for any additional comments. There were three questions on the general importance of area-based conservation. The survey included an explanation of all the terms used in the questions including "area-based conservation, protected areas, other effective area-based conservation measures, and areas for connectivity conservation". All the questions were on protected areas, with no differentiation between land and sea.

Five of 16 questions asked for a response based on a seven-point scale from 1 (highest importance) to 7 (least important) and three questions used a five-point rating scale ranging from 1 (highest importance) to 5 (least important). The choice of a 5 or 7-point scale was based on our estimate of the likely range of responses to an individual question. Likert scale questions were analysed by the percentage of respondents who agreed with each element of the scale, and graphs were prepared using the Likert package in R. The data for the Likert plots were visualised and written to .pang files using ggplot2.

Question results were subjected to a Kruskal-Wallis test to determine differences between the three language groups or geography (by continent). This test asks if the different groups of respondents scored a question higher or lower than the other groups did. If there was a difference recorded by the Kruskal-Wallis test, we then used a Dunn test (using the R package Dunn. Test), which takes each group pair (e.g. English vs. Spanish

Two-toed sloth (*Choloepus didactylus*), Panana © Alison Woodley

respondents) and asks if there is a difference, making a table of values with an average difference (Z) and a significance (p).

RESULTS

We received responses from 335 scientists, located in 81 countries with good distribution across continents. The survey was part of several regional mailings sent to over 2,000 email addresses. However, the actual response rate is unknown as we have no information on how many of the emails were actually read or how many emails were current. The highest percentage responses were from Europe (25 per cent) and North America (24 per cent), with other continents (Africa (15 per cent), South and Central America (18 per cent), Asia (10 per cent) and Oceania (7.2 per cent)) being reasonably represented. By choice of language, there were 260 English, 53 Spanish and 22 French respondents. Respondents were mostly academic (41.2 per cent) or from civil society (36 per cent), with smaller numbers from government (14 per cent), the private sector (7 per cent), and indigenous and community groups (2.3 per cent). The largest percentage of the respondents worked at the regional level (32 per cent), with 20 per cent each working locally or nationally, and 28 per cent working internationally.

The results from the opinion questions on area-based conservation for the survey are as follows:

Question 1: From your perspective, how important is area-based conservation to the conservation of biological diversity?

There was virtually unanimous agreement from respondents that area-based conservation was important, with 89 per cent stating it was extremely important and 10 per cent saying it was somewhat important, for a total of 99 per cent.

Question 2: From your perspective, why is area-based conservation important?

Overwhelmingly, respondents said that "safeguarding species and ecosystems" was of highest importance (see Figure 1). The "delivery of ecosystem services", "maintaining our life support system", and "to adapt to climate change" also got strong support, but was well below "safeguarding species and ecosystems". The "economic value and benefits from protected areas", "preserving cultural practices, heritage and identity" and "maintaining local livelihoods" all received weaker levels of support as reasons for area-based conservation.

After questions on the importance of, and reasons for, area-based conservation, the survey then asked specific questions about Target 11 and a possible successor to Target 11.

Question 3: There are a number of elements within the existing Aichi Target 11. Which elements of area-based conservation are important to retain in a revised target, beyond 2020?

This question examined all the elements of Target 11, both qualitative and quantitative, with results shown in Figure 2. There was majority support for all the elements of Aichi 11, but differences in the overall level of support. There was strongest support to retain the elements of "areas of importance for biodiversity" and "ecologically well-connected systems of protected areas". Support for "areas are effectively managed" and "integrated into wider landscapes and seascapes" also received substantial support as did "ecologically representative", "percentage area targets" and areas of importance for ecosystem services". "Equitable management" received the relatively lowest support for retaining in a successor to Aichi 11. However, all elements of Aichi Target 11 received support for retention in a successor to Aichi Target 11.

African fish eagle (Haliaeetus vocifer), Amboseli National Park, Kenya © Stephen Woodley

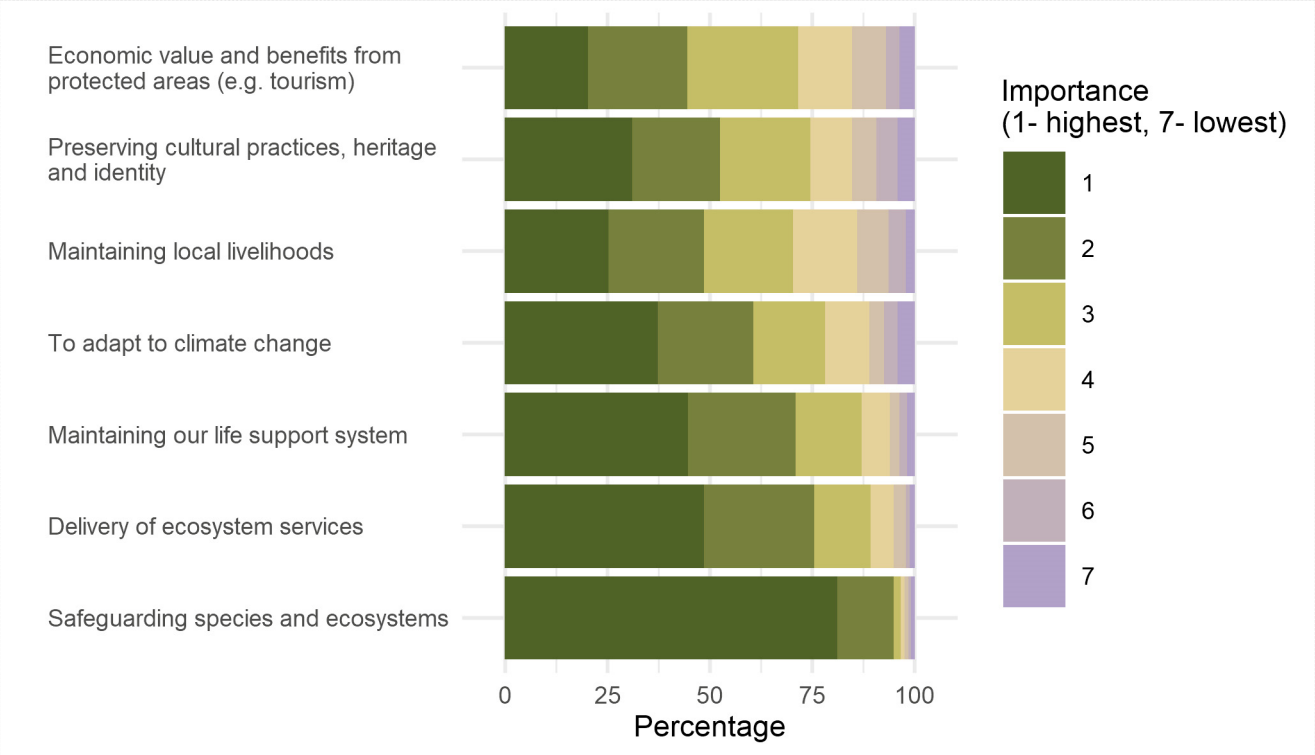

Figure 1. Summary of responses to Question 2, "From your perspective, why is area-based conservation important?"

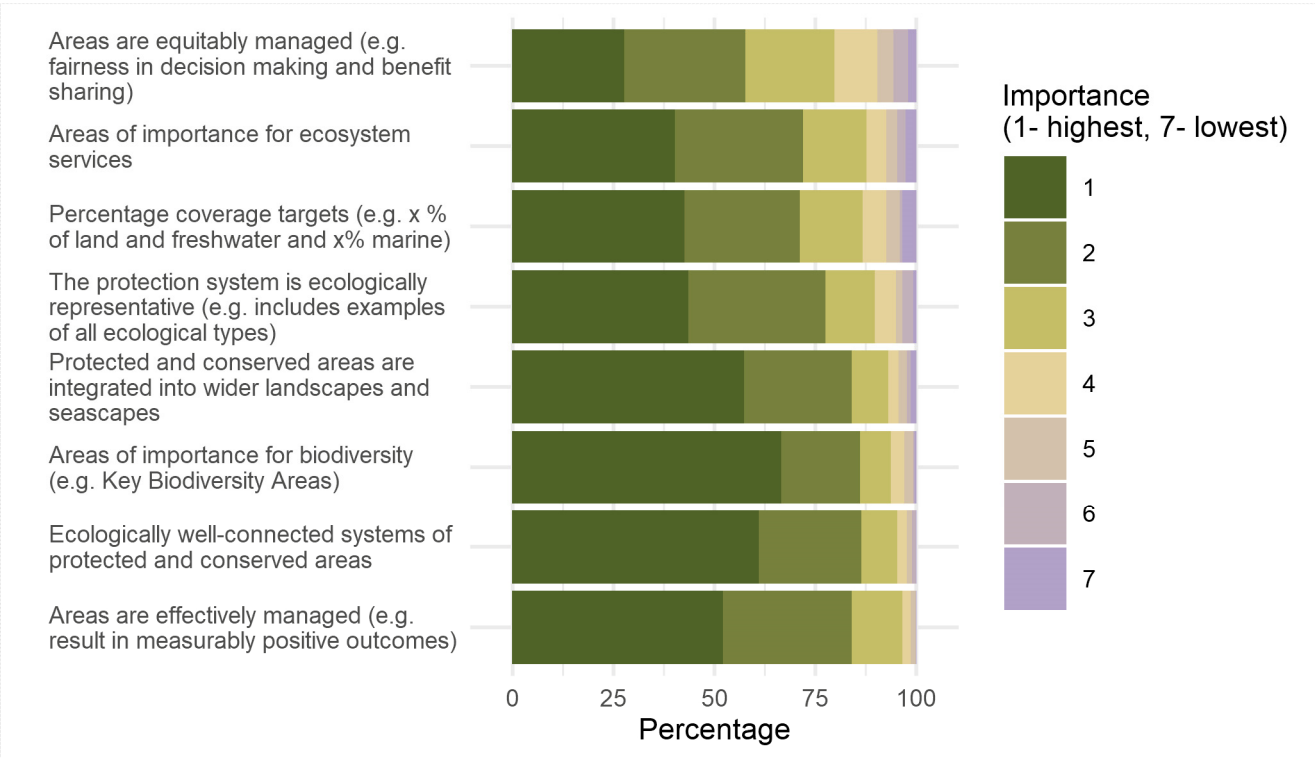

Figure 2. Summary of responses to the Question 3, "Which elements of area-based conservation are important to retain in a revised target, beyond 2020?"

Collared araçari (*Pteroglossus torquatus*), Amastrad National Park, Panama © Stephen Woodley

Question 4: What additional elements could potentially be added to a revised area-based conservation target?

This question examined a set of elements that could be potentially added to a successor to Target 11, with the results shown in Figure 3.

Large-scale conservation networks that include connectivity between protected areas, protection of endangered and threatened species or ecosystems, and ecologically intact wilderness areas (in that order) were the top three missing elements that should be added to a successor to Target 11. However, all the other new elements suggested had significant support, including "large conservation core areas in each ecological region that allow for ecological integrity and resilience", "key ecological processes and functions", "protection of geographically restricted species and ecosystems" and "protection of species aggregations that occur during breeding or migration". The level of agreement in these elements was consistently strong, with little support for contrary views. This question also had an open-ended text box to allow for additional elements to be suggested, but there were few additional suggestions.

Question 5: Based on your understanding of the current ecological challenge to conserve biodiversity (genes, species and ecosystems), what do you think of the level of effectiveness of the current Aichi Target 11?

This question asked for a specific evaluation on the effectiveness of Target 11. There was overwhelming agreement (80 per cent) that 17 per cent of land and freshwater, and 10 per cent of marine areas, was not sufficient to meet the current ecological challenge for in-situ conservation. Seventeen per cent of respondents thought that Aichi Target 11 was "about right to conserve global biodiversity" and three per cent responded that Target 11 was more than required to conserve global biodiversity.

Question 6: In the development of conservation targets, there are a range of considerations for how the targets should be developed. Which of the considerations listed below should influence the area-based conservation target beyond 2020?

Conservation scientists strongly agree that a future target should be evidence-based, ranking above any other considerations (Figure 4). In keeping with that

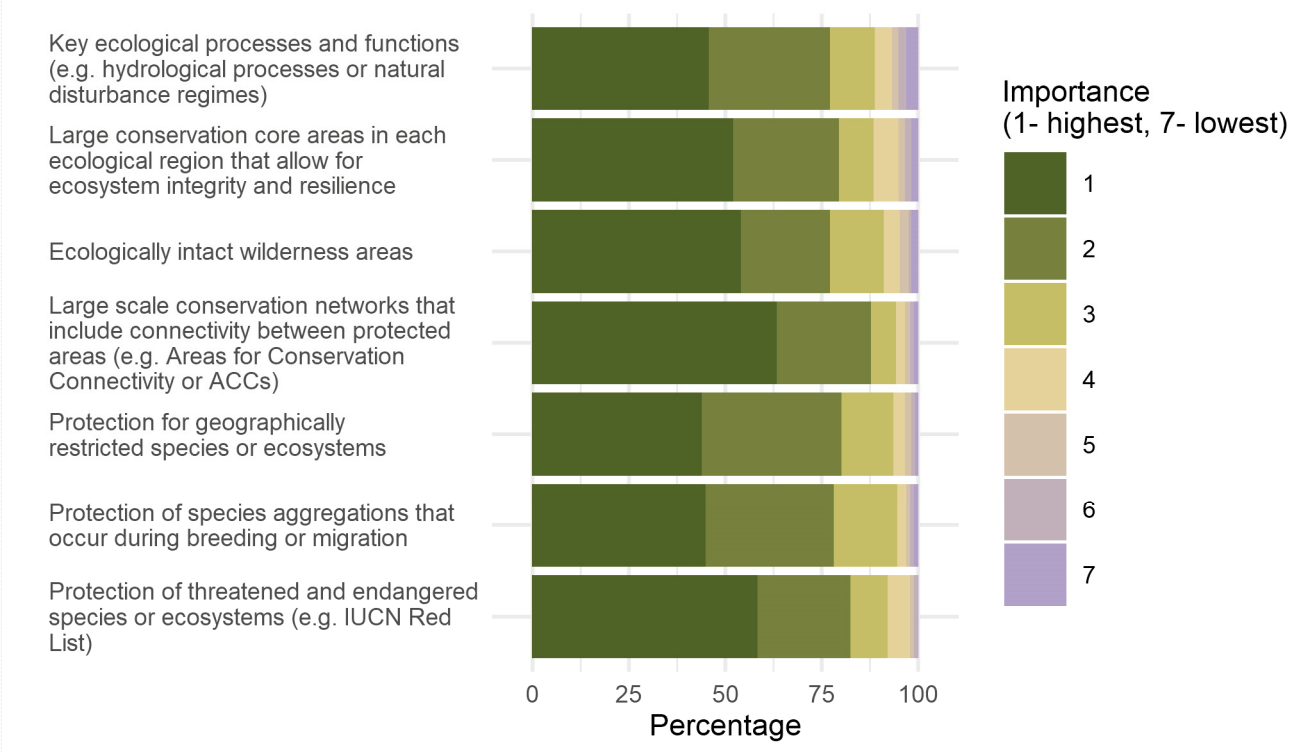

Figure 3. Summary of responses to Question 4, "What additional elements could potentially be added to a revised area-based conservation target?"

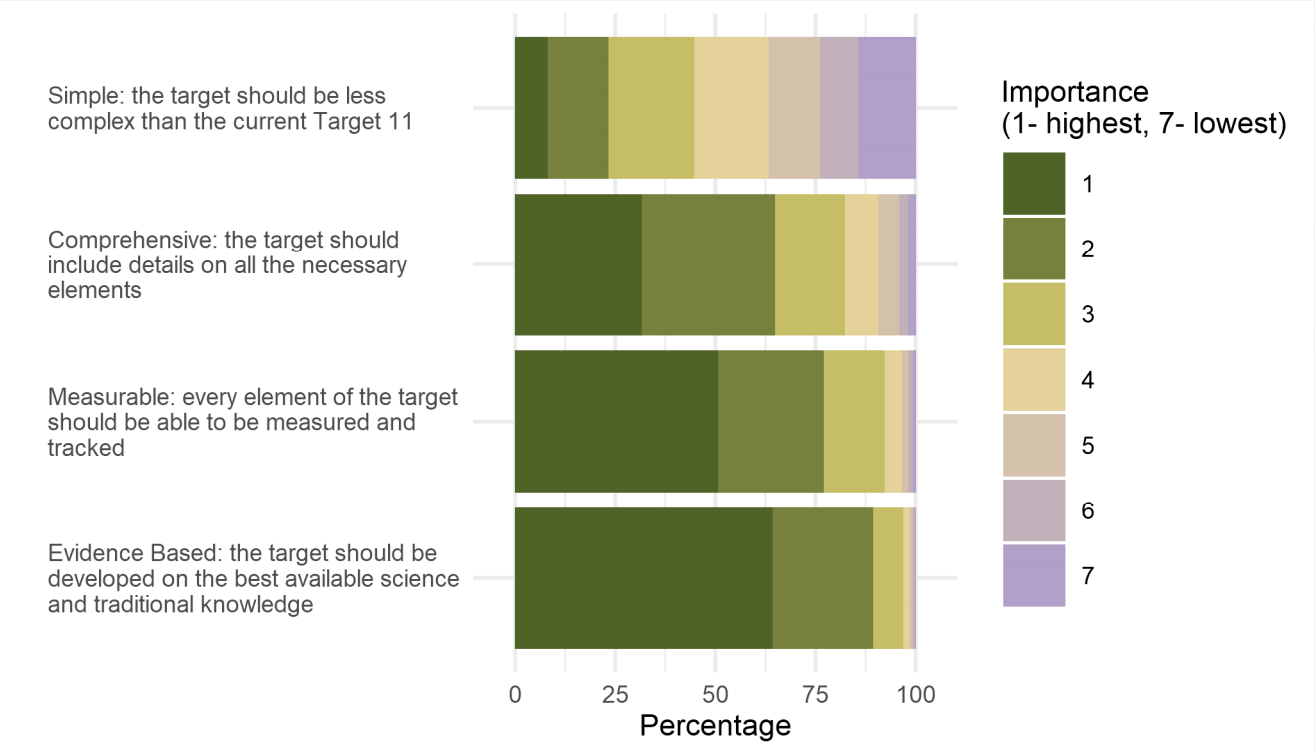

Figure 4. Summary of responses to Question 6, "Which of the considerations listed below should influence the area-based conservation target beyond 2020?"

view, there was also support for the target being measurable. Conservation scientists were less certain about comprehensive details of all the necessary elements and generally did not support making a successor to Target 11 less complex than the current target.

Large percentage conservation targets

The survey then moved on to ask specific questions about large percentage area targets for conservation with the following questions:

Question 7: To what extent to do you agree with large percentage area-based targets?

The respondents were provided with the following background to this question: "In recent years, there have been calls from the conservation community to dramatically scale up area-based conservation. The Nature Needs Half movement calls for at least half the Earth to be protected in an interconnected way (Locke, 2013). A similar target is being proposed by the E.O. Wilson Foundation detailed in the book '*Half-Earth: Our planet's fight for life*' (Wilson, 2016). At the World Parks Congress in 2012, the Promise of Sydney called for full protection of 30 per cent of the oceans. These large area-based targets are a significant increase from the existing Aichi Target of 17 per cent of land and freshwater and 10 per cent of coastal and marine ecosystems". They were then asked, "To what extent do you agree with large percentage area-based targets?"

Responses to this question showed very strong support by conservation scientists for large percentage area-based targets (Figure 5). Combining response categories 1 and 2, 76 per cent of respondents strongly agreed or agreed that large area-based targets were very important for conservation.

Question 8: If % area is to be established for a future area-based conservation target, what is the best approach to arrive at a % area of land or sea to protect?

Respondents rated a set of possible methods to determine area-based targets (Figure 6). There was a reasonable level of support for all the four methods proposed. The systematic conservation planning approach was the most strongly supported method, followed by the use of ecological models. There was less support for population viability analysis and species–area curves, but the strongest view was that all these approaches had value.

Differences in language and continent

We tested for differences in language groups and geography (continent) of the respondents. There were some significant differences in the weights of response for individual responses to question elements by continent and language group in five of the questions and 14 of the responses. These are summarised in tabular form in the online Supplemental Materials. The results reflect regional and linguistic differences in perspective. For example, in North America and Europe, in response to the question, "From your perspective, why is area-based conservation important?" there is stronger focus on "maintaining our life support system" than in Latin America. In Latin America and Africa, there was more weight on "preserving cultural practices, heritage and identity", "maintaining livelihood" and "the economic value of protected areas". For the question on "From your perspective, how important is area-based conservation to the conservation of biological diversity?" there were a range of regional and linguistic differences in the rate of response. However, there was also widespread agreement between all languages and continents on the overall response that area-based conservation was highly important. There were also

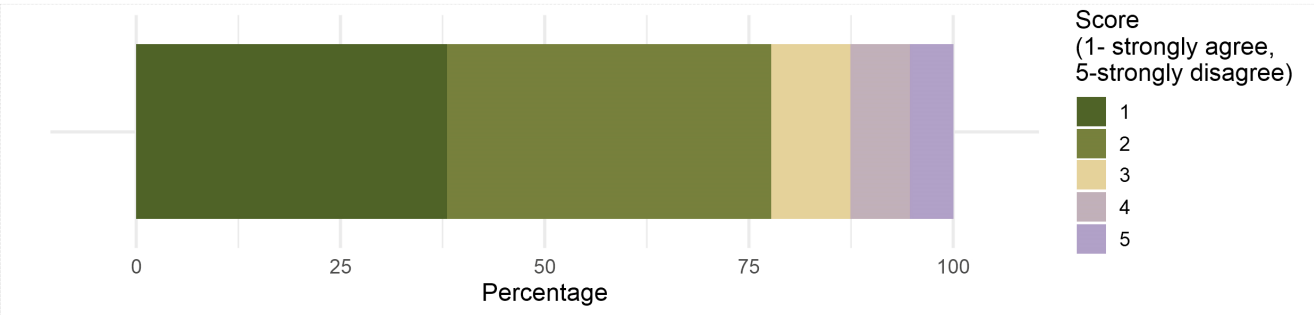

Figure 5. Summary of responses to Question 7, "To what extent to do you agree with large percentage area-based targets?"

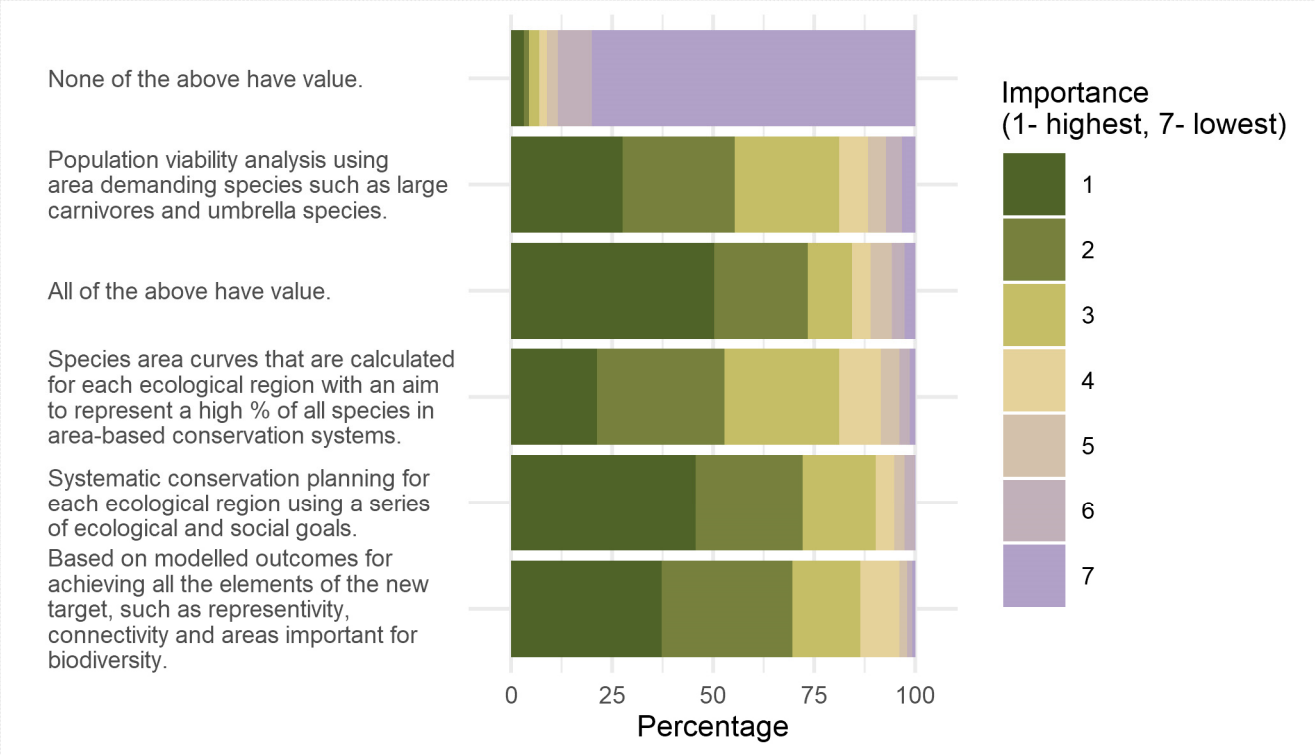

Figure 6. Summary of responses to Question 7, "If % area is to be established for a future area-based conservation target, what is the best approach to arrive at a % area of land or sea to protect?

differences on the importance of in-situ conservation for "ecosystem services".

These differences in response rates are relatively subtle. The key result was, despite some regional and linguistic differences in relative weights of responses, that the overall pattern of answers was the same. There were no major changes to the overall pattern of the answers between continents and linguistic groups.

DISCUSSION

This is the first global survey of the opinions of conservation scientists on the question of area-based conservation targets. The results show a rather unified view among conservation scientists regarding in-situ conservation of biodiversity and the value of ambitious percentage targets for area-based conservation. The strong cohesion is remarkable, given it represents a sample from 81 countries who chose to respond in three different languages, with scientists working at a range of spatial scales and for a range of sectors.

The results of the global survey of conservation scientists can be summarised as follows:

1. Area-based conservation is considered to be essential for a variety of conservation values. The degree of support from respondents is very close to unanimous with 99 per cent saying area-based conservation was very or somewhat important. This clearly favours a land sparing approach to conservation (Phalan et al., 2011), where some areas are set aside from the transformational aspects of the human enterprise, as opposed to a land sharing approach where the entire surface of the Earth is managed in a sustainable manner for a wide range of values.

2. There is very strong agreement that high percentage targets for area-based conservation are valuable (76 per cent) and that Aichi Target 11, with an area-based target of 17 per cent of land and freshwater and 10 per cent of coastal and marine areas is not adequate to conserve biodiversity (80 per cent agreement). This survey finding is very consistent with the published literature, where several authors have found the 17 per cent and 10 per cent targets inadequate, either on land (Noss et al., 2012; Butchart et al., 2015) or in the ocean (O'Leary et al., 2016).

3. The qualitative aspects of Aichi 11 are generally well supported, in particular a focus on area of importance for biodiversity (e.g. Key Biodiversity

Areas) and ecological connectivity. However, all the qualitative elements from the current targets were well supported by the majority of respondents.

4. When asked about additional biological considerations to add to a successor for Target 11, there was strong support for all elements suggested. The leading additions were large-scale conservation networks that include connectivity between protected areas, and protection of endangered and threatened species. There was also strong support for ecologically intact wilderness areas which has been called for as a priority by Watson et al. (2018).

5. Conservation scientists showed strong support (76 per cent strongly agreed or agreed) for large percentage conservation targets, along the lines of 50 per cent of the Earth suggested by Locke (2013); Wilson (2016) and Dinnerstein et al (2019). This is interesting because such proposals are sometimes interpreted as impractical in a world of approximately 7.7 billion people. There was support for all methods of determining the percentage needed, with systematic conservation planning the most favoured approach. This agreement on large percentage targets determined by a variety of methods is consistent with the findings of a recent structured review of the literature for percentage area-based targets required to conserve natural values on land and sea (Woodley, 2019).

6. There was strong agreement that the next generation of conservation targets should be evidence-based, measurable and cover a broad range of elements important to the effective conservation of biodiversity.

7. There were some differences in the weight of responses to five questions between continents and linguistic groups. However, the difference in responses did not change the direction of any of the overall responses. In general, there is more emphasis on the utilitarian values of protected areas, including economic and ecosystem services, in Africa, Asia and Latin America than in North America and Europe.

Hood mockingbird (*Mimus macdonaldi*) , Española Island, Galapagos © Marc Hockings

SUPPLEMENTARY ONLINE MATERIAL

Survey questionnaire.

ACKNOWLEDGEMENTS

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ABOUT THE AUTHORS

Stephen Woodley has worked in environmental conservation as a consultant, a field biologist, researcher, and first Chief Scientist for Parks Canada. In 2011, Stephen began working as Senior Advisor to the Global Protected Areas Program of the IUCN and continues that work as Vice Chair for Science and Biodiversity of IUCN's World Commission on Protected Areas. The work focus is to understand the role of protected areas as solutions to the current global conservation challenges.

Nina Bhola works at the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). As well as her work on the post-2020 framework, she also manages a GEF-funded project on areas-beyond national jurisdiction focusing on area-based planning and ocean governance. Nina completed a PhD focused on investigating the effects of climate and land use changes on the spatial-temporal dynamics of wildlife and vegetation within protected areas and their surrounding pastoral rangelands in Africa.

Calum Maney joined the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) in 2018. His work there ranged from ecological modelling around agroforestry landscapes to building spatial frameworks for identifying priority conservation landscapes around the world. He is now a Cambridge University MPhil candidate investigating ways to link the commitments countries make to nature to their impact on biodiversity.

Harvey Locke is Chair of the IUCN-WCPA's Beyond the Aichi Targets Task Force. For the last three years, he has led international consultations on post-2020 conservation targets to protect the earth. He is co-founder of the Yellowstone to Yukon Conservation Initiative and the Nature Needs Half Movement. Named one of Canada's leaders for the 21st century by Time Magazine, he has received many awards for his work including IUCN's Fred M. Packard International Parks Merit Award. He lives in Banff National Park, Canada.

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RESUMEN

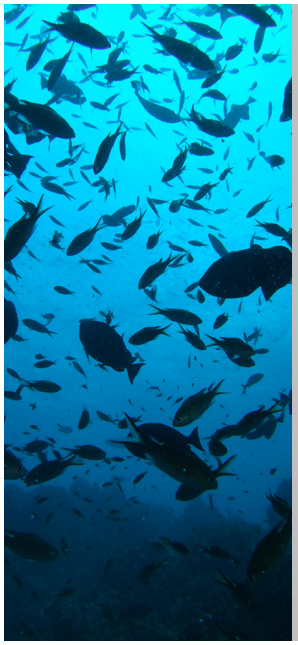
Entrevistamos a 335 científicos conservacionistas, de 81 países, en inglés, francés y español, para obtener opiniones sobre la conservación basada en áreas en relación con el Plan Estratégico para la Biodiversidad 2011–2020 del Convenio sobre la Diversidad Biológica y los posibles objetivos futuros, especialmente un sucesor de la Meta 11 de Aichi. Los resultados se pueden resumir de la siguiente manera:

1. De forma casi unánime, la conservación basada en áreas o in situ se considera importante para conservar la biodiversidad (99%).
2. Todos los aspectos cualitativos de la Meta 11 cuentan con el apoyo adecuado, con un mayor grado de apoyo a las áreas de importancia para la biodiversidad (por ejemplo, áreas clave para la biodiversidad); conectividad ecológica; integración con paisajes terrestres y marinos más amplios; y gestión eficaz.
3. Los futuros objetivos de conservación basados en áreas deben incluir redes de conservación a gran escala que incluyan conectividad entre áreas protegidas, protección de especies o ecosistemas amenazados y en peligro, y áreas silvestres ecológicamente intactas.
4. De los diversos métodos de la biología de la conservación que se consideraron útiles para establecer objetivos basados en áreas, la planificación sistemática de la conservación fue la que recibió el mayor apoyo.
5. Existe un amplio consenso (79%) en torno a que la Meta 11, con sus objetivos porcentuales actuales de 17% de tierra y agua dulce y 10% de áreas costeras y marinas, no es adecuada para conservar la biodiversidad.
6. Los científicos de la conservación mostraron un fuerte apoyo a los objetivos porcentuales de conservación de las áreas protegidas a gran escala, del orden del 50 por ciento de la Tierra.

RÉSUMÉ

Nous avons interrogé 335 scientifiques spécialistes de la conservation de 81 pays, en anglais, espagnol et français, afin de recueillir leur point de vue sur la conservation par zones en rapport avec le Plan stratégique pour la diversité biologique 2011-2020 de la Convention sur la diversité biologique et les futurs objectifs potentiels, en particulier le successeur de l'Objectif 11 d'Aichi. Les résultats peuvent être résumés comme suit :

1. Presque à l'unanimité, la conservation localisée ou in situ est considérée comme importante pour la conservation de la biodiversité (99 pour cent).
2. Tous les aspects qualitatifs de l'Objectif 11 sont bien étayés, avec un soutien plus fort pour les zones importantes pour la biodiversité (exemple: les zones clés pour la biodiversité); la connectivité écologique; l'intégration avec des paysages terrestres et des marins plus vastes; et une gestion efficace.
3. Les futurs objectifs de conservation par zone devraient inclure des réseaux de conservation à grande échelle qui assurent la connectivité entre les aires protégées, la protection des espèces et des écosystèmes menacés ou en voie de disparition, et les grands espaces sauvages écologiquement intacts.
4. Diverses méthodes issues de la biologie de la conservation ont été jugées utiles pour établir des cibles par zone, parmi lesquelles la planification systématique de la conservation a bénéficié du plus grand soutien.
5. Il existe un très fort consensus (79 pour cent) sur le fait que l'Objectif 11, avec ses cibles actuelles en pourcentage de 17 pour cent des terres et des eaux douces et de 10 pour cent des zones côtières et marines, ne permet pas de préserver la biodiversité.
6. Les scientifiques de la conservation ont montré un très fort soutien pour des objectifs de conservation à grande échelle, de l'ordre de 50 pour cent de la surface de la Terre.



A REVIEW OF EVIDENCE FOR AREA-BASED CONSERVATION TARGETS FOR THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK

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ABSTRACT

Our review of the scientific evidence for large-scale percentage area conservation targets concluded:

1. The 17 per cent terrestrial and inland waters, and 10 per cent marine and coastal targets from Aichi Target 11 of the Strategic Plan for Biodiversity 2011–2020 are not adequate to conserve biodiversity.
2. Percentage area targets cannot be considered in isolation from the quality considerations. Protected and conserved areas need to be selectively located, well governed, and effectively and equitably managed to conserve biodiversity.
3. There is no unequivocal answer for what percentage of the Earth should be protected. Estimates from studies considering a wide set of biodiversity values are very high; well over 50 per cent and up to 80 per cent. Studies that include a narrower subset of biodiversity values are lower, but rarely under 30 per cent, and always with caveats that they are incomplete estimates. Protected area conservation targets should be established based on the desired outcomes (e.g. halting biodiversity loss by 2030).
4. The global protection of a minimum of 30 per cent and up to 70 per cent, or even higher, of the land and sea on Earth is well supported in the literature. The call for 50 per cent of the Earth is a mid-point of these values and is supported by a range of studies.
5. Implementation of large global percentage area targets can be achieved through differentiating the kinds of areas that need protection at a national scale, supported by nationally determined contributions in accordance with local conditions.

Key words: Aichi Targets, Target 11, area-based conservation, post-2020 global biodiversity framework, systematic conservation planning, protected areas

INTRODUCTION

This paper was prepared as a background to considering large-scale conservation targets, as the world heads into the negotiation of the post-2020 Framework for Biodiversity under the Convention on Biological Diversity, scheduled for adoption at the Conference of the Parties in China in October 2020.

We face a global biodiversity crisis. Extinction rates are estimated to be 1,000 times the background rate and future rates could be 10,000 times higher (De Vos et al., 2015). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (Díaz et al., 2019) reports that 75 per cent of the Earth's land surface is significantly altered, 66 per cent of the ocean area is experiencing increasing cumulative impacts, and over 85 per cent of wetlands (by area) have been lost. On average, population sizes of wild vertebrate species have declined precipitously over the last 50 years on land, in freshwater and in the sea, and around 25 per cent of species in assessed animal and plant groups are threatened (Díaz et al., 2019).

The most significant direct drivers of biodiversity loss are habitat loss and fragmentation (changes in land and sea use) and direct exploitation, with over-exploitation being more significant in marine systems. Factors of climate change, invasive alien species, disease and pollution are also important (Díaz et al., 2019). Many of these drivers of biodiversity loss can be managed through area-based conservation, with protected areas and conserved areas (defined by the Convention on

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Biological Diversity as 'other effective area-based conservation measures' or OECMs (CBD, 2018)) being the backbone of area-based conservation. Because biodiversity loss is being driven primarily by habitat loss and fragmentation and over-harvest, protected and conserved areas are key policy and practical solutions to biodiversity loss. Area-based conservation may be less effective for addressing some drivers, including widespread pollution, and widespread disease and invasive species.

Setting global priorities for precisely where biodiversity should be conserved is complementary to the question of how much area of land and sea should be conserved. The question of how much land, sea and freshwater to conserve in protected areas and conserved areas (including OECMs under the Convention on Biological Diversity (Jonas et al., 2018)) is central to a larger set of conservation decisions, which include site selection and biodiversity conservation outcomes. In reviewing the percentage area question, the primary consideration must focus on the overall purpose of having such a goal. A reasonable assumption is that the goal of a global protected and conserved area network is to ensure that key drivers of biodiversity loss on land, ocean and freshwater are no longer causing biodiversity loss. Area-based targets should include biodiversity targets (Noss & Cooperrider, 1994) and nature's contributions to sustaining people (ecosystem services including carbon storage). These values are expressed in the 2050 vision of 'Living in Harmony with Nature' for the Strategic Plan for Biodiversity (https://www.cbd.int/kb/record/decision/12268).

Biodiversity, defined as the diversity of genes, species and ecosystems, is distributed very unevenly on planet Earth. For example, the tropics have much higher levels of diversity than the poles, and isolated and island areas

Galapagos marine iguana (Amblyrhynchus cristatus), is unique among modern lizards by foraging in the sea and found only in Galapagos National Park © Dan Laffoley

have higher species endemism because of their isolation. Diversity is a function of overall productivity, water availability, colonisation history and disturbance (Worm & Tittensor, 2018). Therefore the amount of area required to protect biodiversity must be adjusted by this fact of uneven distribution.

Global conservation targets have driven much of the international focus on area-based conservation and there is a rich history of setting conservation targets for protected and conserved areas. Conservation targets have been changing with evolving ideas on biodiversity and ecosystem services and the emergence of sustainable development and conservation biology (Locke, 2018; Sala et al., 2018; Laffoley, 2019). The well -known targets of 10 per cent or 12 per cent of geographical areas, including for countries, natural regions, and vegetation types, were based on representing samples of the Earth's ecosystems and did not include requirements for the persistence of species or ecological processes (Rodrigues & Gaston, 2001). The 10 per cent target originated in 1982, at the Third World Congress on National Parks (Miller, 1984) and was later reinforced at the Fourth World Congress on National Parks and Protected Areas (McNeely, 1993). A 12 per cent target was developed in 1987 with the goal of protecting a representative sample of Earth's ecosystems (World Commission on Environment and Development, 1987).

As conservation biology grew as a discipline, conservation targets continued to include representation but also encompassed broader goals expressed in conservation biology (Noss & Cooperrider, 1994) including:

1. Representing all native ecosystem types in protected areas;
2. Maintaining populations of all native species in natural patterns of abundance and distribution;
3. Maintaining ecological processes such as hydrological processes and fire; and
4. Ensuring resilience to short-term and long-term environmental change.

Aichi Target 11 of the Convention on Biological Diversity contains qualitative language that reflects some of the above goals, including representativeness, connectivity, and areas of particular importance for biodiversity and ecosystem services. But the targets of conserving a minimum of 17 per cent of land and 10 per cent of oceans that are included in Aichi Target 11 were set arbitrarily. The Target 11 percentages were formulated as an interim policy target to encourage progress and push the conservation agenda, while being considered to be achievable.

The IUCN-WCPA Beyond the Aichi Targets Task Force conducted a global survey of conservation scientists in 2018 to explore their perspectives on area-based conservation (Woodley et al., 2019a). It surveyed the membership of the Society for Conservation Biology and received responses from 363 scientists from 81 countries. There was very strong support for large area-based targets from the respondents (78 per cent agreed or strongly agreed they were important) and widespread agreement that the 17 per cent and 10 per cent areas were inadequate (72 per cent agreed).

In recent years, there have been calls for significantly higher global percentage area targets, arguably based on assessing the scientific need for biodiversity conservation. Notable proponents include Half-Earth (https://www.half-earthproject.org/) and the Nature Needs Half movement (https://natureneedshalf.org/) which have been described generically as the movement to protect half the world (Locke, 2018). These efforts are backed by an international coalition of scientists, conservationists and NGOs with the aim of conserving nature at a sufficient scale to allow nature to persist and function for the benefit of all life, including human well-being. A 50 per cent conservation figure is actually not a new idea and was first expressed by the pioneering ecologists, the Odum brothers, almost 50 years ago, "It would be prudent for planners everywhere to strive to preserve 50 per cent of the total environment as natural environment" (Odum & Odum, 1972).

METHODS

This review identified scientific literature relating to area-based conservation targets by searching the titles, abstracts and keywords of publications since 1980 in Web of Science and Google Scholar on 10 July 10 2019, with the keywords "conservation objectives, conservation planning, conservation site prioritization, representation targets, reserve selection, scale analysis, selection of conservation areas, cumulative species—area model, and holistic conservation strategy". Search results were sorted by relevance and the search discontinued when results were determined to be of low relevance. Due to time and resource constraints, our review was restricted to publications in English. The review included published peer-reviewed journal articles and unpublished grey literature, with research findings and conservation plans from around the world covering terrestrial and marine ecosystems. Papers were retained if they contained original research of global or regional

attempts to quantify percentage area targets or systematic or structured reviews of similar papers. The review has been supplemented by other references from known sources.

RESULTS

The search yielded 1,656 papers which were scanned for relevance by title and then abstract. A total of 70 papers were retained and examined in detail, with key papers as listed in Table 1. Rondinini and Chiozza (2010) reviewed methods for setting percentage area conservation targets for habitat types. This is not precisely the same as setting global area-based targets, but the concepts are similar. In general, scientists have used three different types of approaches to determine the area required to conserve biodiversity at large scales, as follows:

Species area curves—The species–area relationship, or species–area curve, describes the relationship between the area of an ecosystem and the number of species found within that area. Larger areas tend to contain larger numbers of species, and empirically, the relative numbers seem to follow systematic mathematical relationships (Brose et al., 2004). The number of species in an area is determined by only four rates: birth, death, emigration and immigration. In his book '*Half Earth*', E.O. Wilson (2016) used species–area curves to argue that half of the Earth should be protected. This is based on global species–area curves where conserving 50 per cent of the Earth would cover 85 per cent of the species on the Earth. If the 50 per cent was configured and located properly, it would cover the species at risk, the endemic species and the naturally rare species. The remaining 15 per cent of species would

Table 1. Key Publications and Conclusions on Global or Regional Percentage Area Required for Conservation Targets

Conclusions	Reference	Approach	Scale and Area
Solution to cover the selected elements equated to protecting a minimum of 27.9 per cent of the global terrestrial area.	Butchart et al., 2015	Global assessment of the minimum needs of all elements of Aichi Target 11	Global—terrestrial
Average values reported for targets from conservation assessments was 30.6 per cent ± 4.5 per cent and for targets using threshold analyses was 41.6 per cent ± 7.7 per cent.	Svancara et al., 2005	Review of the literature – 159 articles reporting with 222 conservation targets	Global—terrestrial
"Several tens of per cent" of the sea is required to meet conservation goals, with an average of 37 per cent, and a median 35 per cent. More than 50 per cent of area required to meet 80 per cent of conservation objectives.	O'Leary et al., 2016	Review of the literature	Global—marine
Set global and regional conservation targets at 50 per cent of the area.	Noss et al., 2012	Review of selected studies of conservation targets	Global
Conserving 50 per cent of the Earth would cover 85 per cent of the species on the Earth.	Wilson, 2016	Species–area curves	Global—terrestrial
"Recent comprehensive conservation plans have delineated around 50 per cent or more of regions for nature conservation."	Pressey et al., 2003	Test of regional conservation goals	Regional—Cape Floristic Region, South Africa
A wildlands design for the southern Rocky Mountains comprises 62 per cent of the ecoregion.	Miller et al., 2003	Systematic conservation planning	Regional—Rocky Mountains, the USA
A retention target is that a minimum of 60 per cent of the entire ecosystem should be conserved in order to avoid a regime shift. Lovejoy and Nobre suggest this be 80 per cent.	Lapola et al., 2014; Lovejoy & Nobre, 2018	Minimum ecosystem size	Regional—Amazon basin
60 per cent of the world's land area (excepting Antarctica) would need to be protected to minimise the extinction risk of the world's terrestrial mammals.	Mogg et al., 2019	Systematic conservation planning using mammals	Global—terrestrial

be lost or survive in the other 50 per cent of the Earth. Species–area curves have not been used extensively in the literature to determine percentage area targets. A review of their uses can be found in Rosenzweig (1995).

Systematic conservation planning — Systematic conservation planning approaches set targets and then select sets of valued ecosystem components, generally species (e.g. Red Listed Species), ecosystem types (e.g. rare or representative) or other abiotic features (e.g. caves or bedrock outcrops) and ecosystem services (e.g. carbon storage). These can then be aggregated to determine an overall percentage area required to meet the selected range of conservation features. Sometimes policy elements are included in these analyses (e.g. redundancy). In contrast to species–area curves, these approaches are bottom-up, rather than top-down. They often require the use of surrogates for the biological features in an area. For example, areas of importance for biodiversity might be selected as Key Biodiversity Areas. Finally, systematic conservation approaches can be applied at a range of spatial scales, from local to regional or global.

In an editorial review of studies on conservation targets, Noss et al. (2012) concluded that conserving 25–75 per cent of a typical region in a natural state was required to conserve biodiversity. Noss et al. (2012) argued that conservation scientists have failed to articulate a bold vision that was based on science, because the numbers are perceived as too high to be socially acceptable. They argued that we should set global and regional conservation targets at 50 per cent of the area, which is slightly above the mid-point of recent evidence-based estimates.

Svancara et al. (2005) conducted a comprehensive review of terrestrial conservation targets, finding 159 articles reporting with 222 conservation targets. They focused on assessing differences between policy-driven and evidence-based approaches. On average, the percentage coverage of an area recommended for evidence-based targets was nearly three times as high as those recommended in policy-driven approaches. Average values reported for targets from conservation assessments was 30.6 per cent ± 4.5 per cent and for targets using threshold analyses was 41.6 per cent ± 7.7 per cent.

Notable for this review is a paper by Butchart et al. (2015), which asked how much of the Earth would be required to achieve the quality elements of Aichi Target 11, and Target 12. The study specifically examined the representativeness of known species groups assessed by the Red List of Species, the representativeness of ecological regions, and KBAs as areas of importance for biodiversity. The conclusion was that an optimal solution to cover the selected elements equated to protecting 27.9 per cent of the global terrestrial area. The paper notes that this is a likely underestimate of the percentage of the land surface required as their selected biodiversity elements did not include all possible species, nor did they consider any ecosystem services.

Ecoregional planning is based on broad goals of conservation biology, including coverage of species and representativeness of ecosystems and ecosystems. When broad conservation goals are considered, many studies call for about half of any given ecoregion to be protected (Noss et al., 2012; Locke, 2014). Examples of comprehensive conservation planning for large regions are instructive for setting global targets. Such studies tend to have far better data sets than global analyses and are based on conserving or protecting selected biodiversity elements (e.g. concentrations or occurrences of rare species), representing all ecosystem types, and meeting the spatial needs of focal species, in particular large carnivores. As an example, in the Rocky Mountains of the USA, systematic conservation planning called for protecting 62 per cent of the entire ecoregion, including 26 per cent of the ecoregion in core areas and much of the remaining area in compatible use and linkage zones (Miller et al., 2003). Reviews of similar studies conducted using ecoregional planning techniques, both globally (Locke, 2013) and more specifically focused on the US (Locke, 2014), generally concluded that about 50 per cent of the area was required to protect the conservation values of any given ecoregion. For example, a plan for the Greater Yellowstone Ecosystem in the USA, which added in explicit population modelling for focal species, concluded that 70 per cent protection of the region was required (Noss et al., 2002). These are high percentage values, but they are based on peer-reviewed estimates of what is required to meet a broad suite of conservation goals, with good data sets.

In marine systems, O'Leary et al. (2016) reviewed 144 studies to assess whether the 10 per cent target contained in Aichi Target 11 for marine protected areas was adequate to achieve, maximise or optimise six environmental and/or socioeconomic objectives. They concluded that it was not adequate. Only 3 per cent of studies met all the objectives with 10 per cent MPA coverage, 44 per cent of studies met all the objectives with 30 per cent coverage, and 81 per cent of studies required more than 50 per cent coverage to meet all the objectives.

Under Aichi Target 11, there has been recent progress is setting aside large no-take protected areas in important areas of high biological diversity © Dan Laffoley

The six objectives considered by O'Leary et al. were:

1. protect biodiversity;
2. ensure population connectivity among MPAs;
3. minimise the risk of fisheries/population collapse and ensure population persistence;
4. mitigate the adverse evolutionary effects of fishing;
5. maximise or optimise fisheries' value or yield; and
6. satisfy multiple stakeholders.

O'Leary et al. also concluded that protecting "several tens of per cent" of the sea is required to meet the conservation goals, with an average of 37 per cent, and a median 35 per cent. Previous reviews (Roberts, 2003 and Gaines et al., 2010) have suggested that 20–40 per cent of coverage by marine protected areas was warranted. They concluded that even the more ambitious target of at least 30 per cent protection called for by the IUCN World Parks Congress 2014 (Wentzel et al. 2016) and its near-unanimous approval by Resolution at the 2016 Hawaii World Conservation Congress is likely insufficient to meet all of the multiple objectives expected of MPA networks. It should be noted that O'Leary et al. do not consider values such as carbon storage, so even these large percentage area targets are likely to be low.

Percentage area targets used in conservation planning are challenging in that they relate to the scale at which they are applied (Pressey et al., 2003). Rodrigues and Gaston (2001) examined the underlying assumptions of using systematic conservation planning to set percentage area conservation targets. They concluded that no single universal target for the minimum percentage of area (such as the 10 per cent) can be appropriate. The actual percentage area is a function of the features that go into the systematic conservation plan. They noted that nations with higher species diversity and/or higher levels of endemism, such as the tropical ones, would require substantially larger

fractions of their areas to be reserved, perhaps up to 75 per cent of the overall area (Mittermeier et al., 1999).

Rodrigues and Gaston (2001) also concluded that a minimum conservation network that is sufficient to capture the diversity of vertebrates will not be sufficient to conserve biodiversity in general because many other more diverse groups with higher levels of local endemism (including plants and many groups of invertebrates) are expected to require considerably larger areas to be fully represented. Even studies that come up with large percentage area numbers often leave important elements out of the calculation.

The third key conclusion from Rodrigues and Gaston (2001) was about the size of selection units (e.g. grid cell size). Small selection units will lead to smaller percentage area targets because the ecological feature can be represented in a small area. However, this is likely misleading as the area will not be ecologically viable for the feature or species in question (Pimm & Lawton, 1998). For large selection units (e.g. the often used 1° ´ 1° or approximately 12,000 km²), it is predicted that 74.3 per cent of the global land area and 92.7 per cent of the tropical rainforests would be required to represent every plant species once, and 7.7 per cent and 17.8 per cent for higher vertebrates.

Rodrigues and Gaston point out some of the challenges in using systematic conservation planning. More importantly they conclude that the inclusion of all species and ecological features in a realistic way always leads to a conclusion that very high percentage area targets are required to conserve biodiversity.

In a global gap analysis, Rodrigues et al. (2004) concluded that "the percentage of area already protected in a given country or biome is a poor indicator of additional conservation needs. They found that current protection levels should not be used as a significant criterion to guide priorities for allocation of future conservation investments." This is because protected areas are often not established in locations where they can make a significant conservation impact.

The most comprehensive analysis to date (Butchart et al., 2012) of protected area coverage of important sites for biodiversity (specifically, Important Bird & Biodiversity Areas [IBAs], and Alliance for Zero Extinction [AZE] sites) showed that the proportion of protected areas which are IBAs or AZEs has been decreasing over time since the 1980s. Recent re-analysis shows that this negative trend has continued over the 2011–2019, that is, the timeframe of Aichi Target 11. This trend has been accompanied by a flattening of the

Botswana's Moremi Game Reserve protects a population of the endangered African wild dog (*Lycaon pictus*) © Alison Woodley

percentage of IBA and AZE sites which are protected over the same time period (Bonga arts, J., 2019. IPBES, 2019).

Mogg et al. (2019) used IUCN Red List criteria to assess area-based conservation targets that would minimise the extinction risk of the world's terrestrial mammals. They concluded that approximately 60 per cent of the Earth's non-Antarctic land surface would require some form of protection to conserve land mammals. They concluded that the Aichi targets will be inadequate to secure the persistence of terrestrial mammals and suggest the need to implement a connected and comprehensive conservation area network, guided by targets based on species persistence.

Several analyses have shown persistent biases in establishment of protected areas away from places important for halting biodiversity loss, and towards places that are "residual"—that is, large, cheap areas not demanded by any other uses of land (Joppa & Pfaff, 2009; Venter et al, 2014) or sea (Devillers et al., 2015). Thus, area protected alone is not a complete metric of conservation. It must be accompanied by a focus on area of importance for biodiversity.

The achievement of large percentage targets is also conflated by concerns over the quality of the protected areas in delivering conservation outcomes after establishment. Leverington et al. (2010), in a study of 8,000 protected areas globally, reported that 40 per cent have significant weakness in management. Sound management is critical to biodiversity outcomes in protected areas on land (Geldmann et al., 2018) and sea (Gill et al., 2017). Sala et al. (2018) reviewed progress on

marine conservation targets and concluded progress was often illusory because many reported protected areas allow fishing and other extractive activities and thus have minimal conservation benefits. They reported that although 7 per cent of the ocean was reported as protected, only 3.6 per cent of the ocean MPAs were implemented, and only 2 per cent of the ocean were strongly or fully protected MPAs. After creation of a few large no-take reserves in the last few years, these numbers have increased to 4.8 per cent of the ocean in implemented MPAs, and 2.2 per cent of the ocean in fully protected MPAs (mpatlas.org). Additionally, Aichi Target 11 calls on implementation of conservation targets to include concerns for social justice, specifically equity. The percentage area conserved may increase as a result of including additional socioeconomic factors to the biological one (Gurney et al., 2015).

Drawing on these concerns, Visconti et al. (2019) have proposed instead focusing solely on quantitative site conservation targets for their desired outcomes, rather than on percentage protected area. Specifically, they suggested a target as "The value of all sites of global significance for biodiversity, including key biodiversity areas, is documented, retained, and restored through protected areas and other effective area-based conservation measures", which they argued would constitute the post-2020 site conservation target most likely to deliver positive benefits for biodiversity. Woodley et al. (2019a) argued that, in addition to a focus on quality, a focus on ambitious percentage areas targets was also required to inform decision makers of the scale of conservation required for science-based targets and to drive ambition.

Minimum sizes of ecosystems to avoid regime shifts

A third general approach to consider percentage area conservation targets is the minimum area required to maintain an intact, functioning ecosystem. This approach includes examining what area is required to maintain the ecological conditions necessary to avoid a regime shift (Rocha et al., 2018) or to maintain a keystone species. Perhaps the best example of this minimum ecosystem size approach is from the Amazon region (Lapola, 2014; Davidson et al., 2012). The Amazon river system produces about 20 per cent of the world's freshwater discharge, and holds about 100 billion tonnes of carbon. Because the Amazon forest transpires so much water, it generates its own rainfall with a wave pattern across the basin. It is predicted that a loss of 40 per cent of the tree cover in the basin (which means a new loss of 20 per cent to add to the current 20 per cent lost) would cause an irreversible change in the entire basin, causing it to change from forest to savannah. So, in this case, a minimum of 60 per cent of the entire ecosystem should be conserved. Lovejoy and Nobre (2018) call for a higher amount of 75–80 per cent forest retention in the Amazon due to the synergies of widespread use of fire, climate change and deforestation.

In addition to the above three approaches, many authors are calling for the retention of intact ecosystems for a range of natural values, including forests (Watson et al., 2018). Intactness targets are based on what remains. For example, there is a call to conserve all the remaining intact forests (Watson et al., 2018).

Canada's boreal forest is one of the largest and most intact ecosystems on the planet. It is a vast storehouse of carbon, and hosts a breeding bird population of 1–3 billion. The boreal forest's Woodland caribou are highly sensitive to human disturbance and a keystone species. They are a good example of a species-based tipping point. It has been calculated that at least 65 per cent of a boreal caribou range should remain undisturbed to provide a 60 per cent probability of retaining Woodland caribou in the system (Environment Canada, 2011). As with the Amazon, a very high retention figure is needed to maintain even basic values in this large ecosystem.

Existing and developing international policy guidance on conservation targets

A key outcome of the IUCN World Parks Congress 2014, held in Sydney, Australia, was the Promise of Sydney, which included the following statement: "Governments and peoples must move far beyond the Aichi targets to adaptive conservation systems that are based on halting biodiversity loss (Aichi Target 12). This must be done through balancing biodiversity and human needs. We need to increase conservation until biodiversity loss is halted. The total area of protected areas and connectivity lands needs to be far higher than current conceptions and delegates agreed on the importance of setting ambitious targets. Percentage area targets are problematic in focusing on area at the expense of biodiversity objectives. Nonetheless, many delegates argued that these should be around at least 30 per cent of the planet for no-take reserves, 50 per cent overall protection, and 100 per cent of the land and water managed sustainably."

Following Sydney, IUCN members passed a resolution WCC-2016-Res-050-EN—Increasing marine protected area coverage for effective marine biodiversity conservation (IUCN, 2016a). This widely supported resolution called for the following:

Canada's Gwaii Haanas National Park Reserve and Haida Heritage Site protects temperate old growth rain forests © Stephen Woodley

- ENCOURAGES IUCN State and Government Agency Members to designate and implement at least 30 per cent of each marine habitat in a network of highly protected MPAs and other effective area-based conservation measures, with the ultimate aim of creating a fully sustainable ocean, at least 30 per cent of which has no extractive activities, subject to the rights of indigenous peoples and local communities;
- ENCOURAGES the Parties to the CBD to consider a new process for developing post-2020 targets to increase the percentage of marine areas highly protected to 30 per cent by 2030.

The history and rationale for the development of marine conservation targets were reviewed by Laffoley (2019). Note that Resolution CC-2016-Res-050-EN establishes IUCN policy for marine protection of at least 30 per cent in highly protected or no-take reserves, and calls for upgraded sustainable management on the rest of the ocean.

In 2019, with adoption of COP Decision 14/8, the Convention on Biological Diversity adopted a definition and criteria of Other Effective Area-based Conservation Measures (OECMs). Adding OECMs to protected areas should make large area-based conservation more achievable. (In this paper we refer to OECMS as conserved areas.)

A key implementation challenge for large percentage area targets is that many areas of the terrestrial world are too developed to consider such targets. To deal with the implementation challenge that one simple percentage target does not fit all the various conditions of the world, the IUCN-WCPA Beyond Aichi Targets Task Force has developed an enabling framework that would operationalise local conservation objectives once a global percentage target is set. The Three Global Conditions for Biodiversity Conservation and Sustainable Use (Locke et al., 2019) are Cities and Farms, Shared Lands and Large Wild Areas. The conservation policy objectives, which vary by condition, include the following:

- Cities and Farms: Secure endangered species, protect all remaining primary ecosystem fragments, maintain pollinators, increase ecological restoration. Mainstream sustainable practices such as nitrogen use reduction and urban planning for compact cities that protect good farmland and provide access to nature for urban dwellers' health and well-being.
- Shared Lands: Establish "ecologically representative and well-connected systems of protected areas … integrated into the wider landscape" (from Aichi Target 11); restore and maintain ecological processes and viable populations of native species (increase area protected and conserved to 25 per cent to 75 per

cent of ecoregion). Practise sustainable resource extraction outside, but integrated with well managed and properly funded protected area networks and sustainable tourism. Local livelihoods include use of wildlife where appropriate and sustainable.

- Large Wild Areas: Retain overall ecological integrity and associated global processes such as carbon storage and rainfall generation, fluvial flows and large migrations; prevent further fragmentation allowing only rare nodes of intense industrial development enveloped in a largely wild matrix. Remove and restore anomalies. Control invasive species as needed. Secure Indigenous knowledge and livelihoods.

Intended for simultaneous use, these conservation responses and sustainable practices offer a coherent basis for common national actions and international cooperation to protect the "Earth ecosystem". Countries with similar conditions have similar responsibilities and options for domestic action. Developed nations can also support efforts elsewhere, especially when their trade footprints cause biodiversity loss in other countries. Such an approach could enable a single global percentage target that is then applied appropriately across all Three Conditions.

A recent paper by Dinerstein et al. (2019) calls for a new global deal for nature where 30 per cent of the planet is protected in well-located and well-connected systems of protected areas, and an additional 20 per cent of the protected area is focused on conserving ecosystems of high carbon value. This combined approach aims to tackle threats to nature from climate change and mass extinction. This call is consistent with IUCN policy statements in the Promise of Sydney and

Italy's Gran Paradiso National PARK was established to protect the endangered Alpine ibex (Capra ibex), and was the source population to successfully re-establish the species in Europe. © Stephen Woodley)

Resolution WCC-2016-Res-050-EN for marine areas. In addition, with significant and accelerating impacts from climate change in polar, temperate and tropical ocean regions, there is a strong case that a new global deal for nature should also include an additional 20 per cent of climate-sensitive management in the marine world (Laffoley—pers comms; Dinerstein, 2019) as an essential element of an overall truly sustainable approach. Nature conservation on 30 per cent or 50 per cent of the land and sea must work in harmony with sustainability approaches on the entire planet.

DISCUSSION

The key conclusions of this review, applicable equally to terrestrial, marine and freshwater ecosystems, are as follows:

1. The 17 per cent terrestrial and 10 per cent marine targets from Aichi Target 11 are not considered adequate to conserve biodiversity by any research, either on sea (O'Leary et al., 2016; Klein et al., 2015) or on land (Butchart et al., 2015; Rodrigues & Gaston, 2001; Noss et al., 2012; Svancara et al., 2005). Even with the best siting of protected areas, there is simply too much species diversity and too high levels of endangerment to cover these elements in relatively small percentages of the global surface. Almost universally, when conservation targets are based on the research and expert opinion of scientists, they far exceed targets set to meet political or policy goals (Svancara et al., 2005; Noss et al., 2012). This is supported by a global survey of conservation scientists conducted in 2017, who massively supported very large percentage area targets to conserve biodiversity (Woodley et al., 2019a).

2. Percentage area targets cannot be considered in isolation from the quality considerations presented in Aichi Target 11. There is concern that a focus on percentage area targets might draw away from a focus on quality (Visconti et al., 2019). Protected and conserved areas are policy tools to achieve nature conservation and need to be selectively located, properly designed, equitably governed, and effectively managed in order to achieve biodiversity outcomes. Questions of ecological design, equitable governance and management effectiveness that lead to conservation outcomes are included in the IUCN Green List of Protected and Conserved Areas Standard (IUCN and World Commission on Protected Areas (WCPA), 2017; Hockings et al., 2019). The question of where to locate protected and conserved areas is too complex for this review, but there is good agreement in the literature that they should focus on areas of importance for biodiversity, including Key Biodiversity Areas (IUCN, 2016b), EBSAs (https://www.cbd.int/ebsa/), significant ecosystem services, and equivalent national and open ocean priorities.

3. There are different approaches to considering percentage area targets, but all approaches call for much higher percentage area targets than are currently in Aichi Target 11. There is no one unequivocal answer to the question of what percentage of the Earth, or a region, should be protected in order to maintain biodiversity. The answers are complicated by spatial scale, patterns of biodiversity and weaknesses in selection approaches. The answers are further complicated by the selected conservation values used in systematic conservation planning approaches. Each selected conservation element raises the percentage targets. For example, selecting only for endangered or rare biodiversity elements will result in a lower percentage area than if ecological connectivity or ecosystem services are also considered. Studies that include a more complete set of values are universally very high, well over 50 per cent and up to 80 per cent. Studies that include a narrower subset of biodiversity values result in lower percentage area targets, but are never under 30 per cent and always include caveats that they are likely inadequate and represent minimum estimates. As such, protected area conservation targets should be established based on the desired outcomes (e.g. halting biodiversity loss by 2030). It is clear in this respect that decisions already taken by the global conservation community on, for example, at least 30 per cent protection of the ocean, can only be way points to what is really needed to address current crises in biodiversity and climate.

4. Large area-based targets should never be considered as percentages for percentages' sake. They should always be determined and implemented, whether at the global, regional or local scale through systematic conservation planning or other science-based approaches. However, there is strong evidence that percentage targets materially increase national conservation efforts. Target 11 is being seen as one of the most successful targets reached (Green et al., 2019) including in mega-diverse countries (Bacon et al., 2019). Area targets alone are insufficient to halt biodiversity loss, and must be

accompanied by a focus on quality, notably the equitable governance and effective management of systems of protected and conserved areas. Protected and conserved areas must also be carefully located in areas where they make a conservation impact for nature conservation. It is clear we need a dramatic increase in both the quality and quantity of protected and conserved areas as an essential means to halt and reverse the catastrophic loss of biodiversity that is undermining all life on Earth. They must also be set in truly sustainable actions across the entire ocean and land space to realise the true benefits.

5. The key conclusion from this review is that the calls for the global protection of a minimum of 30 per cent and up to 70 per cent or even more of the land and sea on Earth are supported in the literature (after removing outliers) whether through studies based on species–area curves, systematic conservation planning or minimum system size approaches. Importantly, these suggested higher conservation targets are not discounted in any of the biodiversity literature. The call for conserving 50 per cent of the Earth is a mid-point of these values and is supported by a range of studies. More importantly, there are no studies that argue that we can maintain biodiversity with low percentage coverage targets. There is consistent scientific agreement that very large-scale conservation is required to deal with the known drivers of biodiversity loss. Suggested conservation targets of 30 per cent or 50 per cent or even 70 per cent, while not based on precision, are consistent with scientific literature on what is required to conserve biodiversity.

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RESUMEN

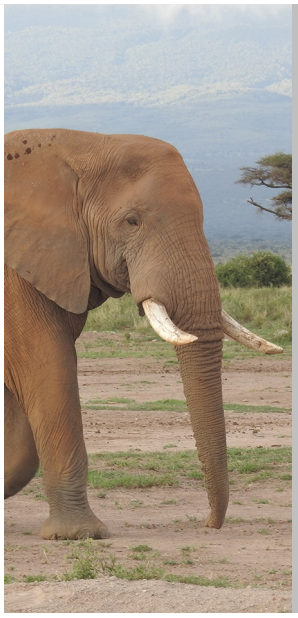
Nuestra revisión de las pruebas científicas relacionadas con los objetivos porcentuales de conservación de las áreas protegidas en gran escala concluyó que:

1. El 17% de las aguas terrestres y continentales, y el 10% de los objetivos marinos y costeros de la Meta 11 de Aichi del Plan Estratégico para la Biodiversidad 2011-2020, no bastan para garantizar la conservación adecuada de la biodiversidad.
2. Los objetivos porcentuales de conservación de las áreas protegidas no pueden desvincularse de las consideraciones de calidad. Para conservar la biodiversidad, las áreas protegidas y conservadas deben establecerse de manera selectiva, estar bien administradas y gestionarse de manera eficaz y equitativa.
3. No hay una respuesta inequívoca sobre qué porcentaje de la Tierra debería protegerse. Las estimaciones de los estudios que consideran un conjunto amplio de valores de biodiversidad son muy elevadas; más del 50 por ciento y hasta el 80 por ciento. Los estudios que incluyen un subconjunto más reducido de valores de biodiversidad son menores, pero casi nunca inferiores al 30 por ciento, y siempre con advertencias de que son estimaciones incompletas. Los objetivos de conservación para las áreas protegidas deben establecerse en función de los resultados deseados (por ejemplo, detener la pérdida de biodiversidad para 2030).
4. La protección global de un mínimo del 30 por ciento y hasta un 70 por ciento, o incluso más, de la tierra y el mar en el planeta se encuentra ampliamente documentada en la literatura. El llamamiento al 50 por ciento de la Tierra, que es un punto medio de estos valores, se apoya en diversos estudios.
5. Es posible lograr la implementación de objetivos porcentuales de conservación para las áreas protegidas a escala mundial, diferenciando los tipos de áreas que precisan protección a escala nacional, con el apoyo de contribuciones determinadas a nivel nacional de conformidad con las condiciones locales.

RÉSUMÉ

Notre examen des preuves scientifiques à l'appui des objectifs de conservation mondiale en termes de pourcentage a conclu que :

1. Les objectifs de 17 pour cent pour les eaux terrestres et intérieures et de 10 pour cent pour les zones marines et côtières de l'Objectif 11 d'Aichi du Plan stratégique pour la diversité biologique 2011-2020 ne sont pas suffisants pour préserver la biodiversité.
2. Les objectifs des zones en termes de pourcentage ne peuvent pas être appréciés indépendamment des considérations de qualité. Les aires protégées et conservées doivent être localisées de manière sélective, bien gouvernées et gérées de manière efficace et équitable afin d'atteindre ou de conserver la biodiversité.
3. Il n'y a pas de réponse claire quant au pourcentage de la Terre à protéger. Les estimations des études portant sur un large éventail de valeurs de biodiversité présentent des chiffres élevées, bien plus de 50 pour cent et jusqu'à 80 pour cent. Les études comprenant un sous-ensemble plus restreint de valeurs donnent des chiffres plus faibles, mais rarement inférieures à 30 pour cent et toujours assortis de mises en garde quant au fait qu'il s'agit d'estimations incomplètes. Les objectifs de conservation des aires protégées devraient plutôt être établis en fonction des résultats souhaités (par exemple, enrayer la perte de biodiversité d'ici 2030).
4. La protection globale étendue au minimum à 30 pour cent et jusqu'à 70 pour cent, voire plus, de la terre et de la mer est bien corroboré dans la documentation. L'appel pour atteindre le point médian de ces valeurs à 50 pour cent de la Terre est étayé par une série d'études.
5. La mise en œuvre des objectifs de conservation mondiale en termes de pourcentage peut être réalisée en différenciant les types de zones nécessitant une protection à l'échelle nationale, soutenues par des contributions déterminées au niveau national et conformes aux conditions locales.



EXTENT OF LOCAL COMMUNITY PARTICIPATION IN TOURISM DEVELOPMENT IN CONSERVATION AREAS: A CASE STUDY OF MWALUGANJE CONSERVANCY

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ABSTRACT

The genesis and growth of Community Based Tourism Initiatives (CBTIs) in the 1990s was based on their perceived ability to augment community support for wildlife conservation, while ensuring that local communities can participate and gain from tourism development. However, a number of CBTIs in Kenya have failed to meet community and tourism industry expectations. This study examined the extent to which local communities participate in tourism development in the Mwaluganje Conservancy through a community survey and key informant interviews. Community participation was limited and largely confined to giving consent on land utilisation and benefit sharing, and providing views on tourism development to be undertaken. They lacked power to ensure that agreements were implemented. We recommend an alternative tourism development strategy that involves active participation of the key actors in the entire tourism development process

Key words: Community participation, conservation area, tourism, development

INTRODUCTION

Background to the study

Kenya's tourism industry focuses primarily on beach and safari tourism (Kibicho, 2008) with the latter contributing to approximately 60 per cent of tourism earnings in the period 2013-2015 (GoK, 2016). The attitudes of adjacent local communities towards wildlife living within protected areas has not been positive (Kibicho, 2008) because of human–wildlife conflict. The need to address this issue has led to the adoption of alternative approaches of wildlife conservation and tourism development. In the mid-1990s, the Kenyan government through Kenya Wildlife Service (KWS) started community-based wildlife tourism programmes in areas adjacent to protected areas. This led to the emergence of Community Based Tourism Initiatives (CBTIs). The aim was to heighten community support for wildlife conservation (Manyara & Jones, 2007), as well as constitute a development strategy for local communities (Cater, 2006). From the very onset, this model used the 'benefit-based approach' with tourism development as the main source of income for these communities (Meguro & Inoue, 2011).

Various policy documents in Kenya for example, the Tourism Act 2011 (GoK, 2011), Vision 2030 (GoK, 2007) and the Wildlife Management and Conservation Act 2013 (GoK, 2013) support community participation in tourism development; however, there are no guidelines on how community participation should be implemented to ensure that tourism development in community-managed areas results in expected outcomes. CBTIs in general denote a high level of local community involvement in the planning and implementation of tourism projects with the aim of improving the social, cultural and economic well-being of the community, while ensuring conservation of the natural environment (Salazar, 2012).

More than two decades after the development of CBTIs in Kenya, it is important to critically assess the effectiveness and sustainability of these initiatives to conservation and tourism development. This paper therefore explores the extent of local landowners' involvement in tourism development. This is on the premise that ideal community participation and consistent positive impacts lead to more favourable

community attitudes and inputs towards tourism development which enhances sustainability (Mak et al., 2017).

Community participation in tourism development

Since the publication by Murphy (1985) on 'Tourism: A Community Approach', much has been written and documented on local communities and their participation or otherwise in tourism and conservation initiatives (Honey, 2008 and Simpson, 2008). However, according to Muganda et al. (2013), the role of the community and how their views are incorporated in the whole planning process remain unclear.

Community participation in tourism development has been studied from three perspectives, namely, participation of the host community in the decision-making process (Nsabimana, 2010), project execution and sharing of tourism revenues (Kihima, 2015; Nyagah, 2017). Further, evaluation of community participation programmes must consider the quality of the participatory process and the extent to which specific stakeholders have realised their own explicit goals/outcomes in participatory decision making (Mak et al., 2017 and Nsabimana, 2010). This study therefore endeavours to focus on the level of community involvement/participation and its impact on the sustainability of tourism development at such sites.

Indeed, proponents of CBTIs put emphasis on community participation in tourism destination areas (Muganda et al., 2013). Moreover, the United Nations 70th General Assembly designated 2017 as the International Year of Sustainable Tourism (IYST) for Development. The aim was to raise awareness of the contribution of sustainable tourism to development among public and private sector decision-makers and the public, while mobilising all stakeholders to work together in making tourism a catalyst for positive change. The International Year aimed to highlight the contribution of tourism to Sustainable Development Goals (SDGs) in the following key areas: inclusive and sustainable economic growth; social inclusiveness, employment and poverty reduction; resource efficiency, environmental protection and climate change; cultural values, diversity and heritage; and mutual understanding, peace and security.

Through these initiatives, community involvement in tourism has been widely recognised to the highest level. Increasingly, terms including 'eco-development', 'inclusive tourism', 'sustainable tourism', 'ecotourism', 'Pro Poor tourism', 'empowerment' and 'indigenization' used in tourism circles point towards the involvement of local communities in the development agenda (Kihima, 2015). All these emphasise the importance of local decision makers who must take charge of tourism development.

Elephant (*Loxodonta africana),* Kenya © Marc Hockings

Participation can take different forms (Tosun, 2000). Pimbert and Pretty (1995) contextualise community participation as an absolute term that permits involvement of a host community in their own matters at diverse levels (local, regional or national) and several forms (induced, passive, spontaneous, etc.) under place-specific circumstances. Participation can vary from passive/coercive participation whereby the community has no input in project planning and is not involved in benefit sharing, through different levels, comprising consultation and other forms of minimal participation to the highest level of community participation which involves self-mobilisation/spontaneous participation (Tosun, 2006). At this level, host communities exercise complete control of the decision-making process, project execution and benefit sharing. These typologies are useful in identifying different levels of community participation from passive forms to those that are more genuine and collaborative.

Generally, it has been noted that community participation in tourism development is an essential factor in realising the sustainable development of the sector (Aref et al., 2010 and Mak et al., 2017). Through participation, negative impacts and perceptions associated with tourism development can be reduced, while the general quality of life, perceived and real, of all industry players can be improved (Byrd et al., 2009; Kihima, 2015). Community participation in tourism:
creates superior opportunities for the host community to access greater and more sustainable benefits from tourism development in their areas (Manyara & Jones, 2007; Tosun, 2006), enhances host community support for the sector (Okazaki, 2008; Kieti et al., 2013); and
leads to more favourable attitudes towards tourism development and conservation of indigenous resources (Lepp, 2007; Akama & Kieti, 2007).

Further, it increases the local community's tolerance to tourism development (Tosun, 2006). Considering that tourism is a multi-stakeholder industry, it can be argued that participation promotes cooperation or partnerships and the assurance required to guarantee the sustainability of Community Based Tourism development projects (Nsabimana, 2010).

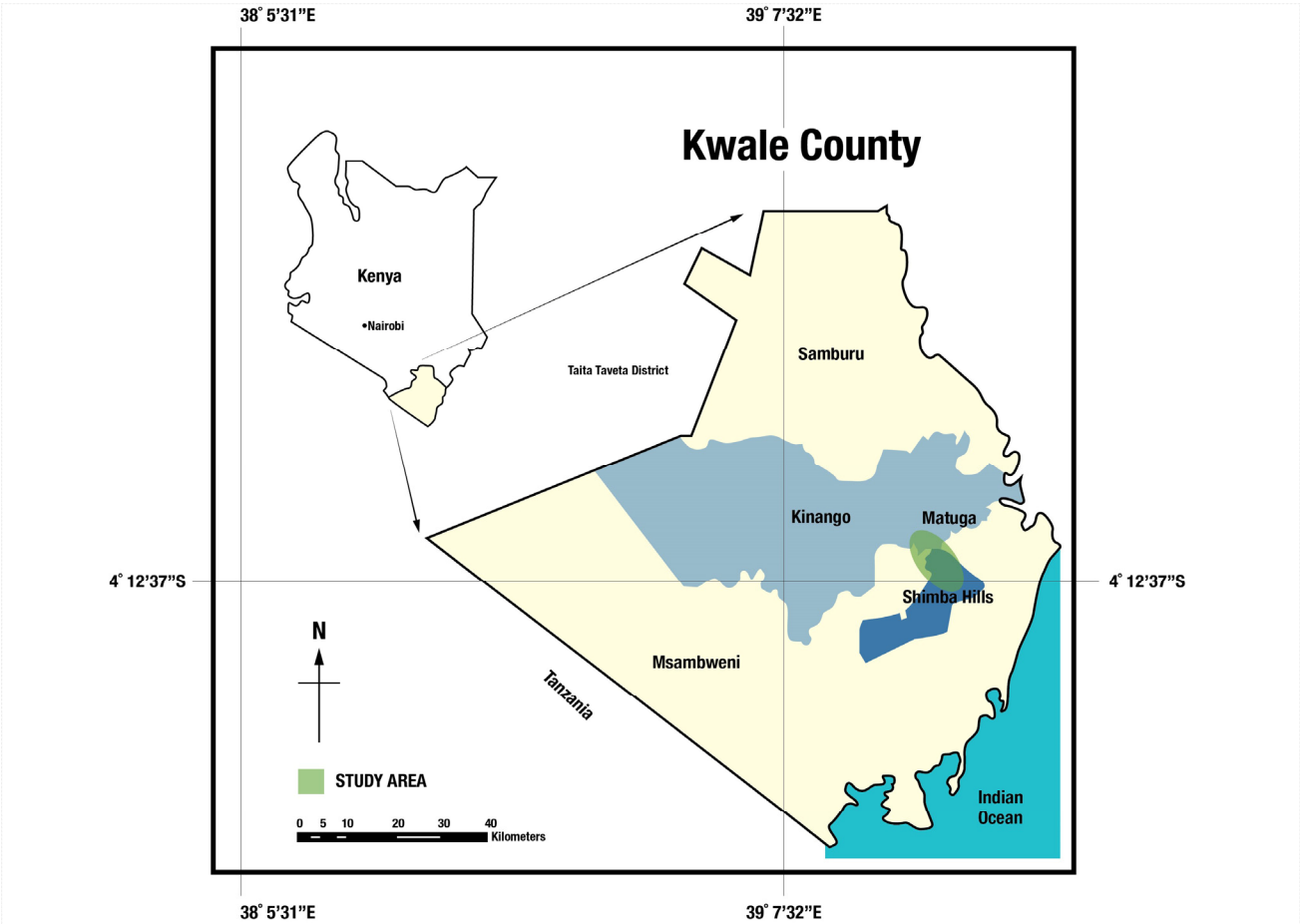

Figure 1: Mwaluganje Elephant Sanctuary

Study area

The study was conducted in Mwaluganje Elephant Sanctuary (MES), located in Kwale County on the south coast of Kenya (Figure 1). The sanctuary is part of the Shimba Hills Ecosystem (259 km2) that encompasses Shimba Hills National Reserve (SHNR) (192.5 km2), Mkongani North Forest (11.1 km2), Mkongani West Forest (13.6 km2), Mwaluganje Elephant Sanctuary (24.7 km2) and Mwaluganje Forest (17.15 km2) (Blackett, 1994). MES is among the first CBTIs to be established in Kenya, and has been recognised as exhibiting best practice (Manyara & Jones, 2007) and is hence considered 'successful'. The community members around this sanctuary have been participating in CBT for a period of more than 20 years. They therefore have had sufficient time to notice the effects of tourism development on their lives.

Shimba Hills National Reserve (SHNR), the main attraction in the area, lies on a coastal plateau that rises to an altitude of 450 m above sea level at a distance of approximately 15 km from the Indian Ocean (Schmidt, 1991), while the sanctuary lies below the plateau's escarpment on the northern side. Due to its location on the leeward side of the plateau, the sanctuary receives less rainfall than SHNR (Davis & Bennum, 1993). The sanctuary receives an average annual rainfall range of 450-800 mm (MES, 2012) while for SHNR it ranges between 900-1200 mm (KWS, 2013).

The southern half of MES is characterised by cliffs, rolling forested hills and bush-land with baobab trees (Adansonia digitata), all ideal for wildlife. To the north is Mwaluganje Forest Reserve characterised by a montage of evergreen dry lowland forest cover. Manolo River flows from the south to the north of the sanctuary lined by bush riverine forest. The African elephant (*Loxodonta africana*) is the dominant large mammal species. According to a 2012 aerial elephant count by KWS, out of the approximately 400 elephants in the ecosystem, 160 individuals (i.e. 40 per cent) were in MES. Other animal species include buffalo, impala, warthog and a variety of birdlife, reptiles and invertebrates (KWS, 2013). Moreover, MES has a sacred groove 'Kitsanze Falls' and a small patch of sacred indigenous forest (popularly referred to as Kaya Mtae) that holds high cultural importance to the native Duruma people (Blackett, 1994).

Formation of MES

The formation of MES commenced in 1991 when KWS, the government agency in charge of conserving and managing wildlife resources in Kenya, proposed to Kwale County Council that the land between Mwaluganje Forest Reserve and Shimba Hills National Reserve be declared a conservation area (Kiiru, 1995). The move was prompted by increased cultivation along the Manolo River valley, resulting in intense human–elephant conflict as elephants moved between the two forests. Cultivation on the Godoni Cliff (east of Manolo River) also posed an environmental problem due to severe soil erosion and silting of the Pemba River. The issue of declaring Golini-Mwaluganje a conservation area was, however, complicated by the existing land tenure arrangements in the valley. While Mwaluganje area (west of Manolo River) was under the custody of Kwale County Council, Godoni (east of Manolo River) had been adjudicated and individual title deeds issued (Kiiru, 1995).

MES was eventually formed in 1993 after several meetings between KWS, landowners in the proposed corridor, local administrators, politicians and the Coast Development Authority. The objectives of the project were to mitigate serious human–elephant conflict in the area, generate benefits to the landowners through tourism development and maintain the sanctuary as a conservation area (MES, 1994). Kwale County Council initiated the land adjudication process in Mwaluganje area to issue title deeds to the landowners. Following the adjudication, MES comprised two main adjudication sections: Golini adjudication section with 107 landowners and Mwaluganje adjudication section with 175 landowners, all occupying approximately 7,000 acres. Golini section is predominantly inhabited by Digo, while Mwaluganje is predominantly occupied by the Duruma sub-ethnic group.

METHODS

A random sample consisting of 130 of the 282 landowners who ceded their land to establish MES was selected, stratified by the two settlement areas in the MES (Golini and Mwaluganje A/B). These respondents completed a questionnaire administered by the researchers. Five ex-officio and 19 staff including the directors of MES also completed the questionnaire and were interviewed as key informants for the study. They were selected because of their past and present involvement in tourism development in the community, hence deemed to have in-depth information about MES and CBTI development.

RESULTS AND DISCUSSION

Respondent characteristics

A total of 130 respondents (50 Golini and 80 Mwaluganje) participated in the study. Characteristics of the respondents are given in Table 1.

Table 1. Characteristics of community respondents

Attribute		Percentage
Gender	Male	69.2
	Female	30.8
Education	No formal education	54.6
	Primary	27.7
	Secondary and above	17.7
Sources of livelihood	Mixed farming	52.3
	Crop farming	32.3
	Livestock	1.5
	Employment	9
	Business	4.6

Half of the landowners practised mixed farming (subsistence farming and keeping of livestock) as their means of livelihood and a third were crop farmers. The main crops are maize interplanted with bananas, cassava and cowpeas. Respondents indicated that during the dry season (January-April) their livestock illegally graze in MES, reducing the attractiveness of the site, while during the rainy season their farms experience increased human–wildlife conflict, sometimes leading to loss of both wildlife and humans.

The results depict a community that is not formally well educated and with little business involvement and hence may face challenges in making informed decisions on matters relating to tourism development. This is in line with Hall et al.'s (2005) view that limited skills and knowledge of tourism can contribute to false expectations about the benefits of tourism and a lack of preparedness for the change associated with tourism.

Levels of involvement

The results indicated that most community members (95.4 per cent) were involved in tourism development. This suggests that the respondents understood the importance of community participation in Community Based Tourism (CBT) development in MES. The respondents indicated that they actively participated during annual general meetings and special general meetings, and were also free to visit the MES office to discuss matters they felt to be of concern to the community. Those who said that they "were not involved" indicated that it was the role of the directors and MES staff to do everything on behalf of the community as long as the community got "good money" at the end of the year.

The community in MES not only gave part of their land for conservation and tourism, but also wanted to be actively involved in tourism. At inception, MES was run by a manager appointed by Eden Wildlife Trust. However, the community called for greater involvement in the running of the sanctuary as they wanted active participation in the process.

The community opted for a process of community development by calling upon the donor to dismiss a manager employed at inception (who was not a local) and engage a local person. The donor felt that the proposed manager from the local community lacked capacity to manage the sanctuary. However, overwhelmed by the community's persistence, the donor dismissed the non-local manager but stopped providing money to pay for the new manager and fuel for car transport. The community welcomed the decision, as

Woodland kingfisher (*Halcyon senegalensis*) © Marc Hockings

they thought that they could manage the project without donor support, an illustration of the community's lack of awareness and information on the complex nature of tourism development and conservation.

As part of the questionnaire, the roles of community members in tourism development were then investigated using seven statements (Table 2) rated on a five-point Likert scale from "1 = Strongly agree" to "5 = Strongly disagree" (Dahles, 2000).

Most respondents agreed that they were involved in benefit sharing, were involved from the inception of MES and were involved in decision making, while few were involved in project implementation in the area (Table 2).

Involvement at inception

Active involvement at the inception of a project helps win the support of the community at an early stage, identify major concerns and plan for mitigation measures for any anticipated negative impacts. Results indicate that community members were extensively involved at the inception of MES (Table 2).

Respondents commented that during inception they attended many meetings called by the conservation agency in conjunction with a local conservation NGO (Eden Wildlife Trust). During such meetings, members gave consent for their land to be utilised for the project; modalities of establishing the sanctuary were agreed upon; various community committees were formed to ensure community interests, especially on matters relating to land ownership, and fence construction and tourism development were adequately addressed. Manyara and Jones (2007) and Akama et al. (2011) similarly noted in their studies, that although external intervention was vital in the mobilisation process of CBTI formation, the extensive involvement of local communities at inception helped to ensure wide acceptance of these projects. Three community members who were not living on their land at the time of inception mentioned that they joined MES because all their neighbours had joined, and they could not continue to live in the area because of high incidences of human–elephant conflict.

Involvement in decision making

Involvement in decision making is important because projects should not be imposed on the community. Further, communities have valuable information that can contribute towards the success of tourism ventures. Respondents expressed the view that the extent of community involvement in decision making regarding tourism development in MES was high (Table 2). They mentioned that the directors consulted them when evaluating the performance of an investor in the sanctuary, in road maintenance, on matters relating to human–wildlife conflict, fence management, staff recruitment, and annual compensation payment among others. These findings concur with those of Muganda et al. (2013) who established that communities want their views and opinion considered when decisions on tourism development in their localities are made.

Involvement in benefits sharing

One of the expected outputs of local community participation in tourism development is benefits sharing. It was therefore important to establish whether the community benefited from tourism development. All respondents affirmed either "strongly agreed" or "agreed" that they benefited from tourism development (Table 2).

Table 2: Respondent role in tourism development (n=130; SA – strongly agree, A – agree, N – neutral, D – disagree, SD – strongly disagree)

Roles in tourism development	SA	A	N	D	SD
I was actively involved at the inception of MES	35	95	-	-	-
I am involved in decision making in MES	14	116	-	-	-
I am involved in benefit sharing in MES	110	20	-	-	-
I am actively involved in conservation of the natural and cultural resources in MES	-	41	13	72	4
I report unsustainable practices within MES to the conservation agency	-	36	-	82	12
I am an ambassador of MES in promoting it	-	15	10	99	6
I am involved in implementation of various projects in MES	-	4	4	108	14

The benefits derived included annual compensation, employment, construction of schools and dispensaries, improved water supply and provision of a bursary to needy students. Similar results were observed by Kibicho (2008) in Kimana wildlife sanctuary in Kenya, and by Manyara and Jones (2007) in various CBTIs in Kenya. High levels of participation in benefits sharing in this study were attributed to the tangible nature of the benefits (especially the annual compensation) and minimal cost of accessing such benefits (once the amount for compensation is declared, individuals walk into the office to collect their dues). However, findings that the community benefited from tourism development must be approached with caution since such benefits could be below the expectations of the community. Compensation to landowners in MES has been less than USD 5 per acre per annum for the last 5 years, though some community projects and a bursary programme have been initiated (MES, 2012).

Involvement in conservation

Involvement of the local community in resource conservation guarantees their sustainability and that of the tourism development they support. A majority of respondents indicated that they were not involved in any way in conservation activities, while around one third mentioned that they had only attended some public forums (*barazas*) where conservation issues were discussed.

Unsustainable practices and failure to promote CBTIs by local communities can derail tourism development. Respondents were asked if they reported unsustainable practices observed in MES to the conservation agency and if they were ambassadors of MES in promoting it. Reporting unsustainable practices to conservation agencies and promoting the CBTI by the local community are indications of 'ownership' and satisfaction with the tourism development taking place. The majority of respondents neither reported unsustainable practices to the conservation agency, nor promoted the sanctuary as a tourism site (Table 2).

Respondents who did not report unsustainable practices indicated that they occasionally benefited from collecting a few resources (e.g. poles, firewood, fish and herbs) from the sanctuary, and therefore reporting such activities would make it difficult to access them. On promoting MES, respondents indicated that they lacked capacity to do so and furthermore it was the duty of the management.

Involvement in project implementation

Almost all respondents (93.9 per cent) indicated that they were not involved in the implementation of various activities in MES. Respondents were content with implementation being carried out by employees. Past experience had shown that implementation of activities through various community committees had led to conflicts.

In this regard, one respondent reported that "initially when there were many committees from the community handling implementation of various projects (e.g. fence clearing, road maintenance and compensation payment), there were very many conflicts amongst community members due to corruption and embezzlement of funds, but now that all matters are handled by the manager's office in conjunction with the board these conflicts are no more". Fear of conflicts within the local community discouraged community members from participating in implementing various projects unless they were contracted to carry out such projects.

Key informant interviews

Interviews with the directors and staff indicated that apart from the annual general meeting (AGM) during which members were informed of the performance of the sanctuary and discussions took place on future plans, 'special general meetings' were held whenever the need arose to discuss upcoming issues, projects and for education. At least one 'special general meeting' was held every year. Landowners were free to raise any issues arising with both the MES and Senior Warden's office.

Directors (both elected and ex-officio, who constitute the board) were the key decision makers. However, they consulted the local community before implementing major decisions. One director said "when we found it necessary to get another investor, we called a special AGM to discuss the matter with the community; after approval and in conjunction with KWS we identified suitable sites and advertised the expression of interest". Probed on whether the community had confidence in the leadership and management structure, the directors replied in the affirmative, and added that "both Golini and Mwaluganje villages are equally represented (3 directors each) on the board, if the landowners were unhappy with any of us they would vote him/her out when their term expires". Further, the ex-officio members were on the board to ensure that decisions made are in line with the government policy on Wildlife Conservation and Management. The interviews confirmed that all landowners benefited from the annual compensation, very few landowners/siblings were employed, while elected directors received

Elephant (*Loxodonta africana*), Kenya © Marc Hockings

allowances for attending management and board meetings.

Even though the community members were involved in decision making, they had no power to ensure that whatever had been agreed upon was implemented. This was well expressed by the comments of one director; "we were selected to be members of a project implementation committee for fence rehabilitation and construction of a new gate in the sanctuary by the conservation agency, but after the first introductory meeting the agency implemented both projects without involving us. Some of the issues we agreed on during the meeting were not implemented – for example, the employment of locals. We were only invited at the opening of both projects." Failure to involve the community in the implementation phase is a major issue that needs to be adequately addressed if the local community is to remain committed to tourism development in CBTIs.

CONCLUSIONS

We examined the roles played by the local community in MES. These included giving/providing consent on the utilisation of their land for tourism and conservation purposes, providing views and opinions on the nature of tourism development to be undertaken, and sharing benefits of tourism development. Kihima (2014) notes that, in addition to aesthetic and scenic quality, the quality of a tourism destination resides also in the local actors who deliver and benefit from tourism. This underscores the importance of local participation in destination areas. Manyara and Jones (2007) describe Community Based Enterprises as projects where the local communities are true owners, are directly involved in managing, and derive direct benefits from them.

Community involvement in tourism development in MES was found to be of a low to moderate extent. This represents "induced community participation" in Tosun's (2006) typology and "functional participation,

participation for material gains and participation by consultation" in Pimbert and Pretty's (1995) typology, both of which are regarded as degrees of tokenism by Tosun (2006). These rungs of participation were below the expected level of participation for sustainable tourism development as they are more passive and less authentic and interactive.

The local community is allowed to hear and be heard, and have a voice in the tourism development process, but they do not have the power to ensure that their views will be taken into account by other powerful interest groups such as government bodies (Tosun, 2006). Community participation in tourism development aims to achieve ideal participation levels, self-mobilisation (Pimbert & Pretty, 1995) and spontaneous participation (Tosun, 2006) for the sustainability of the industry. However, this seems not to have been achieved in MES despite being in existence for 20 years.

ABOUT THE AUTHORS

Bonface Odiara Kihima holds a PhD and MSc in Tourism from the University of Lyon 2 in France. His areas of research interest include: Ecotourism, Community Based Tourism, Beach Tourism and Destination Marketing. He is actively engaged in tourism research and consultancy. He is a member of the eco-rating committee of Ecotourism Kenya as well as the Tourism Professional Association. For 10 years, he has been responsible for University teaching and supervision of post graduate students in the area of Tourism. Currently, he is a Senior Lecturer and Chair of Tourism and Travel Management at the Technical University of Kenya.

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RESUMEN

El desarrollo y el crecimiento de las Iniciativas de turismo comunitario (CBTI, por sus siglas en inglés) en la década de 1990 partió de la necesidad de aumentar el apoyo comunitario para la conservación de la vida silvestre, asegurando al mismo tiempo que las comunidades locales pudieran participar y beneficiarse del desarrollo turístico. Sin embargo, varias CBTI en Kenia han incumplido las expectativas de la comunidad y la industria turística. Este estudio examinó la medida en que las comunidades locales participan en el desarrollo del turismo en Mwaluganje Conservancy a través de una encuesta comunitaria y entrevistas con informantes clave. La participación de la comunidad fue limitada y se circunscribió en gran parte a dar su consentimiento sobre la utilización de la tierra y la distribución de beneficios, y ofrecer sus puntos de vista acerca del desarrollo turístico que se debería emprender. Carecían de poder para garantizar la implementación de los acuerdos. Recomendamos una estrategia alternativa de desarrollo turístico que implique la participación activa de los actores clave en todo el proceso de desarrollo del turismo.

RÉSUMÉ

La genèse et la croissance des initiatives de tourisme communautaire dans les années 1990 étaient fondées sur leur capacité perçue d'accroître le soutien communautaire à la conservation de la faune, tout en veillant à ce que les communautés locales puissent participer et tirer profit du développement du tourisme. Cependant, certaines initiatives au Kenya n'ont répondu ni aux attentes de l'industrie du tourisme ni à celles des communautés. Cette étude a examiné dans quelle mesure les communautés locales participent au développement du tourisme dans la réserve de Mwaluganje au moyen d'un sondage communautaire et des entretiens avec des intervenants clés. Il s'avère que la participation communautaire est limitée et se cantonne en grande partie à donner un consentement sur l'utilisation des terres et le partage des avantages, et à donner des points de vue sur le développement du tourisme à entreprendre. Le pouvoir leur manque pour faire appliquer les accords. Nous recommandons une stratégie alternative de développement du tourisme qui implique une participation active des acteurs clés dans l'ensemble du processus de développement du tourisme.

THE IUCN GREEN LIST OF PROTECTED AND CONSERVED AREAS: SETTING THE STANDARD FOR EFFECTIVE AREA-BASED CONSERVATION

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ABSTRACT

The IUCN Green List of Protected and Conserved Areas is the first global sustainability standard describing best practice for area-based conservation. The standard is organised around four components — Good Governance, Sound Design and Planning, Effective Management and Successful Conservation Outcomes — subdivided into 17 criteria and 50 indicators. IUCN manages a 'Green List' of protected and conserved areas through a certification process that examines evidence assembled by site managers against each of the criteria and indicators. The assessment of evidence is carried out by an independent group of experts in the governance and management of protected and conserved areas, overseen by an independent reviewer to ensure that proper processes and appropriate evidence are used in the assessment. The objective of the IUCN Green List programme is to increase the number of protected and conserved areas around the world that deliver successful conservation outcomes through good governance, sound design and effective and equitable management. The IUCN Green List programme is currently operating in 40 countries and by August 2019, 46 sites in 14 countries had been awarded the Green List status. There are a further 400+ protected and conserved areas engaged in the process. The challenge remains to scale up the Green List programme to the point where it is truly global in operation and able to provide both a stimulus and a metric for effective conservation.

Key words: IUCN Green List, protected areas, conserved areas, standards, successful conservation, certification

INTRODUCTION

Protected and conserved areas are recognised as one of the most effective measures for conserving biodiversity on land and sea. To ensure biodiversity outcomes in protected and conserved areas, it is essential they are governed and managed effectively. While the extent of protected and conserved areas has increased substantially over recent years, a global assessment has shown that weak governance and ineffective management are contributing to poor conservation outcomes in many protected areas (Leverington et al., 2010; Watson et al., 2014; Barnes et al., 2016; Gill et al., 2017; Geldmann et al., 2018).

Guidelines on assessing management effectiveness have been developed and widely applied around the world

(Hockings et al., 2000; Coad et al., 2015) as a means to encourage more effective and adaptive management. However, the lack of a globally accepted standard for 'good' governance and management of protected areas meant that assessors were often unsure exactly what expectations they were measuring against. In addition, it is recognised that governance and management activities do not always guarantee effective outcomes, due to confounding external factors, including climate change and habitat fragmentation. Recognising these gaps, the IUCN and its World Commission on Protected Areas (WCPA) have been working to develop such a standard to guide managers and as the basis for a certification programme that considers both management and outcomes – the IUCN Green List of Protected and Conserved Areas (the IUCN Green List).

The fifteenth meeting of the Conference of Parties to the Convention on Biological Diversity (CBD), to be held in China in late 2020, will set new targets for the conservation of biodiversity. The nature and content of these targets is currently being debated around the world (Mace et al., 2018). It is likely the targets will call for ambitious expansion of the global system of protected and conserved areas to secure the most important areas for biodiversity conservation (Dinerstein et al., 2019). This strategy will only be successful if these areas are well governed and managed and deliver positive outcomes for biodiversity and for society.

THE IUCN GREEN LIST OF PROTECTED AND CONSERVED AREAS

History and Development

The IUCN Green List builds on many years of work by IUCN in developing and promoting systems for assessing management effectiveness of protected areas. Early work on developing a standard for protected area management was undertaken at the IUCN World Parks Congress in Durban in 2003 (Hockings et al., 2004) and options including certification were canvassed (Dudley et al., 2004). However, reflecting the divergent views that were evident amongst governments and NGOs (Hockings et al., 2004), it was not until 2008 that sufficient support for the development of a standard and certification system was evident and WCPA commenced a pilot programme to examine the idea in detail. Developments in biodiversity policy including the decision of the CBD to include "other effective area-based conservation measures" in Aichi Biodiversity Target 11 in 2010 (Laffoley et al., 2017; Jonas et al., 2018) had emphasised the need to ensure any standard was applicable to both protected and conserved areas. Early work on developing a protected area standard at the end of the decade was reflected in a resolution of the IUCN World Conservation Congress 2012 in Jeju, Korea, calling on IUCN to develop a Green List of species, ecosystems and protected areas. This paper details work on the protected area component of this programme while other areas of IUCN are working to develop Green List approaches in relation to species and ecosystems (see for example Akçakaya *et al.* 2018).

The WCPA and IUCN's Global Protected Areas Programme convened a global development and consultation process to develop and test a new IUCN Green List Standard for protected areas (the Standard) and an associated process for certification. A pilot phase was undertaken with results presented at the IUCN World Parks Congress 2014 in Sydney. Pilot studies were conducted in eight countries (Australia, China, Colombia, France, Italy, Kenya, Republic of Korea and Spain) leading to 25 protected and conserved areas receiving a provisional 'Green List' certificate for their achievements.

While the essential structure and process for the Green List established during the pilot phase remains the same, significant changes were made to the detail of criteria that form the Standard, the associated indicators and means of verification, drawing on the lessons from the pilot studies. A mandatory requirement for a site visit and stakeholder and public consultation was also added. The revisions of the Green List Standard were

Delacour's langur (*Trachypithecus delacouri*) in Van Long Nature Reserve, Vietnam; a Green List candidate site © Le Khac Quyet

made by a Standards Committee composed of eleven people from nine countries with diverse experience covering both the physical and social sciences and management of protected areas. Following on from the pilot programme, the development of the Standard has been carried out in conformance with the ISEAL Standard-Setting Codes of Good Practice (ISEAL Alliance, 2014). The draft Standard was made available online for public comment with specific input sought from participating jurisdictions in the pilot phase and IUCN Commission members as well as civil society. The revised Standard was further discussed at the IUCN World Conservation Congress 2016 and approved by the IUCN Council in 2017. The current version (Version 1.1) will be presented at the IUCN World Conservation Congress in 2020 and will then be scheduled for review in 2024, and again following every quadrennial programme of IUCN. This will ensure that the Standard remains robust and relevant to current issues in protected and conserved area management.

IUCN Green List programme objective

The objective of the Green List programme is to increase the number of protected and conserved areas that deliver successful conservation outcomes through good governance, sound design and effective and equitable management. The intent is to use the Standard across all regions and countries of the world, on land and in the sea. In order to do this, the Standard has been designed to be both universal but also adaptable to countries and jurisdictions without compromising quality and sufficiently rigorous to ensure sites demonstrate the achievement of conservation objectives. It is designed to be globally applicable and inclusive – not only for the most well-resourced areas or sites in the world.

THE IUCN GREEN LIST STANDARD

The four components of the Green List Standard are **Good Governance**, **Sound Design and Planning**, and **Effective Management**, which work together to lead to **Successful Conservation Outcomes**. These components contain a set of 17 criteria (Figure 1), further subdivided into 50 generic indicators with associated means of verification (Appendix 1 Supplementary Online Material).

While these components and criteria are designed to be universal and therefore applicable to all protected and conserved areas, their expression and assessment will be context-dependent. Therefore the Green List process provides for adaptation of the indicators and the recommended means of verification for each jurisdiction (a jurisdiction is a locality, country, region or other geographic area that engages as one entity with the Green List programme). Any adaptations have to be approved by the Green List Standards Committee to ensure that a common global standard of performance is maintained.

Setting and meeting thresholds of success

In establishing criteria, the Standards Committee recognised that many sites would most likely have to

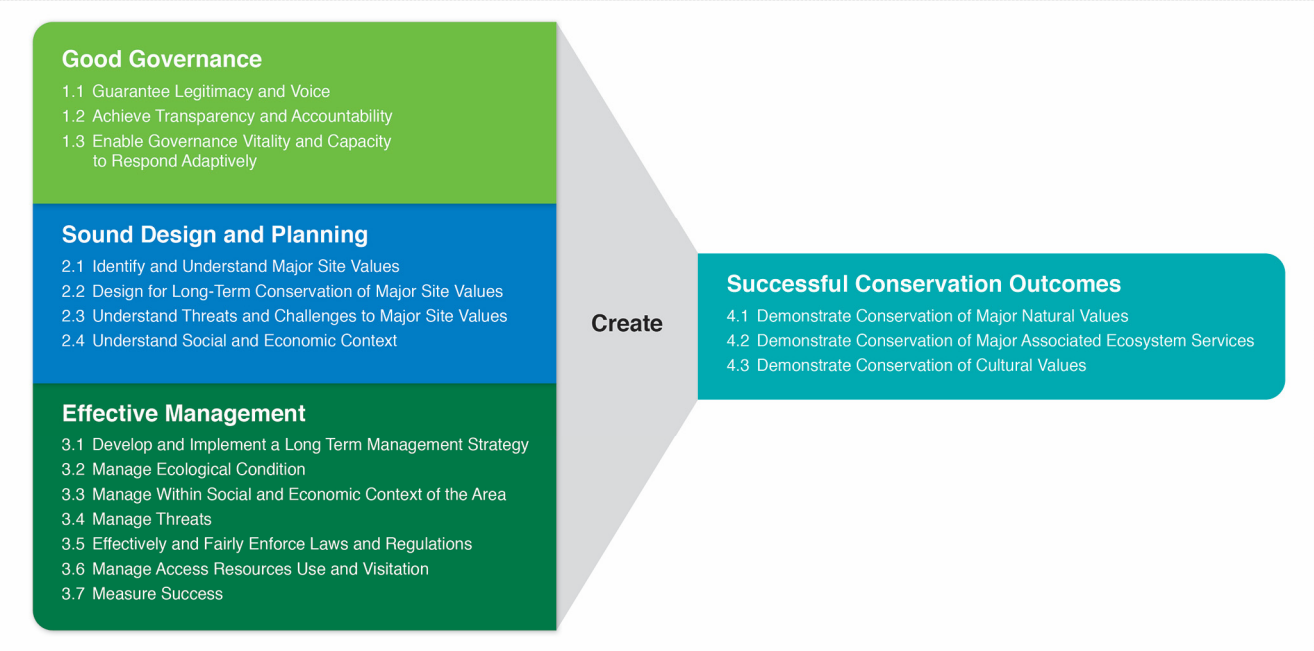

Figure 1. The IUCN Green List Standard components and criteria

implement new initiatives and management processes to meet the Green List Standard. Criterion 3.7 requires that sites have set explicit ecological thresholds that represent success in conservation of their major values. While many protected and conserved areas around the world are monitoring the condition of their major values, only a very small proportion has taken the additional step of setting thresholds for the condition of these values that represent successful outcomes for the conservation of these values. This is a critical element of the Standard.

THE IUCN GREEN LIST PROCESS

The Green List process, governance and other key information is provided in the Green List User Manual (https://www.iucn.org/theme/protected-areas/our-work/iucn-green-list-protected-and-conserved-areas/user-manual). This manual guides the operation of all participants in the Green List process and specifies the governance structures of the Green List programme: a Green List Committee, Management Committee, Standards Committee and Operations Team (Figure 2).

Formation and operation of the Expert Assessment Group for the IUCN Green List

While the IUCN Green List Standard is designed and managed globally by IUCN, the main activities of the Green List process are implemented regionally or nationally for specific jurisdictions. At the heart of this implementation system, a series of expert groups, together with the managers of sites nominating for the Green List, provide the working mechanisms for the listing process. The Expert Assessment Groups for the Green List (EAGLs) are composed of experts in protected area management who volunteer their time to support the programme at national or regional level. Members of the EAGL are selected by the relevant Regional Vice-Chair of the WCPA from applicants who

Dr Amy Harris studying Gould's Petrel (*Pterodroma leucoptera*) on Montague Island Nature Reserve, a Green List site in New South Wales, Australia © Justin Gilligan

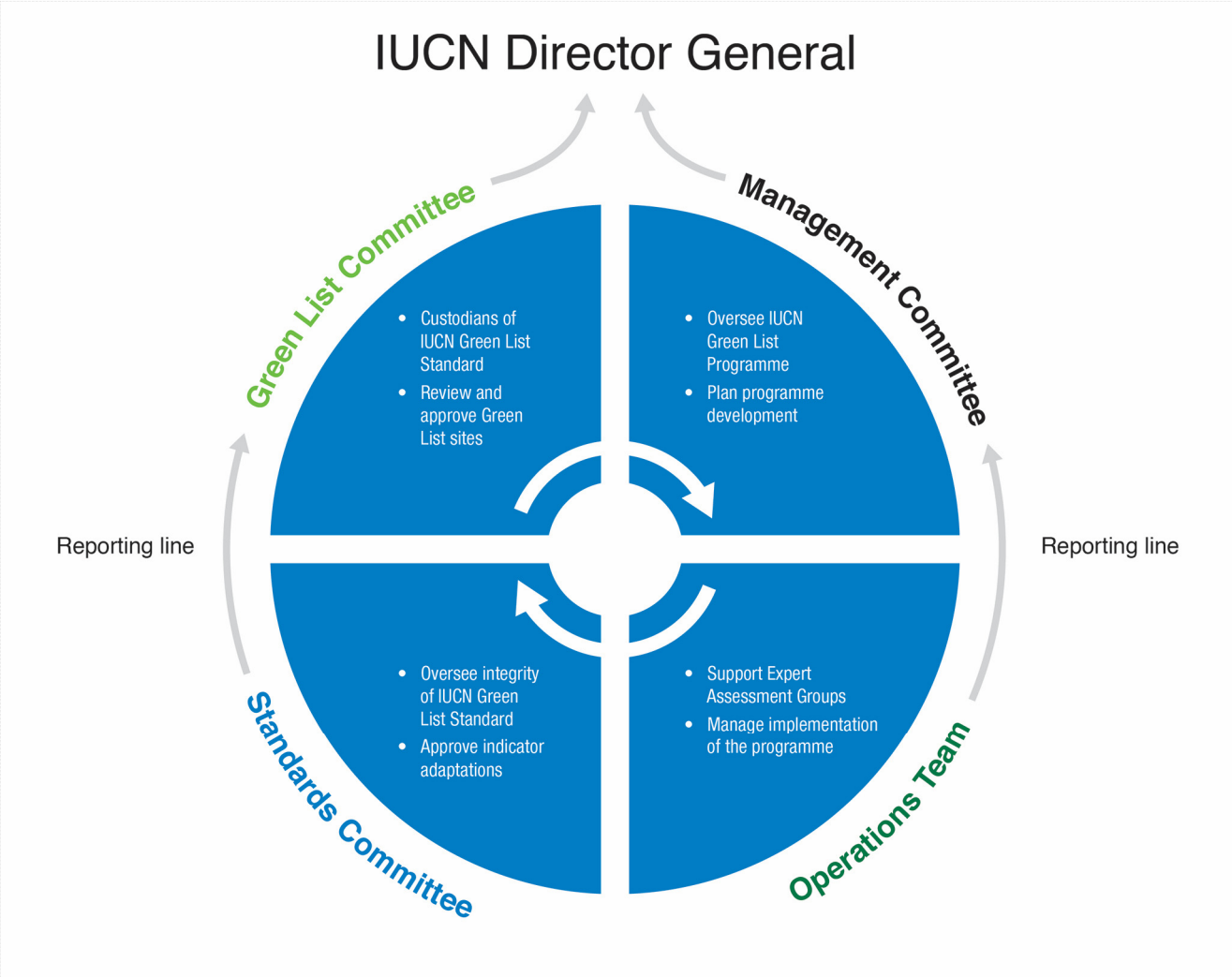

Figure 2. Governance structures for the IUCN Green List

respond to an open call for the position. The Regional Vice-Chair is assisted by an independent reviewer who advises on the selection process. The composition of the EAGL aims to provide gender and disciplinary balance and to ensure that all members are appropriately experienced (minimum of 10 years' relevant experience, except for a young professional member requiring only 5 years of experience).

The first job of the EAGL is to adapt the global Green List indicators and means of verification to the context of the jurisdiction (see Figure 3 for an overview of the Green List process). Any suggested adaptations are then referred to the Standards Committee for ratification.

The adapted Green List Standard is then used by the managers of protected areas participating in the Green List process. Applicants must prepare evidence for five basic indicators to become a Candidate Site. They then prepare evidence for all remaining indicators to show how their site/s comply with the Standard. The nature of evidence needed to show compliance with the indicators is guided by exemplars (means of verification) developed by the Green List programme and in discussion with the EAGL for the jurisdiction. This evidence, with supporting documentation, is then uploaded onto the web-based portal used to manage information and communications for the Green List.

Stakeholder consultation and involvement

Sites participating in the Green List are required to undertake targeted consultation with key rightsholders and stakeholders. Methods for consultation proposed by the site managers are considered and approved by both the EAGL and the independent reviewer to ensure regionally and stakeholder-relevant consultation processes are used. These consultations may include hosting the information on a website, presentations to

relevant committees of stakeholder representatives or meetings with relevant groups or individuals.

Site visit

At least one member of the EAGL must visit the site to assess the operations and performance of the protected area, speak with staff, and view information not available electronically. The site visit provides an opportunity to meet with rightsholders and stakeholders.

Assessment of nominations

Once the site has provided evidence of compliance against all criteria and indicators and the EAGL has conducted a site visit and public consultation, the EAGL members meet to consider the application. Managers from the sites being considered may also be present for part of the meeting so that they can clarify any of the evidence presented in support of the application. The meeting is also attended (in person or remotely) by the independent reviewer, whose role is to ensure that proper processes are followed and appropriate consideration is given to the evidence. The EAGL can either recommend the site for addition to the Green List or indicate to the site managers where they think additional work is needed to meet the Standard. EAGL recommendations are then conveyed, together with a summary of site compliance and the report of the independent reviewer, to the international Green List Committee which takes the final decision on admitting the site to the Green List.

Review and re-listing

Sites are placed on the Green List for a period of five years with a mid-term 'spot-check' review and a full re-listing including a site visit to be conducted at the end of the period. There is also a mechanism for stakeholders or the public to raise an alert if they feel that a site on the Green List has suffered from a material change in management effectiveness or in outcomes that would impact on the appropriateness of the site being on the list. The EAGL then examines the information provided and can recommend a variety of responses including remedial action or removal of the site from the list.

THE IUCN GREEN LIST AND SCALING-UP

The aim is to scale up the Green List so that it can function as the global benchmark against which

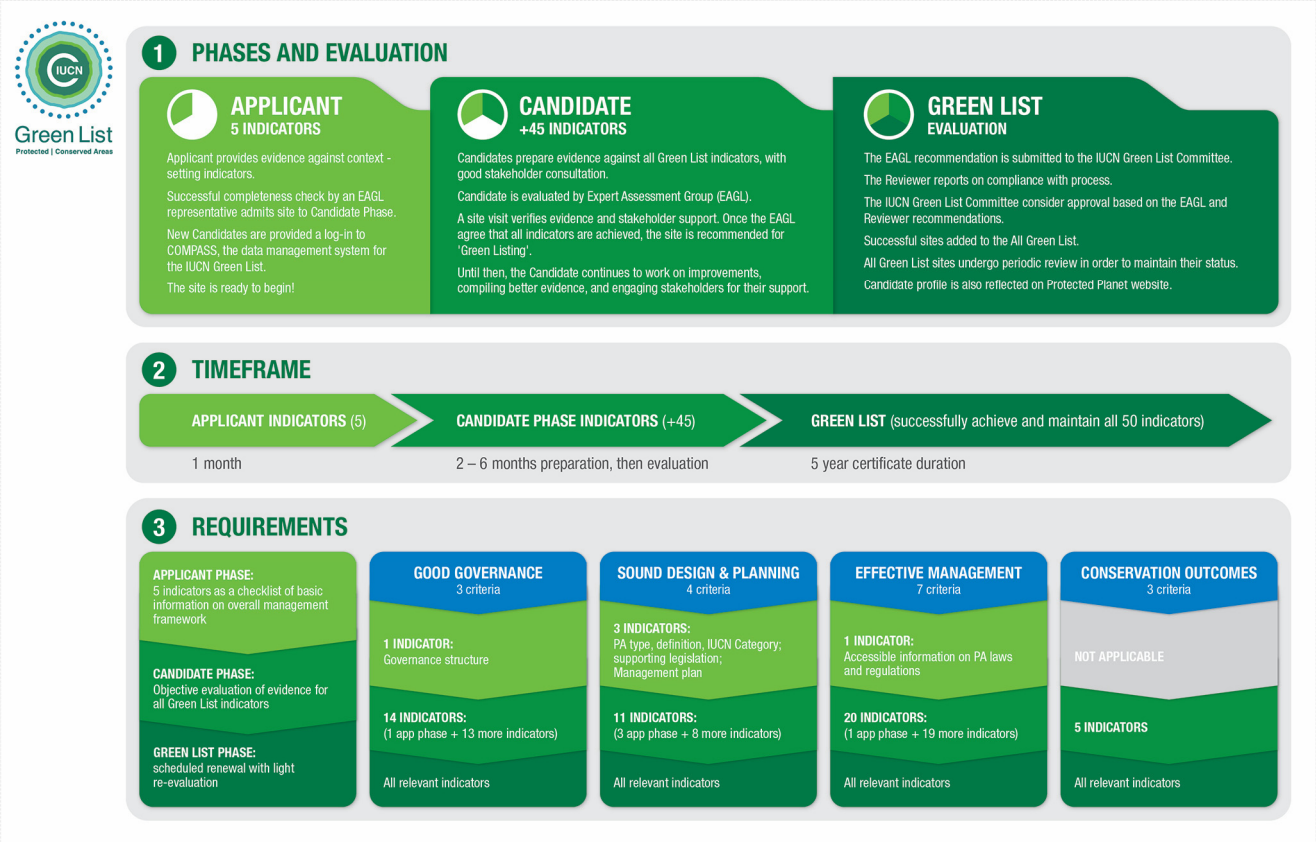

Figure 3. Overview of the IUCN Green List process

Lebanese cedar (*Cedrus libani*) in Al Shouf Nature Reserve; the first IUCN Green List site in Lebanon. This tree is estimated to be over 3000 years old © Marc Hockings

protected and conserved areas can be measured and to establish a baseline for what is an accepted and expected standard for protected and conserved areas.

The Green List Standard of four components and 17 criteria with their associated 50 indicators stand on their own outside the certification system. They represent what we understand to be the conditions required to contribute to successful biodiversity outcomes in protected and conserved areas. These concepts are useful in their own right. Protected areas managers, planners, educators and scientists can use these concepts for a variety of purposes outside a formal certification process.

The IUCN Green List programme is currently operating in 40 countries with more applying to join as capacity to manage applications permits. More than 400 protected or conserved areas are currently participating in the programme. By April 2019, 46 sites in 14 countries had been awarded the Green List status. The challenge remains to scale up the Green List programme to the point where it is truly global in operation and able to provide both a stimulus and a metric for effective conservation. A broadly similar and compatible standard has been developed and is being applied for tiger reserves in Asia (Pasha et al., 2018) with the aim of ensuring effective, long-term conservation of tigers.

While the Green List is voluntary and may not engage all the protected areas in a jurisdiction, the Green List Standard can help guide the management of all nature conservation areas. For example, Mexico has already indicated its intention to use the Standard in this way. It will apply for Green List status for its most important reserves and use the Green List Standard as a guide for all protected areas. It will assess sites against this Standard through internal management effectiveness

evaluations on a regular basis (Ignacio March, pers. comm. August, 2019). Colombia is using the components, criteria and indicators to define thresholds for protected area success to mobilise long-term financial sustainability of its National System of Protected Areas.

When the CBD sets new targets for conservation of biodiversity at the 15th Conference of the Parties to the Convention in October 2020, one of these targets is likely to be a successor to the current Aichi Target 11 on protected areas and other effective area-based conservation measures. Just as Target 11 specifies that these sites need to be effectively and equitably managed, the new target is likely to be as strong or even stronger in focusing on the quality of protected and conserved areas. The IUCN Green List provides an ambitious programme and metric to promote and measure this quality.

SUPPLEMENTARY ONLINE MATERIAL

Appendix 1 IUCN Green List Standard with generic indicators and associated means of verification.

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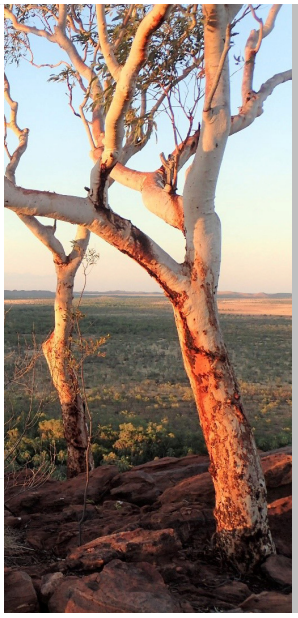
RESUMEN

La Lista Verde de Áreas Protegidas y Conservadas de la UICN es el primer estándar mundial de sostenibilidad que describe las prácticas recomendadas para la conservación basada en áreas. El estándar está organizado en torno a cuatro componentes: buena gobernanza, el diseño y la planificación acertada, la gestión eficaz y los resultados de conservación exitosos –subdivididos en 17 criterios y 50 indicadores. La UICN administra una "Lista Verde" de áreas protegidas y conservadas a través de un proceso de certificación que examina la evidencia reunida por los administradores de los sitios en relación con cada uno de los criterios e indicadores. La evaluación de la evidencia la lleva a cabo un grupo independiente de expertos en la gobernanza y la gestión de áreas protegidas y conservadas, supervisado por un evaluador independiente para garantizar que en la evaluación se empleen los procesos adecuados y la evidencia apropiada. El objetivo del programa de la Lista Verde de la UICN es aumentar el número de áreas protegidas y conservadas en todo el mundo que ofrecen resultados de conservación exitosos a través de una buena gobernanza, un diseño acertado y la gestión eficaz y equitativa. El programa de la Lista Verde de la UICN actualmente opera en 40 países y para agosto de 2019, a 46 sitios en 14 países se les había concedido el estatus de Lista Verde. Hay más de 400 áreas protegidas y conservadas que participan en el proceso. El desafío sigue siendo ampliar el programa de la Lista Verde hasta el punto en que sea verdaderamente global en términos de operación y capaz de proporcionar tanto un estímulo como un método para una conservación eficaz.

RÉSUMÉ

La Liste Verte des aires protégées et conservées de l'UICN est la première norme de durabilité mondiale décrivant les meilleures pratiques en matière de conservation par zones. La norme s'articule autour de quatre composantes: bonne gouvernance, conception et planification solides, gestion efficace et résultats de conservation réussis - subdivisée en 17 critères et 50 indicateurs. L'UICN gère une «Liste Verte» d'aires protégées et conservées grâce à un processus de certification qui examine les éléments de preuve recueillis par les gestionnaires de site par rapport avec chacun des critères et indicateurs. L'évaluation des preuves est effectuée par un groupe indépendant d'experts en gouvernance et gestion des aires protégées et conservées, supervisé par un examinateur indépendant pour s'assurer que les processus conformes et les preuves appropriées sont appliqués lors de l'évaluation. L'objectif du programme de la Liste Verte de l'UICN est d'augmenter le nombre d'aires protégées et conservées dans le monde qui donnent des résultats positifs en matière de conservation grâce à une bonne gouvernance, une conception rationnelle et une gestion efficace et équitable. Le programme de la Liste Verte de l'UICN est opérationnel dans 40 pays et, en août 2019, 46 sites dans 14 pays avaient obtenu le statut de Liste Verte. Actuellement 400 autres aires protégées et conservées sont engagées dans le processus. Le défi reste de développer le programme de la Liste Verte à un point où il est véritablement opérationnel au niveau mondial et capable de fournir à la fois un stimulus et un indicateur pour une conservation efficace.



HEALTH CHECKS: A SIMPLE TOOL FOR ASSESSING THE CONDITION OF VALUES AND EFFECTIVENESS OF RESERVE MANAGEMENT

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ABSTRACT

Health Checks are qualitative tools for efficiently and routinely monitoring the condition of key natural, historic and visitor values on national parks and other reserves in the state of Queensland, Australia. They use criteria that can be applied state-wide across a diversity of values and are based on threatening processes and their impacts (e.g. infestations of pest plants, overgrazing, trampling, fire and cyclone impacts, vandalism), or particular parameters (e.g. faunal habitat features, recruitment of canopy species), that are good indications of condition. The assessor scores the condition of the value for each indicator, at representative sites, using simple, predetermined visual cues. No specialised equipment is needed. The Health Check reports use the International Union for Conservation of Nature (IUCN) condition categories (Good, Good with Some Concern, Significant Concern, Critical) and definitions to describe the overall condition of a value across the reserve based on all the Health Check indicators relevant to the value. We present a case study that demonstrates the utility of the tool in assessing condition and, when coupled with an understanding of the desired outcomes for a value and information on management inputs and outputs, evaluating management effectiveness.

Key words: Values, condition monitoring, health checks, management effectiveness

INTRODUCTION

The Queensland Parks and Wildlife Service (QPWS) is implementing the QPWS Values-based Management Framework (VBMF) (DES, 2019). The VBMF is built around the adaptive management cycle (Jones, 2000) and the management effectiveness and reporting standards established by IUCN and the World Commission on Protected Areas (WCPA) (Hockings et al., 2006). The goals of the VBMF include: providing a transparent approach for prioritising input to reserve management, given limited resources; ensuring planning is converted to on-ground actions; scrutinising whether the resources invested are resulting in desired outcomes, rather than just outputs; responding to improved information and understanding by adapting management; and demonstrating 'value for money' to the public.

Because the VBMF is predicated on adaptive management, it puts substantial emphasis on monitoring and evaluation, in particular of the condition of 'key values' – these being the most significant assets for which the reserve is recognised and a focus for management actions. In Queensland, the large number of public reserves (1,044), their area (approximately 13 million hectares of terrestrial estate including more than 450 islands), and the multitude of key values, preclude detailed quantitative monitoring on all reserves, let alone for all values. Nevertheless, it was considered essential to have at least a basic means to evaluate and report on the condition of most key values across the whole reserve estate over time. Simple tools known as Health Checks were developed for that purpose.

Importantly, Health Checks sit within a hierarchical framework of monitoring (Figure 1). They provide a foundation for regular evaluation of the effectiveness of on-ground actions in maintaining or improving the condition of key values and can trigger additional or modified actions including more detailed monitoring. Where highly significant values require management

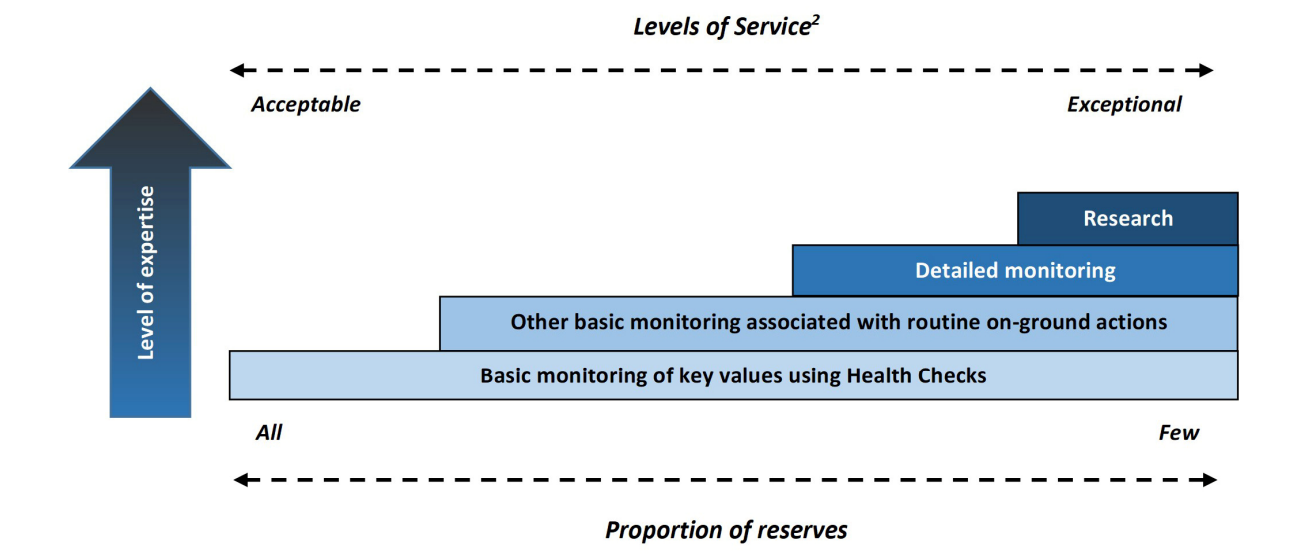


Figure 1. Hierarchical framework for monitoring and research on QPWS estate under the VBMF

intervention on high priority estate, then targeted bespoke monitoring or research is warranted.

A Health Check tool has been developed for natural values that are ecosystem-based (Melzer, 2019), visitor values (Olds et al., 2019), and post-European contact historic values (Melzer et al., 2019b). Similar concepts and methods apply across all three. This paper uses the Natural Values Health Check to outline those concepts and methods. The tools have been trialled, refined and gradually implemented over the last four years (2015–2019). To demonstrate the value of implementing Health Checks over the medium- to long-term, we developed a Retrospective Health Checks case study. This case study has been invaluable for promoting uptake of the method.

BASIC CONCEPTS AND METHODS

Key values are selected during the management planning process for a reserve. Their current and desired condition is defined using the IUCN categories (Good, Good with Some Concern, Significant Concern, Critical) and definitions (IUCN, 2012; Osipova et al., 2014) (Figure 2). The actions required to move from the former to the latter, and the priority for those actions, are also determined during the planning process. Health Checks are used to help track whether the condition of a value is trending in the right direction over time. Their purpose includes:

- providing the opportunity and means to help land managers determine whether their on-ground actions are achieving goals, in terms of the condition of key values as documented in plans and strategies, and so inform future management;
- increasing the likelihood that emerging threats will be detected more rapidly than they might otherwise have been;
- identifying the need for more detailed investigation such as quantitative monitoring or research;
- and providing the means to regularly capture a standard set of information for review and reporting that is transparent and easily understood internally and externally including internationally.

Most tangible values can be monitored using Health Checks. Species are an exception. The Natural Value Health Check is designed for assessing the condition of values that are 'ecosystems' (e.g. vegetation communities) not species. Nevertheless, for many species the condition of the ecosystem may be a useful indicator for the species' habitat. However, we generally counsel against only monitoring habitat – whether by Health Checks or bespoke monitoring – when the key value is a threatened species, because species decline may occur as a result of threats, such as disease or predation, despite apparently healthy habitat.

A comprehensive guide, providing instructions for how to undertake Health Checks and complete the record sheets, and detailed information on the indicators and criteria used in the assessment, is available for natural values (Melzer, 2019), visitor values (Olds et al., 2019), and post-European contact historic values (Melzer et al., 2019b). The guides are provided in their entirety as Supplementary Online Material. A brief overview is provided below.

Each Health Check tool uses a set of predetermined Health Check *Indicators* (HCI) based on threatening processes and their impacts (e.g. pest plant infestation, overgrazing, wildfire) or features indicative of condition (e.g. ground cover, recruitment of canopy species) (Figure 2). Their merit is that they are relatively easy to standardise, applicable across the variation in values and, when coupled with defined desired outcomes and information on management inputs and outputs, provide a good indication of the effectiveness of management or are good triggers for action.

Each HCI has a standardised set of criteria – quantitative and or qualitative – that enable the assessor to categorise the condition of the indicator as Good, Good with Some Concern, Significant Concern or Critical at each monitoring site. An example – the criteria for the HCI: *Infestations of ecosystem-changing pest plants* – is provided in Figure 2. The assessment does not require specialised equipment and requires only basic land-management skills.

The monitoring sites are not selected randomly. They are selected to provide the best representation possible of the key value and its condition states across a reserve and to facilitate the evaluation of outcomes from management actions over time. For key values that are extensive and/or represented by many examples (e.g. dispersed patches of a vegetation community), the need to adequately 'sample' the value is addressed not only by undertaking a Health Check at selected sites but also by observing (by walking, driving, flying [including drones], boating) as much as possible of the value to get an overview of its condition. The *General Impression* assigned to each HCI (Figure 2) and the *Overall Condition Class* (Figure 2) assigned to the key value at the end of the Health Check assessment are based on both the site-based inspections and the overview. The *General Impression* rating assigned to a HCI is based on the criteria for that particular HCI, whereas the *Overall Condition Class* is based on the IUCN definitions for the four condition categories (i.e. Good, Good with Some Concern, Significant Concern, Critical).

Health Check Indicator	Condition Class					General impression
	Site 1	Site 2	Site 3	Site 4	Site 5	Not an 'average'!
1. Infestations of ecosystem-changing pest plants						
2. Infestations of pest plants other than ecosystem-changers						
3. Risk of future invasion by significant pest plants not already present						
4. Rainforest invasion						
5. Woody thickening (other than by rainforest species)						
6. Overgrazing/browsing by feral animals, stray stock or natives						
7. Trampling, digging or rooting by feral or native animals, stray stock...						
8. Impacts on wetlands						
9. Vehicle impacts						
10. Dumping						
11. Ground cover						
12. Fire damage to fire-sensitive and ecosystems not fire-dependent						
13. Fire damage to peat-based ecosystems						
14. Age class distribution, fire-adapted ecosystems in conservation zones						
15. Severe wildfire in fire-adapted wooded ecosystems						
16. Severe storm, cyclone or tornado in wooded ecosystems						
17. Overtopping, erosion and associated impacts resulting from tidal...						
18. Tree/shrub health and dieback						
19. Key features for faunal biodiversity in terrestrial ecosystems						
20. Recruitment of canopy species						
Overall Condition Class (refer below)						

Description	Condition Class
Pest species are absent including on the margins.	Good
Native species dominate; pest species inconspicuous/mainly on margins. • Pest spp. in ground stratum – comprise up to 5% of cover &/or • Pest shrubs/trees – comprise up to 5% of stems or cover &/or • Pest climbers – cover up to 5% of canopy	Good with Some Concern
Pest species are a conspicuous component of the vegetation. • Pest spp. in ground stratum – comprise 5-25% of cover &/or • Pest shrubs/trees – comprise 5-25% of stems or cover &/or • Pest climbers – cover 5-25% of canopy	Significant Concern
Pest species dominate • Pest spp. in ground stratum – comprise >25% of the cover &/or • Shrubs/trees – comprise >25% of stems or cover &/or • Pest climbers – cover >25% of canopy	Critical

Overall Condition Class – what the categories mean.	
Good	The Key Value is in good condition and is likely to be maintained for the foreseeable future, provided that current conservation measures are maintained.
Good with Some Concern	The Key Value is likely to be essentially maintained over the long-term with minor additional conservation measures to address existing concerns.
Significant Concern	The Key Value is threatened by a number of current and/or potential threats. Significant additional conservation measures are required to preserve the value over the medium to long-term.
Critical	The Key Value is severely threatened. Urgent additional large-scale conservation measures are required or the value may be lost.

Figure 2. The primary field data sheet for a Natural Value Health Check.
The insert shows the criteria ('Description') for determining the condition class for the Health Check Indicators – Infestations of ecosystem-changing pest plants and Infestations of pest plants other than ecosystem-changers.

The frequency at which Health Checks are undertaken is determined by reference to a decision matrix[1] incorporating the *Levels of Service* (i.e. management standard)[2] of the reserve and magnitude of risk from threatening processes to the key value, and observations and outcomes of recent Health Checks assessments. It ranges from less than 12 months to a maximum of five years.

CASE STUDY: *RETROSPECTIVE* HEALTH CHECKS

A novel approach to demonstrating the utility of a new monitoring programme in detecting change is to retrospectively apply it using historical park records. With a wealth of archival information for many of Queensland's reserves, it is possible to conduct retrospective Health Checks to track the past condition of key values. This exercise also gives an insight into how Health Checks can examine and inform management effectiveness, provided there is a good understanding of the desired outcomes for a value and information on management inputs and outputs (e.g. expenditure, on ground actions). One such example is explored here.

The Boodjamulla National Park complex, comprising ten adjoining protected areas covering a large (378,333 ha) area in remote north-west Queensland, was selected for the case study: comparing the results of current on-ground Health Checks (2017) with Health Checks ten years earlier for several key values. The 2007 Health Checks were completed by using aerial photographs, satellite imagery and park records including survey data, photographs from monitoring sites, fire history maps and first-hand knowledge of experienced staff to determine the condition class at representative sites across a key value. These were then used to determine the *General Impression* for each HCI, and the *Overall Condition Class* of the key value. When undertaking the 2007 desktop Health Checks, particular attention was paid to those HCIs reflecting known ecosystem drivers (e.g. pest animals such as feral pigs and horses, wildfire, ecosystem-changing weeds) at Boodjamulla. The results for one key natural value at Boodjamulla – the ecological community 'Eucalypt woodlands dominated by spinifex (*Triodia pungens*)' – hereafter, spinifex woodlands, are provided here.

The spinifex woodlands, which include several regional ecosystems[3] on Boodjamulla, dominate vast areas of the park and provide habitat for threatened species including the endangered Carpentarian grasswren (*Amytornis dorotheae*) which relies on mature, long-unburnt spinifex (Threatened Species Scientific Committee, 2016). It is a highly fire prone community in a semi-arid environment that experiences high spring

Overlooking plains and hillslopes of Eucalypt woodlands dominated by spinifex in Boodjamulla National Park © R. Melzer

and summer temperatures (mean maximum November and February temperatures are 39.1 °C and 36.5 °C respectively) and a long austral winter dry season. Fire is therefore a critical driver in this community and for Boodjamulla generally. The fire management guidelines[3] for the community recommend fire free intervals of four to 10 years generally, but with the retention of some areas not burnt for ten to 20 years. The strategy recommended in the guidelines is to undertake burns across the landscape at a range of frequencies, with numerous small burns being applied every year in different places, to achieve the mosaic of age classes required to reduce the risk of wildfire burning across vast areas and retain long-unburnt spinifex in the system.

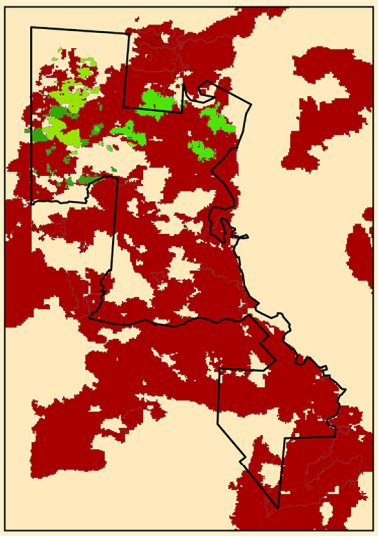
Since its gazettal in 1984, a five-year cycle of broad-scale wildfires was a feature of Boodjamulla, due mostly to insufficient landscape-scale planned burning. The wildfires, typically in the late dry season, resulted in significant financial and environmental costs as outlined below.

The results of the 2007 and 2017 Health Checks for the spinifex woodlands are presented in Figures 3 and 4.

3a. 2007 Health Check

Key: G = Good; GC = Good with Some Concern; SC = Significant Concern; C = Critical; NA = Not Applicable.

Health Check Indicator	Condition Class					General impression
	Site 1	Site 2	Site 3	Site 4	Site 5	Not an 'average'!
1. Infestations of ecosystem-changing pest plants	G	G	G	G		G
2. Infestations of pest plants other than ecosystem-changers	G	G	G	G		G
3. Risk of future invasion by significant pest plants not already present	GC	GC	GC	GC		GC
4. Rainforest invasion	G	G	G	G		G
5. Woody thickening (other than by rainforest species)	G	G	G	G		G
6. Overgrazing/browsing by feral animals, stray stock or natives	G	G	G	G		G
7. Trampling, digging or rooting by feral or native animals, stray stock....	G	G	GC	G		G
8. Impacts on wetlands	NA	NA	NA	NA		NA
9. Vehicle impacts	G	GC	G	G		G
10. Dumping	G	G	G	G		G
11. Ground cover	C	C	C	C		C
12. Fire damage to fire-sensitive and ecosystems not fire-dependent	NA	NA	NA	NA		NA
13. Fire damage to peat-based ecosystems	NA	NA	NA	NA		NA
14. Age class distribution, fire-adapted ecosystems in conservation zones	C	C	C	C		C
15. Severe wildfire in fire-adapted wooded ecosystems	C	C	C	C		C
16. Severe storm, cyclone or tornado in wooded ecosystems	G	G	G	G		G
17. Overtopping, erosion and associated impacts resulting from tidal...	G	G	G	G		G
18. Tree/shrub health and dieback	GC	GC	GC	GC		GC
19. Key features for faunal biodiversity in terrestrial ecosystems	C	C	C	C		C
20. Recruitment of canopy species	SC	SC	SC	SC		SC
Overall Condition Class						C



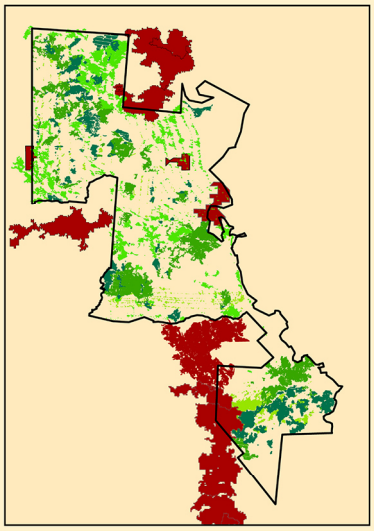
Park boundary

Overall Condition Class: Critical

3b. 2017 Health Check

Key: G = Good; GC = Good with Some Concern; SC = Significant Concern; C = Critical; NA = Not Applicable.

Health Check Indicator	Condition Class					General impression
	Site 1	Site 2	Site 3	Site 4	Site 5	Not an 'average'!
1. Infestations of ecosystem-changing pest plants	G	G	G	G		G
2. Infestations of pest plants other than ecosystem-changers	G	G	G	G		G
3. Risk of future invasion by significant pest plants not already present	GC	G	G	G		GC
4. Rainforest invasion	G	G	G	G		G
5. Woody thickening (other than by rainforest species)	G	GC	G	G		G
6. Overgrazing/browsing by feral animals, stray stock or natives	G	G	G	G		G
7. Trampling, digging or rooting by feral or native animals, stray stock...	G	G	GC	G		G
8. Impacts on wetlands	NA	NA	NA	NA		NA
9. Vehicle impacts	G	GC	G	G		G
10. Dumping	G	G	G	G		G
11. Ground cover	G	G	G	G		G
12. Fire damage to fire-sensitive and ecosystems that are not fire-	NA	NA	NA	NA		NA
13. Fire damage to peat-based ecosystems	NA	NA	NA	NA		NA
14. Age class distribution, fire-adapted ecosystems in conservation zones	GC	GC	G	G		G
15. Severe wildfire in fire-adapted wooded ecosystems	G	G	GC	GC		GC
16. Severe storm, cyclone or tornado in wooded ecosystems	G	G	GC	GC		GC
17. Overtopping, erosion and associated impacts resulting from tidal...	G	G	G	G		G
18. Tree/shrub health and dieback	G	G	G	G		G
19. Key features for faunal biodiversity in terrestrial ecosystems	G	G	GC	GC		GC
20. Recruitment of canopy species	G	G	G	G		G
Overall Condition Class						GC



Park boundary

Overall Condition Class: Good with Some Concern

Figure 3. Health Checks record sheets for 2007 (a) and 2017 (b) for the key value – spinifex woodlands. Note: the map inserts depict the distribution of burnt areas at Boodjamulla with planned burns shown in shades of green and wildfires in red. In 3b, wildfires self-extinguished on areas burnt in the planned burn program.

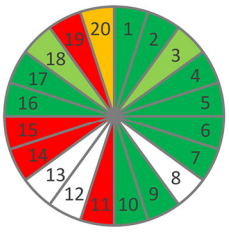
Health Check Indicator				
Good	Good with Some Concern	Significant Concern	Critical	Not applicable
1. Infestations of ecosystem-changing pest plants				
2. Infestations of pest plants other than ecosystem-changers				
3. Risk of future invasion by significant pest plants not already present				
4. Rainforest invasion				
5. Woody thickening (other than by rainforest species)				
6. Overgrazing/browsing by feral animals, stray stock or natives				
7. Trampling, digging or rooting by feral or native animals, stray stock…				
8. Impacts on wetlands				
9. Vehicle impacts				
10. Dumping				
11. Ground cover				
12. Fire damage to fire-sensitive and ecosystems that are not fire-dependent				
13. Fire damage to peat-based ecosystems				
14. Age class distribution, fire-adapted ecosystems in conservation zones				
15. Severe wildfire in fire-adapted wooded ecosystems				
16. Severe storm, cyclone or tornado in wooded ecosystems				
17. Overtopping, erosion and associated impacts resulting from tidal…				
18. Tree/shrub health and dieback				
19. Key features for faunal biodiversity in terrestrial ecosystems				
20. Recruitment of canopy species				

2007

Overall Condition Class:

Critical

***General Impression* rating for each HCI:**



2017

Overall Condition Class:

Good with Some Concern

***General Impression* rating for each HCI:**

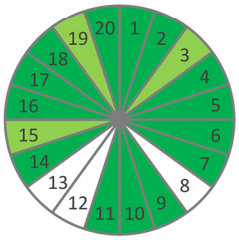


Figure 4. Comparison between the condition of the key value – spinifex woodlands, in 2007 and 2017 in terms of the Overall Condition Class and the General Impression rating for each Health Check Indicator.

The 2007 Health Checks fall within six to 12 months after a 244,229 ha wildfire swept across Boodjamulla in November 2006. The fire resulted in widespread loss of ground cover, vast areas of even-aged vegetation, severe wildfire impacts (dead trees, crown damage and epicormic growth) and loss of fauna habitat such as large old trees, shrub cover and woody debris. These impacts are clearly evident in the 2007 condition ratings for the associated HCI (11, 14, 15 and 19, respectively – refer Figure 4 for HCI numbering), with both the site-based and *General Impression* condition for those four indicators assessed as Critical (Figures 3 and 4). The *Overall Condition Class* (based on the IUCN definitions) for the spinifex woodlands was deemed to be Critical. The 2017 Health Checks were conducted on-ground after six years of a proactive broad-scale aerial burn programme, aimed at creating a complex spatial and temporal mosaic of burnt and unburnt patches across the landscape. The HCI showed a significant improvement in condition, with both the site-based and *General Impression* condition for the four aforementioned indicators assessed as either Good or Good with Some Concern and an *Overall Condition Class* of Good with Some Concern (Figures 3 and 4).

The *Retrospective* Health Checks exercise demonstrated the tangible improvement in condition of a key value over time and the ability to capture the change using simple Health Checks. It also provided an opportunity to examine the inputs, outputs and outcomes associated with fire management at Boodjamulla over time and explore how the implementation of Health Checks may have influenced those parameters. Figure 5 tracks the progress, via the *General Impression* condition class, of the HCI – *Age class distribution in fire-adapted ecosystems*, given the underlying context of the Boodjamulla fire management programme at the time and assuming annual Health Checks had been conducted between 2007 and 2017. The *General Impression* condition class for this HCI is based on the representation of age classes across an ecological community in a park and so is determined from fire history mapping and associated information.

Figure 5 reveals an interesting story. The 2006 wildfire response cost QPWS approximately $AUD 180,000 (the aerial component alone cost $AUD 110,000) and involved high risk fire-fighting operations in very remote areas. Increased planned burning was

undertaken between 2007 and 2011 in an effort to minimise the risk of future broad-scale wildfires ($AUD 57,000). This management response resulted in the *General Impression* condition rating for the HCI improving from Critical to Significant Concern as a greater range of vegetation age classes gradually developed across the landscape. The burn programme was however too conservative – failing to achieve a complex mosaic of vegetation (and hence fuel) age classes sufficient to prevent another large (218,892 ha) and costly ($AUD 66,869) wildfire in September 2011. The 2011 wildfire again resulted in even-aged spinifex woodlands. Health Checks for late 2011 resulted in the *General Impression* condition rating for the HCI being rated as Critical (Figure 5). Thereafter, the burn programme received significant operational support and financial investment ($AUD 100,000 including charter of aircraft and cost of incendiaries for conducting aerial burning, staff travel costs, satellite imagery for mapping burn areas, over five years). A proactive landscape-scale planned burning operation was implemented annually and achieved a spatial and temporal (less than one to greater than 10 years) mosaic of vegetation age-classes resulting in a *General Impression* condition rating of Good for the HCI in 2017. In 2016 (five years on from the previous wildfire), only 5,000 ha of park burnt in wildfires, with these self-extinguishing on patches recently burnt in planned burn operations. The same occurred in 2017, with only 7,950 ha being burnt. No financial costs were incurred by QPWS in either the 2016 or 2017 wildfire season. The cost-benefit of a well-supported annual burn programme is obvious. The investment (annually averaging approximately $AUD 20,000) was significantly less than the financial outlay associated with the two large wildfire events and, importantly, had broken the five-yearly wildfire cycle (Figure 3b) without the intervention of, and risk associated with, on-ground firefighting.

The case study also highlights the capacity of the Health Checks programme to sound a warning to land managers of an emerging threat to a key value. For example (Figure 5), four successive annual ratings (2007–2010) of Significant Concern for the HCI – *Age class distribution in fire adapted ecosystems* leading up to the fifth year of a park with a history of five yearly

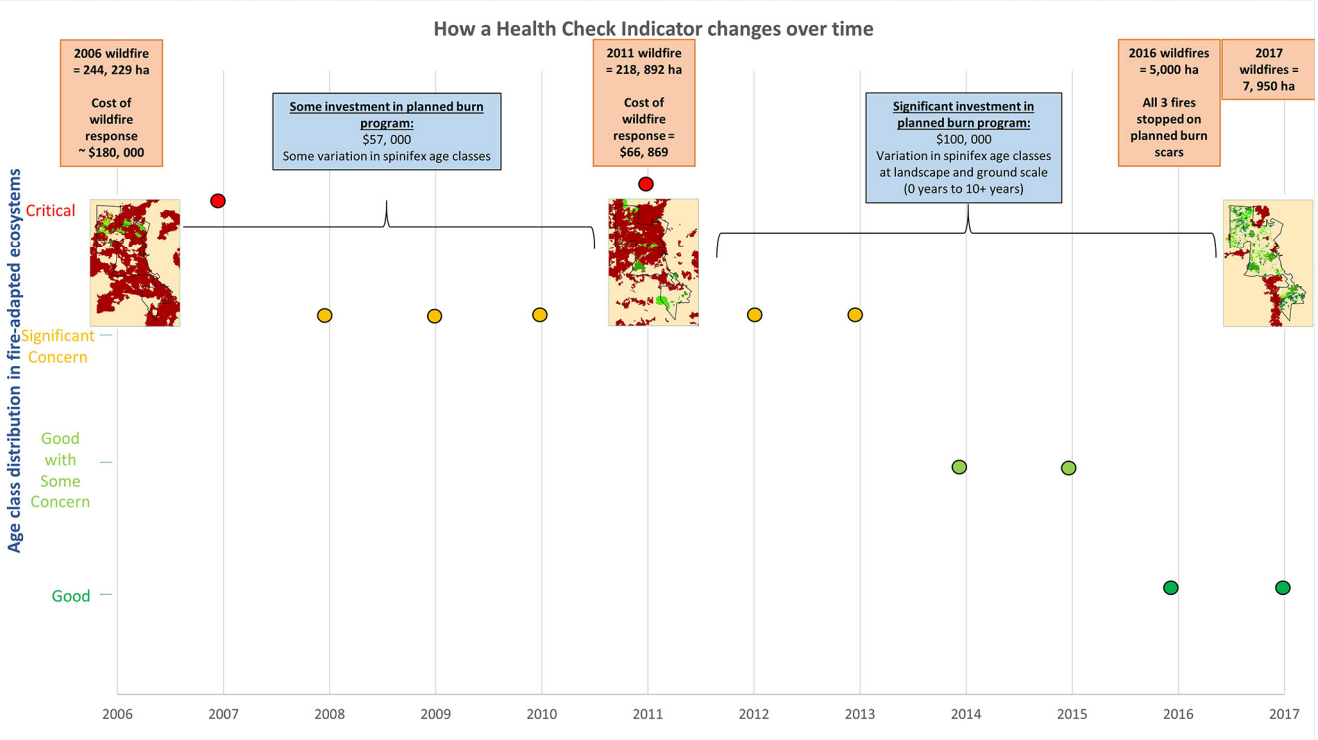


Figure 5. Examination of the change over time in the General Impression condition class for an important Health Check Indicator – Age class distribution in fire adapted ecosystems, in the context of inputs, outputs and outcomes (ecological, financial, human safety). The small maps shown at years 2006, 2011 and 2017 depict the distribution of burnt areas at Boodjamulla, with red being the extent of wildfire in the previous 12 months, greens the extent of planned burns over the previous four years (for more detail for 2007 and 2017 refer to figure 3). Note the lack of planned burns preceding the 2006 and 2011 wildfires.

wildfires, would have highlighted the need for management intervention.

Retrospective case studies, such as the one provided here, provide an insight into how Health Checks could be embedded into routine work programmes and used to inform future management and achieve positive, cost -effective conservation outcomes. The exercise demonstrated the effectiveness of simple Health Checks in assessing the condition and trend of a key value over time, and also their utility in alerting land managers to emerging threats and issues. The exercise has been well received by those who will be implementing Health Checks and has helped to overcome the inevitable reluctance of a busy workforce to embrace a new programme.

Health Checks are now routinely used on Boodjamulla to monitor the condition of the key values of the park to evaluate progress towards defined desired outcomes. Although the programme is in its infancy, the results from the annual Health Check assessments are used to help formulate the prospective work programme and guide on-ground actions, particularly with respect to fire, pest and stray stock management.

DISCUSSION

The establishment of organisation-wide monitoring programmes for conservation reserves is not novel (e.g. Vital Signs Monitoring in the United States National Park Service – Fancy et al., 2009) and there are many detailed quantitative condition monitoring programmes (e.g. BioCondition – Eyre et al., 2015) as well as rapid, often qualitative, protocols developed for specific purposes (e.g. Parks Victoria's rapid assessment technique for evaluating the condition and management needs of small reserves – Tolsma & Cheal, 2013; Reef Health and Impact Survey used on the Great Barrier Reef – Beeden et al., 2014). There is also a growing number of monitoring programmes, in Australia and internationally, incorporating both quantitative and qualitative data, involving citizen scientists and producing report cards of ecosystem health (e.g. McKinney et al., 2011; Tipa et al., 2017; Chesapeake Bay Foundation, 2018). Some of the best known of these in Australia include the Great Barrier Reef Report Card (Queensland Government, 2016) and South East Queensland Healthy Waterways report cards (Healthy Land and Water, 2017).

The QPWS Health Check tools sit within the domain of the rapid, qualitative monitoring protocols, but evolved out of an imperative to evaluate and report on the condition and trend of a large number and diversity of key values across a large and dispersed QPWS conservation estate with limited resources. While acknowledging the value of a more quantitative method, these limitations demanded the development of a rapid, simple, qualitative approach that requires limited technical expertise, to achieve that imperative. Health Checks align with the IUCN framework for reporting on condition (IUCN, 2012; Osipova et al., 2014) and the *Retrospective* Health Checks have demonstrated their utility and captured the attention of land managers. Their use of indicators of threat impacts, which are relatively easy to standardise, avoids the difficulties associated with trying to define what constitutes a healthy structure and composition for each ecosystem type (for example) and their natural variation through space and time. Moreover, it negates the requirement for expertise to evaluate such parameters.

Spinifex woodlands were in Critical condition in 2007 after the impact of the 2006 wildfire © QPWS&P

Health Checks have limitations. These include the use of a small number of sites where values are extensive, the

Boodjamulla planned burn program between 2012 and 2016 improved the spinifex woodlands condition to Good with Some Concern in the 2017 Health Checks © Lea Ezzy

potential bias in site selection, the potential for some inconsistency between assessors in determining condition ratings and the lack of quantitative data demonstrating the link between indicators and biodiversity outcomes. Input, in the planning phase, by staff experienced in undertaking monitoring, the use of site-based and overview assessments to derive the *General Impression* and *Overall Condition Class,* together with training and mentoring help to overcome or minimise the effect of some of these limitations. Critical, however, is the recognition that Health Checks form the most basic level of monitoring in a hierarchy of monitoring (Figure 1). We have purposely not used numerical scores to arrive at condition ratings – to avoid any illusion that Health Checks are a quantitative form of monitoring: something they are not!

The *Natural Value* Health Check is not designed for monitoring species. However, it is applicable where ecosystem health is a good surrogate for the health of a species' habitat requirements. Further, the Health Checks framework lends itself to developing specific protocols for monitoring the condition of a species' habitat when its habitat requirements are well understood and able to be defined using qualitative parameters. The first such protocol has recently been developed for the koala (*Phascolarctos cinereus*) (Melzer et al., 2019a). The *Koala Habitat* Health Check is applicable to all known and potential koala habitat across the Australian states of Queensland and New South Wales.

In summary, Health Checks are simple tools that can be used across reserves as part of routine management activities to provide basic information on the condition and trend of a wide range of values. They require minimal training and no specialist equipment, and facilitate regular review by land managers of the effectiveness of their management in maintaining or recovering key values. Engaging in basic Health Checks monitoring makes it more likely that a need for detailed monitoring or research will be identified. A regular, structured, albeit qualitative, monitoring programme also makes it more likely that issues or emerging threats will be identified earlier than might otherwise occur – especially in the case of reserves that are rarely visited or

Spinifex woodlands with a mosaic of age classes of spinifex © H. Hines

where other forms of monitoring or opportunities for monitoring are lacking. Although in the early phase of implementation, the value of Health Checks in engaging staff not previously involved in monitoring, eliciting rapid management response to redress hitherto unnoticed threats to key values, and informing future work programmes, has been pleasing. Last, but not least, they provide a means to regularly capture a standard set of information about a value that can be used for reporting at a range of levels including internationally.

ENDNOTES

[1.] The decision matrix is provided as Figure 2 in the guides for undertaking natural (Melzer, 2019), visitor (Olds et al., 2019), and historic values (Melzer et al., 2019b). Background information and comprehensive instructions for undertaking Health Checks are provided in the guides. They are available at https://parks.des.qld.gov.au/managing/framework/monitoring/ and as Supplementary Online Material.

[2.] Levels of Service (LoS) benchmarks are used to set the desired management standards across all parks – recognising that all parks deserve great management, but that more effort needs to be directed to parks with higher values. LoS are set for eight management elements, such as fire and pest management, and guide the amount of time, people and money invested for each element. There are five LoS: acceptable, medium, high, very high, exceptional. https://parks.des.qld.gov.au/managing/framework/planning/

[3.] Regional ecosystems are based on bioregions, land zones and vegetation types – as reflected in the unique three-part code (e.g. 1.10.4 – one of the regional ecosystems comprising the ecological community referred to in this paper – eucalypt woodlands dominated by spinifex) assigned to each regional ecosystem. An explanation of the regional ecosystem framework is provided at https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/framework. A range of information, including fire management guidelines, is available for each regional ecosystem. It can be accessed by searching on the regional ecosystem code at https://apps.des.qld.gov.au/regional-ecosystems/

SUPPLEMENTARY ONLINE MATERIALS

Natural Values Health Check Guide
Historic Values Health Check Guide
Visitor Values Health Check Guide

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Rhonda Melzer is Manager of the Ecological Assessment Unit and a terrestrial ecologist. She has worked in QPWS since 1991, with a focus on conservation management in protected areas. Rhonda is responsible for the development of the Health Checks programme, its ongoing oversight and associated training and mentoring.

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RESUMEN

La comprobación de la condición es una herramienta cualitativa clave para monitorear eficiente y rutinariamente la condición de los valores naturales, históricos y de visitantes en los parques nacionales y otras reservas en el estado de Queensland, Australia. Utilizan criterios que se pueden aplicar en todo el estado a través de una diversidad de valores y se basan en los procesos de amenaza y sus impactos (por ejemplo, infestaciones de plantas con plagas, pastoreo excesivo, pisoteo, efectos de los incendios y los ciclones, vandalismo) o parámetros particulares (por ejemplo, características de los hábitats de la fauna, reclutamiento de especies de dosel), que son buenos indicios de la condición. El evaluador califica la condición del valor para cada indicador, en sitios representativos, mediante la utilización de señales visuales predeterminadas simples. No se necesita equipo especializado. Los informes de comprobación de la condición utilizan las categorías sobre el estado de conservación de la Unión Internacional para la Conservación de la Naturaleza (UICN) (Bueno, Bueno con alguna preocupación, Preocupación significativa, Crítico) y definiciones para describir la condición general de un valor en la reserva en función de todos los indicadores del informe de comprobación de la condición que son pertinentes para el valor. Presentamos un estudio de caso que demuestra la utilidad de la herramienta para evaluar la condición y, cuando se combina con el conocimiento de los resultados deseados para un valor e información sobre los aportes y resultados de la gestión, para evaluar la eficacia de la gestión.

RÉSUMÉ

Les bilans de santé sont des outils qualitatifs permettant de surveiller efficacement et régulièrement l'état des principales valeurs naturelles, historiques et touristiques dans les parcs nationaux et autres réserves de l'État du Queensland en Australie. Ils se servent de critères qui peuvent être appliqués à l'ensemble du territoire à travers une diversité de valeurs, tenant compte des menaces éventuelles et de leurs conséquences (par exemple des infestations de plantes nuisibles, surpâturage, piétinement, impacts d'incendies et de cyclones, vandalisme) ou des paramètres particuliers (par exemple, les caractéristiques de l'habitat faunique, le recrutement d'espèces de la canopée), qui sont de bonnes indications d'un état de santé. L'évaluateur note l'état de la valeur pour chaque indicateur sur des sites représentatifs, en utilisant des repères visuels simples et prédéterminés. Aucun équipement spécialisé n'est nécessaire. Les rapports de bilan de santé utilisent les catégories de conditions (Bon, Bon avec certains aspects préoccupants, Préoccupation importante, Critique) de l'Union internationale pour la conservation de la nature (UICN) et des définitions pour décrire l'état général d'une valeur dans l'ensemble de la réserve en se fondant sur tous les indicateurs de bilan de santé pertinents à la valeur. Nous présentons une étude de cas qui démontre l'utilité de cet outil dans l'évaluation de l'état de santé, ainsi que, quand cela est associé à une appréciation des résultats escomptés pour une valeur et une information sur les intrants et les extrants, de l'efficacité de la gestion.

LESSONS LEARNED FROM 18 YEARS OF IMPLEMENTING THE MANAGEMENT EFFECTIVENESS TRACKING TOOL (METT): A PERSPECTIVE FROM THE METT DEVELOPERS AND IMPLEMENTERS

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ABSTRACT

Understanding the successes and failures of management of protected areas is vital for the conservation of global biodiversity. The Management Effectiveness Tracking Tool (METT) is a simple, questionnaire-based approach for assessing protected area management effectiveness (PAME). Since it was developed in 1999, it has become the most widely applied PAME tool, used in at least 127 countries worldwide. This paper reviews the development of the METT and how it has been implemented and adapted.

A combination of literature review on implementation and implementation experience from the original authors and key users of the METT confirms that the METT is a relatively quick and simple way of collecting information about the status and trends of management in protected areas, and provides information to help drive management improvements. As such it is suitable for protected area managers, national protected area agencies, donors, and NGOs aiming to improve area management, and as a component of national reporting to the Convention on Biological Diversity.

The paper examines issues related to METT implementation and concludes with 12 recommendations, from using the METT to verification of results, which together help ensure the tool is implemented in the most effective way and improves the credibility of PAME assessments.

Key words: Management effectiveness tracking tool, METT, PAME, protected area management effectiveness, assessment

INTRODUCTION

Protected areas are the cornerstone of global biodiversity conservation strategies (Watson et al., 2014). There is considerable evidence that well-managed protected areas are effective in reducing biodiversity loss (Gray et al., 2016; Gill et al., 2017). However not all protected areas are fulfilling their conservation objectives (Craigie et al., 2010), and recent work has identified a range of drivers of biodiversity loss in protected areas (Barnes et al., 2016). Ensuring that protected areas are managed effectively is therefore of critical importance to in situ biodiversity conservation (UNEP-WCMC, IUCN & NGS, 2018).

Experience in understanding how best to manage protected areas is constantly evolving. At the IVth International Union for Conservation of Nature (IUCN) World Parks Congress in Caracas in 1992, the protected area community recommended that IUCN develop a system for assessing the effectiveness of protected area management (Hockings et al., 2015). An international task force was established, within IUCN's World Commission on Protected Areas (WCPA), with broad regional representation. After research, field testing and consultation, in 2000, WCPA published a framework for protected area management effectiveness (PAME) providing technical guidance on the structure of and process for developing an evaluation system, together with a checklist of issues that should be measured (Hockings et al., 2000). It suggested that an evaluation should reflect three main assessment themes: i) design and planning; ii) adequacy and appropriateness of management systems and processes; and iii) delivery of objectives. Within these three themes, the WCPA framework (which was updated in 2006, Hockings et al., 2006) identifies six key elements of the protected area management cycle, which together provide the basis of a PAME assessment (Figure 1).

The concept of PAME has subsequently been enshrined in the programmes and targets of the Convention on Biological Diversity (CBD) (UNEP-WCMC, IUCN & NGS, 2018), with all parties to the Convention being called on to undertake PAME evaluations. Target 11 of the Aichi Biodiversity Targets of the CBD specifically calls for "effectively and equitably managed systems of protected areas" (CBD, 2010), and the CBD's Programme of Work on Protected Areas (PoWPA) asked Parties to "expand and institutionalize management effectiveness assessments to work towards assessing 60 per cent of the total area of protected areas by 2015 using various national and regional tools, and report the results into the global database on management effectiveness. . ." (CBD, 2004).

One of the first PAME methodologies to be based on the WCPA framework was developed by the World Bank/ WWF Alliance for Forest Conservation and Sustainable Use (the Alliance), to evaluate their target: 50 million hectares of existing but highly threatened forest protected areas to be secured under effective management by the year 2005 (Dudley & Stolton, 1999). In 2000, the "Scoring system for process and output indicators" from Appendix II of the WCPA Framework was sent to selected World Bank task managers, who were requested to complete it for protected areas over 20,000 ha which were supported through World Bank projects. Following this, a review was undertaken of how the scorecard could be improved, with guidance on its scope and limitations, and recommendations on how the tool could be developed to encompass other elements of the WCPA framework to track progress on PAME.

The primary aim of this improved scorecard was to supply consistent data about the progress of protected area management over time. The revised scorecard was developed in response to eight specific requirements, that it be: i) capable of providing a harmonised reporting system for protected area assessment; ii) suitable for replication; iii) able to supply consistent data to allow tracking progress over time; iv) relatively quick and easy to complete by protected area staff; v) capable of providing a 'score' if required; vi) based around a system that provides four alternative text answers to each question, thereby strengthening the scoring system; vii) easily understood by non-specialists; and viii) nested within existing reporting

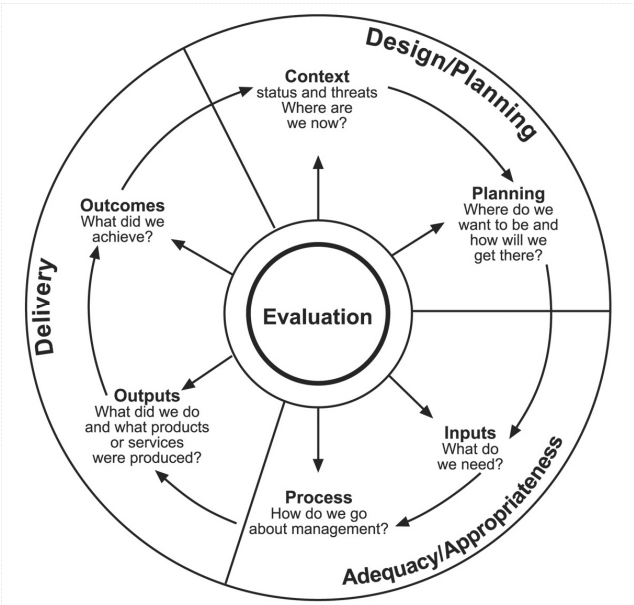


Figure 1. The WCPA Framework for PAME (Source: Hockings et al., 2006)

systems to avoid duplication of effort (Stolton et al., 2002).

As a result, a revised and more comprehensive scorecard was developed for the Alliance: the Management Effectiveness Tracking Tool or METT (Stolton et al., 2002). The METT consists of two sections: datasheets with key information on the protected area (e.g. basic facts about the area, who completed the assessment, and a threat assessment) and an assessment form containing a questionnaire with 30 questions, each with four alternative responses ranging from inadequate to adequate, with an associated score, and data fields for notes, justification of answers and steps to improve management if necessary.

Analysis of results from implementation of the 2002 version of the METT (now known as METT 1) (Dudley et al., 2004) led to further suggestions for improvement. The 2005 version (METT 2) included an improved threat assessment; a standardised list of threats based on an early iteration of the 'unified classifications of threats' developed by the Conservation Measures Partnership (CMP) (Salafsky et al., 2008). From this threat list, assessors were asked to choose the two most important threats facing the management of the protected area. WWF supported a more detailed review and revision of the METT in 2007 based on experience, best practices and the need to reflect growing interest in its use from a wide range of other institutions. This version, known as METT 3 (Stolton et al., 2007), remains the version used or adapted today. It is less orientated towards forest protected areas and suitable for use in all biomes including wetlands and marine, and all governance types of protected area, including privately protected areas and Indigenous and community conserved areas, covers a wider assessment of threats based on the CMP classification, and stresses the importance of providing narrative explanations for the score.

In the 18 years since METT 1 was published, it has become the most widely applied PAME tool globally. Uptake has been driven by a number of factors: i) it is relatively simple and cheap to use and easily adaptable to national contexts; ii) parties to the Convention on Biological Diversity have been encouraged to undertake PAME assessments; (iii) the institutional developers of the METT (the World Bank and WWF) have widely used and promoted the METT; and iv) it has been supported by the Global Environment Facility (GEF) (The METT has been mandatory for use in all projects in protected areas funded by the GEF since 2002; with the assessment carried out at three stages of the project implementation: endorsement, midterm and completion (Swartzendruber, 2013).

Many institutions have adopted and/or adapted the METT (see Supplementary Online Material). Specific adaptations have been made by over 20 organisations and governments including Bhutan, India, Indonesia, Jamaica, Namibia, Papua New Guinea, South Africa and Zambia (Stolton & Dudley, 2016) and Myanmar (Hockings et al., 2018). Conservation NGOs, such as Conservation International, Global Wildlife Conservation, IUCN, Space for Elephants Foundation, The Nature Conservancy, Western Hemisphere Shorebird Reserve Network, Wildlife Conservation Society, Wilderness Foundation Africa and Zoological Society of London, have used and/or adapted the METT as have other funding bodies such as the Critical Ecosystem Partnership Fund, USAID and conventions including the Ramsar Convention on Wetlands (Stolton & Dudley, 2016). The World Bank developed an equivalent system for marine protected areas based on the METT (Staub & Hatziolos, 2004) and the basic structure of the METT has also been used in the development of tools such as the UNDP's Capacity Development Scorecard (Bellamy & Hill, 2010) and Financial Sustainability Scorecard (Bovarnick, 2007).

Field visit during METT training, Alas Purwo National Park, Banyuwangi, Indonesia © Fiona Leverington

Over 2,500 sites have reported using the METT in the Global Database on Protected Area Management Effectiveness (GD-PAME) (UNEP-WCMC, 2019). The METT has been used in at least 127 countries around the world covering over 4.2 million km² (Stolton & Dudley, 2016), which equates to over a fifth of the world's terrestrial protected area coverage (see Figure 2). Global METT data are however not evenly distributed. The METT was initially designed to measure conservation funding impact, so its implementation was biased towards newly established protected areas and/or protected areas identified as requiring additional support to strengthen management (Nolte & Agrawal, 2012; Coad et al., 2015; Stephenson et al., 2015). More recently, it has been applied across full systems of protected areas with a focus on overall effectiveness rather than measuring impact of funding (e.g. Cowan et al., 2010; Kementerian Lingkungan Hidup dan Kehutanan, 2015; Leverington et al., 2017; Hockings et al., 2018; Lham et al., 2019).

METHODOLOGY

PAME literature includes several papers using the METT, and other PAME approaches, to assess the management effectiveness of suites of protected areas (e.g. Leverington et al., 2010; Nolte & Agrawal, 2012); overview PAME in general (e.g. Coad et al., 2015) or report on assessments in individual countries (e.g. Zimsky et al., 2010; Zimsky et al., 2012; Carbutt & Goodman, 2013). To date, however, there has not been a global review of the METT methodology and specifically its implementation process or issues related to confidence in the results of the assessment.

This review started with a search of published and grey literature around the subject of the METT. All documents (sorted by relevance) for the phrase 'Management Effectiveness Tracking Tool' or 'METT' on the Web of Science were reviewed, as were the first 100 hits on a Google search using the same key words to pick up non-peer reviewed literature (after the first 100 listings the results had no relevance to the tracking tool or were repeats of documents already viewed). The authors of this paper all have wide-ranging experience using the METT and all contributed written materials and personal experience relating to implementation. A number of the authors of this paper (SS, ND, MH and KM) were involved in the original development of the METT, and thus archived non-published material and information collected on implementation over the last 18 years was also available in personal files. In total, 98 documents were found and included in the review (see

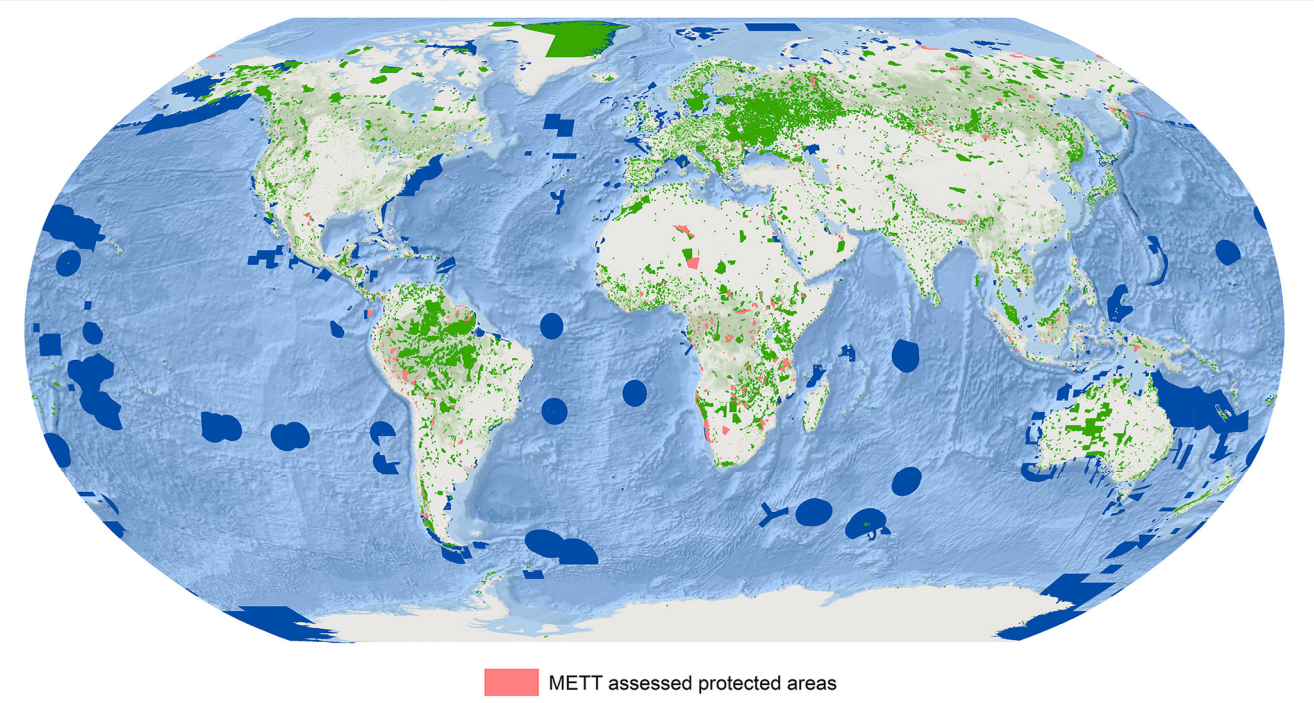


Figure 2. Protected areas (green) with a METT assessment (red) as recorded on the Global Database on Protected Area Management Effectiveness, source UNEP-WCMC and IUCN (2019), Protected Planet: The World Database on Protected Areas (WDPA; available at: www.protectedplanet.net)/The Global Database on Protected Areas Management Effectiveness (GD-PAME, available at: pame.protectedplanet.net), August 2019, Cambridge, UK: UNEP-WCMC and IUCN.

METT training course, Banyuwangi, Indonesia © KSDAE

Supplementary Online Material for the full list). Material ranged from METT-based methodologies to reports on project use, reviews of implementation and peer reviewed papers mainly on data derived from assessments. All the available literature was reviewed, major themes identified and lessons collated, reviewed and finalised.

RESULTS

Major themes from the review (available in full in Stolton & Dudley, 2016) are discussed below.

Self-assessment

A common criticism of self-assessment by protected area practitioners (e.g. staff, NGOs, etc.) is that differences in the interpretation of the answers will create bias in the results (Cook & Hockings, 2011). Many PAME questionnaires ask for assessments to be made based on low, medium or high ratings, without explanation of the rating systems and thus the ratings given may vary substantially across assessors. The multiple-choice nature of the METT questions was developed with the aim of reducing bias. The possibility of bias can be further reduced through capacity building of those undertaking the METT (Cook & Hockings, 2011), training assessors to standardise interpretation of indicators (Coad et al., 2015) as well as encouraging discussions among the staff filling in the questionnaire and bringing in factual information to validate the results. During the early years of dissemination and promotion, the World Bank/WWF Alliance provided a number of regional and national training workshops. The METT was also translated into several local languages to make it more accessible for use at the national level. More recently, in Bhutan, two or more management staff from each of the country's 11 protected areas were trained in workshops and staff were able to discuss draft results together and develop guidance for specific questions where needed (Lham et al., 2019) and similar training is underway in Myanmar (Hockings et al., 2018). In the Philippines, team members met several times to discuss and build common perception of the scores based on possible results prior to the field visits to review the METT results (Inciong et al., 2013). Similar processes were developed in several other countries including Zambia (Mwima, 2007) and India (Zimsky et al., 2012).

Assessing biodiversity outcomes

Assessing biodiversity outcomes is typically the most challenging aspect of PAME. Because it is designed as a relatively simple and rapid tool, the METT is not ideally suited to record the biodiversity outcomes of protected area management (e.g. Nolte & Agrawal, 2012), which usually rely on more detailed data on attributes such as occurrence and population of target species, habitat condition or other objective measures of outcomes. This limitation has always been clearly stated in the METT methodology. However, where biodiversity data are available details can be provided in the narrative sections of the METT thus supporting the assessment answers. To increase the understanding of outcome measures, the METT results can be assessed against other monitoring data (Knights et al., 2014) or adapted to focus more on outcome measures. The GEF has adapted its latest versions of the METT to include datasheets in relation to biodiversity objectives and the threat assessment. Similar adaptations were used by the Ramsar Convention in its version of the METT (Ramsar, 2015). The METT used in Papua New Guinea includes a section for assessors to nominate the primary values of their protected area, and then to use words or pictures to describe these values or benefits. A checklist was also added to help assessors consider possible benefits provided by the protected area, and the assessment of outcomes was enhanced through the evaluation of the condition and trend of the protected area values (Leverington et al., 2018).

Adapting the METT

Adaptations such as the ones noted above are not uncommon and have been encouraged to increase the veracity of the METT. Adaptation generally takes two forms: i) adding questions on issues not covered by the original tool (e.g. in relation to climate change, equity or transboundary issues) or ii) more detailed instructions to the existing questionnaire, in order to relate the METT better to local circumstances. There are advantages in ensuring that the same core questions are always included, to help facilitate comparison between assessments. The more clearly PAME questions are defined for local circumstances, the more accurate and consistent will be the responses (Hockings et al., 2015). Versions of the METT adapted with guidance for local implementation include the Carpathian Countries Protected Areas Management Effectiveness Tracking Tool version for Poland (Pap, 2012); the METT used in protected areas managed by the Zambia Wildlife Authority (METTPAZ) (Mwima, 2007); METTs in South Africa (Cowan et al., 2010), the Bhutan METT+ (Lham et al., 2019), Myanmar (My METT) (Hockings et al., 2018) and Indonesia (Kementerian Lingkungan Hidup dan Kehutanan, 2015). See Supplementary Online Material Table 1 for more details.

Making implementation more effective

Experience suggests that implementation planning for the METT should include practical steps such as informing staff and stakeholders about their involvement in the assessment in a timely fashion and allowing participants the time and space to debate each question to help eliminate any bias, false perceptions or prejudice inherent in such assessments (Carbutt & Goodman, 2013). Protected area managers are found to be well placed to assess key management issues accurately (Cook & Hockings, 2011; Cook et al., 2014). However, the METT works best when a range of stakeholders/rightsholders are involved in the assessment process (e.g. Zimsky et al., 2010; Cook et al., 2014). Any bias in METT responses, even when linked to large-scale funding such as that provided by the GEF, is not believed to be a major issue when the questionnaire is completed as part of a participatory process (Zimsky et al., 2010). The accuracy of the METT score can also be dependent on identifying the correct mix of people involved in the assessment, for example, not only local staff but also staff from a regional or head office managing protected areas who may have a longer history or greater understanding of the protected area. Furthermore, as the METT comprises a broad range of assessment criteria, no single individual is likely to be well placed to answer all of the questions with 100 per cent certainty (Carbutt & Goodman, 2013). In Zambia, where the METT was completed with peer review and full stakeholder participation – including protected area managers, the private sector in the form of tour and lodge operations, and local communities living in Game Management Areas – the scores were more accurate when debate and discussion had been undertaken before a score was finalised (Zimsky et al., 2010). A review of METT use by the GEF found that higher scores were correlated with the presence of only protected area managers and staff; whereas scores were found to be 10 per cent lower when community members, NGOs and external experts were present (GEF, 2015). As a result of this, the GEF database on METT results now collects data on the number of people involved in the assessment. Data from over 300 METT assessments worldwide shows that although some assessments are still only completed by one person, 86 per cent involved more than one person, one site assessment involved 70 people and the average number of people involved is five (Stolton & Dudley, 2016). The METT datasheets allow for the type of stakeholders to be recorded (e.g. protected area staff, local stakeholders, NGO staff, etc.). Unfortunately, these check boxes are rarely completed;

making it impossible to know who has been involved in implementing the METT, which can be important if any follow-up or clarification is needed (Stolton & Dudley, 2016).

Issues related to implementation

All parts of the METT (e.g. datasheets and multiple-choice questions) are an important contribution to the assessment of PAME. There is a misconception (e.g. Mascia et al., 2014) that only the multiple-choice questions are part of the formal METT assessment process, and incomplete METTs are common (e.g. Burgess et al., 2014). A review of METT implementation in iSimangaliso Wetland Park, South Africa concludes: "Management effectiveness assessments should not be seen merely as a 'paper exercise' to meet reporting obligations. Rather, they should be undertaken objectively and with sober judgment and diligence to ensure that the effectiveness score achieved represents a realistic picture of management practices and processes, in the absence of hard quantitative data" (Carbutt & Goodman, 2013, p. 7). Procedural standards for completing the METT can help ensure its proper use (Coad et al., 2015) making the METT a useful adaptive management tool rather than just a reporting task (Zimsky et al., 2010). Indeed, for donors assessing project implementation, one of the most useful aspects of the METT exercise is the process rather than overall score. Being able to look at individual criteria and see whether or not progress is being made on that aspect – and, if not, what can be done to improve performance – remains one of the most important purposes of the METT.

Scoring

The METT score is not designed to be seen as a 'pass' or 'fail' but as an indication of the level of effective management. Many METT studies of implementation in specific countries or across suites of protected areas report on the assessment in terms of the six elements of the WCPA Framework (e.g. see Mwima, 2007; Inciong et al., 2013; Burgess et al., 2014, etc.). Where countries or regions have assessed multiple protected areas with METT, results can be collated across multiple sites, and recommendations focus on improvements across the network or agency as well as for individual protected areas (e.g. Cowan et al., 2010; Leverington et al., 2017; Lham et al., 2019, etc.). However, if the 'next steps' section of the METT has not been adequately filled in, it is difficult to use as an adaptive management tool. The METT can also be used to improve management in a single protected area or across a whole system by

METT training, Papua New Guinea © Ann Peterson

identifying activities to improve low scoring questions and by setting targets for improvement. Target scores such as this have been set in Indonesia (see Stolton & Dudley, 2016) and in South Africa (Cowan et al., 2010).

Multiple implementation

The METT was designed to be used repeatedly at sites, allowing progress to be measured over time in relation to specific management issues (Higgins-Zogib & MacKinnon, 2006). Users confirm benefits will largely be realised when multiple assessments are conducted and can report on significant changes in management practices or local conditions (Heffernan et al., 2005; Knights et al., 2014; Geldmann et al., 2015). Data collected in the METT database indicates at least 90 countries have used the METT more than once in at least one protected area (Stolton & Dudley, 2016). A study of 722 sites that had completed at least two METT assessments tested the criticism that METT scores are not an accurate reflection of reality on the ground and open to manipulation (Geldmann et al., 2015). The study found that most repeat METT assessments produce scores that suggest improvement in management over time, as would be expected if indicative of real improvements, but that some 30 per cent experienced no change, or even declines, in overall scores. Although this does not represent definitive evidence that scores are not manipulated, it suggests that at least some of the observed changes can be attributable to actual changes affecting management effectiveness on the ground. It should however be reiterated that the impact of management at individual sites is best gauged from the changes in scores for each question, or group of questions linked to elements of the WCPA Framework rather than against the overall score.

Verification of results

A common criticism of the METT is that it relies on purely subjective responses by the management agency and partners to questions, with no field verification (e.g. Johns, 2012). One of the objectives of the METT from the onset was for a simple and quick tool, so adding verification processes will clearly impact on these objectives. However, employing external experts to participate in the evaluation process is increasingly being practised, and recommended, in a range of PAME processes (Cook & Hockings, 2011). There are many different options for verifying METT results. Verification can be part of the assessment process, by including a detailed discussion and presentation process to develop, elaborate, clarify and/or present the METT assessment findings, using interviews and discussions groups to discuss the results. Such processes were implemented in the Philippines (Guiang & Braganza, 2014) and Zambia (Zimsky et al., 2010). Another option is to invite local or international experts who are familiar with the site to undertake a peer review of the results. For example, a detailed comparison of two assessments in Cameroon (Boumba Bek and Nki protected areas) demonstrated a rich picture of changing status and effectiveness following management interventions and support (Dudley et al., 2007). Field verification is probably the most thorough, but most expensive, form of verification. In Bhutan, field visits involving a selection of sites which had completed the Bhutan METT+ were carried out prior to finalising the results (Lham et al., 2019). Additionally, METT assessment could be complemented by using other, more detailed PAME tools.

DISCUSSION AND RECOMMENDATIONS

The METT works well as a quick and simple way of collecting information about the status and trends of management in protected areas, and it provides information that can help drive improvements in management. It is a cost-effective option that does not make unreasonable demands on people (e.g. protected area staff, community and other stakeholders) and resources, although costs can rise if more stakeholders are involved and verification processes are instituted.

A rapid self-assessment tool however is always likely to attract criticism that its implementation could be biased, with results being primarily qualitative and of limited use in understanding PAME (Cook & Hockings, 2011). The need for greater guidance has been emphasised by practitioners asking for a clear, emphatic and absolute

Meeting of protected area staff and local community representatives taking part in the METT verification process in Wangchuck Centennial National Park, Bhutan © Sue Stolton

statement on how to best apply assessment tools (Carbutt & Goodman, 2013) and noting that standardised, robust operating guidelines need to be developed and applied to improve the credibility of PAME results (Coad et al., 2015). In response to this call, the review of the use of the METT over the last 18 years has informed the development of the 12 best practices presented below, which can improve the way in which the METT is applied and hence the usefulness of the results to protected area management (Stolton & Dudley, 2016).

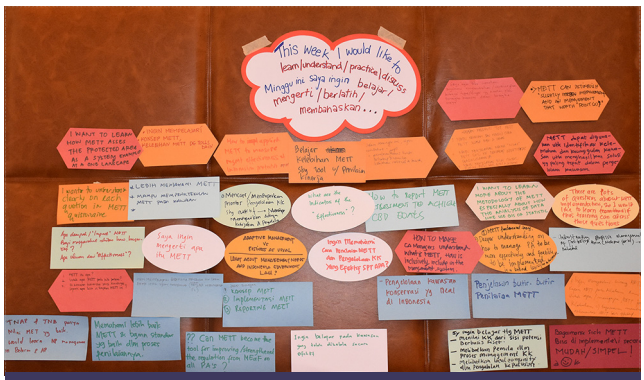
Carefully plan the METT implementation

1. Plan the implementation process. Review the METT questionnaire before undertaking the assessment and assess the information available to complete it. Then review capacity and pre-assessment training needs, adaptation, timing, scope and scale, verification, etc. (Carbutt & Goodman, 2013). Consideration also needs to be given to the process – for example, how and where a workshop is best conducted to maximise participation and input. Where a large-scale assessment exercise is planned, a pilot study to trial the questionnaire can be advantageous to discover any issues that need clarification.

2. Allow enough time to complete the assessment in full. A good METT cannot be completed in an hour; most questions take serious thought and often require consultation and checking back to management files. The first METT for a new site is likely to take at least a day, probably two. Subsequent repeat METTs may be quicker (Carbutt & Goodman, 2013; Knights et al., 2014).

Do it properly and do it all

3. Complete all the METT including all questions on the datasheets and narrative sections related to the multiple-choice questions. The 'next steps' section is essential as this creates a checklist of required actions. This can be developed into management interventions and provides a baseline for checking if the findings of the METT have been implemented in follow-up assessments (Zimsky et al., 2012 Carbutt & Goodman, 2013; Knights et al., 2014; Coad et al., 2015).



Workshop planning for system-wide implementation of the METT in Indonesia © Fiona Leverington

4. Use quantitative data wherever available to support assessment; this is most important in the outcomes questions (Knights et al., 2014; Ramsar, 2015; Dudley et al., 2016; Leverington et al., 2018).

Adapt and translate

5. Adaptation is encouraged as the METT is a generic tool designed for global use; thus it is unlikely to fit one protected area (or system, type, etc.) perfectly. Ideally adaptations should retain the basic format of the METT and add to, rather than change, the wording (e.g. providing additional advice on interpretation for local conditions or by additional questions) (Mwima, 2007; Cowan et al., 2010; Pap, 2012; Zimsky et al., 2012; Hockings et al., 2015; Kementerian Lingkungan Hidup dan Kehutanan, 2015; Dudley et al., 2016) or add additional questions (Stolton & Dudley, 2016).

Repeat the assessment

6. Sites/networks planning to implement the METT should aim to repeat the assessments every few years; ideally the METT should be an automatic part of annual planning and assessment (Heffernan et al., 2005; Knights et al., 2014; Geldmann et al., 2015; Stolton & Dudley, 2016).

Consult and get consensus

7. The implementation, and follow-up activities, of the METT should wherever possible include a wide range of rightsholders and stakeholders to aid insight into the assessment results; including people outside the protected area management agency, such as local communities, will bring richer insights (Zimsky et al., 2010; Cook & Hockings, 2011; Carbutt & Goodman, 2013; Cook et al., 2014; Coad et al., 2015; GEF, 2015; Stolton & Dudley, 2016).

Build capacity and guidance

8. Capacity building is advisable so that all participants understand PAME and the purpose,

Meeting of protected area staff and local community representatives taking part in the METT verification process in Royal Manus National Park, Bhutan © Sue Stolton

opportunities and limitations of the METT (Cook & Hockings, 2011; Zimsky et al., 2012; Coad et al., 2015 Dudley et al., 2016).

Develop a better understanding of the METT through site/country specific advice and guidance, to help ensure METT questions are interpreted in the same way when implemented at a country/portfolio level (Mwima, 2007; Inciong et al., 2013; Lham et al., 2019).

Verify results

10. If deemed necessary develop a verification process; these can range from simple checking of completed METTs by external assessors to more detailed field verification exercises involving additional data collection (Dudley et al., 2007; Zimsky et al., 2010; Cook & Hockings, 2011; Johns, 2012; Guiang & Braganza, 2014; Lham et al., 2019). Where staff have capacity and resources, the METT can also be complemented with more detailed assessments, research, species monitoring, etc.

Implement recommendations

11. Implementation of the METT results should include adaptive management (e.g. a plan of action to address concerns, use of results in the development or revision of management plans or annual operational plans, etc.) and clearly planned communication processes (e.g. presentations and reports) to share results locally, particularly with the participants who helped complete the METT (Mwima, 2007; Inciong et al., 2013; Leverington et al., 2018).

12. Finally, data should be shared nationally or globally, for example by submitting METT data to the Global Database on Protected Area Management Effectiveness (GD-PAME) managed by UNEP-WCMC, which is mandated by the CBD to maintain the GD-PAME and use it for CBD reporting.

CONCLUSIONS AND NEXT STEPS

Given the wide use of the METT, the results of the review of implementation undertaken here and the increased use of the METT in helping countries reach Aichi Biodiversity Target 11, there is an argument to update the METT and develop a new (METT 4) version which builds on the best practices and lessons learned from the last 18 years and includes more outcomes-oriented, social and climate change questions (Stolton &

Dudley, 2016). A METT version with additional questions relating to climate change and conservation outcomes for species and habitats, together with more comprehensive guidance on how to conduct the assessment and how to rate the indicators has been produced for the German Development Bank (KfW) (Marnie Bammert, pers. comm., February, 2019). This could form the basis for METT 4 and plans are being developed to produce this in 2020. In addition, an online version of the tool, also planned for 2020, will greatly aid country implementation, eliminate the need for each separate project to develop a separate data collecting system and aid global data collection and reporting.

The focus of protected area capacity building is now moving beyond assessments towards the establishment of globally-accepted standards and, increasingly, third-party verification that these standards are being met. Conservation Assured | Tiger Standards (CA|TS) (Conservation Assured, 2019) and the IUCN Green List of Protected and Conserved Areas (IUCN, 2016) are two well-developed examples. However, these standards are either predicated on the assumption that management effectiveness assessments are being carried out as an essential part of the management process (CA|TS) or seen as an important part of management (the Green List). As the favoured 'first assessment' system, use of the METT will likely spread even further as these systems develop.

SUPPLEMENTARY ONLINE MATERIAL

1. Table 1. METT adaptations
2. Full results of the literature review

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We would like to thank the many thousands of people who have used the METT and all those who contributed to the METT Handbook (Stolton & Dudley, 2016). Specifically, we would like to thank WWF UK for funding the review of METT implementation. We would also like to acknowledge the developers of the Global Database on Protected Area Management Effectiveness (GD-PAME) and METT database and the data they contain, which was gathered together with protected area managers globally. The data was collated under the auspices of the IUCN Management Effectiveness Task Force, working together with the Universities of Queensland, Oxford and Copenhagen, UNEP-WCMC and with financial assistance from various donors, including WWF and the GEF.

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RESUMEN

La comprensión de los éxitos y fracasos en torno a la gestión de las áreas protegidas es vital para la conservación de la biodiversidad mundial. La herramienta de seguimiento de la efectividad del manejo (METT, por sus siglas en inglés) es un método sencillo basado en un cuestionario para evaluar la efectividad de la gestión de las áreas protegidas (PAME, por sus siglas en inglés). Desde su desarrollo en 1999, se ha convertido en la herramienta más ampliamente aplicada y utilizada en al menos 127 países de todo el mundo. Este artículo examina el desarrollo de METT y cómo se ha implementado y adaptado.

Una combinación basada en una revisión bibliográfica sobre la implementación y la experiencia en materia de aplicación concreta tanto por parte de los autores originales como de los usuarios clave de METT confirma que METT es una forma relativamente rápida y sencilla de recopilar información sobre el estado y las tendencias de la gestión en áreas protegidas, y proporciona información para ayudar a impulsar mejoras en la gestión. De ahí que es apropiada para administradores de áreas protegidas, agencias nacionales de áreas protegidas, donantes, y ONG, etc., con el objetivo de mejorar la gestión de áreas protegidas y como un componente en la presentación de los informes nacionales al Convenio sobre la Diversidad Biológica.

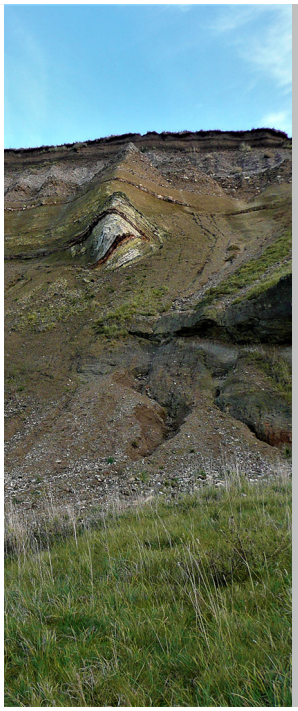
El documento examina los problemas relacionados con la implementación de METT y concluye con 12 recomendaciones, desde el uso de METT hasta la verificación de resultados, que en conjunto ayudan a garantizar que la herramienta se implemente de la manera más eficaz y mejore la credibilidad de las evaluaciones sobre PAME.

RÉSUMÉ

Comprendre les succès et les échecs de la gestion des aires protégées est un élément crucial pour la conservation de la biodiversité mondiale. Une approche simple à ce besoin consiste en l'Outil de suivi de l'efficacité de la gestion (communément appelé METT), basé sur un questionnaire, qui permet d'évaluer l'efficacité de la gestion des aires protégées. Depuis son développement en 1999, il est devenu l'outil d'évaluation le plus répandu, utilisé dans au moins 127 pays à travers le monde. Le présent document passe en revue le développement de cet outil et la manière dont il a été mis en œuvre.

L'examen combiné d'une étude documentaire sur la mise en œuvre du METT et d'un retour d'expérience des auteurs originaux et des utilisateurs clés, nous permet de confirmer que le METT est un moyen relativement rapide et simple de recueillir des données sur l'état et les tendances de la gestion dans les aires protégées et de fournir des informations favorisant l'amélioration de la gestion. A ce titre il est bien adapté aux gestionnaires d'aires protégées, aux agences nationales des aires protégées, aux donateurs, et aux ONG, qui cherchent à faire progresser la gestion des aires protégées, et il constitue un élément important des rapports nationaux soumis à la Convention sur la diversité biologique.

Ce document examine les questions liées à la mise en œuvre du METT et se termine par 12 recommandations, allant de l'utilisation du METT à la vérification des résultats, qui visent à assurer une mise en œuvre optimale de l'outil et à renforcer ainsi la crédibilité des évaluations portant sur la gestion des aires protégées.



LESSONS LEARNED FROM A DESKTOP REVIEW OF CONSERVATION AREAS IN DENMARK: APPLYING IUCN MANAGEMENT CATEGORIES FOR PROTECTED AREAS

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ABSTRACT

As time and resources are often limited, new ways of reporting on national protected areas as part of international conservation commitments can be beneficial. Denmark has, as many other parties, signed the Convention on Biological Diversity (CBD) and been requested to report to the World Database on Protected Areas (WDPA) on its national status for protected areas. The IUCN Guidelines for Applying Protected Area Management Categories are globally recognised and referenced in the WDPA. In 2018, the IUCN National Committee of Denmark undertook a project on behalf of the Danish Environmental Protection Agency to assess a specific type of protected area in Denmark called Conservation Areas and to identify which of these areas could be assigned IUCN management categories. The project was a desktop review and found that 22 per cent of the Conservation Areas assessed fulfilled the IUCN definition of a protected area. This project has shown that an assessment can be done relatively quickly by using a standardised method, and although there are limitations with desktop reviews, they can be a useful option for countries wanting to improve their reporting to the WDPA.

Key words: Protected areas, Danish Conservation Areas, IUCN Guidelines on Protected Area Management Categories, WDPA, Aichi Target 11, CBD, international conservation commitments

INTRODUCTION

At the beginning of 2017, the IUCN National Committee of Denmark started looking into the possibility of a project where the IUCN Guidelines for Applying Protected Area Management Categories could be applied to Danish protected areas. The original idea was to write a manual for the guidelines in Danish on how to apply the Protected Area Management Categories in a Danish context. The Danish IUCN National Committee had invited Chris Mahon, Chief Executive of the IUCN National Committee for the United Kingdom, to a seminar to share experiences from the UK's Putting Nature on the Map project (Crofts et al., 2014). This project was initiated by the IUCN National Committee of the United Kingdom in 2011 and has similar objectives to the current project.

However, in spring 2018 after a debate in the media on the quality of Danish Conservation Areas reported to the European Environment Agency (EEA), the then Danish Minister for Environment and Food requested IUCN to review the Conservation Areas according to IUCN's criteria. The Danish National Committee then offered to do the full review, by involving the Danish members of the IUCN World Commission on Protected Areas (WCPA). In June 2018, the offer was accepted, and the work began. This project complemented the National Committee's goal on using the guidelines to improve the management of protected areas.

The debate in the media was rooted in a review from 2009/10 which looked at 1,843 Conservation Areas, a specific type of protected nature area (in Danish called *Fredninger*). Since the Danish Nature Protection Act came into force in 1917, these Conservation Areas have been a key tool in protecting nature in Denmark. They are the oldest and most comprehensive tool for the protection of flora and fauna, landscapes and cultural

values and today cover about five per cent of Denmark's terrestrial area. The 2009/10 review was carried out by the then Danish Agency for Spatial and Environmental Planning and the IUCN Management Guidelines were applied. The data was submitted to the EEA which collects data on protected areas from the member countries of the European Union. The EEA then submits the data to the UNEP-World Conservation Monitoring Centre to be included in the World Database on Protected Areas (WDPA, Protected Planet). The data in the WDPA are provided by governments and used to estimate whether aspects of Aichi Target 11, under the Convention on Biological Diversity (CBD), are fulfilled. Aichi Target 11 overall states: "By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, are protected..."[1] (CBD Strategic Plan for Biodiversity, 2010). The WDPA data is also used in three indicators for the UN Sustainable Development Goals 14 and 15, as well as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). With the international goals and targets reported in the Protected Planet Report series (UNEP-WCMC, IUCN & NGS, 2018; UNEP-WCMC & IUCN, 2016), there is a rising awareness among governments that the reporting is important (Gannon et al., 2017).

From June to November 2018, the IUCN National Committee of Denmark undertook the project on behalf of the Danish Environmental Protection Agency to assess the Conservation Areas and identify the areas where the main objective is conserving nature and thereafter, if the area fulfils the definition of protected areas. If these requirements were met, the areas were assigned the appropriate IUCN Management Category for Protected Areas. The Conservation Areas are protected according to Chapter 6 of the Danish Nature Protection Act, and this project is the first of its kind in Denmark to thoroughly review a type of protected area to identify whether it meets the IUCN definition of a protected area and its underpinning Management Categories.

The project was carried out by a group led by two Danish members of WCPA. The project team also consisted of Danish members of the IUCN Commission on Ecosystem Management and IUCN Species Survival Commission, as well as a specialist within the field of cultural history and other experts in biodiversity and nature management. The project owner was the IUCN National Committee of Denmark and only the Chair of the National Committee was actively involved by overseeing the project and corresponding with the Danish Environmental Protection Agency. None of the other National Committee members were involved in the execution of the project. This governance structure made it possible for the National Committee members to freely comment on the results when they were made available. Furthermore, Andrej Sovinc, WCPA Vice-Chair for Europe, and Trevor Sandwith, Director of the IUCN Global Protected Areas Programme, were also consulted prior to the project to ensure endorsement from WCPA, and the IUCN Secretariat respectively.

METHOD

The Danish Environmental Protection Agency provided a list of 1,720 Conservation Areas to be assessed over a period of 10 weeks. The project was designed as a desktop study. The assessments were initially started by surveying content found in the declarations gathered electronically from the national register of declarations for Conservation Areas. The declarations were then compared with information that could be accessed electronically in the Danish Natural Environmental Portal (the official portal to data on nature and environment in Denmark) or other relevant online portals from the Danish Environmental Protection Agency. This could, for example, be information on land -use, biodiversity index values or areas of National Geological Interest. It is important to note that the municipalities are the authorities for most of the Conservation Areas in Denmark. Therefore, for private and municipal-owned Conservation Areas further searches were made about the dedication, management, nature content, etc. on the municipalities' websites as well as through general searches on management, care, ownership, etc.

This review used the revised IUCN Best Practice Guidelines to assign IUCN management categories (Dudley et al., 2013). At the start of the project, an assessment sheet (in Danish) was prepared, based on these IUCN Guidelines. To ensure a uniform assessment, test assessments were made for a number of Conservation Areas by the main assessors in the project group. In addition to making assessments, the two WCPA members also carried out quality checks of the other assessors' assessments for each Conservation Area in order to ensure that the IUCN Guidelines were followed in all aspects. Specialist knowledge on geology, cultural history and ecosystem services provided supplementary assessments of selected Conservation Areas.

For each assessment, the first step was to identify if the main goal of the Conservation Area was, in fact, nature protection. This could seem irrelevant, but for many Conservation Areas, the aim of protecting a specific area was not always clear, especially in old declarations, so it

was necessary to dig deeper into the protection declaration to find the actual goal. If a Conservation Area was considered to have nature protection as a main goal, the Conservation Area was assessed according to the following nine parameters originating from IUCN's definition on protected areas:

1. A clearly defined geographical space
2. Recognised
3. Dedicated
4. Managed
5. Protected through legal or other effective means
6. Long-term nature conservation
7. Nature exists in the area (biodiversity, geodiversity, landscape)
8. Associated ecosystem services
9. Protection of cultural values (if present).

If one of the mentioned parameters was not fulfilled the Conservation Area could not be regarded as fulfilling the IUCN definition for protected areas and therefore could not be assigned an IUCN Management Category. With regard to associated ecosystem services, the evaluation was restricted to outdoor recreation, tourism development, ground water protection and fishery because these parameters were the most profound. For cultural values the analysis was restricted to cultural history in the landscape, especially ancient monuments.

During the execution of the project, valuable advice was received from Nigel Dudley, main author of the IUCN Guidelines for Applying Protected Area Management Categories (Dudley, 2008; Dudley et al., 2013). A description of the project was provided in English to ensure that the basic interpretations by the Danish experts were in line with the IUCN Guidelines. In addition, advice was sought for 16 specific Conservation Areas each representing a principal question with regard to the fulfilment of the IUCN definition of protected areas and the assignment of an IUCN Management Category.

RESULTS

An in-depth project review and method of assessments can be found in the published report (in Danish) that was completed for the Danish Environmental Protection Agency (Woollhead & Petersen, 2018).

The main conclusion from the project is that 378 Conservation Areas from the list provided by the Danish Environmental Protection Agency could be assigned an IUCN Management Category based on the desktop analysis alone. This is to be seen in contrast to the 1,843 areas assigned IUCN categories in 2009. It refers only to the number of areas. (Table 1).

It is important to note that the Conservation Areas in the two lists (from 2009/10 and 2018 respectively) are not consistent in that not all areas assigned a category in the 2009/10 review occur in the 2018 list of areas and vice versa. Some Conservation Areas have been removed from the 2018 list and new Conservation Areas have been added as compared to the 2009/10 list. Furthermore, a number of marine Conservation Areas have been added to the 2018 list which were not present in the 2009/10 list.

There is no spatial overlap between the individual Conservation Areas in the same list, barring minor errors which are of no significance here. In order to answer the question on how this project's results compared to the assessments in 2009/10, the Conservation Areas for the two reviews have been sorted

Table 1. Conservation Areas which have been assigned with an IUCN Management Category for Protected Areas in 2009/10 and 2018 respectively

IUCN Categories	2009/10	2018	Difference
Ia Strict Nature Reserve	6	5	- 1
Ib Wilderness Area	7	0	- 7
II National Park	9	3	- 6
III Natural Monument	20	16	- 4
IV Habitat/Species Management Area	204	242	+ 38
V Protected Landscape/Seascape	1,597	111	- 1,468
VI Protected Area with Sustainable use of Natural Resources	0	1	+1
Assigned with an IUCN category	1,843	378	
Total number of *Conservation Areas*	1,843	1,720	

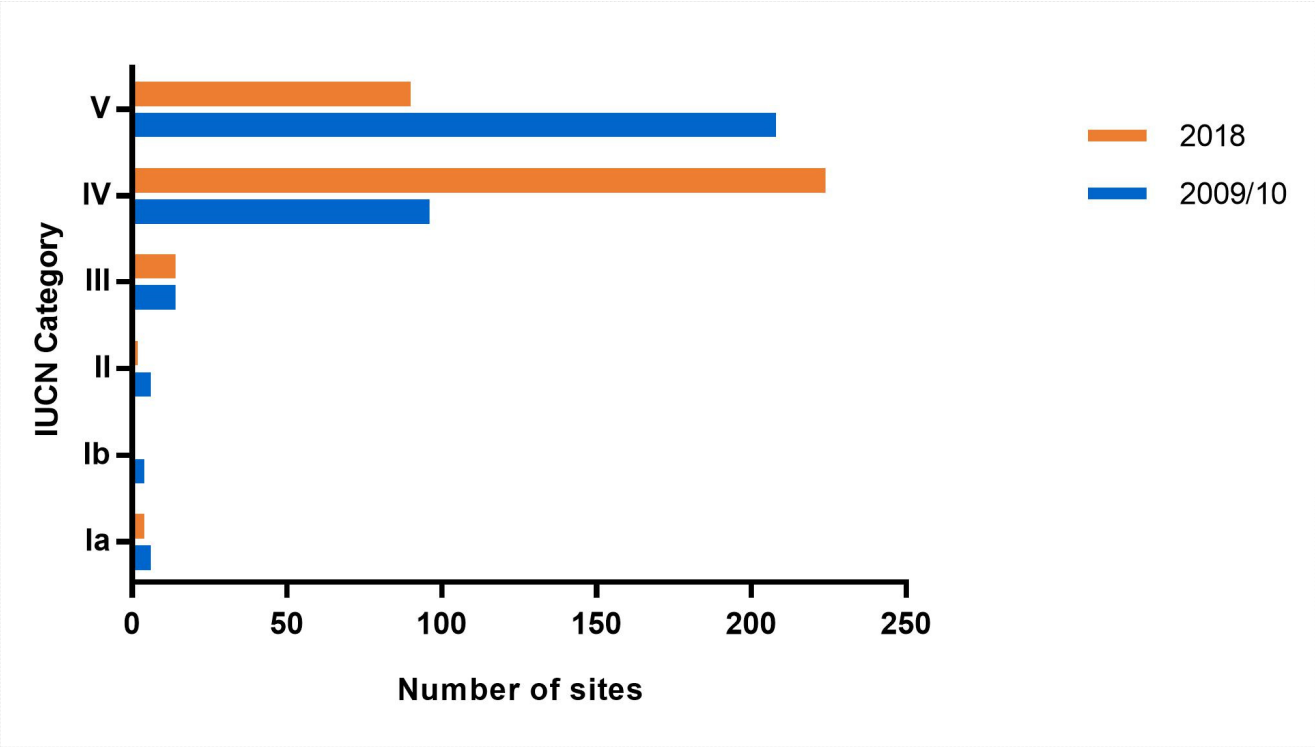

Figure 1. Assignment of Conservation Areas to IUCN categories in 2009/10 and 2018 based on sites assessed in both time periods

in such a way that only the areas which were included in both reviews are compared (Figure 1).

The main difference in the results from the two reviews was firstly due to a different position at the onset. In the 2009/10 review, if an area was protected according to the Danish Nature Protection Act Chapter 6, it was assessed to fulfill the IUCN criteria of a protected area without a thorough assessment. In the 2018 review, it was assessed if an area could fulfil the basic IUCN criteria for a protected area, and if it could, then it would be assigned an IUCN Management Category.

Other reasons why Conservation Areas in the 2018 review were not assigned with IUCN Management Categories include:

- if the main goal was to preserve viewpoints, recreational areas, cultural sites, or aesthetic landscapes;
- if an area did not have strong legal regulations fulfilling the protection goals in the specific declaration of the area;
- if there was a lack of management plans or other proof of management taking place.

Looking at the areas assigned with an IUCN Management Category in both reviews, the main difference is the Conservation Areas which were previously assigned to Category V (Protected Landscapes) have now been assigned to Category IV (Protected Habitat and Species Areas). The reason for this is that Category V is intended for larger natural areas, which the previous review did not weigh as a factor. The present management of many of the areas includes goals on protecting specific habitats or species and therefore could instead justify the assignment to Category IV. Figures 2 to 4 are examples of Conservation Areas that have been assessed in both periods with the result of the assessment indicated in the caption.

The number of Conservation Areas within the less common categories (i.e. within IUCN Management Categories Ia, Ib and II) were fewer in the 2018 review compared to the 2009/10 review. No Conservation Areas have been assigned Category Ib (Wilderness Areas) in the 2018 review, due to the fact that the Danish landscape in general is too influenced by people. The number of Conservation Areas that belong to Category III (Natural Monument) is the same in both reviews but some of the categorised areas are different. It should also be mentioned that in 2009/10, the IUCN Management Category VI (Protected Areas with Sustainable use of Natural Resources) was new and therefore not widely used. In 2018, one Conserved Area at sea was assigned to Category VI. Examples of

Figure 2. Æbelø and the surrounding sea territory are an example of a Conservation Area which in this assessment is assessed as managed under the category National Park (II) without, however, being designated as a national park. The area comprising 3,000 ha was previously reported under Category IV © Anette Petersen.

Figure 3. The hills of Veddinge are protected as a Conservation Area to preserve the landscape as a whole with its geological values that include part of the glacial series, i.e. continuous landscape elements formed in front of an advancing glacier during the last Ice Age. The area was previously reported under Category IV but has in this project been assessed as Category V © Anette Petersen.

Figure 4. The coastal cliffs of Nordmors and the hinterland are a Conservation Area protecting the landscape and scientific values. The area was reported under Category II during the reporting in 2009/10. In this review it has been assessed as a Natural Monument (Category III) © Anette Petersen.

Conservation Areas that changed designation in this comparison across time are given in Figures 2 to 4.

DISCUSSION

The review found that 22 per cent of the Conservation Areas assessed fulfilled the IUCN definition of a protected area. Because the review was based on a desktop study there were limitations to accessing data. It may well be that information on one or more parameters may not be publicly available through websites and databases. A number of Conservation Areas could be found to be fulfilling the IUCN definition of protected areas and be assigned an IUCN Management Category if more data were available. This was not possible to do during the present study, but could have been obtained by, for example, direct contact with the municipalities responsible for their management. In all, 291 sites were not accepted as protected areas due to a lack of information on management. This means that up to 30 per cent of the Conservation Areas could possibly have been assigned an IUCN Management Category if more in-depth data were available.

It is important to note that although many Conservation Areas have not been assigned an IUCN Management Category, it does not mean that these areas are not valuable to Danish nature. Many of the Conservation Areas are areas with a cultural purpose including a natural content. However, as their main goal is cultural and not nature protection, they cannot be categorised as protected areas on the basis of the IUCN definition. It could be useful to undertake a review of 'other effective area based conservation measures' (OECMs) for those areas that do not meet the IUCN Management Categories when the OECM guidelines are available.

Furthermore, it should be noted that Denmark (via the EEA) not only reports Conservation Areas in the World Database on Protected Areas. Denmark also reports Article 3 Protected Nature – these areas are protected by the Danish Nature Protection Act (Chapter 2) under Article 3 protecting all natural habitats above a certain size such as moor, meadows, heather, lakes, rivers, grassland, and salt marshes; as well as National Parks and Natura 2000 sites. Data on sites designated under international conventions and agreements, such as Ramsar, OSPAR, HELCOM and UNESCO World Heritage are also in the WDPA but are reported on by the relevant convention secretariats. Therefore, the results in this project only partially contribute to an updated report from Denmark according to IUCN's criteria for protected areas. It should also be highlighted that so far no assessments have been made on natural sites owned by foundations and other non-state actors.

There are both pros and cons of a desktop study. The pros are that this type of study can be completed in a relatively short time and requires relatively few resources. In this project, the assessments are carried out solely for Conservation Areas, but in principle they can be carried out for all types of protected nature. The cons are that information may be unavailable online, for example, there may be areas that are well-managed but do not have a management plan or similar available online. In such cases, the areas will not be accepted as fulfilling the IUCN criteria. In turn however, this may prompt better communication on the management of a protected area, for example, by being communicated on a website for the benefit of the public, thereby raising awareness of the protection that is taking place.

Nevertheless, the exercise highlighted the need for a more thorough review of sites before reporting to the EEA database. It can be completed relatively quickly by using a standardised method based on the IUCN Guidelines for Applying Protected Area Management Categories and could easily apply to other countries as well which have signed the CBD and wants to reach the global goals of at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas.

CONCLUSION

As time and resources are often limited, new ways of reporting on national protected areas as part of international conservation commitments can be beneficial. Denmark has, like many other parties, signed the Convention on Biological Diversity (CBD) and has been requested to report to the World Database on Protected Areas on its national status for protected areas. The IUCN Guidelines for Applying Protected Area Management Categories are globally recognised and referenced in WDPA.

This project has shown that an assessment can be completed relatively quickly by using a standardised method based on the IUCN Guidelines for Applying Protected Area Management Categories. Although there are limitations with desktop reviews, they can be a useful option for countries who have limited time to update their data and/or want to improve their reporting to the WDPA, and thereby improve their

The protected area Agerø, Skibsted Fjord in Thy, North Jutland, Denmark is the first area to be assessed as the IUCN Management Category VI. The sea area constitutes a common good with the utilisation of the natural resource while ensuring a high nature content. Local communities can fish with nets in the area and hunt as part of a sustainable use of resources. © Morten Rasmussen.

assessment on reaching Aichi Target 11, as well as Sustainable Development Goals 14 and 15 (Gannon et al., 2017). For each single area not fulfilling the definition, the assessment indirectly gives advice on how to improve the protection.

This project has also shown how an IUCN National Committee, together with IUCN Commission members and with support from IUCN-WCPA and the IUCN Secretariat, can be part of the reviewing process of protected areas. In the IUCN Guidelines for Applying Management Categories to Protected Areas, it reads "One option would be to have a national task force reviewing data on protected areas and it has been suggested that a national committee for IUCN might be an obvious vehicle for this" (Dudley et al., 2013, p. 40).

The Danish IUCN National Committee will continue with the initial idea of producing a manual for the IUCN Guidelines in Danish and is prepared to assist with applying the IUCN Management Categories on other types of protected areas in Denmark. It is hoped that this review will act as an example of how such an assessment can be made easier and quicker. It is also hoped that the review can be used as an example for other countries wanting to apply the IUCN Management Categories and subsequently report to the WDPA.
The Danish Environment Protection Agency has publically announced that it will follow the results from this review when reporting to the WDPA in 2019 (Miljøstyrelsen, 2018).

ENDNOTES

[1]Target 11: By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.

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A common Danish type of Conservation Area whose main purpose is the preservation of a view—here it is the view from the road along a prominent elongated hill in Lumsås over the Bay of Sejerø, Odsherred, Northwest Zealand, Denmark. © Anette Petersen

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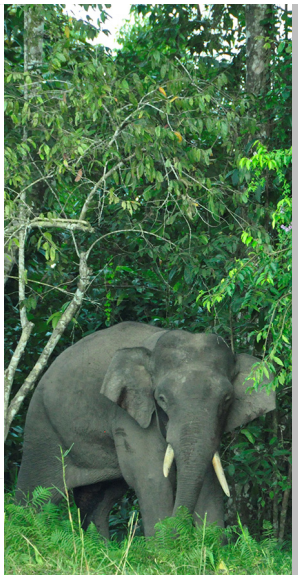
RESUMEN

Como a menudo el tiempo y los recursos son limitados, podría ser ventajoso contar con nuevas formas para informar sobre áreas protegidas nacionales como parte de los compromisos internacionales de conservación. Dinamarca, como muchas otras partes, firmó el Convenio sobre la Diversidad Biológica (CDB) y se le pidió que informara a la Base de Datos Mundial sobre Áreas Protegidas (WDPA, por sus siglas en inglés) sobre el estatus nacional de sus áreas protegidas. Las directrices de la UICN para la aplicación de las categorías de gestión de las áreas protegidas son reconocidas a nivel mundial y figuran en la WDPA. En 2018, el Comité Nacional danés de la UICN emprendió un proyecto en nombre de la Agencia Danesa de Protección Ambiental para evaluar un tipo específico de áreas protegidas en Dinamarca llamadas Áreas de Conservación e identificar a cuáles de estas áreas se les podría asignar categorías de gestión de la UICN. El proyecto consistió en una revisión de escritorio y concluyó que el 22% de las Áreas de Conservación evaluadas se ajustaban a la definición de la UICN de área protegida. Este proyecto ha demostrado que se puede hacer una evaluación relativamente rápida mediante el uso de un método estandarizado, y aunque existen limitaciones en lo que a revisiones de escritorio se refiere, podrían ser una opción útil para los países que desean mejorar la presentación de sus informes a la WDPA.

RÉSUMÉ

Le temps et les ressources étant souvent limités, il parait bénéfique d'adopter des nouvelles méthodes de communication des données relatives aux aires protégées nationales dans le cadre des engagements internationaux en matière de conservation. Le Danemark, de même que d'autres pays ayant signé la Convention sur la diversité biologique, est tenu de faire un rapport sur le statut de ses aires protégées à la Base de données mondiale sur les aires protégées (connue sous l'acronyme anglais WDPA). Les lignes directrices de l'UICN pour l'application des catégories de gestion des aires protégées sont mondialement reconnues et référencées dans la WDPA. En 2018, le Comité national danois de l'UICN a entrepris, pour le compte de l'Agence danoise pour la protection de l'environnement, un projet visant à évaluer un type spécifique d'aire protégée au Danemark, dite 'Aire de Conservation', et à identifier lesquelles de ces aires pourraient être classées dans les catégories de gestion de l'UICN. Le projet qui consistait en un étude documentaire assistée par ordinateur, a révélé que 22% des Aires de Conservation évaluées correspondaient à la définition d'aires protégées de l'UICN. Ce projet a montré qu'une évaluation peut être effectuée relativement rapidement à l'aide d'une méthode normalisée. Bien que les examens assistés par ordinateur aient des limites, ils peuvent donc constituer une option utile pour les pays qui souhaitent améliorer l'efficacité de leurs rapports à la WDPA.



SHORT COMMUNICATION

ARE 'CONSERVED AREAS' CONSERVATION'S MOST COMPELLING STORY?

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ABSTRACT

State and non-state actors are negotiating a new area-based target for the Convention on Biological Diversity's post-2020 global biodiversity framework. Some terms likely to be referenced are well known ('protected areas') and others newly agreed ('other effective area-based conservation measures', abbreviated to 'OECMs'). Yet one potentially relevant concept in circulation remains undefined, namely: 'conserved areas'. While creative ambiguity has its merits, there may be benefits to reaching agreement on its meaning. Of a range of possible meanings, one in particular inspires us to review how we think about conservation. 'Conserved areas', as a non-legal term for "areas sustaining ecological integrity and/or effective in situ conservation of nature", enables us to focus afresh on the diversity of approaches that contribute to living landscapes and seascapes, including but not limited to effectively managed protected areas and OECMs. Inclusive dialogue about this question may help define area-based targets for 2021-2030 as well as develop a compelling story for the future of conservation.

Key words: Conserved areas, OECM, Indigenous Peoples, local communities, post-2020

CONFUSION OR CREATIVE AMBIGUITY?

The term 'conserved areas' is being used with increasing frequency within international policy circles, often without clear indication of the intended meaning. For example, both the Promise of Sydney and IUCN Resolution 6.033 "Recognising cultural and spiritual significance of nature in protected and conserved areas" reference 'conserved areas' multiple times without defining the term (IUCN, 2014, 2016). The recent Convention on Biological Diversity (CBD) decision on "Protected areas and other effective area-based conservation measures" refers to 'conserved areas' nineteen times, also without defining it (CBD, 2018). Similar usage is reflected in a number of submissions to the CBD about the proposed new area-based target in the post-2020 global biodiversity framework (CBD, 2019).

In other instances, the term is defined to mean different things. The Green List of Protected and Conserved Areas (IUCN, 2019) defines 'conserved areas' as including but not being limited to 'other effective area-based conservation measures' (OECMs). Some commentators use it in the context of conservation by Indigenous Peoples and local communities, often in reference to areas outside or overlapped by state-recognised protected areas (Stevens et al., 2016; Indigenous Circle of Experts, 2018). Others have proposed that 'conserved areas' might refer to "area-based measures that, regardless of recognition and dedication, and at times even regardless of explicit and conscious management practices, achieve de facto conservation and/or are in a positive conservation trend and likely to maintain it in the long term" (Borrini-Feyerabend & Hill, 2015).[1]

An undefined term is not inherently problematic. Creative ambiguity is credited for providing a "delicately -balanced conceptual space in which the existence of ambiguity leads to creative outputs" (Belshaw, 2010). Conversely, the crystallisation of concepts and agreed ways of expressing shared phenomena has merit, especially if the term is used in legal and policy contexts. The process of developing a common understanding of a concept can spur advancements in thinking and – notwithstanding inherent challenges in translation across languages – contribute to an enabling environment for dynamic collaboration. This has been

evident in the work of the Task Force on OECMs (Jonas et al., 2018) and the increased interest in conservation beyond protected areas by state and non-state actors in response to the newly agreed definition and criteria of an OECM (CBD, 2018).[2]

OPTIONS

'Conserved areas' is an undefined, simple and evocative term that has the potential to foster collective clarity about our overall conservation goals and means to achieve them. What are some of the options for the meaning and use of this term?

1. We can continue to use 'conserved areas' without defining it or use it with a diversity of meanings.

2. The term can be used to describe effective conservation by Indigenous Peoples and local communities occurring outside of or overlapped by protected areas. This approach would raise the question of whether other governance types could also govern conserved areas ('privately conserved areas', for example).

3. 'Conserved areas' could be used as shorthand for 'OECMs'. One potential issue with this approach is that it limits the term's application to areas that are recognised as OECMs, simultaneously excluding areas of equal or higher conservation value outside both protected areas and OECMs.

4. This issue could be addressed by using 'conserved areas' to refer to areas of effective conservation outside of protected areas – i.e., we would understand landscapes and seascapes as including, among other kinds of areas, mutually exclusive protected areas and other areas delivering conservation outcomes ('protected and conserved areas'). This provides a neat dichotomy between the designation of protected areas, which is a well-defined area of law, policy and practice, and the newer concept of conserved areas. This usage may give the impression, however, that protected areas (as a designation) are not also 'conserved'.

5. We could use the term to refer to areas sustaining ecological integrity[3] and/or effective in situ conservation of biodiversity (adapted from Borrini-Feyerabend &

Pygmy elephant near Abai village in a community-governed area of the Lower Kinabatangan-Segama Wetlands Ramsar Site, Sabah, Malaysia. © Harry Jonas

Hill, 2015). This approach would include, at least, protected areas that effectively conserve biodiversity (inviting less effective protected areas to improve their management and conservation effectiveness), OECMs, and other kinds of areas delivering conservation outcomes – such as territories and areas conserved by Indigenous Peoples and local communities that are not recognised as protected areas or OECMs.

OPPORTUNITIES

The above, non-exhaustive list of options suggests that there is no immediate need to define the term; let a thousand flowers bloom. But might agreement on one or other definition of the term help people and communities interested in nature conservation better collaborate and communicate our broadly shared vision to others? In this context, the fifth approach – "areas sustaining ecological integrity and/or effective in situ conservation of nature" – is perhaps the most promising.

It may at first appear confusing due to the issue of overlapping protected and conserved areas. This conceptual barrier can be overcome by differentiating between (a) 'conserved areas' as a descriptor of the persistence of the ecological and biological state of an area and (b) 'protected areas' and 'OECMs' as legally defined designations of area-based conservation measures. This paradigm shift enables us to envisage, articulate and communicate the conditions required by all life on Earth, namely: a planet characterised by ever more areas sustaining ecological integrity and/or effective in situ conservation of nature (conserved areas). Such 'conserved areas' can be achieved, maintained and/or secured through a range of mechanisms, including by designating, equitably governing and effectively managing protected areas, recognising, reporting and supporting OECMs and respecting other areas sustaining ecological integrity and/or conservation effectiveness.

Reviewing the CBD's current Strategic Plan for Biodiversity 2011-2020, it is notable that Target 11 is oftentimes referred to as the 'protected areas target', missing the importance of the term 'other effective area-based conservation measures' as well as the living, breathing, geographically defined areas the term describes. Our actions are influenced by the way we define, use and acknowledge the deeper meanings of words. A closing question therefore, as we negotiate the post-2020 global biodiversity framework, is whether we should think about a conserved areas target that can be achieved through a range of area-based measures, including protected areas and OECMs.

View from Melangkap village towards Kinabalu Park, Sabah, Malaysia. Might a focus on 'conserved areas' promote greater connectivity between community- and state-governed areas that sustain ecological integrity? © Harry Jonas

The activist poet Drew Dellinger has said: "The future belongs to the most compelling story."[4] Is a collective understanding of 'conserved areas' a vital part of the vocabulary required at this juncture to co-develop and tell the story of area-based conservation's emerging future? If so, the implications for nature conservation of an inclusive debate about this issue may be profound.

ENDNOTES

[1] Elsewhere Borrini-Feyerabend provides the following definition of a 'conserved area': "natural and modified ecosystems, including significant biodiversity, ecological functions and cultural values that—regardless of

Kelabit community lands in Bario, Sarawak, Malaysia. © Harry Jonas

recognition, dedication and management—are de facto conserved and/or in a positive conservation trend and likely to maintain it in the long term". Borrini-Feyerabend, G. (2016). 'Mothers or lesser sisters: the strange case of conserved areas'. Square Brackets, p. 20. CBD Secretariat and CBD Alliance: Montreal. https://www.cbd.int/ngo/square-brackets/square-brackets-2016-04-en.pdf. Last accessed 20 August 2019.

2. An 'other effective area-based conservation measure' is defined as: "A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio–economic, and other locally relevant values" (CBD, 2018).

3. Ecological integrity is an appealing concept, increasing in usage, but challenging to measure (Timko & Satterfield, 2008; Woodley, 2010; Brown & Williams, 2016; Wurtzebach & Schultz, 2016; Théau et al., 2018). There are a number of definitions of ecological integrity. For example the Canadian National Parks Act (2000) defines 'ecological integrity' as: "a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes". https://laws-lois.justice.gc.ca/eng/acts/n-14.01/page-1.html#h-360230. Last accessed 20 August 2019.

4. "The ecological crisis is deepening our love. It's deepening our love for the planet. We are called to love more fully, and to express our love in more powerful, visionary and effective ways. Lightning is continuously striking in 100 places every moment. The universe spills through our dreams. The future belongs to the most compelling story." www.drewdellinger.org Last accessed 20 August 2019.

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RESUMEN

Los actores estatales y no estatales están negociando nuevos objetivos basados en áreas para la adopción del marco mundial de la diversidad biológica posterior a 2020. Algunos términos susceptibles de referencia son bien conocidos ("áreas protegidas") y otros han sido recientemente acordados ("otras medidas eficaces de conservación basadas en áreas", abreviadas como OECM, por sus siglas en inglés). Sin embargo, un concepto potencialmente pertinente que se utiliza actualmente permanece indefinido, a saber: "áreas conservadas". Si bien la ambigüedad creativa tiene sus méritos, podría resultar beneficioso concertar un acuerdo con respecto a su significado. De una gama de posibles significados, uno en particular nos motiva a reflexionar sobre todos los aspectos de la conservación. “Áreas conservadas”, como un término no jurídico para “áreas que mantienen la integridad ecológica y/o la conservación eficaz de la naturaleza in situ”, nos permite centrarnos de manera renovada en la diversidad de enfoques que contribuyen a la gestión de los paisajes terrestres y marinos vivos, incluyendo pero sin limitarse a la gestión eficaz de las áreas protegidas y las OECM. El diálogo inclusivo en torno a esta cuestión puede ayudar a definir objetivos basados en áreas para el período 2021-2030, así como a desarrollar un argumento de peso para el futuro de la conservación.

RÉSUMÉ

Des acteurs étatiques et non étatiques ont engagé des négociations autour d’un nouvel objectif de conservation par zone dans le cadre globale de la biodiversité pour l'après-2020 de la Convention sur la diversité biologique. Certains termes susceptibles d'être référencés sont bien connus («aires protégées») et d'autres sont nouvellement convenus («autres mesures de conservation efficaces par zone»). Pourtant, un concept potentiellement pertinent en circulation reste indéfini, à savoir les «zones conservées». Bien que l’ambiguïté créatrice ait ses mérites, il serait avantageux de parvenir à un accord sur sa signification. Parmi toute une gamme de significations possibles, une en particulier nous incite à revoir notre façon de penser la conservation. En effet, la signification non-légale du terme «zones conservées» en tant que «zones géographiquement délimitées préservant l'intégrité écologique et/ou la conservation efficace in situ de la nature», nous permet de nous recentrer sur la diversité des approches de la conservation des paysages vivants terrestres et marins, comprenant aussi bien la gestion efficace des aires protégées que les autres mesures de conservation efficaces par zone. Un dialogue inclusif sur cette question peut aider à définir des objectifs régionaux pour 2021-2030 et à élaborer un avenir convaincant pour la conservation.