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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/
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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

Harry Jonas, Special Issue Editor

In the closing moments of the 10th Conference of the Parties (COP) to the Convention on Biological Diversity (CBD), negotiators agreed the final text of the Strategic Plan on Biodiversity 2011–2020 (CBD, 2010). Aichi Target 11 calls on Parties to conserve by 2020 at least 17 per cent of terrestrial and inland water and 10 per cent of coastal and marine areas through "well-connected systems of protected areas and **other effective area-based conservation measures**" (CBD, 2010. Emphasis added).

In the following inter-sessional meetings and COPs (2011–2014), Parties to the CBD highlighted the need for guidance on the interpretation and application of the term 'other effective area-based conservation measures' (OECMs). In response, IUCN's World Commission on Protected Areas (WCPA) established a Task Force in 2015 to develop technical guidelines for Parties and other rights- and stakeholders. These IUCN guidelines are an input to the international process to develop technical guidelines on OECMs – see https://www.iucn.org/theme/protected-areas/wcpa/what-we-do/oecms.

NAVIGATING OPPORTUNITIES AND CHALLENGES

From the first meeting of the Task Force in 2016, the need to carefully balance the opportunities offered by OECMs against any associated concerns has been at the core of the process. On the one hand, it was clear that appropriately recognising, reporting and supporting areas beyond protected areas that are successfully contributing to the *in-situ* conservation of biodiversity can diversify the range of actors involved in effective conservation as well as expand the conservation estate and improve ecological representativity and connectivity. On the other hand, there were concerns that introducing a 'new' conservation designation might divert attention away from the important role of protected area systems and even lead to recognition of new areas of lesser biodiversity value in order to meet targets. This Special Issue is intended to set out for CBD Parties and the broader community a clear update on the development of guidance on OECMs and provide a number of case studies to illustrate the diversity of governance and management of areas that could qualify as OECMs.

OVERVIEW OF THE SPECIAL ISSUE

The *Editorial Essay* by Jonas et al. provides an overview of the CBD- and Task Force-related processes and the contribution that OECMs can make to achievement of Aichi Target 11 and the post-2020 Biodiversity Framework. The rest of the Special Issue is dedicated to case studies of 'potential OECMs', which are areas that have been identified as having OECM-like characteristics but which have not yet been assessed against OECM criteria, also including consideration of the rights of the governing authorities (such as the free, prior and informed consent of Indigenous peoples and local communities). OECMs can be governed by the same diversity of governance types as protected areas, namely by: governments (at various levels); private individuals, organisations and companies; Indigenous peoples and/or local communities; or under a shared arrangement between two or more of these governance authorities. The case studies are presented according to this typology.

Government: Hiltz et al., in their paper *Disko Fan Conservation Area: A Canadian Case Study*, provide an overview of interim guidance on OECMs developed by Fisheries and Oceans Canada (DFO) and consider the Disko Fan Conservation Area (a fishery closure in Canada's Eastern Arctic). Gray et al., in their paper, assess two areas governed by Ontario Conservation Authorities (Canada) in the context of work by the Canadian Council on Ecological Areas and IUCN's draft Guidelines on OECMs.

Private: Mitchell et al. compare private protected areas (PPAs) to OECMs on private land, clarify misconceptions and provide case studies for how Australia and South Africa are working through the application of these categories in the context of local, private land conservation mechanisms. Utomo and Walsh, in *Hutan Harapan ecosystem restoration concession, Sumatra, Indonesia: a potential OECM?* provide an overview of the innovative 'Hutan Harapan' ecosystem restoration concession where a private governance authority is managing designated production forests for conservation rather than exploitation.

Indigenous peoples and local communities: Cristina Eghenter analyses the applicability of OECMs to *tana' ulen* (restricted forested land) conserved by the Dayak Kenyah people in the interior of Kalimantan, Indonesia. Focusing on Kenya, Mwamidi et al. examine territories and areas conserved by Indigenous peoples and local communities in northern Kenya and consider whether the areas fit the criteria to be recognised as OECMs.

Shared governance: Matallana-Tobon et al. explore three 'Complementary Conservation Strategy' case

A Brahminy kite flies over the abundant Lower-Kinabatangan Segama Wetlands Ramsar Site, within which lie 'potential OECMs' governed and managed by local communities © Harry Jonas

studies and analyse whether and to what degree these include elements related to OECMs. Finally, Waithaka and Warigia Njoroge, in *The role of potential OECMs in safeguarding space for nature in Kenya: A case study of wildlife conservancies*, provide an historical overview of land rights and 'conservation' in Kenya, describe 'conservancies' and report on a workshop held in 2017 that explored whether such conservancies are potential OECMs.

LOOKING AHEAD

The inclusion of the term 'other effective area-based conservation measures' in Target 11 provides an exciting opportunity for greater and more appropriate recognition, reporting and support for areas that contribute to the effective *in-situ* conservation of biodiversity outside protected areas. The effectiveness and utility of the OECM concept will largely be determined by the exact terms of the CBD decision on guidance that is adopted at COP 14 and its subsequent interpretation and implementation. It is hoped that this Special Issue contributes to those discussions and further promotes the openness and inclusivity with which the process has run thus far.

EDITORIAL ESSAY: OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES: FROM AICHI TARGET 11 TO THE POST-2020 BIODIVERSITY FRAMEWORK

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DEVELOPMENT OF GUIDANCE ON OECMs

At the 10th Conference of the Parties to the Convention on Biological Diversity (COP 10/CBD), Parties agreed to the Strategic Plan for Biodiversity (2011–2020) with twenty Aichi Biodiversity Targets. Among these, Aichi Target 11 states that:

> By 2020, at least 17 per cent of terrestrial and inland water, 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 landscapes and seascapes. (CBD, 2010. Emphasis added).

This marks the first appearance of the term 'other effective area-based conservation measures' (OECMs) in international law. Over the following four years, discussions began within CBD fora and across other networks about how best to apply this new term in practice (see, for example, Lopoukhine & Dias, 2012; IUCN, 2012a; IUCN, 2012b; Woodley et al., 2012; CBD, 2013; CBD, 2014). Following a call to use the opportunity to innovate on existing conservation models (Jonas et al., 2014), the IUCN's World Commission on Protected Areas (WCPA) established a Task Force in 2015 to develop guidance for IUCN members and CBD Parties on the definition and application of the concept of 'other effective area-based conservation measures'.

Today the WCPA Task Force has over 100 members globally. It convened three technical workshops in 2016–2017 and developed a first draft of *Guidelines for Recognising and Reporting OECMs*, for comment and field trial in April 2017. This resulted in a second draft that was circulated to Task Force members and all CBD National Focal Points in October 2017. In light of comments received, a revised draft was submitted to the Secretariat of the CBD in January 2018 in advance of workshops convened by the Secretariat to give effect to Decision XIII/2.

Those draft Guidelines proposed the following definition for an OECM:

> A geographically defined space, not recognised as a protected area, which is governed and managed over the long-term in ways that deliver the effective *in-situ* conservation of biodiversity, with associated ecosystem services and cultural and spiritual values. (IUCN-WCPA, 2018).

The CBD Secretariat hosted two expert workshops in February 2018, held simultaneously, one focused solely on OECMs and a second on marine protected areas and

OECMs as they relate to coastal and marine areas (CBD, 2018). The outcome of those deliberations was a revised draft definition of an OECM and draft report on voluntary guidance for its application, to be considered at the 22nd meeting of the CBD's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA 22) in July 2018. The revised draft definition states that an OECM is:

> A geographically defined area, other than a Protected Area, which is governed and managed in ways that achieve positive and sustained outcomes for the *in-situ* conservation of biodiversity, with associated ecosystem services and cultural and spiritual values. (CBD, 2018).

Recommendations from SBSTTA 22, including guidance on OECMs, will be forwarded to CBD Parties for consideration at COP 14 (November 2018). In accordance with the request by COP 13, IUCN WCPA plans to elaborate the Guidelines to provide further guidance to Parties, including case studies and capacity development for implementation.

OECM FUNDAMENTALS

While there are small differences between the draft IUCN and CBD definitions, the essence of both definitions remains the same. The draft IUCN Guidelines set out that the core distinction between a protected area (Dudley, 2008) and an OECM is that whereas protected areas must have conservation as the primary objective of management, OECMs are defined by outcomes rather than objectives (i.e. an OECM must *deliver* the effective *in-situ* conservation of biodiversity, regardless of the area's management objectives). The CBD defines '*in-situ* conservation' as "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties." (CBD, 1992).

The draft Guidelines also describe three approaches that can lead to OECMs, recognition of which would consent of the relevant governance authority. First are areas where conservation is the primary management objective (primary conservation) that may meet all elements of the IUCN definition of a protected area, but are not currently recognised or reported as protected areas – see Table 1 for some examples. Where such areas meet the criteria of a protected area according to the IUCN definition, IUCN recommends that these areas should be recognised and reported as protected areas (e.g. many Privately Protected Areas). Second are areas where conservation is an outcome of management but is a secondary management objective (*secondary conservation*). Third are areas that deliver conservation outcomes as a by-product of management activities even though biodiversity conservation is not a management objective at all (*ancillary conservation*) (IUCN-WCPA, 2018). Notwithstanding these differences, like protected areas, OECMs can be governed across the full suite of IUCN's four governance types. The OECM matrix, akin to the IUCN matrix of management categories and governance types, sets out the relationship between governance types and the three kinds of OECMs, providing illustrative examples of each (see Table 1).

CORE ELEMENTS

While the process of agreeing upon a definition and related guidance is ongoing, a review of the IUCN draft guidelines and CBD draft voluntary guidance reveals a number of core elements on which international consensus is developing. We provide commentary on a number of the most significant elements below.

Geographically defined space

This implies a spatially-defined area with agreed and demarcated boundaries, which can include land, inland waters, marine and coastal areas or any combination of these. In exceptional circumstances, boundaries may be defined by physical features that move over time, such as river banks, the high-water mark or extent of sea ice. While the size of OECMs may vary, they should be of sufficient size to achieve the long-term *in-situ* conservation of biodiversity, including all species or ecosystems for which the site is important, whether these are highly restricted species or habitats of more wide-ranging species.

Not a protected area

Areas that are already designated as protected areas or lie within protected areas should not also be recognised or reported as OECMs. While protected areas and OECMs are mutually exclusive at any point in time (Figure 1), both protected areas and OECMs have value for biodiversity conservation and can be counted towards fulfilling Target 11.

Governed and managed

Governed implies that the area is under the authority of a specified entity, or an agreed upon combination of entities (Dudley, 2008; Borrini-Feyerabend et al., 2013) – see Table 1. The areas should be actively managed; 'management' can include a deliberate decision to leave the area untouched. The governance and management should be equitable and reflect human rights norms recognised in international and regional human rights instruments and in national legislation, including relating to gender equity. Upholding the principle of

Table 1. The OECM matrix illustrates the relationship between IUCN governance types and the three kinds of OECMs, with illustrative examples (based on Jonas et al., 2017). The examples assume that the governance authorities have decided to recognise and report their areas as OECMs, including where relevant by providing their free, prior and informed consent for recognition as an OECM.

Governance types --- Conservation priority	Governments (at various levels)	Private individuals, organisations and companies	Indigenous peoples and/ or local communities	Shared governance
Primary conservation	E.g. permanently protected areas of forest, such as old-growth, primary or other high-biodiversity value forests, which are protected from both forestry and non-forestry threats by government agencies.	E.g. privately conserved areas, which are managed with a specific conservation objective but which are not recognised as protected areas under national legislation, such as Harapan Rainforest.	E.g. territories or areas governed by Indigenous peoples and/or local communities that have a primary conservation objective and deliver the *in-situ* conservation of biodiversity, but where the governing body wishes the territories or areas to be recognised and reported as OECMs, rather than as protected areas.	E.g. areas under shared governance which meet the IUCN definition but are not currently recognised as protected areas.
Secondary conservation	E.g. watersheds or other areas managed primarily for water resource management or ecosystem services that also result in the *in-situ* conservation of biodiversity. Urban or municipal parks managed by government agencies primarily for public recreation but which are large enough and sufficiently natural to also effectively achieve the *in-situ* conservation of biodiversity (e.g. wild grassland, wetlands) and which are managed to maintain these biodiversity values.	E.g. privately owned lands and waterways managed for reasons primarily other than conservation, though conservation may be an additional objective. E.g. excluded use zones of lands/waters protecting industrial infrastructure.	E.g. territories and areas managed by Indigenous peoples and/or local communities (or sections of these areas) to maintain natural or near-natural ecosystems, with low levels of use of natural resources practised on a sustainable basis and in a way that does not degrade the areas' biodiversity.	E.g. areas under shared governance where conservation is a subsidiary objective.
Ancillary conservation	E.g. military lands and waters, or portions of military lands and waters that are managed for the purpose of defence, but also achieve the effective conservation of biodiversity in the long-term.	E.g. privately-managed coastal and marine areas protected for reasons other than conservation, but that nonetheless achieve the *in-situ* conservation of biodiversity.	E.g. sacred natural sites with high biodiversity values that are protected and conserved long-term for their associations with one or more faith groups.	E.g. areas under shared governance without a conservation objective but managed in ways that result in long-term conservation.

free, prior and informed consent (FPIC) will be especially important in the run up to 2020 (the deadline for CBD Parties to achieve the Strategic Plan and Aichi Targets), when state agencies will be under pressure to meet Target 11 and may be tempted to report ICCAs as OECMs without due process (Jonas et al., 2017).

Positive biodiversity outcomes and effective *in-situ* conservation

Given the explicit link in Target 11 between OECMs and biodiversity conservation outcomes, it is implicit that OECMs must achieve the effective and sustained *in-situ* conservation of biodiversity (as defined by the CBD) (i.e. the biodiversity outcomes should continue 'long-term'). Positive conservation outcomes may arise from strict protection or certain forms of sustainable management consistent with the CBD definitions of '*in-situ* conservation' and 'biodiversity'.

Long-term

While the draft IUCN and CBD definitions differ slightly in the wording in this regard, the guidance underscores that the conservation outcome must be 'long-term' and therefore is expected to be ongoing. Short-term or temporary management strategies will be unlikely to support effective conservation outcomes and areas with short-term restrictions therefore fail to qualify as an OECM.

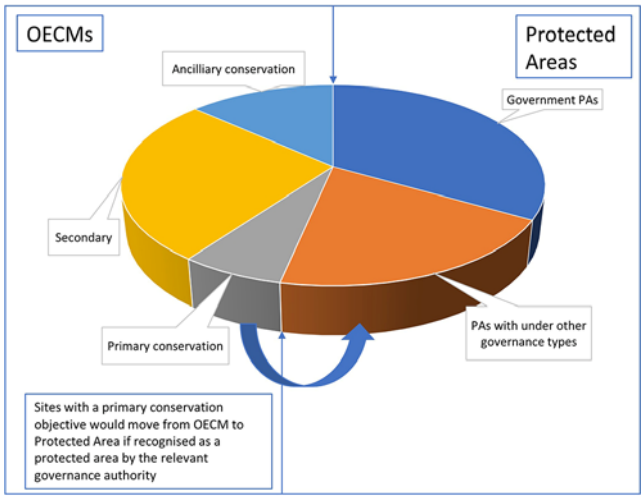

Figure 1. The relationship between OECMs and protected areas (Note: sizes of segments are illustrative only and not based on actual data)

Recognition

The recognition of an OECM should be on a case-by-case basis and not based on classes of areas. State agencies or others can identify classes of 'potential OECMs' but should not designate these *en bloc* without assessing each case individually. In this regard, the best available scientific information, including Indigenous and local knowledge, should be used for recognising OECMs, delimiting their location and size, informing management approaches and measuring performance.

Box 1: OECMs Protecting Biodiversity

OECMs will effectively protect one or more of the following elements of native biodiversity:

- Rare, threatened or endangered species and habitats, and the ecosystems that support them, including species and sites identified on the IUCN Red List of Threatened Species, Red List of Ecosystems, or national equivalents.
- Representative natural ecosystems.
- High level of ecological integrity or ecological intactness, which are characterised by the occurrence of the full range of native species and supporting ecological processes. These areas will be intact or be capable of being restored under the proposed management regime.
- Range-restricted species and ecosystems in natural settings.
- Important species aggregations, including during migration or spawning.
- Ecosystems especially important for species life stages, feeding, resting, moulting and breeding.
- Areas of importance for ecological connectivity or that are important to complete a conservation network within a landscape or seascape.
- Areas that provide critical ecosystem services, such as clean water and carbon storage, in addition to in-situ biodiversity conservation.
- Species and habitats that are important for traditional human uses, such as native medicinal plants.

In this context, an intensively-managed farm with a small proportion of the original native plants and birds will likely not be an OECM. Conversely, an area of native grassland, dominated by native plants, and having healthy populations of a large variety of native birds and mammals, might well be an OECM if a lower-intensity management and governance regime ensures these outcomes over the long-term. Just as for protected areas, there may be instances where an OECM is especially important for protecting a particular threatened species by protecting the entire ecosystem.

LOOKING AHEAD: OPPORTUNITIES AND CHALLENGES

Protected areas provide the foundation of national biodiversity conservation strategies and delivery of Target 11 (Lopoukhine & Dias, 2012; Woodley et al., 2012), but there are many areas outside national and regional protected area networks that also contribute to the effective *in-situ* conservation of biodiversity. There are several potential benefits of recognising OECMs within broader landscapes and seascapes and as complementary to systems of protected areas (Jonas et al., 2014; MacKinnon et al., 2015; IUCN-WCPA, 2016a, 2016b, 2017; Juffe-Bignoli et al., 2016; Diz et al., 2017; Jonas et al., 2017; Laffoley et al., 2017). Recognition of OECMs provides the opportunity to engage and support new stakeholders and more equitable partnerships in global conservation efforts, highlighting the diversity of contributions to conservation globally; increases opportunities for enhancing and increasing ecological representation within conservation networks; enables enhanced recognition and increased protection of areas of high biodiversity significance; improves connectivity across landscapes and seascapes; and can contribute to improved management and restoration of areas that could usefully support long-term *in-situ* conservation of biodiversity. For example, preliminary findings from a study by BirdLife International of Key Biodiversity Areas (KBAs) in 10 countries shows that around 80 per cent of the 754 unprotected KBAs were at least partly covered by one or more potential OECMs and over half were wholly covered (P. Donald, pers. comm.). The *Protected Planet Report* draws attention to these opportunities, stating that: "In the long-term, OECMs could have the potential to contribute greatly to elements such as representativeness and connectivity, and to contribute to conservation in important places such as Key Biodiversity Areas (KBAs), especially in cases where protected areas are not an option" (UNEP-WCMC & IUCN, 2016).

As with any new framework, there will likely be challenges for interpretation and implementation. Anticipating and addressing them proactively will lessen any potential negative effects. OECM-related challenges may include some of the following considerations.

Classifying efforts against appropriate Aichi Targets

As national governments intensify efforts to achieve the 2020 targets, it is important to ensure that areas identified as potential OECMs achieve their objectives through the *in-situ* conservation of biodiversity consistent with Target 11 criteria. Other area-based measures, more consistent with improving forms of sustainable use, should be attributed against other targets. For example, many fisheries closures apply to specific geographic areas for a limited time period and therefore are more appropriately attributed to Aichi Target 6 (Laffoley et al., 2017). Similarly, many forestry management measures might best be considered as contributions to Aichi Target 7, which calls for areas under forestry to be managed sustainably by 2020. Industrial forestry and fishing areas should not count as OECMs.

Local-level management and governance of OECMs

The management and governance authorities of potential OECMs will need to have the capacity to identify the full range of key biodiversity attributes for which the site qualifies and demonstrate effective and enduring *in-situ* conservation of biodiversity, among other requirements. This will require investment in two-way capacity building at the local level focusing on local needs. It will also require all rights- and stakeholders – including Indigenous peoples and local communities – being centrally involved in the development and implementation of (sub-)national OECM-related laws, policies, procedures and institutional arrangements (Jonas et al., 2017).

Implementing agencies

Government, conservation and other implementing agencies are often under-resourced and understaffed. Adding another complex framework to their daily workload is likely to exacerbate any existing strains. Ensuring support and capacity building for relevant agencies to work with the OECM designation is important.

Recording OECMs in the World Database on Protected Areas

The World Database on Protected Areas (WDPA), managed by the UN Environment World Conservation Monitoring Centre (UNEP-WCMC) and IUCN, contains over 230,000 protected area records (UNEP-WCMC & IUCN, 2017). Area-based measures that are found to qualify as protected areas or OECMs should be reported to the WDPA. The WDPA is updated on a monthly basis and made available and downloadable online through the Protected Planet platform. UNEP-WCMC uses data in the WDPA to measure progress against international conservation goals, such as Target 11. Ensuring that countries apply the final guidelines on OECMs rigorously and are therefore reporting bona fide OECMs

Historic wreck sites which are fully protected can qualify as OECMs and provide an undisturbed environment for marine wildlife to flourish
© Dan Laffoley

will be an important issue that requires attention and relevant capacity building.

Funding

Financial support for existing protected areas and new protected areas is limited. Additional funds will be required to build capacity to enhance management, monitor biodiversity outcomes and/or to provide support to OECMs. It will be important that institutional and private funders make available 'new and additional' financial resources to support this work appropriately.

Engaging public support and the broader community

The term 'other effective area-based conservation measures' is a political construct and not at all user friendly. A more approachable term will likely ensure the engagement of a diverse coalition of interested parties. Related initiatives and statements, such as in the Promise of Sydney and the New Social Compact (IUCN, 2014a, 2014b), reference 'protected and conserved areas' without specifying the exact meaning of 'conserved areas'. A discussion about this issue in the run up to COP 15 would be useful.

CONCLUSIONS AND RECOMMENDATIONS

OECMs offer a significant opportunity to recognise *de facto* conservation that is taking place outside currently designated protected areas and being implemented by a diverse set of people, including private actors, Indigenous peoples and local communities as well as government agencies. OECMs can contribute to the conservation of biodiversity in many ways, such as: conserving important ecosystems, habitats and wildlife corridors; supporting the recovery of threatened species; maintaining ecosystem functions and securing ecosystem services; enhancing resilience against threats; and retaining and connecting remnants of fragmented ecosystems within developed landscapes. OECMs can also contribute to ecologically representative and well-connected conservation systems, integrated within wider landscapes and seascapes. In doing so, they can help countries meet their commitments under Aichi Target 11. This is particularly important as there remain severe shortcomings in the achievement of the full intent of all aspects of Target 11 (Butchart et al., 2015; UNEP-WCMC & IUCN, 2016; Bingham et al., 2017).

In developing Target 11, Parties to the CBD emphasised the important role of protected areas as a conservation

tool but also recognised that achieving the target in terms of coverage and ecological representation would require recognition of other areas achieving effective conservation beyond the existing protected area estate (Lopoukhine & Dias, 2012; Woodley et al., 2012). As we approach the negotiation of the post-2020 biodiversity targets, Parties have an opportunity to increase significantly both coverage and ecological representation through 'systems of protected areas and other effective area-based conservation measures' but should not include areas that do not contribute to the aims of Target 11. In the post-2020 Biodiversity Framework, much greater attention must be paid to ensuring that the full scope of Target 11 is achieved and that both protected areas and OECMs are delivering their respective outcomes. In that context, it may be important to consider the elaboration of separate numeric targets for OECMs and protected areas. Protected areas are a proven conservation tool and the conditions for their successes are increasingly well documented. OECMs, on the other hand, are a new concept at the international level and will represent a novel national-to-local form of legal recognition (notwithstanding the fact that the areas 'recognised and reported' as OECMs will frequently not be 'new'). Maintaining the full value of OECMs is likely to require substantial efforts to build capacity to identify, monitor and maintain their biodiversity values. OECMs provide an exciting opportunity to expand the conservation estate but we must be wary of any tendency to inflate conservation totals by counting as OECMs areas of sustainable management that do not meet the criteria, including areas of industrial forestry and fishing.

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DISKO FAN CONSERVATION AREA: A CANADIAN CASE STUDY

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ABSTRACT

In 2010, under the United Nations Convention on Biological Diversity, Canada agreed to protect 10 per cent of its coastal and marine areas by 2020 through marine protected areas and other effective area-based conservation measures. In 2015, the Government of Canada committed to an interim target of increasing the protection of marine and coastal areas to 5 per cent by 2017. To aid this endeavour, Fisheries and Oceans Canada (DFO) developed science-based guidance, in advance of the finalisation of international voluntary guidance, to determine which area-based management measures should count towards Canada's 2017 target and beyond. DFO's guidance identifies five criteria to be met: a clearly defined geographic location; conservation or stock management objectives; presence of ecological components of interest; long-term duration; and, effective conservation of the ecological components of interest from existing and foreseeable pressures. As announced in December 2017, Canada has 51 area-based fishery closures that meet these criteria, covering approximately 275,000 km^2 or 4.78 per cent of Canada's ocean territory. This paper describes one such closure in Canada's Eastern Arctic, the Disko Fan Conservation Area, and the steps taken to ensure protection of an ecologically important area which benefits marine biodiversity. Lessons learnt in the establishment of this Conservation Area are shared.

Key words: Aichi Biodiversity Targets, protected areas, other effective area-based conservation measures, conserved areas, Baffin Bay, Canada, fishery closures

INTRODUCTION

With the world's longest coastline, and adjacency to three ocean basins, Canada's heritage, culture and economy have significant connections to the marine environment. In 2015, in response to international commitments under the Convention on Biological Diversity, Canada adopted a suite of national targets known as the "2020 Biodiversity Goals and Targets for Canada", based on the international Aichi targets. Canada's Target 1 states: By 2020, at least ... 10% of marine and coastal areas are conserved through networks of protected areas and other effective area-based conservation measures (Government of Canada, 2017). In addition, in 2015 the Government of Canada also committed to an interim target of protecting 5 per cent of marine and coastal areas by 2017. When this commitment was made, Canada's protected areas accounted for only 0.92 per cent of its marine territory (Government of Canada, 2018a). Given the short time period required to meet the 2020 commitments, Canada has gone to significant lengths to use all available tools to protect the marine environment, and this is evident in the progress made in identifying existing other effective area-based conservation measures (OECMs) and establishing new ones using powers under Canada's *Fisheries Act*.

Advancing OECMs is part of the plan that the Government of Canada developed to meet its Marine Conservation Targets (MCT). Other elements of the plan include: completing marine protected area establishment processes underway; protecting large offshore areas; protecting areas under pressure; and establishing marine protected areas faster and more effectively (DFO, 2018a). To advance OECMs, Canada reviewed existing area-based fishery closures under Canada's *Fisheries Act* and established new ones, to be considered as OECMs towards Canada's MCT, with an understanding that internationally accepted guidance was not yet available. The Government of Canada's commitment to meet its 5 per cent interim MCT provided an incentive to assess whether existing area-

based fishery closures were meeting their conservation objectives and adjust their restrictions where necessary, thereby increasing their contributions to biodiversity conservation.

International guidance on OECMs is currently being developed so that CBD Parties can adequately measure progress towards Aichi Target 11 in a consistent manner (CBD, 2018). In advance of internationally accepted voluntary guidance and to ensure areas that Canada reports as contributing to Aichi Target 11 meet specific standards for conservation, Fisheries and Oceans Canada (DFO) sought scientific advice through the Canadian Science Advisory Secretariat (CSAS) to identify characteristics and factors to determine whether a marine area-based management measure is likely to provide biodiversity conservation benefits (DFO, 2016a). Based on this advice, as well as emerging direction by an IUCN Task Force (IUCN WCPA, 2015, 2016), advice developed by the Canadian Council on Ecological Areas (CCEA) (MacKinnon et al., 2015) and operational realities in Canada's oceans, DFO developed operational guidance for identifying marine OECMs (DFO, 2017a). Efforts have been underway within Canada and within DFO to explore what areas may qualify as OECMs ever since the term was introduced through Aichi Target 11. However, the provisioning of the CSAS science advice over the 2015–2016 time period can be seen as the starting point for developing DFO's operational guidance in its current form. Canada's interim commitment to conserve 5 per cent of the marine environment provided a major driver for advancing this work, and applying the guidance within Canadian waters.

Whereas the IUCN guidance and CCEA guidance are designed to apply more broadly to marine and terrestrial areas across a range of jurisdictions and governance types, the DFO guidance is only applicable to the marine environment and to date has only been applied to assess Critical Habitats identified under Canada's *Species at Risk Act* and area-based fishery closures established under Canada's *Fisheries Act*. In addition, DFO's operational guidance aligns with the scientific advice that protecting a single habitat type can yield important benefits for biodiversity conservation if that habitat type is particularly important (DFO, 2016a), which differs from the view in the IUCN and CCEA guidance that all elements of biodiversity in a given area must be protected. DFO's operational guidance lists five criteria for an area to be considered an OECM: clearly defined geographic location; conservation or stock management objectives; presence of ecological components of interest, including an important habitat and species; long-term duration; and effective conservation of the ecological components of interest from existing and foreseeable pressures.

Greenland halibut among bamboo coral aggregation in Disko Fan Conservation Area (DFCA) © ArcticNet-CSSF-DFO

As announced in December 2017, Canada has 51 area-based fishery closures that are recognised as meeting DFO's OECM criteria. These closures are known domestically as marine refuges and cover approximately 275,000 km^2 or 4.78 per cent of Canada's ocean territory. Area-based fishery closures only prohibit fishing, therefore, to be considered as a marine refuge within DFO guidelines it must be determined that fishing is the only existing or foreseeable human activity likely to pose a risk to the ecological components of interest identified for protection in the area.

The following case study provides an overview of one marine refuge, the Disko Fan Conservation Area (DFCA), the application of the Canadian OECM operational guidance, and lessons learnt.

LOCATION AND ECOLOGICAL CONSIDERATIONS

Geography and oceanography

DFCA is located in southern Baffin Bay in Canada's Eastern Arctic (Figure 1). It encompasses the majority of the glacial alluvial fan known as the Disko Fan found in Canadian waters. The oceanography of this area is complex due to a wide bathymetric range (300 m in the southeast corner to 1,600 m on the western boundary of DFCA), steep gradient and a combination of water masses (warm West Greenland slope current along the eastern boundary and cold Baffin Island current along the western boundary). Ice cover in this area is considerably more dense and dynamic than along the west coast of Greenland. Leads may be present even in heavily consolidated pack ice, which is of great significance to marine biota occupying this area in winter.

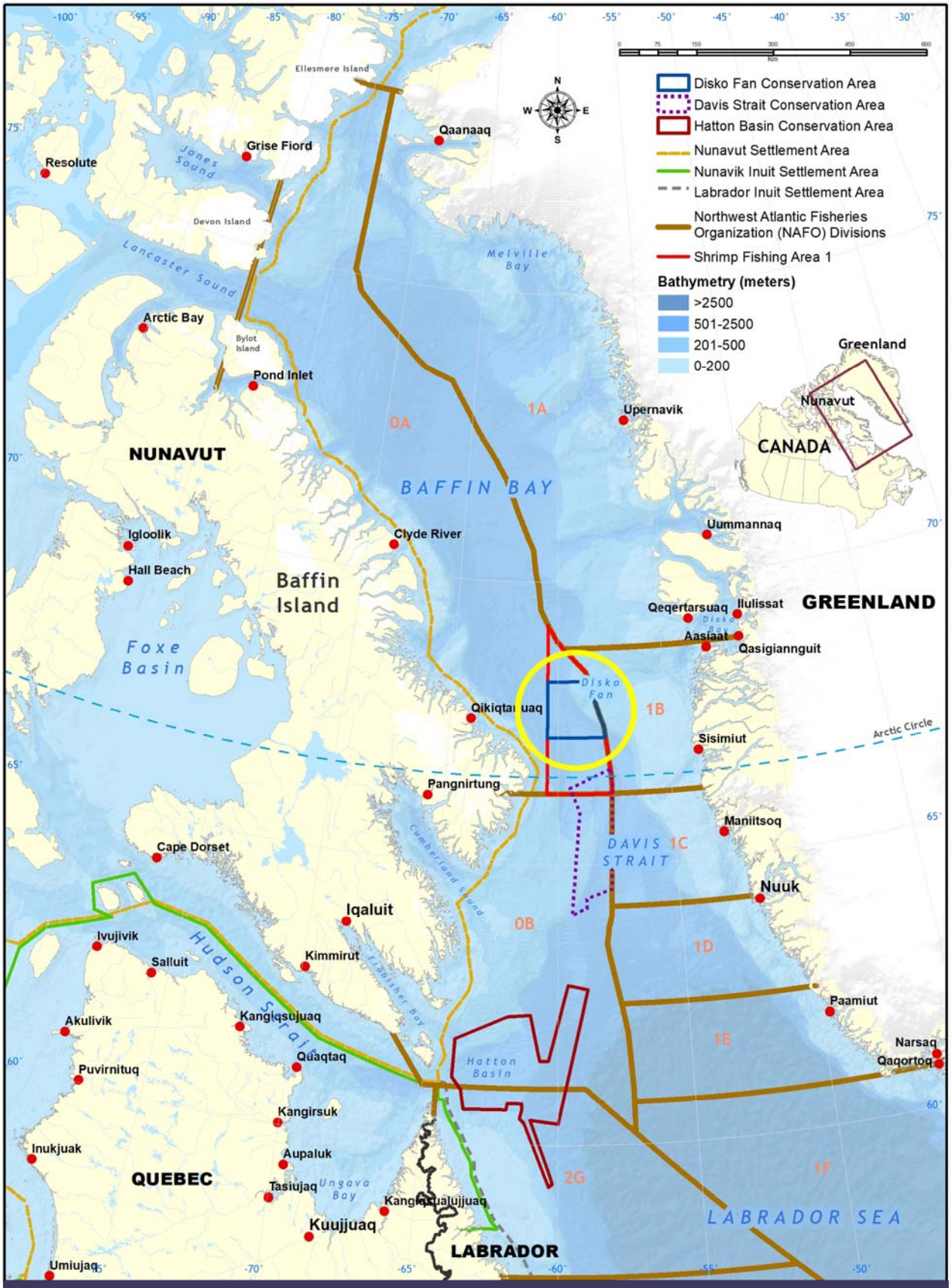

Figure 1. Management areas in Canada's Eastern Arctic relevant to the implementation of the Disko Fan Conservation Area (circled)

Features of ecological importance and connectivity

The Disko Fan was identified as an Ecologically and Biologically Significant Area (EBSA) in 2011 based on oceanographic characteristics, overwintering habitat for narwhal (*Monodon monoceros*), presence of other marine mammals (including sperm whales (*Physeter macrocephalus*) and northern bottlenose whales (*Hyperoodon ampullatus*)), and presence of several coral species (Cobb, 2011; DFO, 2011). In 2016, DFO delineated significant benthic areas of coral and sponge in Eastern Canada, including the Eastern Arctic. Large gorgonian coral (*Alcyonacea*, formerly classed as *Gorgonacea*) concentrations in the Disko Fan were mapped based on a modelling process that considered scientific trawl surveys and historical commercial catch information (Kenchington et al., 2016). Of particular note were aggregations of 1 m high bamboo corals (*Keratoisis spp.*), one of the slowest growing and longest lived coral species, which have not been found anywhere else in the world to date (de Moura Neves et al., 2015), (Figure 2).

In addition to specific ecological components, DFCA is also in close proximity to other areas managed for biodiversity protection. While more research is required to better understand connectivity across species and trophic levels between protected areas (Burgess et al., 2014), there are several neighbouring designated areas (i.e. within approximately 100 km) with conservation objectives complementary to DFCA, including (Figure 1):

- Davis Strait Conservation Area: A closure to bottom contact fishing gear to protect sensitive benthic areas, specifically significant aggregations of corals, sponges and sea pens;
- Akpait National Wildlife Area: To protect key marine habitat supporting numerous seabirds, including one of Canada's largest thick-billed murre (*Uria lomvia*) colonies; and Qaqulluit National Wildlife Area: To protect Canada's largest breeding colony of northern fulmars (*Fulmarus glacialis*) as well as other nesting seabirds such as black guillemots (*Cepphus grille*), glaucous gulls (*Larus hyperboreus*) and Iceland gulls (*Larus glaucoides*).

GOVERNANCE

While there are several federal departments and agencies with mandates related to the marine environment, DFO has the lead role in managing Canada's fisheries. Canada's *Fisheries Act (1985)*, the *Fishery (General) Regulations (1993)* and *Atlantic Fishery Regulations (1985)* made thereunder, as well as the *Oceans Act (1996)* and the *Species at Risk Act (2002)* are the main pieces of federal legislation under which marine fisheries are managed (see Government of Canada, 2018b). The powers granted pursuant to these Acts and Regulations permit the Minister of Fisheries and Oceans to specify licence conditions including those related to vessel type, gear, fishing restrictions, information reporting and vessel monitoring system, as well as to issue Variation Orders that outline fishing seasons and areas.

DFO has developed a national Sustainable Fisheries Framework (SFF) to ensure Canadian fisheries are conducted in a manner that supports conservation and sustainable use (DFO, 2016b). Policies contained within the SFF promote a precautionary and ecosystem-based approach to fisheries management.

DFO uses Integrated Fisheries Management Plans (IFMPs) to guide the conservation and sustainable use of marine resources. An IFMP is developed for a particular species or group of species in a given region. During IFMP development, the expertise and activities of DFO, along with input from resource users, Indigenous organisations, and other stakeholders, are integrated into decisions regarding management and conservation measures. Generally this is done via stakeholder advisory committees. The IFMP communicates basic information on the fishery and its management to stakeholders and the general public.

The commercial marine fisheries in Baffin Bay are managed consistent with the *Nunavut Agreement* (INAC & NTI, 2013). This Agreement between the Government of Canada and the Inuit of Canada's central and eastern Arctic sets out a co-management system for wildlife/resource management within and outside the Nunavut Settlement Area (NSA). For example, the Nunavut Wildlife Management Board (NWMB) provides fisheries management decisions (inside the NSA) and recommendations (outside the NSA) to the Minister of Fisheries and Oceans. NWMB decisions/ recommendations, as accepted by the Minister, are incorporated into relevant IFMPs.

MANAGEMENT

Fisheries management

Two commercial marine fisheries operate in Baffin Bay off the coast of Baffin Island, Nunavut, within Canada's Exclusive Economic Zone: a Greenland halibut (*Reinhardtius hippoglossoides*) fishery in the Northwest Atlantic Fisheries Organization (NAFO) Subarea 0, and a northern shrimp (*Pandalus borealis*) fishery in

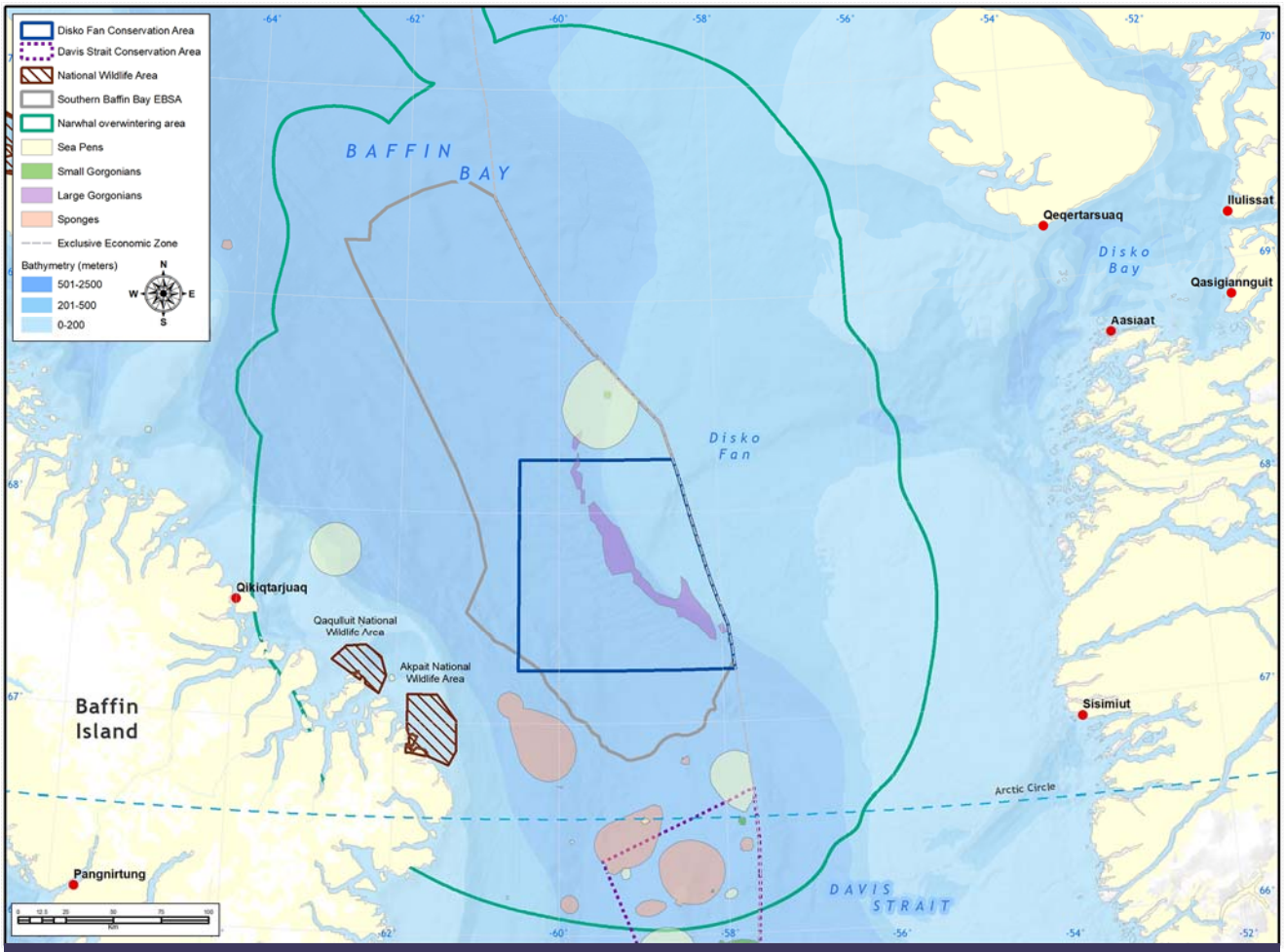

Figure 2. Winter home ranges of Baffin Bay narwhals (modified from DFO, 2014); significant concentrations of corals, sponges and sea pens (from Kenchington et al., 2016); and Southern Baffin Bay Ecologically and Biologically Significant Area (from DFO, 2011).

Shrimp Fishing Area (SFA) 1 (Figure 1). The management regimes are described in their respective IFMPs (Greenland Halibut NAFO Subarea 0, effective 2014; Northern Shrimp SFAs 0–7 and the Flemish Cap, effective 2007) (DFO, 2018b).

Regular stakeholder advisory committee meetings are held to review current management measures, discuss management issues and provide management recommendations. For the Baffin Bay fisheries, the main fora for consultations are the Eastern Arctic Groundfish Stakeholder Advisory Committee (EAGSAC) and Northern Shrimp Advisory Committee (NSAC).

Previous marine conservation efforts in the Disko Fan

In 1998, DFO reviewed available information on narwhal winter habitat use in Baffin Bay and created an area where fishing effort for Greenland halibut was restricted. The objective was to minimise impacts on the winter food source and overwintering habitat for narwhal.

Coral concentrations, including gorgonian and antipatharian species, were first located along the steep Greenland Shelf break in this area during research surveys conducted in 1999 and 2001. Given the known negative impacts to corals by bottom contact fishing gear and science advice (DFO, 2006 and 2007), DFO expanded the objectives for this area to include the conservation of cold water coral concentrations and established an area closure to all Greenland halibut fishing using bottom contact gear. The area closure, called the Narwhal Overwintering and Coldwater Coral Zone (name changed to DFCA in December 2017) was incorporated into the 2006–2008 NAFO Subarea 0 Greenland Halibut IFMP and implemented for the 2008 season via groundfish licence conditions and Variation Orders. This groundfish fishery closure has remained in

place since and been included in subsequent versions of the IFMP.

Conservation efforts in the Disko Fan since Canada announced its Marine Conservation Targets: With the impetus of Canada's 2017 interim MCT, planning began in July 2016 to reassess DFCA in light of new scientific information against the Policy for Managing the Impact of Fishing on Sensitive Benthic Areas, objectives stated in IFMPs and DFO's OECM operational guidance.

In January 2017, EAGSAC established a Working Group to recommend groundfish fishing closures in Baffin Bay and Davis Strait. In March 2017, following consultations with shrimp fishery stakeholders, the Working Group's mandate expanded to include recommendations for shrimp fishing closures. DFO sought science advice on the compatibility of the northern shrimp fishery operating within the shallower depths of DFCA with conservation objectives. It was concluded that a full ecological risk assessment (considering all activities, stressors and threats) would be required to fully evaluate the winter habitat aspect of the conservation objectives (DFO, 2017b). The Working Group considered known science for Baffin Bay and Davis Strait as well as the economics of the fisheries, including fishing footprints (DFO, 2017c; Koen-Alonso et al., 2018) and landed values. The Working Group met six times and collaborated intensely to review and negotiate area-based fishery closure proposals, including adjustments to the DFCA groundfish fishery closure and a new shrimp fishery closure within DFCA. The Working Group provided a final recommendation to DFO on DFCA closures in May 2017. Although the Working Group was the primary venue for consultations, DFO also sought views regarding fishing closure recommendations in Baffin Bay directly from co-management organisations, Indigenous partners, the groundfish and shrimp fishing industries, territorial government and environmental organisations. Throughout all consultations, Inuit and fisher knowledge was solicited.

The proposed closures recommended by the Working Group for DFCA were presented to the NWMB by DFO in June 2017. A letter of support from the NWMB was received in July 2017. Subsequently, DFO accepted and implemented changes in December 2017 via Variation Orders that contained closure boundary coordinates. Groundfish and shrimp harvesters were notified of the change. Beginning 1 April 2018, the closure boundary coordinates will also be included in licences issued to harvesters.

Impacts from 1999 DFO multi-species research vessel survey using bottom trawl still seen in 2013. Fragments are dead bamboo coral with no sign of recovery even with the prohibition of groundfish fishing in DFCA since 2008. © DFO

Within DFCA there are three overlapping closures to bottom contact fishing gear, including: groundfish fishery using fixed gear (gillnets and longlines), groundfish fishery using mobile gear (trawls), and the shrimp fishery which uses only mobile gear (trawls). The area of overlap between these closures, where all bottom contact fishing is now prohibited, covers 7,485 km2 (Figure 3). There are no existing or foreseeable activities that would negatively impact the identified ecological components of interest, within the portion of DFCA that is closed to all bottom contact fishing. Of note, there are no current or former oil and gas leases within DFCA, and a five-year oil and gas development moratorium has been implemented in Canada's Arctic.

EXPECTED BIODIVERSITY OUTCOMES

There are expected benefits to both commercially fished populations as well as the ecological components of interest within DFCA. The three narwhal stocks that use the area in winter (Watt et al., 2012; DFO, 2014; Richard et al., 2014) are protected from fishing impacts (e.g. entanglement, ghost fishing, habitat loss and/or degradation, competition with winter food (Greenland halibut, Pandalus shrimp, Arctic squid (*Gonatus fabricii*), octopus and Arctic cod (*Boreogadus saida*) (Laidre & Heide-Jørgensen, 2005; Watt et al., 2013). The significant concentrations of large gorgonian corals, including large tracts of globally unique, high density bamboo corals, are protected from all fishing. It is important to note that the structural habitat created by the corals also provides habitat for many other species including those of commercial importance (i.e. Greenland halibut, northern shrimp) (DFO, 2010). Conservation benefits may also be conferred to sperm whales, northern bottlenose whales, and benthic fish

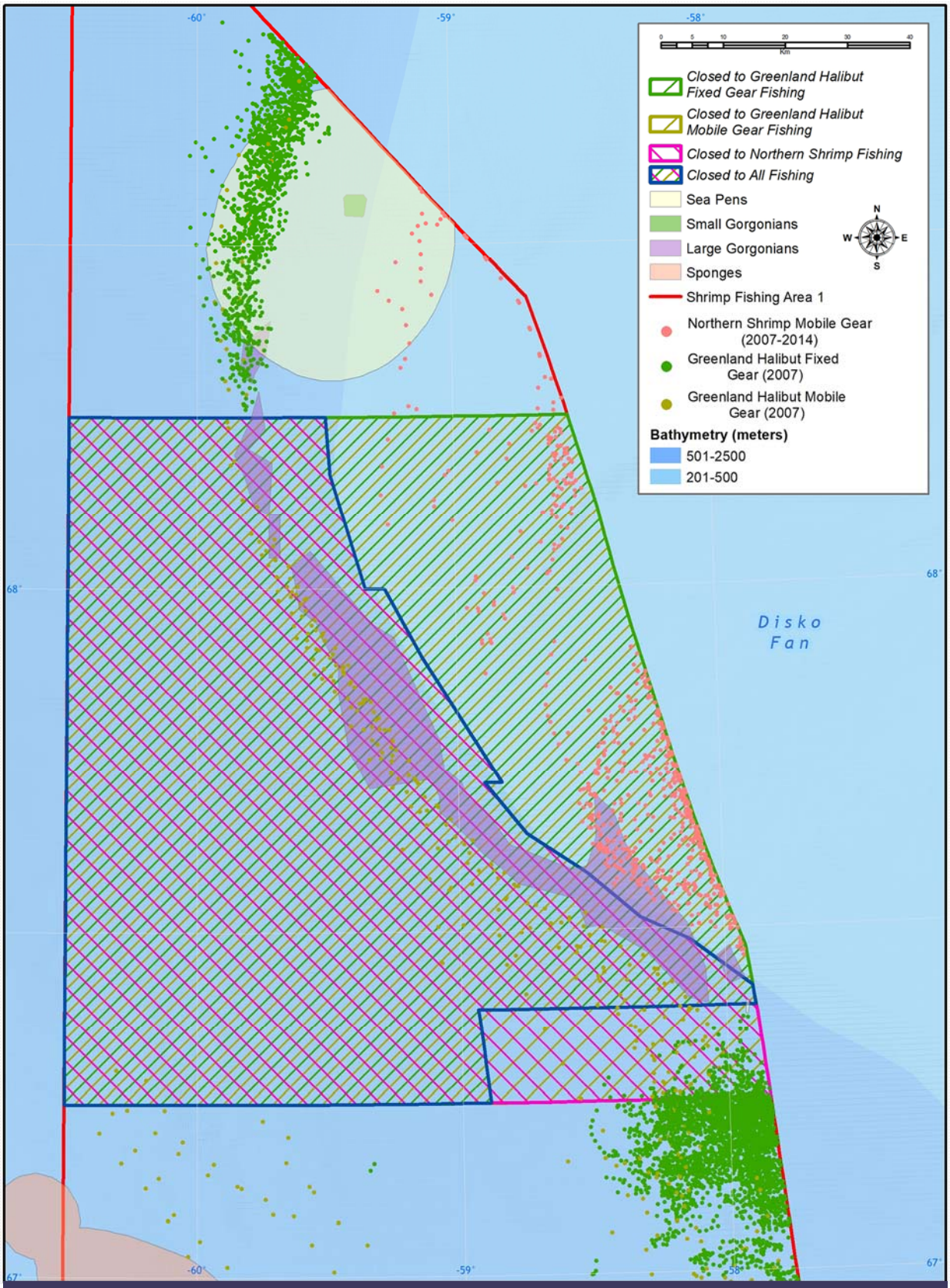

Figure 3. Three overlapping area-based fishing closures constitute the Disko Fan Conservation Area. The portion closed to all bottom contact fishing gear contributes 7,485 km2 to Canada's Marine Conservation Targets.

and invertebrate species that use the area (Davidson, 2016; Krieger & Wing, 2002; Roberts & Hirshfield, 2004).

ECOSYSTEM SERVICES AND CULTURAL VALUES WITHIN DFCA

Baffin Bay narwhal stocks support Inuit subsistence fisheries in Canada and Greenland. For centuries, Inuit have relied on narwhal as a traditional food and source of materials for day-to-day living. The subsistence harvest and the sharing of the proceeds is of social, cultural and economic importance. Narwhal skin and blubber are high in protein, vitamins and other essential nutrients (Government of Nunavut, 2013). Other valuable by-products of the subsistence harvest include ivory tusks, bone and sinew which are used to manufacture carvings, handicrafts and hunting equipment. Communities can also benefit indirectly from non-consumptive activities involving narwhal, such as scientific research and production of educational materials. Narwhal provide food and income to residents of isolated Arctic communities, where employment opportunities are scarce.

By minimising impacts of commercial fisheries to narwhal overwintering habitat and food, DFCA helps maintain the ecosystem services and cultural values associated with narwhal. Conservation measures that enhance the sustainability of narwhal stocks, such as DFCA, are supported by the inhabitants of Nunavut.

Other valuable ecosystem services within DFCA may include the spillover of commercially fished species to adjacent unprotected areas. Studies within temperate and sub-Arctic region area-based fishery closures have demonstrated benefits to community composition and abundance over time (Brown et al., 1998, Fisher & Frank, 2002; Jaworski et al., 2006). In addition to providing these benefits within the closed areas, positive effects have also been observed in adjacent unclosed areas, possibly due to a spillover of species (Fisher & Frank, 2002; Jaworski et al., 2006).

MONITORING EFFECTIVENESS

The Narwhal Overwintering and Coldwater Coral Zone area closure was implemented prior to the 2008 fishing season. During the past ten years, the closure has been evaluated from a compliance, scientific and fishery management perspective. Such assessments will continue and improve.

Compliance monitoring

The Greenland halibut and northern shrimp IFMPs list several management measures, which support DFCA conservation objectives (e.g. reporting requirements, a mandatory Vessel Monitoring System, 100 per cent at-

Juvenile narwhal in Milne Inlet near Pond Inlet, Nunavut. This stock of whales overwinters in DFCA. © Marianne Marcoux

sea observer coverage, lost gear provision, etc.). These measures are monitored for compliance and action is taken as warranted. Compliance issues are articulated in the IFMP and discussed at regular meetings with stakeholders.

Ecological monitoring
There are several research projects ongoing or planned in or near DFCA which can contribute useful information for ecological monitoring. These include: ongoing telemetry and tracking work on several species that use DFCA, including Greenland halibut, Greenland shark (Somniosus microcephalus) and narwhal; monitoring of Circumpolar Marine Biodiversity Monitoring Plan sites in DFCA; remote operated vehicle surveys for benthic habitat in DFCA; and DFO's multi-species research vessel surveys adjacent to DFCA.

Effective and measurable benefits of conserved areas (such as increases in fish population density) may take upwards of 15 years to be observed (Molloy et al., 2009). More time and research are needed to accurately assess the effectiveness of DFCA in meeting its stated conservation objectives.

Fisheries management monitoring
DFO conducts internal postseason reviews of the Subarea 0 Greenland halibut fishery attended by all DFO sectors to identify operational issues encountered during the previous season and recommend actions for improvement, including the exploration of new tools (e.g. electronic logbooks, electronic video monitoring).

Efforts are underway to address findings from the 2016 Office of the Auditor General of Canada Report 2 – Sustaining Canada's Major Fish Stocks (OAG, 2016). Gaps identified relevant to DFCA include the need for improved sharing of fishery monitoring information between DFO regions and systems that allow for data availability and comparison. DFO has committed to reassess the boundaries of the three fishing closures comprising DFCA prior to 2020 as new science information becomes available.

LESSONS LEARNT

Conditions for success: Canada's commitment to protecting 5 per cent of its marine environment was a primary driver in additional protections to this area and in the progress made by fisheries managers to implement the DFO's Policy for Managing the Impacts of Fishing on Sensitive Benthic Areas. The desire by the fishing industry to pursue and maintain eco-certification for the Greenland halibut and northern shrimp fisheries provided an incentive to work collaboratively on protecting this area.

Good stakeholder relationships and an inclusive EAGSAC that encompassed a range of perspectives were important to success. Dedicated DFO resources to organise stakeholder discussions and provide information required for deliberations kept the process moving forward. Time was taken at the beginning of the process to communicate to all stakeholders, over a number of meetings, the importance of features found in the area through maps, dedicated information sessions with science speakers, and repeated presentations, which led to a shared understanding of DFCA biodiversity. Availability of peer-reviewed science on EBSAs, locations of coral and sponge concentrations, and fishing locations provided a sound basis for discussions. The Southern Baffin Bay EBSA covers 29,969 km2, 10,932 km2 (36 per cent) of which overlaps the DFCA, including 7,431 km2 (25 per cent) of overlap with the portion of DFCA that prohibits all bottom fishing. Further meetings were held where stakeholders reviewed and validated fishery footprint and economic analyses, followed by boundary negotiations.

In support of transparency, collaboration and respect for ongoing co-management relations, DFO provided the NWMB with information and updates pertaining to the fisheries area closure and solicited comments at its quarterly in-person meetings. The regularly scheduled meetings provided useful deadlines for decisions and effective fora for engagement. NWMB support for the proposal was critical to the success of the fisheries area closure.

The thorough, stepwise approach followed created trust and allowed for boundaries to be agreed upon in a timely manner. Ongoing discussions and joint public outreach projects between DFO and stakeholders allow for further collaboration and increase pride in the work accomplished on DFCA as well as the other two OECMs in Baffin Bay and Davis Strait.

Opportunities for improvement

There are further steps that could be taken to maximise biodiversity outcomes associated with DFCA. Existing compliance, ecological and fishery management monitoring efforts could be enhanced through formal monitoring plans that outline indicators, targets and measuring methods. These could be used to communicate a strategic vision and clearly articulate outstanding needs, thereby encouraging and directing further research. Regular reporting to stakeholder advisory committees on attainment of targets, or lack thereof, could be used to support accountability and transparency. Issues would be more clearly documented, making it easier to find solutions.

Northern shrimp among bubblegum coral (Paragorgia arborea). Both species are found in DFCA. © DFO

The regulatory tools used to create DFCA are licence conditions and Variation Orders under the *Fisheries Act*. Fishery management measures described in these tools are often long standing. However, they are subject to adjustments or cancellation at any time. Currently, consultations are underway on proposed amendments to the *Fisheries Act* that would give the Minister authority to make regulations to establish spatial restrictions to fishing activities for the purpose of conserving marine biodiversity for the long-term. Should this proposed provision be accepted into the *Fisheries Act*, DFO intends to apply the new provision to marine refuges that count towards Canada's MCT. Fisheries area closures that do not qualify as marine refuges would continue to use Variation Orders and licence conditions to prohibit fishing activities. This means that fishing prohibitions in the portion of DFCA which qualifies as a marine refuge (i.e. the portion of the DFCA that is closed to all bottom contact fishing) would be established via regulation, and fishing activities in the remaining portions of the DFCA would continue to be managed by Variation Order and licence conditions. The proposed regulatory tool under the amended *Fisheries Act* would be complementary to Canada's Marine Protected Areas under the *Oceans Act*. Both tools would be used to protect important species, habitats and features. The appropriate tool to use in a given situation would depend on the ecological components of interest and identified risks.

A network of marine protected areas is a collection of conserved areas (including, for example, *Oceans Act* Marine Protected Areas, marine refuges, National Marine Conservation Areas, marine portions of Migratory Bird Sanctuaries and National Wildlife Areas designated by the federal government, and protected areas of other governments) that operate cooperatively to safeguard important ecological components of ocean biodiversity. Effective networks can enhance the contributions of individual conserved areas to achieve greater ecological benefits that translate into economic, social and cultural benefits (DFO, 2017d). Marine

protected area network development is currently underway on Canada's east coast, west coast and in the western Arctic. Development of a network for the Eastern Arctic would help to ensure that current conserved areas and any future conservation measures lead to long-term biodiversity protection and ecosystem resilience in this rapidly changing environment.

CONCLUSION

Canada's commitment to meeting its interim 5 per cent MCT led to significant momentum in area-based protections, including the use of area-based fishery closures under the *Fisheries Act*. The portion of DFCA closed to all bottom contact fishing aligns with the key elements of the draft IUCN Guidelines on OECMs (IUCN WCPA, 2018). It is expected to provide biodiversity conservation outcomes for narwhals and cold water corals, and will likely benefit other species that use DFCA, including sperm whales, northern bottlenose whales, and benthic fish and invertebrate species. DFCA is also anticipated to support ecosystem services and cultural values associated with the area. There are some areas for improvement for DFCA, including developing formal monitoring plans to measure the effectiveness of DFCA and setting up safeguards to ensure the closure provides long-term conservation value.

The Working Group and secretariat functions provided by DFO enabled proactive and timely discussions. Bilateral discussions between stakeholders also enhanced the level of agreement between stakeholder groups. Boundaries for DFCA were agreed to by all partners and stakeholders, primarily as a result of involvement in these various processes, as well as timely exchange of information with co-management boards and the Government of Nunavut. The boundaries were achieved by compromise and also with a view towards ensuring a future, productive working relationship between conservation interests, resource harvesters and co-management boards. This relationship led to agreement on other area-based fishery closures, Hatton Basin Conservation Area and Davis Strait Conservation Area. This process increased trust between stakeholders and allowed for more open discussion on other conservation initiatives including seabird bycatch, Greenland shark bycatch, and fisheries monitoring. The DFO commitment to review the DFCA boundaries by 2020 allows additional science input and dialogue on biodiversity protection.

Canada's Eastern Arctic has a relatively short history of commercial fishing as compared to other areas in the Northwest Atlantic. Commitment from the Government of Canada, along with a desire for resource sustainability from fisheries interests, co-management boards and all stakeholders provide a strong foundation for long-term ecosystem protection. The process followed for adjusting the measures within DFCA is an example of what should be done in other areas that undergo marine refuge establishment and are considered to count towards Canada's international protection targets.

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ABOUT THE AUTHORS

Elizabeth Hiltz has worked for DFO since 1988 in a range of positions: Marine Mammal Biologist conducting research in the Central and Eastern Arctic; Impact Assessment Biologist reviewing development proposals in the Prairies for impacts to fish and fish habitat; Coordinator with Oceans Program developing environmental components of the Ecosystem Overview Report and Management Plan for the Beaufort Sea, Western Arctic; and, for the last 10 years, Senior Officer managing the commercial marine fisheries in the Eastern Arctic. Elizabeth led the 2017 process to establish fishing closures in Canada's Eastern Arctic.

Susanna Fuller is a Senior Project Manager with Oceans North and has a PhD in marine biology from Dalhousie University. She studied diversity of marine sponges in the Northwest Atlantic, and has had extensive experience in international and national policy development and implementation focused on protecting vulnerable marine habitats from the impacts of fishing. Susanna believes in working closely with Indigenous peoples, resource harvesters and coastal communities and understanding market-based incentives for sustainable fisheries as important elements of achieving tangible conservation outcomes.

Jessica Mitchell has worked in the Oceans Management group at DFO's headquarters office since 2010, following completion of a Marine Biology Honours degree and a Masters of Resource and Environmental Management degree at Dalhousie

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RESUMEN

En 2010, de conformidad con el Convenio sobre la Diversidad Biológica de las Naciones Unidas, Canadá acordó proteger el 10% de sus zonas costeras y marinas para 2020 mediante áreas marinas protegidas y otras medidas de conservación eficaces basadas en áreas. En 2015, el Gobierno de Canadá se comprometió con un objetivo provisional de aumentar a 5% la protección de las zonas marinas y costeras para 2017. Para ayudar en este empeño, el Ministerio de Pesquerías y Océanos de Canadá (DFO, por sus siglas en inglés) desarrolló orientaciones de base científica, antes de la finalización de las guías internacionales de aplicación voluntaria, para determinar qué medidas de gestión basadas en áreas deberían contemplarse para alcanzar el objetivo fijado por Canadá para 2017 y más allá. Las directrices del DFO identifican cinco criterios que deben cumplirse: una ubicación geográfica claramente definida; objetivos de conservación o de gestión de poblaciones; presencia de componentes ecológicos de interés; duración a largo plazo; y conservación eficaz de los componentes ecológicos de interés en función de las presiones actuales y previsibles. Tal como se anunció en diciembre de 2017, Canadá ha establecido 51 zonas de veda para la pesca que cumplen estos criterios y abarcan una extensión de aproximadamente 275,000 km^2 o el 4,78 por ciento del territorio oceánico de Canadá. Este artículo describe uno de estos cierres para la pesca en el Ártico oriental de Canadá, el Área de Conservación Disko Fan, y las medidas tomadas para garantizar la protección de una zona de importancia ecológica que favorece la biodiversidad marina. Se comparten las experiencias adquiridas en el establecimiento de esta Área de Conservación.

RÉSUMÉ

En 2010, dans le cadre de la Convention des Nations Unies sur la diversité biologique, le Canada a accepté de protéger 10% de ses zones côtières et marines d'ici 2020 grâce à la mise en place d'aires marines protégées et à d'autres mesures de conservation efficaces. En 2015, le gouvernement du Canada s'est engagé à atteindre un objectif provisoire visant à protéger 5% de ses zones marines et côtières en 2017. A cette fin, dans l'attente de la finalisation des directives volontaires internationales, le Ministère des Pêches et Océans Canada (MPO) a élaboré ses propres directives scientifiques afin de déterminer quelles mesures de gestion par zone seraient comptabilisées pour l'atteinte des objectifs de 2017 et au-delà. Les directives du MPO identifient cinq critères à respecter: un emplacement géographique clairement défini; des objectifs de conservation ou de gestion des stocks; la présence d'éléments d'intérêt écologique; une durée sur le long terme; et la protection efficace des éléments d'intérêt écologique face aux pressions existantes et prévisibles. Comme il a été annoncé en décembre 2017, le Canada a fermé 51 zones de pêche correspondant à ces critères, qui s'étendent sur environ 275 000 km2 soit 4,78% du territoire océanique du Canada. Le présent article présente une de ces fermetures à l'est de l'Arctique canadien, dans l'aire de conservation Disko Fan, ainsi que les mesures prises pour assurer la protection de cette zone écologiquement importante et qui favorise la biodiversité marine. Nous partageons les leçons tirées de l'instauration de cette aire de conservation.

COMPARING SCREENING TOOLS FOR ASSESSMENT OF POTENTIAL 'OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES' IN ONTARIO, CANADA

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ABSTRACT

Biodiversity conservation in formally recognized protected areas is the primary intent of Aichi Target 11. In addition to traditional protected areas, Target 11 recognizes a new mechanism, 'other effective area-based conservation measures' (OECMs). Since its inclusion in the Aichi Target 11 objective, the OECM category has created considerable confusion and debate, and few examples have been described to date. In this paper, we explore the capacity of OECM screening tools developed by the International Union for Conservation of Nature (IUCN) and the Canadian Council on Ecological Areas (CCEA) to evaluate two potential OECMs located in highly developed urban areas in southern Ontario, Canada. Results reveal that the two sites may qualify as 'candidate' OECMs. In a comparative analysis of the two screening tools, we determined that the CCEA's tool faithfully integrates IUCN guidance and provides additional detail to help practitioners address unique 'in-country' social and ecological conditions. In a bio-geo-politically diverse world, the successful translation of high-level guidance into tools designed for application at unique local-national levels of decision-making is critical to successful biodiversity conservation.

Key words: Aichi targets, biodiversity conservation, protected areas, other effective area-based conservation measures, OECMs, screening tool, conservation authorities, governance

INTRODUCTION

Designation of '*other effective area-based conservation measures*'[1] (OECMs) is an integral component of Aichi Target 11, but to date little guidance has been developed in support of their inclusion. In 2013, the CCEA[2] initiated work with federal, provincial and territorial agencies, non-government organizations (NGOs) and independent scientists to develop an 'in-country' screening tool to help practitioners evaluate and categorize lands and waters for their potential contribution to Canada's Biodiversity Strategy Target 1[3] and Aichi Target 11 commitments as '*protected* areas' or OECMs (MacKinnon et al., 2015; CCEA, 2018). Concurrently, the World Commission on Protected Areas (WCPA) created a Task Force on Other Effective Area-based Conservation Measures in September 2015 that employed a collaborative process to develop global guidelines for practitioners (IUCN, 2018).

Ontario's Conservation Authorities (CAs) own and/or manage lands and waters that may qualify as OECMs in some of the most densely populated and modified ecosystems in Canada. In recognition of this potential, the Canadian Wildlife Service – Ontario Region (CWS-

ON) and CAs evaluated 23 properties and property clusters with the CCEA screening tool. Two of the properties that may qualify as 'candidate' OECMs are reviewed in this paper. A comparative analysis of the two screening processes was also completed to determine whether or not the CCEA screening tool faithfully reflects IUCN guidance.

CASE STUDY AREAS

Established in 1946, CAs are mandated to provide, in the area over which they have jurisdiction, "*...programs and services designed to further the conservation, restoration, development, and management of natural assets other than gas, oil, coal and minerals*" (MNRF, 2017, p.13). Collectively, the CAs own and/or manage 250 conservation areas and other designated sites[4] (comprised of more than 6,400 individual parcels) that encompass about 146,000 ha, most of which is compositionally and/or functionally important for biodiversity conservation. For example, many CA properties have high ecological integrity, protect species at risk, and are designated as Areas of Natural and Scientific Interest (ANSI),[5] Provincially Significant Wetlands[6] and/or Canadian Heritage Rivers.[7]

Although the combined CA holdings represent only 1/10th of 1 per cent of Canada's protected area estate, they are important to the Target 11 commitment because they are located in the Mixedwood Plains Ecozone,[8] which encompasses many of the country's most significantly modified landscapes and waterscapes. Covering only 8 per cent of the province, it is Ontario's smallest ecozone, and home to about 35 per cent of Canadians and 92 per cent of Ontarians. And yet, despite the massive transformations resulting from human settlement, agriculture and industrial development, the ecozone remains Canada's most biologically diverse landscape-level ecosystem (OBC, 2011).

Morris Island Conservation Area

The Morris Island Conservation Area (MICA) encompasses two adjacent properties located along the Ottawa River shoreline that are managed by the Mississippi Valley Conservation Authority (MVCA) under one plan (Figure 1). One property (34 ha) is owned by the City of Ottawa and the other (43 ha) by Ontario Power Generation (OPG). The MVCA manages the City of Ottawa property under lease[9] and the OPG property under a license of occupation.[10]

Morris Island is comprised of deciduous/coniferous forest and wetland ecosystems (Brunton, 1992; MVCA, 2006). Wildlife species on the property include provincially Threated Species and Special Concern Species under the *Endangered Species Act* (Statutes of Ontario, 2007), and Federal Schedule 1 Threatened Species and Schedule 3 species of Special Concern under the *Species At Risk Act* (Statutes of Canada, 2002). The site is a provincial ANSI and the City of Ottawa meets its commitment of protecting '*natural urban and rural functions*' under the auspices of its Official Plan (City of Ottawa, 2003). Recreational and educational services include two hiking trails, a wheelchair accessible trail, fishing platforms, a canoe launch and a picnic area.

Colonel Samuel Smith Park

Located on the shoreline of Lake Ontario, Colonel Samuel Smith Park (CSSP) is owned by the Toronto and Region Conservation Authority (TRCA) and managed by the City of Toronto Parks, Forestry and Recreation Department (Figure 2).[11] The park is important because it is one of a number of shoreline and aquatic habitat restoration projects under the TRCA's Lake Ontario waterfront program (TRCA, 2003) and portions of it may qualify as an OECM because it is an urban park "*... managed primarily for public recreation but which* [is] *large enough and sufficiently natural to also effectively achieve the in-situ conservation of biodiversity (e.g., wetlands)*" and/or an area "*...successfully restored from degraded or threatened ecosystems, to provide important ecosystem services but which also contribute to effective biodiversity conservation (e.g., freshwater and coastal wetlands restored for flood protection)*" (IUCN, 2018, p.26).

The area was identified for establishment as a park in 1980 (MTRCA, 1980) and a lake-fill program was completed to increase the land area and provide shoreline access to the public. The 78-ha park encompasses 42 ha of Lake Ontario and 36 ha of land and wetland/pond. The Lake Ontario portion includes artificial shoals and reefs designed to enhance fish habitat and an embayment that shelters a marina (TRCA, 2008). Twenty three species of fish inhabit park waters (Buchanan, 1991) while terrestrial and wetland/pond habitats support 256 species of plants that comprise 39 natural and anthropogenic vegetation communities (TRCA, 2014a). Naturally occurring native flora are largely concentrated in coastal meadow and wetland communities. The park provides habitat for 48 breeding vertebrate species as well as staging habitat for thousands of migrating songbirds and waterfowl. Recreational and educational services include hiking trails, outdoor skating, beaches, picnic areas, marina services and fishing.

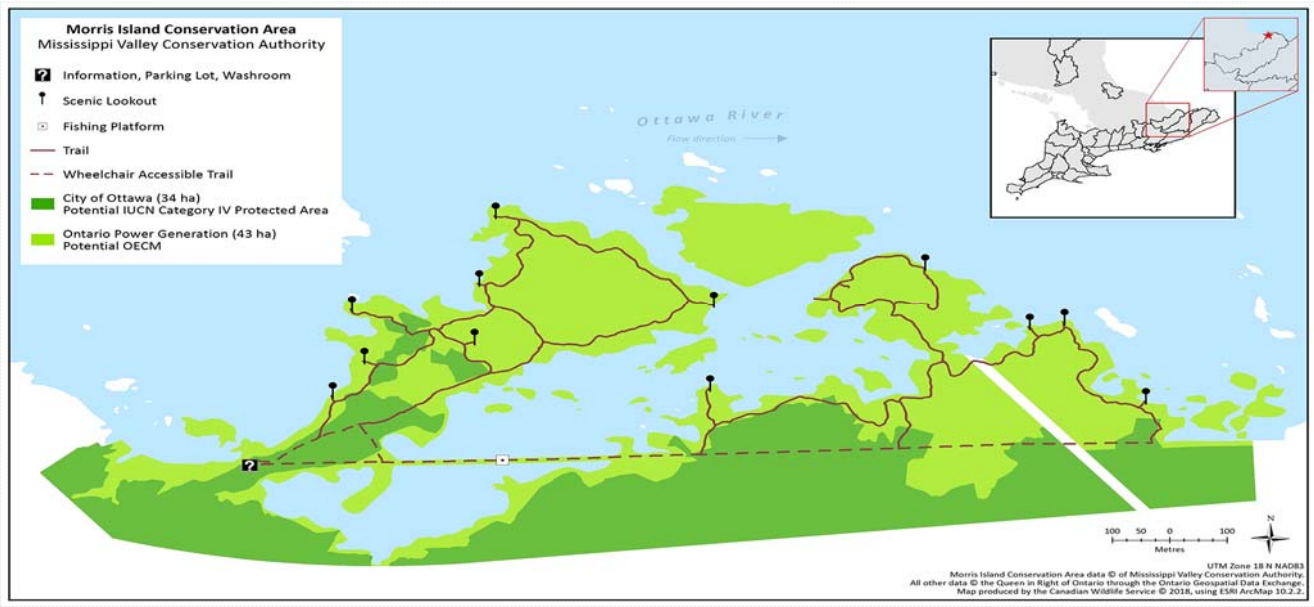


Figure 1. The Morris Island Conservation Area in Ottawa, Ontario, Canada, which may qualify as a 'candidate' protected area (IUCN Category IV) and a 'candidate' OECM.

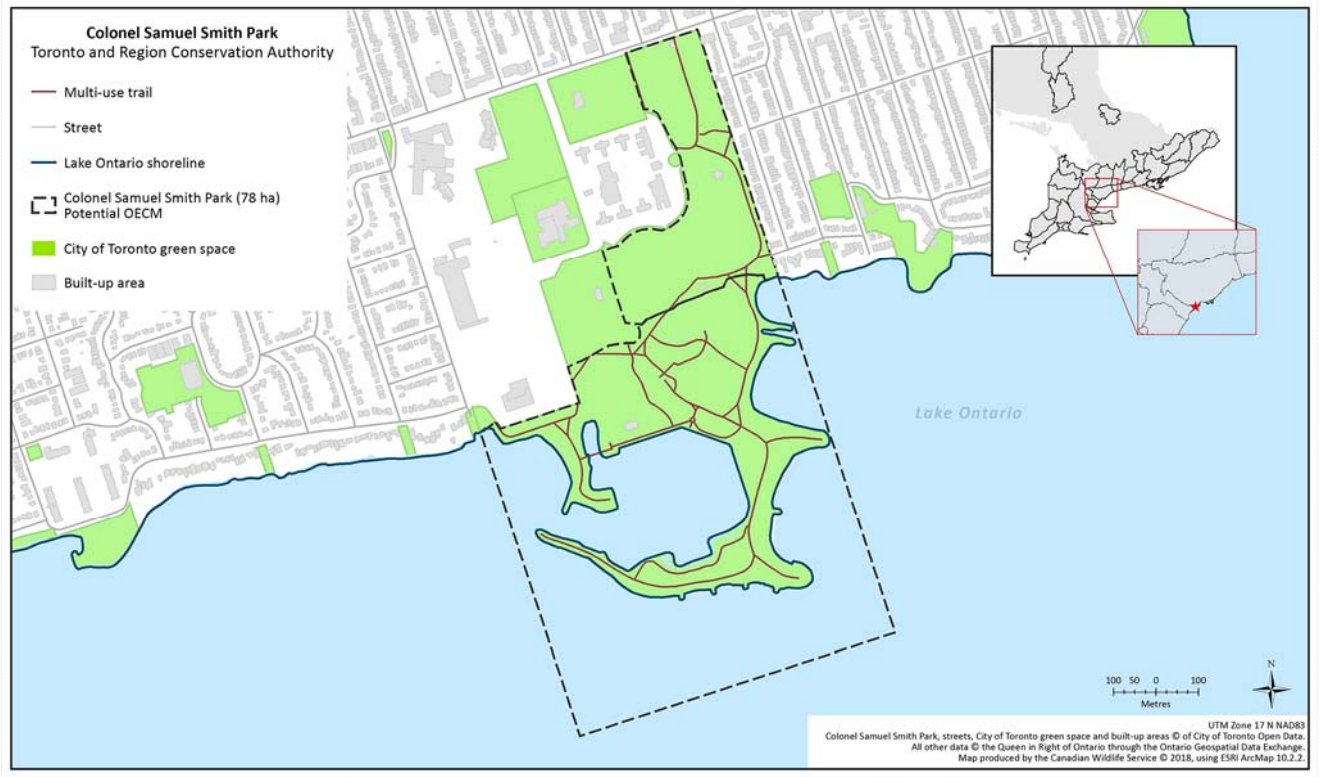


Figure 2. Colonel Samuel Smith Park located in the western part of Toronto, Ontario, Canada, portions of which may qualify for designation as 'candidate' OECMs.

CCEA AND IUCN SCREENING TOOLS

The CCEA Screening Process

For the purpose of assessing conservation lands and waters as protected areas and/or OECMs, the CCEA developed a user-friendly screening template that serves as an evaluation platform and provides for a descriptive and numeric record of an area's attributes (MacKinnon et al., 2015; CCEA, 2018). The mechanics of the CCEA screening tool are illustrated with OECM evaluations of the MICA and CSSP. The template has four parts that practitioners complete to describe an area's condition and apply a colour coded (green-yellow-

red) ranking system based on key word statements to identify biodiversity conservation thresholds for 13 criteria (Figure 3).

Beginning in 2015, the CWS-ON and a number of Ontario's 36 Conservation Authorities (CAs) collaboratively tested versions of the evolving CCEA screening tool on 14 CA properties in 2015-2016 (for protected areas only; see Gray et al., 2017) and nine properties and property clusters in 2016-2017 (for protected areas and OECMs; see Gray et al., 2018). The OECM screening tool results for the MICA and CSSP were generated using the following steps:

1. Compare area status and management regime against the descriptions in the screening tool.
2. If the assessed area satisfies all of the criteria (i.e. all 'green') for 'Conservation Effectiveness' (10 criteria) and 'Effectiveness of Protection from Subsurface Resource Activity' (3 criteria), then it is an Aichi Target 11 area.
3. If the area corresponds in a least one respect with a description in a 'red' cell, it is not a protected area or OECM and should not be reported as an Aichi Target 11 site.
4. If the area corresponds in at least one respect to a description in a 'yellow' cell, there is a gap in effectiveness, and it may not qualify as an Aichi Target 11 site. If all apparent gaps in effectiveness can be demonstrated as not real, the area can be qualified as an Aichi Target 11 site. If the responsible organization is not committed to addressing the apparent gaps within a reasonable time frame, the site should not be reported as an Aichi Target 11 site.
5. If the organization is committed to addressing all gaps within a reasonable time frame, the area can potentially be reported as an 'interim' or 'candidate' Aichi Target 11 site until all the gaps are addressed (MacKinnon et al., 2015; CCEA, 2018).

The first six criteria in the 'Conservation Effectiveness' portion of the screening template apply to both protected areas and OECMs (Table 1) while the following four criteria are also designed to help practitioners distinguish between protected areas and OECMs (Table 2). With respect to subsurface rights, properties are evaluated according to their effectiveness at preventing: 1) the granting of subsurface resource rights, 2) the exercise of subsurface resource rights, and 3) impacts on conservation values. Each of these categories is assessed and assigned a ranking as follows: 1) 'green' indicates a potential high level of effectiveness and low risk to conservation values over time, 2) 'yellow' denotes a potential medium level of effectiveness because of concern that improper implementation of the mechanism poses a risk to conservation values over time, and 3) 'red' indicates potential for a low level of effectiveness or high level of risk to conservation values over time.

Comparative Analysis of the IUCN and CCEA Screening Tools

A comparative analysis was employed to assess whether or not the 'in-country' CCEA screening tool (CCEA, 2018) faithfully applies IUCN guidance. The comparison was organized around the methodological 'steps' and 'criteria' described by the IUCN Task Force in IUCN (2018). Key words and phrases were used to identify similarities and differences in the 'steps' and 'criteria' used in the two screening processes.

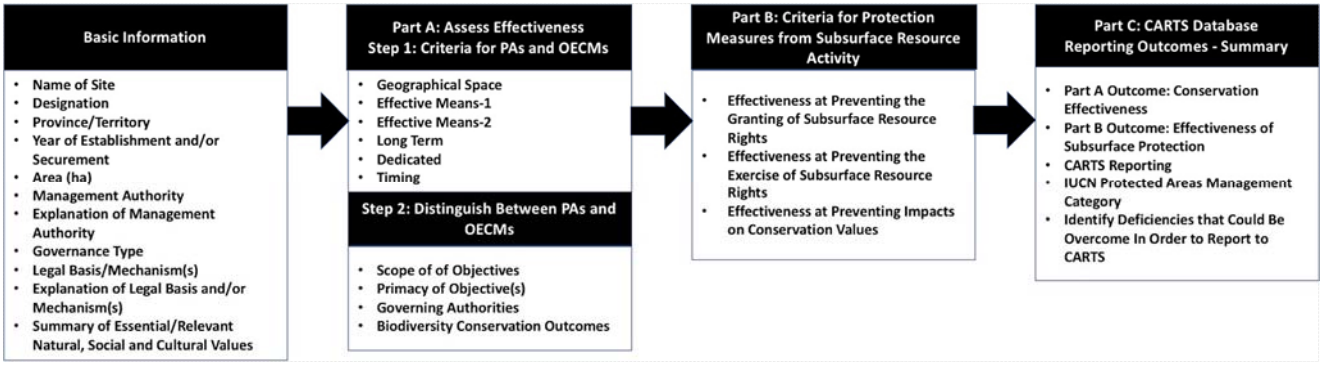


Figure 3. Components of the Canadian Council on Ecological Areas (CCEA) screening template used to document and rank known and potential Aichi Target 11 and Canadian Biodiversity Strategy Target 1 sites (Source: CCEA, 2018).

Table 1. CCAE decision screening tool for Aichi Target 11 protected areas and 'other effective area-based conservation measures' (OECMS). All criteria in this table are intended to help assess whether the mechanism should be reported against Target 11, and apply equally to both protected areas and OECMS (Source: CCEA, 2018).

Criteria	Ranking Scheme		
	(A) Sufficiently effective to report as a PA or OECM	(B) May or may not be sufficiently effective to report as a PA or OECM	(C) Not sufficiently effective to report as a PA or OECM
Geographical Space	The geographical space has clearly defined and agreed-upon borders	The geographical space is intended to be clearly defined but may not be easily or widely recognizable	The geographical space is not clearly defined
Effective Means-1	The mechanism(s) has the power to exclude, control, and manage all activities within the area that are likely to have impacts on biodiversity	The mechanism(s) has the power to exclude, control, and manage most activities within the area that are likely to have impacts on biodiversity	The mechanism(s) does not have sufficient power to exclude, control, and manage most activities within the area that are likely to have impacts on biodiversity
Effective Means-2	The mechanism(s) compels the authority (ies) to prohibit activities that are incompatible with the in-situ conservation of biodiversity	The mechanism(s) does not compel the authority (ies) to prohibit activities incompatible with the in-situ conservation of biodiversity but the authority is excluding those activities	The mechanism(s) does not compel the authority (ies) to prohibit activities incompatible with the in-situ conservation of biodiversity and/or incompatible activities are being allowed
Long-term	The mechanism is intended to be in effect for the long term (i.e., in perpetuity)	The mechanism is intended or expected to be in effect indefinitely	The mechanism is not intended or expected to be in effect for the long term
Dedicated	The mechanism can be reversed only with great difficulty	The mechanism can be reversed with moderate difficulty	The mechanism can be reversed without much difficulty
Timing	The mechanism is in effect year-round	----------	The mechanism is not in effect year-round

RESULTS AND DISCUSSION

Morris Island Conservation Area case study

The CCEA criteria rankings indicate that the City of Ottawa property may qualify as an IUCN Category IV[12] protected area and the OPG property as a 'candidate' OECM (Table 3). The OPG property may qualify as an OECM because it is a privately owned area managed with a specific conservation objective that is not recognized as a protected area under national legislation (IUCN, 2018). To date, the MICA has not been recorded as protected in the Conservation Areas Reporting and Tracking System (CARTS[13]). The rationale developed for the OPG property is as follows:

Geographical Space: 'Green' – The geographical space has clearly defined and agreed-upon boundaries. A metes and bounds survey has been completed and boundaries are defined by features such as railway tracks, shoreline and fencing.

Effective Means-1: 'Green' – Under authority of the management plan, lease and license of occupation, the MVCA has the power to exclude, control and manage all activities within the MICA that are likely to impact biodiversity conservation. The area is part of an urban park managed for public recreation that provides *in-situ* conservation of terrestrial and aquatic biodiversity. Land use is strictly controlled and permitted uses are limited to day-use outdoor recreation and nature extension programs (MVCA, 1987; MVCA, 2006).

Effective Means-2: 'Green' – The protection mechanism used to manage the MICA compels the CA to prohibit activities that are incompatible with

Table 2. Decision Screening Tool for Aichi Target 11 Protected Areas and Other Effective Area-based Conservation Measures. All criteria are intended to help assess whether the mechanism should be reported against Target 11 and also help to distinguish between Protected Areas and OECMs (Source: CCEA, 2018).

Criteria	Ranking Scheme (A) Sufficiently effective to report as a PA	(B) May or may not be sufficiently effective to report as a PA	(C) Sufficiently effective to report as an OECM	(D) May or may not be sufficiently effective to report as an OECM	(E) Not sufficiently effective to report as a PA or OECM
Scope of Objectives	The objectives are for the in-situ conservation of biodiversity, or for conservation of a subset of biodiversity or Indigenous cultural values accomplished through the in-situ conservation of biodiversity	The objectives are for the in-situ conservation of a subset of biodiversity, such as a particular species or habitat	The area has objectives consistent with, whether intentionally or otherwise, the in-situ conservation of biodiversity	The area has objectives potentially consistent with, whether intentionally or otherwise, the in-situ conservation of biodiversity	The objectives are neither for, nor consistent with, the in-situ conservation of biodiversity; or objectives do not exist
Primacy of Objectives	Conservation objectives are stated as primary and overriding	Based on stated or implied conservation objectives, allowable and prohibited activities, and evident intent, conservation objectives are primary and overriding, or are given priority when there is conflict among objectives	The stated primary and overriding objectives are clearly consistent, and not in conflict, with in-situ conservation of biodiversity	Based on stated or implied objectives, allowable and prohibited activities, and evident intent, priority is given to objectives consistent, and not in conflict, with the in-situ conservation of biodiversity	Based on stated or implied objectives, allowable and prohibited activities, and evident intent, objectives for, or consistent with, the in-situ conservation of biodiversity may be compromised by conflicting objectives, or do not exist
Governing Authorities	All relevant governing authorities acknowledge and abide by the conservation objectives of the area	Most key, but not all, relevant governing authorities acknowledge and abide by the conservation objectives of the area	All relevant governing authorities acknowledge and abide by a management regime that results in the in-situ conservation of biodiversity	Most key, but not all, relevant governing authorities acknowledge and abide by a management regime that results in the in-situ conservation of biodiversity	Few or no relevant governing authorities acknowledge and abide by the conservation objectives (if any) of the area or by a management regime likely to result in the in-situ conservation of biodiversity
Biodiversity Conservation Outcomes	The area is managed effectively to achieve the long-term in-situ conservation of biodiversity (with associated ecosystem services and cultural values, as appropriate)	The area is managed with the intent of, and is likely achieving, the long-term in-situ conservation of biodiversity (with associated ecosystem services and cultural values, as appropriate), despite possible management shortcomings	Based on clear evidence of conservation outcomes, the long-term, in-situ conservation of biodiversity is being achieved	Based on at least some evidence of conservation outcomes, the traits of the mechanism(s), and allowable and prohibited activities, the long-term, in-situ conservation of biodiversity is likely being achieved	Deficiencies in conservation outcomes, and/or on the traits of the mechanism(s) and allowable and prohibited activities, area is not/not likely, being managed to achieve the long-term, in-situ conservation of biodiversity; or outcome evidence is entirely lacking

biodiversity conservation. The MVCA works with partners to ensure that the integrity of the site is retained and remains accessible to the public (MVCA, 2006). For example, integrated site planning must include permitted land uses and public safety programs, and account for ecological integrity. The area is an ANSI and the City meets its commitment of protecting '*natural urban and rural functions*' and designated areas in its Official Plan (City of Ottawa, 2003) by carefully managing permitted land uses. The OPG supports the ANSI program and has a long-standing commitment to enhance quality of life in the areas of

Table 3. Application of the Canadian Council on Ecological Areas (CCEA) screening template to assess three properties owned and/or managed by Conservation Authorities in southern Ontario. Potential conservation effectiveness (see Tables 1 and 2) and protection from subsurface resource activity were assessed with evidence-based rationale using a green-yellow-red ranking system to distinguish thresholds of protection.

CCEA Screening Template Attribute		Morris Island Conservation Area (MICA) City of Ottawa Property	Ontario Power Generation Property (OPG)	Colonel Samuel Smith Park Toronto and Region Conservation Authority Property
Conservation Effectiveness	Geographical Space	The geographical space has clearly defined and agreed upon boundaries	The geographical space has clearly defined and agreed upon boundaries	The geographical space is intended to be clearly defined but may not be easily or widely recognizable
	Effective Means -1	The MICA has the power to exclude, control, and manage all activities within the area that are likely to have impacts on biodiversity	The MVCA has the power to exclude, control, and manage all activities within the area that are likely to have impacts on biodiversity	The management authority has the power to exclude, control, and manage all activities within the area that are likely to have impacts on biodiversity
	Effective Means -2	The protection mechanisms compel the CA to prohibit activities that are incompatible with the *in-situ* conservation of biodiversity	The protection mechanisms compel the CA to prohibit activities that are incompatible with the *in-situ* conservation of biodiversity	The mechanism(s) does not compel the authority (ies) to prohibit activities incompatible with the in-situ conservation of biodiversity but the authority is excluding those activities
Protected Area/OECM Distinguishing Criteria	Long-term	The mechanism is intended or expected to be in effect in perpetuity	The mechanism is intended or expected to be in effect indefinitely	The mechanism is intended or expected to be in effect for the long-term (i.e., in perpetuity)
	Dedicated	A multi-partner approach to the maintenance and protection of the city's property, which is zoned as 'Parks and Open Space'	A multi-partner approach to the maintenance and protection of the property and the license of occupation suggest that the mechanism can be reversed with moderate difficulty	The mechanisms can be over-turned or rescinded only great difficulty
	Timing	The mechanism is in effect year-round	The mechanism is in effect year-round	The mechanism is in effect year-round
	Scope of Objectives	The objectives are for the *in-situ* conservation of biodiversity	The property has objectives consistent with, whether intentionally or otherwise, the *in-situ* conservation of biodiversity	The property has objectives consistent with, whether intentionally or otherwise, the *in-situ* conservation of biodiversity
	Primacy of Objectives	The first priority is to ensure that the site is planned and managed to protect and sustainably manage biodiversity	The first priority is to ensure that the site is planned and managed to protect and sustainably manage biodiversity	Based on stated or implied objectives, allowable and prohibited activities, and evident intent, priority is given to objectives consistent, and not in conflict, with the in-situ conservation of biodiversity
	Governing Authorities	All relevant governing authorities acknowledge and abide by the conservation objectives of the area	All relevant governing authorities acknowledge and abide by the conservation objectives of the area	All relevant governing authorities acknowledge and abide by the conservation objectives of the area
	Biodiversity Outcomes	The intended conservation outcome is likely to be sustained	The intended conservation outcome is likely to be sustained	Based on at least some evidence of conservation outcomes, the traits of the mechanism(s), and allowable and prohibited activities, the long-term, in-situ conservation of biodiversity is likely being achieved
Subsurface Rights	Effectiveness of Protection from Subsurface Resource Activity	Mining rights have been withdrawn from prospecting, staking, sale, and lease	Mining rights have been withdrawn from prospecting, staking, sale, and lease	Mining rights have been withdrawn from prospecting, staking, sale, and lease
Outcome		May qualify as a 'candidate protected area' (IUCN Category	May qualify as a 'candidate' OECM	May qualify as a 'candidate 'OECM

operation where it helps to provide educational services for visitors.

Long-term: 'Yellow' – A long-term objective of the MVCA management plan is to provide visitors with examples of sustainable practices (e.g. demonstration sites of shoreline buffering techniques and wildlife habitat creation using brush piles and rotting logs) and to maintain the site in a condition that demonstrates a 'practice what we preach' philosophy (MVCA, 2006). A 'green' ranking requires that the protection "*... mechanism is intended to be in effect for the long term (i.e., in perpetuity)*" while a 'yellow' ranking states that the "*...mechanism is intended or expected to be in effect indefinitely*" (CCEA, 2018; emphasis added). Given that the long-term nature of the protection measure for the MICA is implied, a more explicit commitment to protection in perpetuity in the management plan would elevate the ranking for this criterion from 'yellow' to 'green'.

Dedicated: 'Yellow' – A multi-partner approach to the maintenance and protection of the OPG property and the license of occupation suggest that the mechanism can be reversed with moderate difficulty. Although multiple partners are involved in the maintenance and protection of the properties and the area is an ANSI, an explicit statement about the strength of the protection mechanism for the OPG property would help elevate this ranking from 'yellow to 'green'.

Timing: 'Green' – The management mechanism is in effect year-round.

Scope of Objectives: 'Green' – For the OPG property, the area has objectives consistent with, whether intentionally or otherwise, the *in-situ* conservation of biodiversity. A key *in-situ* management objective for the MICA is to "*develop and maintain opportunities to foster an appreciation of the natural environment and understanding of water management*", and land use (e.g. trail establishment) must not jeopardize the ecological integrity of wetlands and other natural features (MVCA, 2006). For example, Best Management Practices[14] guidelines are used to ensure protection of aquatic habitats and shoreline vegetation (MVCA, 2006).

Primacy of Objectives: 'Green' – The first priority is to ensure that the site is planned and managed to protect natural features and ensure they are used sustainably (MVCA, 2006). The CA requires that trail

View of the interior bays and shoreline of the Morris Island Conservation Area, Ottawa, Ontario, Canada © Mississippi Valley Conservation Authority

planning, placement and maintenance be approved and monitored as part of site planning processes that include application of Best Management Practices to ensure that sensitive natural areas such as erosion-susceptible steep slopes, shoreline ecosystems, wetlands and significant wildlife habitats are avoided. The CA guides visitor behaviour with safety-related signs (e.g. canoe launch safety sign), trail markers, interpretative signs, and signs that list prohibited activities (e.g. no overnight camping, no hunting, no power boats and no motorized vehicles).

Governing Authorities: 'Green' – A key characteristic of an OECM is that property owners are involved in the assessment and management of the site (IUCN, 2018). All relevant governing authorities acknowledge and abide by the conservation objectives developed for the area. The City of Ottawa, OPG and the MVCA work in partnership to ensure that the integrity of the site is retained and that it remains accessible to the public. The MICA provides an excellent example of collaborative conservation involving the public and private sectors to protect and manage a significant ecological area.

Biodiversity Conservation Outcomes: 'Yellow' – The intended conservation outcome is likely to be sustained because the property is managed to simultaneously provide low-impact recreation opportunities and long-term *in-situ* biodiversity conservation. Aspects of two issues require attention - long-term monitoring and enforcement of regulations. The MVCA has monitored and maintained the site since 1987. Biodiversity studies have been completed for the area (e.g. Brunton, 1992) and long-term monitoring studies have been recommended (MVCA, 2006). The conservation area has been open for almost 30 years and the CA has not detected any notable ecological degradation. As a safeguard the CA engages a group of volunteers to closely monitor activity and advise staff of potential problems. As per the management plan, results-based monitoring of the MICA's biodiversity is recommended and requires implementation. Enforcement issues requiring attention include the elimination of unacceptable behaviour by a few visitors who damage trails with unauthorized use of motorized vehicles and vandalize the gates (MVCA, 2006). Key challenges include securement of funding for monitoring programs.

Effectiveness of Protection from Subsurface Resource Activity: 'Green' – The mining rights for the MICA have been withdrawn from prospecting, staking, sale and lease under the auspices of the *Mining Act* (Statutes of Ontario, 1990a).

Colonel Samuel Smith Park case study

The rankings generated with the CCEA template indicate that portions of the CSSP may qualify as 'candidate' OECMs (Table 3). To date, the property has not been recorded as protected in Canada's CARTS. The rationale developed for CSSP is as follows:

Geographical Space: 'Yellow' – A metes and bounds survey with registered boundaries on title has been completed and the geographical space has clearly defined and agreed upon borders. About 58 per cent of the terrestrial portion of the park is devoted to biodiversity conservation and the rest to recreation. Given the extent of the recreational footprint, biodiversity conservation outcomes will not be achieved in the entire park. However, the CA could elect to strengthen the protection of the existing pond/wetland complex, the coastal meadow, and other key habitats by implementing the TRCA zoning classification system, which includes a Nature Reserve Zone (NRZ) designation. A NRZ encompasses *"...significant or unique natural features, landforms, species or habitats that require careful management to ensure long-term protection"* (TRCA, 2015, p.23).

Effective Means-1: 'Green' – The management authority has the power to exclude, control and manage all activities that are likely to impact biodiversity. CA planning policies provide for conservation, infrastructure and recreational use (TRCA, 2014b). The management authority complies with a number of provincial and federal statutes that provide for the protection of species populations and habitats, including the provincial *Fish and Wildlife Conservation Act* (Statutes of Ontario, 1997) and the federal *Fisheries Act* (Statutes of Canada, 1985). The property was created by active restoration of degraded ecosystems to provide important ecosystem services, and biodiversity has increased significantly in the last four decades. But given the size of the recreational footprint in the park, the long term management of people, their dogs, and wildlife will require ongoing application of a balanced suite of recreation-oriented rules and regulations that complement rules and regulations designed to protect biodiversity.

Effective Means-2: 'Yellow' – The protection mechanism used to manage CSSP compels the CA to prohibit activities that are incompatible with biodiversity conservation where biodiversity is a stated objective. Activities are managed under *The Living City Policies* (TRCA, 2014b), issued under the authority of Section 20 of the *Conservation Authorities Act* (Statutes of Ontario, 1990b), and endorsed by TRCA's Board (28

November 2014). The CA could strengthen its commitment to biodiversity conservation by establishing NRZs around key habitats where public access is "*....limited to authorized trails for low impact activities such as walking, hiking, cycling, leashed dog walking, and cross country skiing. A complete ban on any public use is also possible in this zone, based on the need for natural or cultural heritage protection*" (TRCA, 2015, p.23).

Long-term: 'Green' – The mechanisms are intended to be in effect for the long term (i.e. in perpetuity).

Dedicated: 'Green' – The mechanisms can be over-turned or rescinded only with great difficulty.

Timing: 'Green' – The mechanisms are in effect year-round.

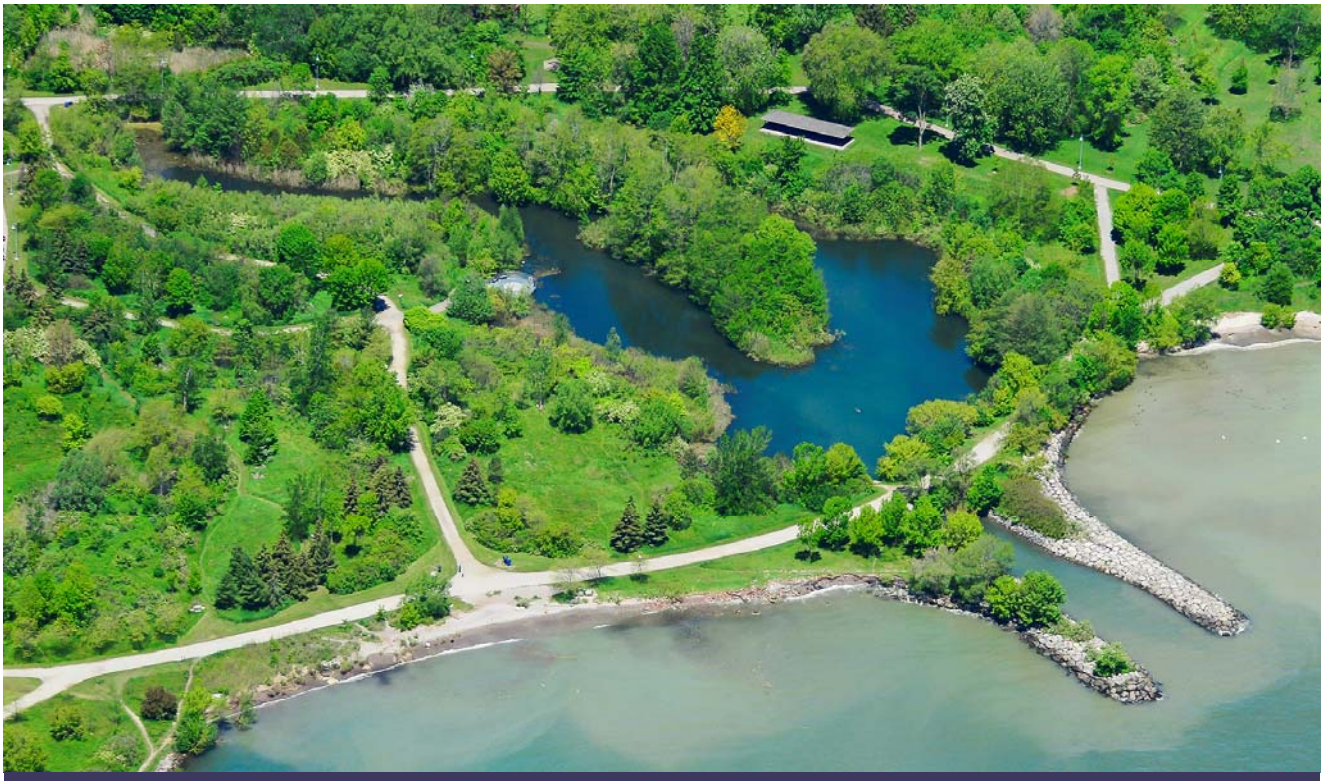
Scope of Objectives: 'Green' – The area has objectives consistent with, whether intentionally or otherwise, the *in-situ* conservation of biodiversity. These objectives are the foundation of TRCA's regulatory program, and their application in policy reflects the diversity of landscapes, land uses, and urbanizing nature of TRCA's watersheds[15] and the Lake Ontario shoreline. The administration of TRCA's regulations is based on, but not limited to, the following objectives:

- Prevent development, interference, or alterations that negatively impact natural landform features, functions and systems.
- Protect, manage or restore lands within the watershed and Lake Ontario ecosystems for the purpose of maintaining or enhancing the natural features, natural system and hydrologic and ecological functions within valley and stream corridors, wetlands, watercourses, shorelines and hazardous lands, and the relationships among them.
- Prevent development, interference and alterations that affect the control of flooding, pollution, erosion, dynamic beaches or conservation of land within valley and stream corridors, wetlands, watercourses, hazardous lands and along the Lake Ontario shoreline (TRCA, 2014b).

Primacy of Objectives: 'Yellow' – The stated primary and overriding objectives are consistent, and not in conflict, with the *in-situ* conservation of biodiversity. A key strategic objective of *The Living City Policies* is the protection and restoration of natural areas that provide habitat for plant and animal species, improve air quality and provide opportunities for the enjoyment of nature and outdoor recreation (TRCA, 2014b). Establishment of NRZs around key habitats to control human/dog access "*...based on the need for natural or cultural heritage protection*" would elevate this ranking to 'green' (TRCA, 2015, p.23).

Governing Authorities: 'Green' – All relevant governing authorities acknowledge and abide by management regimes that result in the *in-situ* conservation of biodiversity. Examples of governing legislation include the *Conservation Authorities Act* (Statutes of Ontario, 1990a), *Planning Act* (Statutes of Ontario, 1990b), *Fish and Wildlife Conservation Act* (Statutes of Ontario, 1997), *Fisheries Act* (Statutes of Canada, 1985) and the *Clean Water Act* (Statutes of Ontario, 2006). Important land use policies include the *Provincial Policy Statement* under the *Planning Act* (MMAH, 2014) and *The Living City Policies for Planning and Development* (TRCA, 2014b). The TRCA's mission is to work with its partners to ensure that decisions about the allocation and use of natural assets are based on a foundation of healthy rivers and shorelines, greenspace, biodiversity and sustainable communities (TRCA, 2014b).

Biodiversity Conservation Outcomes: 'Yellow' – On the basis of some evidence collected to date (e.g. the multi-decadal increase in terrestrial and wetland species numbers) the intended conservation outcome is likely to be sustained in the long-term. Conservation effectiveness is being measured with watershed, groundwater, and natural heritage studies and monitoring programs (TRCA, 2014a). In addition, the TRCA promotes adaptive management through performance monitoring and evaluation of measures to avoid, mitigate and compensate for the effects of development and infrastructure on natural assets (TRCA, 2014b). Two consequential issues requiring attention result from hiker movement patterns and the behaviour of off-leash dogs (TRCA, 2014a). Off-trail hikers trample vegetation and disturb animals that may be feeding or protecting their young, which is exacerbated by off-leash dogs that can aggressively flush and harass animals (e.g. George & Crooks, 2006; Langston et al., 2007; Bowes et al., 2018). Remedial actions include protection of key habitats in NRZs, extension programs, signage, strategically placed plantings along trails and a requirement that all dogs be leashed, particularly during the spring, summer and fall seasons. Given the impact of free-ranging dogs on wildlife, it is unlikely that any part of the park would qualify for OECM status in the absence of on-leash regulations. Inclusion of the Lake Ontario portion of the park as a zone that may qualify as an OECM requires an



View of the wetland in Colonel Samuel Smith Park, Toronto, Ontario, Canada © Toronto and Region Conservation Authority

assessment of habitat condition, including the contribution of the shoal and reef habitats to biodiversity conservation.

Effectiveness of Protection from Subsurface Resource Activity: 'Green' – The mining rights for the CSSP have been withdrawn from prospecting, staking, sale and lease under the auspices of the *Mining Act* (Statutes of Ontario, 1990a).

Challenges and opportunities associated with effective in-situ biodiversity conservation in candidate OECMs in highly transformed terrestrial and inland water ecosystems

These case studies were prepared to inform discussions about the designation of OECMs in urban conservation areas and parks. Key questions about their suitability for protection status include their size and condition, and the management regime used to maintain or enhance that condition, including use by people. For example, general ecological principles suggest that larger connected areas are preferable to smaller isolated areas, properties with high ecological integrity contribute more to biodiversity conservation than highly modified or degraded sites, and areas in which visitor levels and related activities are strictly managed to avoid or minimize negative effects are preferred over areas where management authorities do not or cannot control visitor numbers or their behaviour patterns.

Canadian jurisdictions protect a large number of small areas (i.e. less than 1,000 ha) (Woodley, 2015) and the Mixedwood Plain Ecozone in southern Ontario is no exception where the average size of formally protected areas such as provincial and national parks, conservation reserves and wilderness areas is 668 ha (MNR, 2011). Many types of urban parks, parkettes, public gardens, playgrounds, sports fields, fairgrounds and golf courses do not conserve biodiversity at levels that significantly contribute to ecological integrity at landscape and waterscape levels of planning. However, even though CA conservation areas and parks tend to be smaller in the Canadian context (e.g. the 23 CA properties and property clusters examined during this project ranged from 14 to 6000 ha), many encompass and protect important biological and geological features and contribute to biodiversity conservation in large urban areas where human populations continue to grow and recreational pressures are moderate to high and increasing. For example, the MICA and CSSP encompass habitats that support populations of local species, some rare or threatened species, and migratory species where thousands of birds visit in spring and fall to feed and/or rest.

The contribution of these properties to biodiversity conservation depends on the effectiveness of *in-situ* protection and maintenance of ecological integrity (condition) in the protected area and the external effects of the surrounding urban-scape. The case study properties are part of larger networks of conserved areas and/or ecosystems where other restoration or conservation initiatives are underway. The ecological integrity of the MICA properties has remained intact since the MVCA assumed responsibility for the area more than 40 years ago and continues to provide habitat for species inhabiting the wetland and forested ecosystems found there (MVCA, 2006). The MICA is connected to an aquatic network (e.g. the Ottawa River) and a terrestrial network of parks and greenspace areas owned and/or managed by the CA, City of Ottawa, OPG and the National Capital Commission. The CSSP resulted from an 'infill' project in the 1970s, is one of a number of rehabilitated sites along the significantly modified Lake Ontario shoreline, and now encompasses 42 ha of Lake Ontario with shoal and reef habitats, and 36 ha of terrestrial and wetland habitat of which 21.3 ha provide natural cover, including 10.8 ha of forest, 4.1 ha of coastal meadow, 3.2 ha of beach, 1.6 ha of successional habitat, 0.9 ha of aquatic (pond) and 0.7 ha of wetland (TRCA, 2003; TRCA, 2014a).

Many types of potential OECMs identified by the IUCN (2018) were initially established for an eclectic variety of land uses in jurisdictions around the world, including forest 'set-asides', urban parks, university research programs, military operations, restoration, fisheries management and sport hunting. Regardless of the primary objective(s), an OECM designation requires that the property be "*...governed and managed over the long-term in ways that deliver the effective in-situ conservation of biodiversity*" (IUCN, 2018, p.14). Although primary activities are not intended to negatively affect biodiversity, it is inevitable that some impacts will occur. For example, Jones et al. (2018) report that just 42 per cent of the global protected area estate is free from measureable human pressure. Accordingly, it is incumbent upon governing authorities to identify known and potential issues and factor them into the OECM evaluation process. For example, does the infrastructure footprint and/or permitted activities in the area militate against successful biodiversity conservation, or are techniques to mitigate these impacts available and practical? Issues resulting from recreational activities in the MICA and CSSP are likely mitigatable, and while the infrastructure footprint in CSSP is significant, the property does provide measureable wildlife habitat along the edge of Canada's largest city.

Jurisdictions committed to ecological integrity and the provision of optimal recreational opportunities work to ensure that human impacts do not reduce or even nullify the contribution of potential sites to effective *in-situ* biodiversity conservation. Our experience with assessing potential OECMs in highly populated and developed areas underscores the importance of understanding the baseline condition (ecological integrity) of these areas. The application of science-based thresholds for human impacts needs more research in a Canadian context to help practitioners working with both the IUCN and CCEA screening tools.

Commitment to biodiversity conservation assumes that participating jurisdictions will identify, designate and manage networks of high quality protected areas. In this regard, practitioners require reliable assessment tools to eliminate proposed sites with little or no biodiversity conservation value from further consideration, identify potential sites requiring remedial action, and formally add qualified protected areas/OECMs to the protected area estate. To this end, the CCEA tool helps practitioners identify or confirm effective policy and planning mechanisms, issues requiring attention, and new and emerging knowledge (i.e. scientific, traditional and/or local knowledge) needs and priorities. Our experience with these two case studies reinforces our belief that collaboration and access to all of the germane information about a site are key requirements for a fair and robust assessment. The importance of baseline data and information should not be underestimated because knowledge provides the foundation for a critical review of the policies and plans used to guide *in-situ* decision-making. In addition, we strongly recommend that agencies employ peer review as part of the screening process.

Similarities and differences between the IUCN and CCEA screening processes

There are more similarities than differences between the IUCN (2018) and CCEA (2018) screening processes, as follows:

IUCN Step 1: "*For cases in which a party other than the governing authority is managing the process, confirm the interest of the governing authority in having the area evaluated and potentially reported as an OECM*." This is an important step in the Canadian system as well, which encourages involvement by the property owner(s) and/or governance authority(ies) (CCEA, 2018).

IUCN Step 2: "*Review and discuss the guidelines and the screening criteria, and assemble a review team of people familiar with the variety of approaches being*

taken locally to area-based conservation." Like protected areas, candidate OCEMs in Canada are shaped by a unique mix of social, cultural, political and ecological qualities that more often than not require the scrutiny and assessment of an integrated review team with knowledge of the property's condition and a sound understanding of the management regime employed to protect it. In this study, the two candidate OECMs were assessed by a team of owners/managers, practitioners, academics and an outside expert who provided an insightful and substantive review of the project team's initial assessments.

IUCN Step 3: "*Compile maps and information on potential OECMs*." The two candidate OECMs were assessed using data and information retrieved from the Conservation Authority Lands Database, baseline values maps, scientific and technical reports and publications, and policy statements and plans obtained from CA staff and through web-based literature searches.

IUCN Step 4: "*Apply the four screening criteria to each area being assessed as an OECM*". The CCEA screening tool is comprised of 13 criteria that, with three exceptions, match the essential conservation criteria outlined in IUCN (2018) (Figure 4 and Supplementary Online Material):

Criterion 1: "*Ensure that the area is not already recorded as a protected area.*" The CCEA screening tool requires that assessors declare property status.

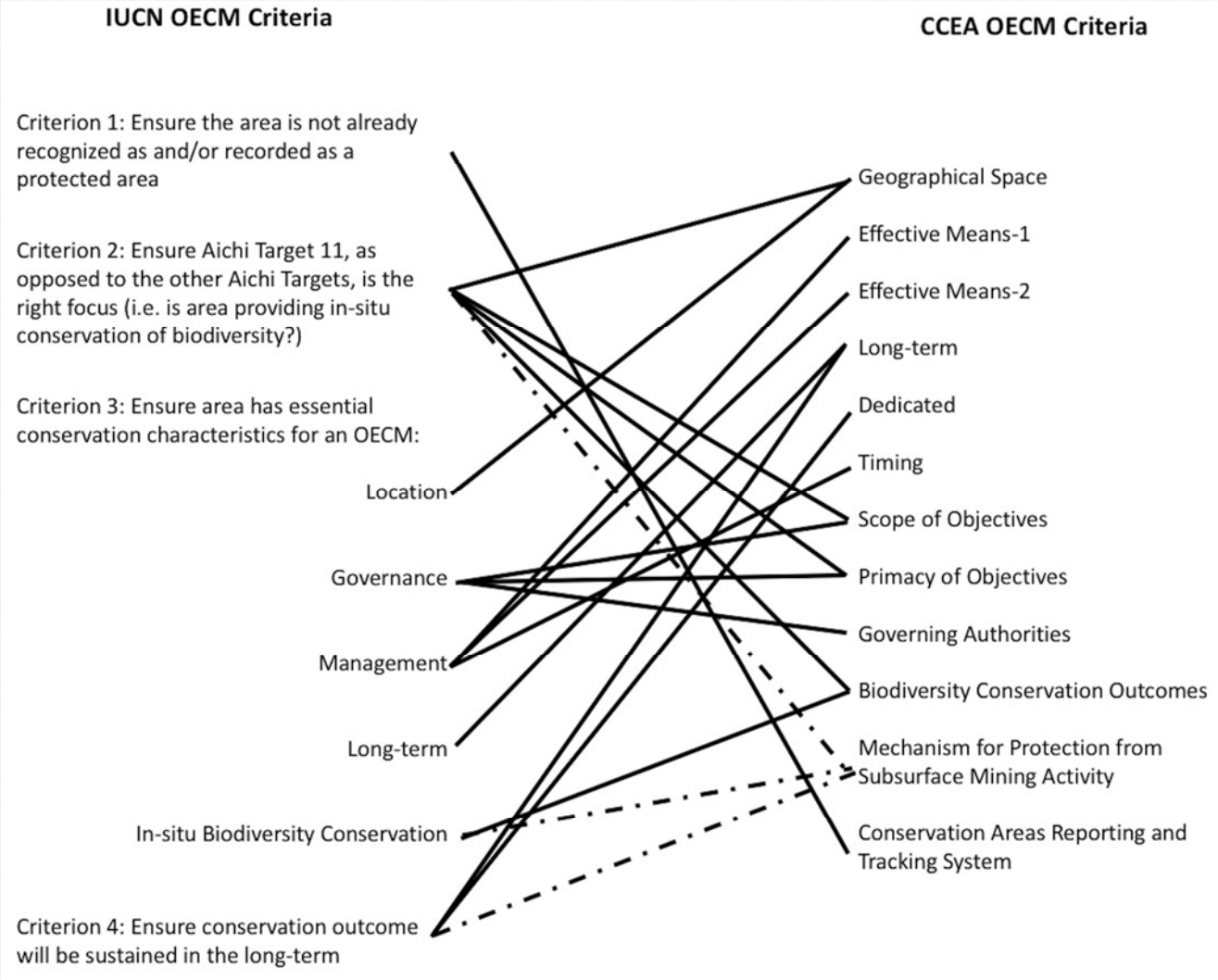


Figure 4. The relationship between IUCN and CCEA criteria used to evaluate areas that may qualify for OECM status. Note that IUCN Criterion 1 matches with Canada's Conservation Areas Reporting and Tracking System (CARTS), which is a separate tool and not a CCEA criterion. While the IUCN process does not address subsurface resource use, we have flagged at least three IUCN criteria (dotted lines) that are relevant (and there are likely more).

Criterion 2: "*Ensure that Aichi Target 11, as opposed to other Aichi Targets, is the right focus*." The CCEA evaluation tool requires a summary evaluation of the essential and relevant natural, social and cultural values of the candidate property, and ranks agency commitment to protect the ecological integrity of the property (CCEA, 2018). Additionally, CCEA guidance (CCEA, 2018, p.68 and Appendices 2 and 3) reiterates IUCN guidance (IUCN, 2018, p.23 and Appendices 2 and 3) to determine if Aichi Target 11 is the most relevant target against which to evaluate the conservation measure.

Criterion 3: "*Ensure that the area has the essential conservation characteristics of an OECM*." Nine of the CCEA criteria match the essential conservation criteria outlined in IUCN (2018) for location ('geographical space'), governance ('scope of objectives', 'primacy of objectives,' and 'governing authorities'), management ('effective means-1', 'effective means-2', and 'timing'), long-term ('long-term'), and *in-situ* biodiversity conservation ('biodiversity conservation outcomes').

Criterion 4. "*Ensure that the conservation outcome can be sustained.*" CCEA criteria (i.e. 'long-term', 'dedicated' and 'subsurface resource activities or dispositions') are intended to demonstrate an owner's/manager's commitment and capacity to sustain the candidate property as a protected area or an OECM. The IUCN OECM Task Force does not directly address subsurface activities such as mining while the CCEA tool is designed to recognize all areas that are effectively protected against the impacts of subsurface resource use, regardless of governance type, and to encourage the application of Best Management Practices that provide long-term security against such threats (CCEA, 2018). The CCEA approach responds to and supports a number of IUCN policies, including IUCN Recommendation 2.82 (protection and conservation of biological diversity of protected areas from the negative impacts of mining and exploration) (IUCN, 2000) and Recommendation WCC-2016-Rec-102-EN (protected areas and other areas important for biodiversity in relation to environmentally damaging industrial activities and infrastructure development) (IUCN, 2016).

IUCN Step 5: "*Identify areas that meet all four criteria as OECMs, subject to more detailed review involving empirical evidence. Report the areas that meet all the criteria, including consent from the governance authority, to the WDPA.*" The CCEA has developed a screening template (see CCEA, 2018, Appendix 6) that requires detailed explanation of responses to screening questions, including consideration of available empirical evidence. Selected Canadian authorities (e.g. provincial/territorial governments) evaluate and report areas recommended for recognition as protected areas and OECMs in CARTS.

IUCN Step 6: "*For those areas that do not meet the criteria, record reasons for decisions against each criteria. This information may be helpful in identifying whether any changes to the governance or management might lead to the area qualifying as an OECM. Where desired, reapply Steps 1-5, as appropriate.*" One advantage of the CCEA's colour coded key word ranking system is that it helps practitioners identify management thresholds with which to make and defend their decisions (see Tables 1 and 2). It also explicitly asks evaluators to identify any deficiencies that need to be overcome in order to report a site as a protected area or OECM (see CCEA, 2018, Appendix 6). Both the IUCN and CCEA task teams recognize that rationalizing the reasons for a decision provides an important learning tool for practitioners going forward.

The IUCN and CCEA OECM screening processes are based on the same foundation of CBD commitments and definitions, and assess effectiveness for the same outcome, *in-situ* biodiversity conservation. For example, the same key words are used by the CCEA and the IUCN to formulate screening tool criteria contained in their respective guidance documents. Given the extent of bio-geo-political diversity in the world, the IUCN's support for development of country- and region-specific tools to help practitioners translate high-level global guidance to in-country assessment protocols that reflect the unique local-national conditions that shape biodiversity conservation is strategic and progressive.

Causeway entrance at the Morris Island Conservation Area during autumn © Mississippi Valley Conservation Authority

CONCLUSIONS

The CCEA's screening process includes a robust tool that practitioners can use to assess and rank potential OECMs in the Canadian conservation context. The case studies illustrate how detailed site assessments and/or the results of *in-situ* monitoring programs help practitioners determine the condition of and capacity for biodiversity conservation. They demonstrate the importance of a strong commitment to the process, collaborative teamwork, access to spatial and temporal data and information, and support for national and international reporting processes. The CCEA screening tool faithfully integrates IUCN guidance developed by the Task Force (IUCN, 2018) and beyond (e.g. subsurface resource activity). The case studies presented here highlight the importance of Parties developing or adopting a detailed country-level screening tool tailored to the unique geo-political and ecological conditions in which proposed OECMs are located. Finally, the case studies illustrate the potentially important contribution that relatively small areas can make to biodiversity conservation in urban settings, where pockets of remnant natural ecosystems and restored sites add to the ecological diversity of the urban-scape and the wider environmental matrix to enhance social connectivity with nature.

ENDNOTES

[1]Other Effective Area-Based Conservation Measures (OECMs): An OECM is *"A geographically defined space, not recognized as a protected area, which is governed and managed over the long-term in ways that deliver the effective and enduring in-situ conservation of biodiversity, with associated ecosystem services and cultural and spiritual values"* (CCEA, 2018, p.12). A candidate OECM has been identified as a potential OECM by the governance authority and is being assessed against OECM criteria. This may also refer to a potential OECM that is being assessed, has not met the OECM criteria, and is being worked on with a view of being recognized and reported as an OECM (IUCN, 2018).

[2]The CCEA was established in 1982 as an independent national organization to facilitate and assist Canadians with the establishment and management of a comprehensive network of protected areas representative of Canada's ecological diversity.

[3]2020 Biodiversity Goals and Targets for Canada, Goal A, Target 1: *"By 2020, at least 17 percent of terrestrial areas and inland water, and 10 percent of coastal and marine areas, are conserved through networks of protected areas and other effective area-based conservation measures"* (Government of Canada, 2016, p.2).

[4]In 2015, CWS-ON compiled a database of 6,400 parcels of land owned and/or managed by Conservation Authorities (e.g. Fee Simple and Conservation Easements) that encompass about 146,000 ha. These parcels are managed/protected as 250 conservation areas and other designated sites.

[5]ANSI: An Area of Natural and Scientific Interest is an official designation used by the provincial Government of Ontario to recognize contiguous geographical regions within the province that have geological or ecological features that are significantly representative provincially, regionally or locally. See https://www.ontario.ca/data/areas-natural-and-scientific-interest.

[6]PSW: Provincially Significant Wetlands are areas identified by the Province as being the most valuable wetlands. They are determined with a science-based ranking system known as the Ontario Wetland Evaluation System. This Ministry of Natural Resources and Forestry framework provides a standardized method of assessing wetland functions and societal values that enables the Province to rank wetlands relative to one another. This information is provided to planning authorities to support the land use planning process. See https://notl.civicweb.net/document/3911/Provincially%20Significant%20Wetlands.FAQ.Mar%2028%202013.pdf?handle=D3D6C35E814B487894D319E75F5B2355.

[7]CHRS: Established in 1984, the Canadian Heritage Rivers System gives national recognition to Canada's outstanding rivers and encourages jurisdictions to employ management programs to conserve their natural, cultural and recreational values for the benefit and enjoyment of Canadians, now and in the future. See http://chrs.ca/about/.

[8]Canada is classified and mapped in many ways, including a hierarchical array of large to small ecosystems. The ecozone is the largest sub-continental zone that is characterized by representative biotic and abiotic features. The ecozone can be further subdivided into ecoregions and ecodistricts (Crins et al., 2009).

[9]Lease: The lease with the City of Ottawa is a legal contract between two parties, the lessor and the lessee. The lessor is the legal owner of the property while the lessee obtains the right to use the property in return for regular rental payments or other forms of consideration. The lessee also agrees to abide by various conditions regarding their use of the property.

[10]License of Occupation: This is a written permission by the owner that allows the licensee to occupy and use the property in accordance with the terms and conditions of the License.

[11]*"Leases and agreements, depending on their terms, can range from little more than a right to occupy to almost an equivalent of fee simple interest. The benefits and costs associated with the interests obtained vary accordingly."* See https://trca.ca/wp-content/uploads/2016/04/GAP_2016.pdf.

[12]IUCN Category IV: Category IV protected areas help to protect, or restore: 1) flora species of international, national or local importance; 2) fauna species of international, national or local importance including resident or migratory fauna; and/or 3) habitats (Dudley, 2008).

[13]CARTS: The Conservation Area Reporting and Tracking System is a geodatabase that contains data from federal, provincial and territorial jurisdictions, which update their protected areas data to CARTS on an annual basis. The CARTS website provides access to summary reports, geospatial data, data visualization files and commonly requested maps in PDF format. See http://www.ccea.org/carts/.

[14]Best Management Practices: BMPs are effective and practical tools and techniques to achieve an objective (e.g. mitigating the effects of pollution or creating habitat) through optimal use of agency or organization resources.

[15]Watershed: A watershed or catchment basin includes all of the land that is drained by a watercourse and its tributaries.

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RESUMEN

La intención primordial de la Meta 11 de Aichi es la conservación de la biodiversidad en áreas protegidas formalmente reconocidas. Además de las áreas protegidas tradicionales, la Meta 11 reconoce un nuevo mecanismo, "Otras medidas de conservación eficaces basadas en áreas" (OECM, por sus siglas en inglés). Desde su inclusión en la Meta 11 de Aichi, la categoría de OECM ha creado gran confusión y debate, y hasta la fecha son pocos los ejemplos que se han descrito. En este artículo, exploramos la capacidad de las herramientas para la identificación de OECM desarrolladas por la Unión Internacional para la Conservación de la Naturaleza (UICN) y el Consejo Canadiense de Áreas Ecológicas (CCEA, por sus siglas en inglés) para evaluar dos posibles OECM ubicadas en zonas urbanas altamente desarrolladas en Ontario, Canadá. Los resultados revelan que ambos sitios podrían calificar como “candidatos” a OECM. En un análisis comparativo de las dos herramientas de detección, determinamos que la herramienta del CCEA integra fielmente las directrices de la UICN y aporta detalles adicionales para ayudar a los profesionales a abordar las condiciones sociales y ecológicas únicas del país. En un mundo bio y geopolíticamente diverso, la traducción exitosa de una orientación de alto nivel en herramientas diseñadas para su aplicación a niveles locales y nacionales particulares de toma de decisiones es crítica para la conservación exitosa de la biodiversidad.

RÉSUMÉ

La conservation de la biodiversité dans les aires protégées officiellement reconnues est l’intention principale de l'Objectif 11 d'Aichi. Outre les aires protégées traditionnelles, l'Objectif 11 reconnaît un nouveau mécanisme: les «autres mesures de conservation efficaces par zone» (OECM). Depuis son incorporation dans l'Objectif 11 d'Aichi, la catégorie OECM a engendré de la confusion et de nombreux débats, et peu d'exemples ont vu le jour à date. Dans cet article, nous explorons la capacité des outils de dépistage des OECM développés par l'Union Internationale pour la Conservation de la Nature (UICN) et le Conseil Canadien des Aires Ecologiques (CCEA) à évaluer deux OECM potentiels situés dans des zones urbaines hautement développées en Ontario au Canada. Les résultats révèlent que ces deux sites peuvent être considérés comme des «candidats» OECM. Lors d’une analyse comparative des deux outils de dépistage, nous avons déterminé que l'outil du CCEA respecte fidèlement les lignes directrices de l'UICN et fournit des détails supplémentaires pour aider les évaluateurs à prendre en compte conditions sociales et écologiques uniques du pays. Dans un monde bio-géopolitiquement diversifié, la transposition réussie de directives de haut niveau en outils conçus pour une application à des niveaux de décision locaux et nationaux est essentielle à la réussite de la conservation de la biodiversité.

PPA OR OECM? DIFFERENTIATING BETWEEN PRIVATELY PROTECTED AREAS AND OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES ON PRIVATE LAND

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ABSTRACT

Private land conservation has an increasingly important role in ensuring global conservation networks are comprehensive, adequate and representative. To contribute to the Convention on Biological Diversity's Aichi Target 11, areas on private land must be either privately protected areas (PPAs) or 'other effective area-based conservation measures' (OECMs) on private land. Here we compare PPAs to OECMs on private land, clarify misconceptions and provide case studies for how two jurisdictions, Australia and South Africa, have worked through applying these categories to local private land conservation mechanisms.

Key words: privately protected area, protected area, OECM, private land conservation, security

INTRODUCTION

Protected areas, as one of the cornerstones of conservation efforts, have been the subject of significant policy work and considered definition (e.g. Dudley, 2008), despite the differing legal, social and policy approaches to these mechanisms by jurisdictions around the world. Privately protected areas (PPAs), while being applied and recognised by a number of jurisdictions for well over two decades (Mitchell, 2005; Fitzsimons, 2015), have had increased focus at an IUCN policy level in the past five years (e.g. Stolton et al., 2014; Bingham et al., 2017) and have grown in profile as a significant mechanism to help achieve global conservation targets.

Here we compare PPAs to 'other effective area-based conservation measures' (OECMs) on private land, clarify misconceptions and provide case studies for how two jurisdictions, Australia and South Africa, have worked through applying these categories to local private land conservation mechanisms.

Distinguishing OECMs from PPAs: Why it matters

To contribute to the Convention on Biological Diversity's (CBD) Aichi Target 11, areas on private land must be either privately protected areas (PPAs) or 'other effective area-based conservation measures' on private land. Currently both protected areas and OECMs are listed as qualifying equally towards the numerical targets to be achieved by the year 2020. However, discussion on new targets for the CBD post-2020 have begun, and it is likely that protected areas and OECMs will be considered separately going forward.

Perhaps more significantly, future assessments of the effectiveness of various conservation mechanisms will depend on a clear understanding of the differences among categories and types of protected and conserved areas. IUCN is establishing the definitional framework upon which comparative analyses of these mechanisms will depend. In considering private governance, it is

important that analysts and other authorities are able to distinguish between PPAs and OECMs on private land.

What is a privately protected area?

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 (Dudley, 2008).

A privately protected area (PPA) is a protected area, as defined above, under private governance including by:

- individuals and groups of individuals;
- non-governmental organisations (NGOs);
- corporations – both existing commercial companies and sometimes corporations set up by groups of private owners to manage groups of PPAs;
- for-profit owners;
- research entities (e.g. universities, field stations); or
- religious entities (Stolton et al., 2014).

The 2016 IUCN World Conservation Congress (WCC) approved a resolution on supporting PPAs (WCC-2016-Res-036). This resolution acknowledged the "valuable work and the report of the Futures of Privately Protected Areas project [Stolton et al. 2014] and its proposed concept of privately protected area". Through the resolution, IUCN members recognise the complementarity of PPAs to other governance types, and their ability to contribute to connectivity within the broader conservation estate. Similarly, UNEP/CBD/COP/DEC/XII/19 17 October 2014 "Recognizes the contribution of private protected areas, in addition to public and Indigenous and local community conserved areas, in the conservation of biodiversity, and encourages the private sector to continue its efforts to protect and sustainably manage ecosystems for the conservation of biodiversity".

What is an 'other effective area-based conservation measure'?

An OECM, as referenced in Aichi Biodiversity Target 11, is defined in the draft *Guidelines for Recognising and Reporting Other Effective Area-based Conservation Measures* (IUCN WCPA, 2018) as: A geographically defined space, not recognised as a protected area, which is governed and managed over the long-term in ways that deliver the effective in-situ conservation of biodiversity, with associated ecosystem services and cultural and spiritual values.

The draft OECM Guidelines suggest "The distinguishing criterion is that protected areas should have a **primary conservation objective**, whereas an OECM should **deliver the effective in-situ conservation of biodiversity, regardless of its objectives**".

Some early confusions among definitions

Earlier versions of the OECM Guidelines contained some confusing and contradictory explanations on the relationship between PPAs and OECMs. While this has been corrected in the latest draft of the OECM Guidelines, it is important to clarify these issues here to reduce doubt for policy makers and practitioners. The *Futures of Privately Protected Areas* report (Stolton et al., 2014) and subsequent published guidance from the WCPA Specialist Group on Privately Protected Areas and Nature Stewardship (Bingham et al., 2017) made it very clear that PPAs are areas that fit the IUCN protected area definition. Earlier drafts of the OECM guidance suggested that PPAs can fit either the IUCN protected area definition **or** the OECM definition, dependent solely on whether the area is recognised by the government or not. Indeed the draft OECM Guidelines previously stated that an OECM can be a PPA that is not reported by the government, or a protected area whose custodians do not want it to be reported as a protected area. This is not correct. An area cannot both be an OECM and a protected area; if it meets the IUCN definition, it is a protected area. While there are acknowledged issues with reporting of PPAs to national databases and the World Database on Protected Areas (WDPA) (Bingham et al., 2017), this does not impact on the classification of an area. That is, an area can be classified as a PPA even if it is not reported as such to the WDPA. On the other hand, it should be stated that simply calling a place a PPA does not make it so. Management must reflect the definition.

Practically determining differences

While a variety of legal mechanisms are available in many jurisdictions for creating both PPAs and OECMs, a full description of these tools is beyond the scope of this paper (see Bowles et al., 1998). Furthermore, the legal tool (or financial mechanism) used may not have a bearing on whether an area should be considered a PPA and not an OECM, or vice versa. Indeed, the fact that an area is under private governance is also not a determinant as to whether it should be counted as PPA or OECM.

What is significant in making such a determination is whether the site in question meets the IUCN definition of a protected area (Figure 1). Again, we emphasise that

no area can simultaneously be a PPA and an OECM. As outlined above, the first filter to apply when determining whether a place is a PPA or OECM is whether it meets all the criteria to be considered a protected area. Only then should the governance be considered. A private area that meets the protected area definition is a PPA; otherwise, if it does not meet the protected area definition it may be a private OECM.

CASE STUDIES

Some jurisdictions have already determined the types of private land conservation agreements that would qualify as a PPA and OECM on private land categories. Here we provide case studies for this distinction as it has been applied in Australia and South Africa. We are aware that other countries have also initiated this line of work.

Australia

In Australia, the objective of building a national reserve system that includes protected areas of public, private and Indigenous governance types has been embedded in policy for over 25 years and has been actively pursued in that time (e.g. Taylor et al., 2014). The only nationally agreed definition of a PPA is that developed by the Natural Resource Management Ministerial Council (NRMMC) for *Australia's Strategy for the National Reserve System 2009–2030* (NRMMC, 2009). The NRMMC, which consisted of the Australian Commonwealth, state, territory and New Zealand government ministers responsible for primary industries, natural resources, environment and water policy, stated "A fundamental requirement of any area's eligibility for inclusion within the National Reserve System is that it must meet the IUCN definition of a 'protected area' (Dudley, 2008)" (NRMMC, 2009, p. 42). The Natural Resource Management Ministerial Council defined further 'Standards for inclusion in the National Reserve System' with three standards applying generally across all tenure types and a fourth (dealing with security) specific to different tenures (i.e. public, private, Indigenous) The NRMMC provides further definition of the term 'legal or other effective means' for the purposes of inclusion in the National Reserve System:

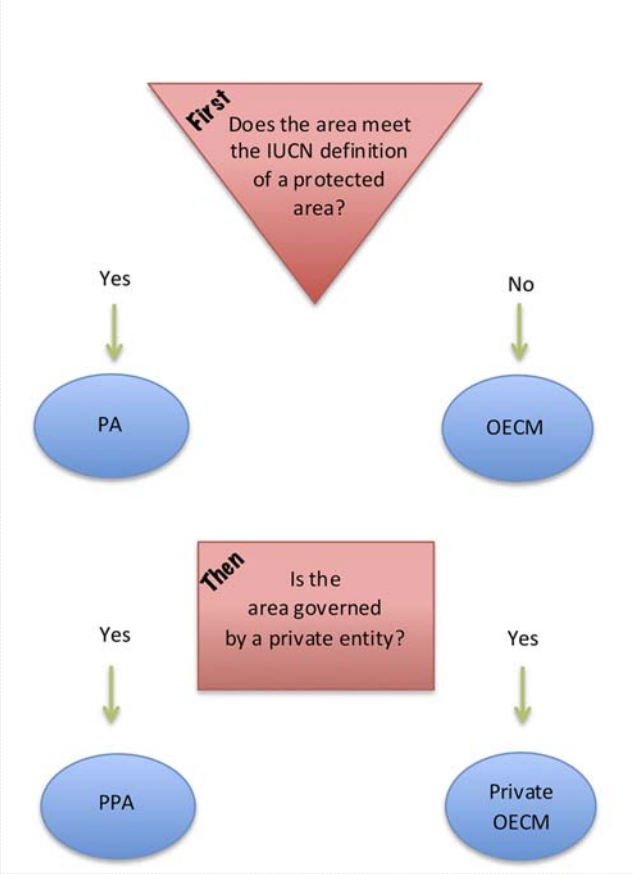

Figure 1. Flow chart to practically determine differences between privately protected areas and OECMs on private land

1. Legal means: Land is brought under control of an Act of Parliament, specialising in land conservation practices, and requires a parliamentary process to extinguish the protected area or excise portions from it.

2. Other effective means: for contract, covenant, agreements or other legal instrument, the clauses must include provisions to cover:

- long-term management – ideally this should be in perpetuity but, if this not possible, then the minimum should be at least 99 years;
- the agreement to remain in place unless both parties agree to its termination;
- a process to revoke the protected area or excise portions from it is defined; for National Reserve System areas created through contribution of public funding, this process should involve public input when practicable;
- the intent of the contract should, where applicable, be further reinforced through a perpetual covenant on the title of the land; and
- 'well-tested' legal or other means, including non-gazetted means, such as through recognised traditional rules under which Indigenous Protected Areas (community conserved areas) operate or the policies of established non-government organisations (NRMMC, 2009, p. 43).

For the purposes of determining which private land conservation mechanisms would qualify as PPAs and thus inclusion in the National Reserve System, an assessment was conducted in the state of Victoria (Table 1) (Fitzsimons, 2006). The determination of protected area status for private land conservation mechanisms largely involves an assessment of the strength of the legislation and/or legal agreements which protect that land (security); the length of time those agreements are in place (permanence); and management intent and obligations to manage the land. The emphasis each mechanism places on these varies within and between Australian jurisdictions.

Security

Security denotes the relative strength of the protection agreement in place, specifically, the level of authority that can sign and revoke/dissolve an agreement. The level of authority reflects a level of transparency and accountability in decision-making. In its definition of private land conservation agreements that would qualify as protected areas, the WCPA ANZR (2000) identifies two differing levels of authority:

- Section 3.1.2 (Inclusion Guideline ii): an area subject to protective covenant on title or agreement under the provisions of land titles legislation or wildlife conservation legislation. The covenant and land uses allowed should be subject to alteration only by a Minister of Parliament, in consultation with the Minister administering environmental planning, conservation or wildlife issues for that State; and
- Section 3.2.5 (Inclusion Guideline ii): freehold, Crown and leasehold land subject to protective covenant on title or agreement under the provisions of land titles legislation or wildlife conservation legislation, where the covenant and land uses allowed are subject to alteration only by a Minister (or Director), in consultation with the Minister (or Director) administering environmental planning or conservation and wildlife issues for that State.

Permanence

Ideally, for private conservation agreements to qualify as protected areas they would be binding on the title of that land and carry over to future owners in perpetuity. However, a 99-year agreement was specified as a minimum time for qualification by the NRMMC (2005).

Management intent and obligations

The primary management aim for protected areas is biodiversity conservation. Therefore, a statement of intent to manage the land in question for biodiversity or other natural features is required in the agreement. It is important to distinguish between the intent to proactively manage for biodiversity conservation, and restrictions on particular uses which may impact negatively on biodiversity (e.g. an environmental significance overlay in a local government planning scheme).

Determining PPAs nationally

In a review of PPAs across Australia, Fitzsimons (2015) showed that conservation covenanting programmes (Figure 2), land purchased by non-government organisations through the Australian Government's National Reserve System Program (Figure 3) and less frequently, areas protected by special legislation or under state/territory national parks legislation, are the main 'types' of PPAs in that country. In September 2013, there were approximately 5,000 terrestrial properties that could be considered private protected areas in Australia covering 8,913,000 ha (Fitzsimons, 2015).

However, not all conservation covenanting programmes would necessarily qualify as PPAs due to either the primary purpose or the level of authority identified in

Figure 2. A conservation covenant in Tasmania, Australia: a property managed for the primary purpose of conservation with a secure agreement which runs with the title of the land and thus a privately protected area © James Fitzsimons

Table 1. Checklist of criteria for assessing protected area status of private land conservation mechanisms in Victoria, Australia (from Fitzsimons, 2006)

Agreement/property type		Act	Security	Permanence	Management intent	Protected area status
Trust for Nature	Conservation Covenants	VCTA	Y	Y	Y	Yes
	Reserves (NRSP)	VCTA	Y	Y	Y	Yes
	Reserves (Non-NRSP)	VCTA	X	X	Y	No
	Revolving fund	VCTA	Y*	Y*	Y	No*
NRSP Private Protected Areas		N/A	Y	Y	Y	Yes
Land Management Cooperative Agreements		CFLA	X	Depends on terms	Depends on terms	No
Wildlife Management Cooperative Areas		WA	Y	Depends on terms	Depends on terms	Depends on terms of agreement
Wildlife Sanctuaries		WA	Y	X	X	No
Section 173 Agreements		PEA	X	Depends on terms	X	No
BushTender (& similar agreements) – permanent (VCT)		VCTA	Y	Y	Y	Yes
BushTender (& similar agreements) – permanent (CFL)		CFLA	X	Depends on terms	Depends on terms	No
BushTender (& similar agreements) – fixed term		N/A	X	X	Y	No
Public Authority Management Agreement		FFGA	X	Depends on terms	Y	No
Interim Conservation Orders		FFGA	X	X	Depends on terms	No
EPBC Conservation Agreements		EPBCA	Y	Depends on terms	Depends on terms	Depends on terms of agreement
Critical Habitat		EPBCA	Y	?	X	No
Indigenous Protected Areas		N/A	Y	Y	Y	Yes
Land for Wildlife properties		N/A	X	X	Y	No
Local Government Reserves		N/A	X	X	Y	No

Abbreviations: VCTA (*Victorian Conservation Trust Act 1972* (Vic)), CFLA (*Conservation, Forests and Lands Act 1987* (Vic)), WA (*Wildlife Act 1975* (Vic)), PEA (*Planning and Environment Act 1987* (Vic)), FFGA (*Flora and Fauna Guarantee Act 1988* (Vic)), EPBCA (*Environment Protection and Biodiversity Conservation Act 1999* (Cth)), N/A (Not applicable), Y = meets criteria, X = does not meet criteria, ? = unclear * See Fitzsimons (2006) for further explanation on this assessment and Hardy et al. (2018a,b) for more on this mechanism.

Figure 3. Red Kangaroo on Neds Corner Station, a property purchased by Trust for Nature (Victoria) with funds from the National Reserve System Program and thus a privately protected area © James Fitzsimons

the conservation covenanting programmes, hence dividing into those that would qualify as PPAs (elaborated in Table 3 in Fitzsimons, 2015) and those that would not (Table 5 in Fitzsimons, 2015). While not qualifying as PPAs, these other conservation covenanting programmes would most likely be OECMs on private land. It is important to note that these other covenant mechanisms are effectively managed in the same way as other conservation covenants (and indeed some may have similar recognition under tax deductions/financial incentives; Smith et al., 2016; Department of the Environment and Energy 2018).

It is recognised that not all properties owned by private conservation trusts would necessarily qualify as PPAs under the current National Reserve System criteria (mainly due to legal protection), however they are managed with this explicit intent and are moving towards greater security and many would be widely considered as 'PPAs' (whether they formally qualified or not).

However, just because a broad 'mechanism' (e.g. conservation covenants) may qualify broadly as a PPA, this does not mean all individual 'agreements' signed as part of that programme would qualify as a PPA. For example, in Queensland, conservation covenants (termed 'Nature Refuges') are generally classified as protected areas, even if they allow activities such as commercial cattle grazing, which ordinarily would not be considered appropriate in a protected area. Taylor (2012) suggests a more flexible approach would see the Nature Refuge internally zoned to define areas primarily for conservation (which would be considered protected areas) and those that allow grazing (which would still be Nature Refuges, but not protected areas).

South Africa

South Africa is recognised as one of the world's 17 mega-diverse countries, containing three of the 34 global biodiversity hotspots (Myers et al., 2000). Its diverse ecosystems are vital to the persistence of biodiversity and the functioning of ecological infrastructure essential to the benefit of its people and its economy. The South African Government's National Development Plan 2030 recognises the "need to protect the natural environment in all respects" (Government of South Africa, 2012) and identified protected area expansion as a key tool to achieving this in the *National Biodiversity Strategy and Action Plan* (Government of South Africa, 2015).

South Africa's protected area, PPA and OECM-equivalent policy framework

South Africa has extensive policy and legislative frameworks to address the challenge of expanding the protected area network and has made a clear distinction between protected areas and conservation areas. South Africa defines a protected area as an area of land or sea that is formally protected in terms of the *Protected Areas Act (2003)* and managed mainly for biodiversity conservation (SANBI, 2016). In contrast, conservation areas are areas of land or sea not formally protected in terms of the *Protected Areas Act* but nevertheless managed at least partly for biodiversity conservation (SANBI, 2016). Conservation areas are defined according to criteria and attributes that do not constitute long-term security and permanence and thus, in South Africa, do not count towards the protected area estate but contribute towards the wider conservation estate in South Africa. There are a broad range of mostly undefined sub-categories within this catch-all designation, including Biodiversity Partnership Areas which clearly meet the criteria of OECMs. Protected areas and conservation areas are recognised and reported on separately.

South Africa's National Protected Area Expansion Strategy (Government of South Africa, 2010) notes that meeting national policy objectives requires the expansion of protected areas on state, private and communally owned land. This is noted as of particular importance in the face of limited resources, gaps in comprehensive coverage across all biomes, and the reality that approximately 75 per cent of South Africa's land surface is held in one or other form of private ownership. South Africa provides for the declaration of protected areas on state or privately owned land, with the consent of the landowner, with no differentiation in the legal status, rights or responsibilities of the landowner on the basis of ownership. South Africa's protected areas on privately or communally owned land correspond clearly with PPAs and are first and foremost, protected areas. Currently, 35 per cent of the terrestrial protected area estate in South Africa is privately owned and 5 per cent is communally owned, essentially South Africa's recognised PPAs constitute 40 per cent of the entire protected area network (Figure 4).

South Africa's primary tool for the advancement of both the protected area and conservation area estates on privately owned land, is the national biodiversity stewardship initiative. Biodiversity stewardship is an approach to securing land in biodiversity priority areas through entering into agreements with private and communal landowners, led by conservation authorities and supported by conservation NGOs (Cumming et al., 2017). Biodiversity stewardship agreements provide for a hierarchy of agreements from formally declared protected areas, with durations from 30 to 99 years or in perpetuity, to non-binding agreements. Increasing levels of legal protection and permanence correspond with increasing levels of land use management restrictions and increasing landowner benefits and incentives, such as biodiversity tax incentives.

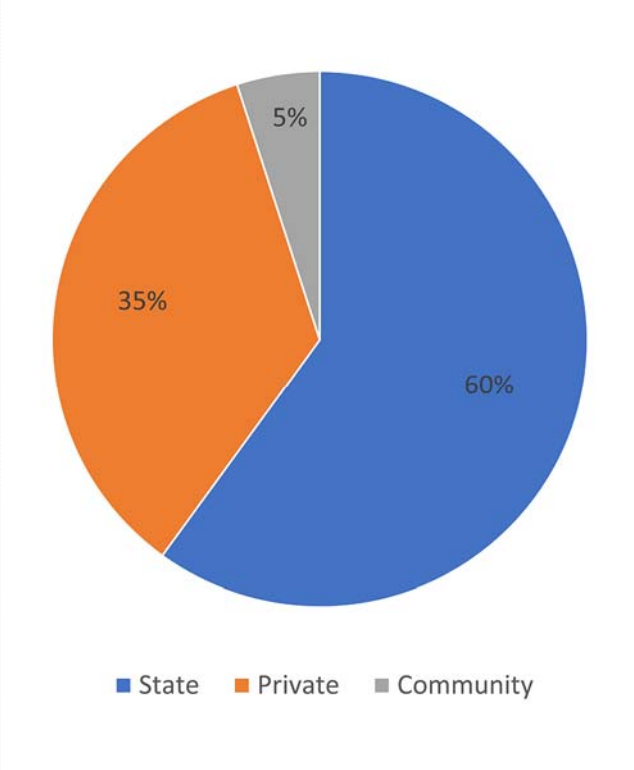

Figure 4. Percentage of ownership of South Africa's terrestrial protected areas. South African PPAs illustrate the key observation that PPAs are PAs in the first instance. Source: Department of Environmental Affairs, 2017.

The biodiversity stewardship approach in South Africa provides detailed case examples of PPAs and OECMs within its hierarchy of private land conservation agreements and gives a clear indication of the distinction between PPAs and OECMs within the greater context of South Africa's legal and policy frameworks and corresponding tax legislation.

South African PPAs

South Africa's *Protected Areas Act* sets out an exhaustive list of protected areas. Biodiversity stewardship utilises three primary types of protected areas, namely: National Parks, Nature Reserves and Protected Environments. All these types are utilised to declare formally recognised protected areas on privately or communally owned land. Such declaration is at the voluntary election of the landowner.

National Parks in South Africa may be state or privately owned. Privately or communally owned national parks (referred to as Contract National Parks within the biodiversity stewardship context), are declared using the same legislation. They are established adjacent to existing state-owned and state-governed National Parks. They are geographic areas with the highest biodiversity value and ecological infrastructure and are formally declared primarily for biodiversity conservation. The declaration term of these agreements ranges up to 99 years or in perpetuity and involves the most stringent management regulations and restrictions, including prohibiting unsustainable land use such as extractive activities. In most instances, landowners of Contract National Parks govern the PPA in a co-management agreement with the state or they may elect to delegate management entirely to the state through the South African National Parks.

Nature Reserves carry the same legal status, duration, biodiversity value, management restrictions and access to incentives as Contract National Parks. Nature Reserves and Contract National Parks are entitled to a biodiversity tax incentive through the *Income Tax Act (1962)* that recognises a landowner for their commitment to declaring a protected area on private or communal land. Access to this unique tax deduction is only possible through recognition as a PPA. Nature Reserves are generally managed by the landowner and also require a mandatory title deed endorsement through property law, securing the land's protected area status regardless of subsequent changes to land ownership.

Protected Environments are protected areas that can be declared across multiple private properties. This form of PPA targets somewhat larger areas with biodiversity value and landscape level ecological functioning and due to its slightly flexible nature has somewhat reduced management restrictions, allowing for biodiversity conservation to take place in production landscapes. Protected Environments are declared under national legislation for a minimum of 30 years up to 99 years or in perpetuity. Title deed endorsements are voluntary, but considered to be best practice. Management plans are developed for the area and are implemented by landowners with support from conservation authorities and NGOs.

South African OECMs

The biodiversity stewardship category of the Biodiversity Partnership Area acts as an umbrella term for what are essentially OECMs. A Biodiversity Partnership Area represents an arrangement that has neither a strong legal or contractual basis nor is it recognised in terms of South African environmental legislation. They contribute to the wider conservation estate but not to the protected area estate as they are not regarded as protected areas. Arrangements with landowners that provide no or limited legal security, little or no permanence, and are managed with only a partial objective of conservation fall within the category of Biodiversity Partnership Area.

Conservancies in South Africa are a definitive example of OECMs. These areas are geographically defined, extending across multiple properties, often comprising a mix of commercial agriculture and natural areas. A short to medium term contract is signed between the participating landowners and the provincial conservation agency regarding environmental management activities on the properties. The degree to which the land is managed for conservation varies widely, and biodiversity conservation is not the primary objective of the land use, as in protected areas. It is more often an ancillary objective, which can be easily set aside when competing economic or other goals take preference, or landowner attitudes towards conservation change. The weaker legal status, lack of long-term conservation intent and the fact that biodiversity conservation is not a primary objective all align these categories with the IUCN guidance regarding OECMs (IUCN WCPA, 2018).

Reporting on PPAs in South Africa

The South African government documents the declaration of PPAs in determining its progress against both national and international protected area targets and reports all state-owned and privately or communally owned National Parks, Nature Reserves,

and Protected Environments to the WDPA, recognising that these types of PPAs are essentially protected areas. The Department of Environmental Affairs also centrally keep records of certain categories of conservation areas and has noted a certain incongruity within WDPA records regarding the reporting on protected areas and conservation areas. South Africa makes a clear distinction between the two networks and bases this distinction on the legal certainty and security, permanence and duration, and management objective of each type of agreement. These distinctions align clearly with the IUCN definition of protected areas and privately protected areas and the guidance and recommendations provided thus far on OECMs.

CONCLUSION

In the case studies illustrated here the fundamental distinction we make between privately protected areas and OECMs is that the governance arrangements or land ownership are a secondary filter, only relevant after first determining whether or not a site qualifies as a protected area as defined by the IUCN (Figure 1, Bingham et al., 2017). Common features of PPAs in the two countries include a high level of legal protection and a primary purpose of biodiversity conservation. OECMs may have one of these but not both (i.e. they may have a high level of protection but biodiversity conservation is ancillary, or biodiversity may be the primary focus but the legal protection mechanism used is weaker and lacks a long-term duration).

It should be recognised that despite the definitions being standardised by IUCN, the term 'privately protected areas' is often used more broadly for private land conservation mechanisms that include a legislative or contractual component (even if not in perpetuity) or generally for land owned by conservation land trusts or similar (Fitzsimons, 2015). Similarly, 'OECM' is not a term used by public or private land conservation practitioners. While definitional work continues, some

Using privately protected area models in South Africa to conserve estuaries © Daniel Marnewick

A privately protected area in South Africa's Grasslands © Daniel Marnewick

advocate for the use of a more user-friendly term, for example, 'conserved area' (Jonas et al., 2017). While clearer language for any classification is to be encouraged, it will be important to avoid creating confusion for practitioners and policy makers by using very similar terms (e.g. 'privately protected area' and 'privately conserved area' – there is likely to be little distinction between the terms 'protected' and 'conserved' for most people). Consultation on suitable terms (beyond the already agreed term OECM) will be important to avoid this confusion, acknowledging the clear acceptance and currency of the term privately protected areas already in existence. As the definition of conserved areas on private land that are not PPAs becomes clearer and formally accepted, it may become easier to grasp the differences between the two. While similar in many respects, the touchstone is the definition of a protected area. Privately protected areas satisfy that definition. Areas that do not may be OECMs on private land.

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RESUMEN

La conservación de tierras privadas ejerce un papel cada vez más importante para garantizar que las redes mundiales de conservación sean integrales, adecuadas y representativas. Para contribuir a la Meta 11 de Aichi del Convenio sobre la Diversidad Biológica, las áreas en tierras privadas deben ser áreas bajo protección privada (APP) u "otras medidas de conservación eficaces basadas en áreas" (OECM, por sus siglas en inglés) en tierras privadas. Hacemos una comparación entre las APP y las OECM en tierras privadas, aclaramos los conceptos erróneos y presentamos estudios de caso que ilustran cómo dos jurisdicciones, Australia y Sudáfrica, han trabajado aplicando estas categorías a los mecanismos locales de conservación de tierras privadas.

RÉSUMÉ

La conservation des terres privées joue un rôle de plus en plus important pour assurer que les réseaux mondiaux de conservation soient complets, pertinents et représentatifs. Pour contribuer à atteindre l'Objectif 11 d'Aichi établi à la Convention sur la Diversité Biologique, les aires situées sur des terres privées doivent soit constituer des aires protégées à gouvernance privée (APP), soit bénéficier d'autres mesures de conservation efficaces par zone (OECM). Dans ce rapport nous comparons les APP aux OECM en place sur des terres privées, proposons de clarifier les idées reçues et de fournir des cas pratiques sur la façon dont deux gouvernements, l'Australie et l'Afrique du Sud, ont appliqué ces catégories aux systèmes locaux de conservation sur les terres privées.

HUTAN HARAPAN ECOSYSTEM RESTORATION CONCESSION, SUMATRA, INDONESIA: A POTENTIAL OECM?

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ABSTRACT

Ecosystem Restoration Concessions (ERCs) offer an opportunity for Indonesia to complement its protected area network with conserved areas of high biodiversity value in forests designated for production purposes. Hutan Harapan is the first ERC, pioneering new ways of conserving Sumatra's lowland rainforest and its biodiversity for the long term. Although much of the 98,555 hectare concession has degraded secondary forest due to extensive logging in the past, it is rich in global biodiversity values. A management structure is in place to deliver well-defined conservation outcomes in terms of protecting globally threatened species and conserving key biodiversity areas (KBA) in a defined geographical space. Hutan Harapan's experience opens up the opportunity of being assessed as an 'Other Effective Area-based Conservation Measure' (OECM). Furthermore, the policy framework supporting the establishment of Hutan Harapan ERC has a strong legal basis and has led to the establishment of more ERCs across the country. However, there are many challenges confronting Hutan Harapan ERC such as encroachment, forest fires, illegal logging and financial sustainability, which are similar to those confronting protected areas elsewhere in Sumatra and other parts of Indonesia. The ERC framework provides a means to addressing these threats since it recognises the complexity of the conservation issues. However, it will require a combination of long-term human and financial investments as well as collaboration with a variety of actors across multiple scales to sustain the conservation outcomes.

Key words: privately protected area, OECM, ecosystem restoration concession, forest concession,

ECOSYSTEM RESTORATION CONCESSION IN PRODUCTION FORESTS

Lowland rainforests in Indonesia and elsewhere in South-East Asia are threatened by logging, conversion and agricultural expansion while these habitats are generally under-represented in the protected area network (ref. Jepson et al., 2001, Laurance and Peres, 2006). Many remaining lowland forests are designated as production forests, but often have high biodiversity value. As a new instrument for managing natural forests, ecosystem restoration concessions (ERCs) offer an opportunity for biodiversity conservation within production landscapes (Burung Indonesia, 2016). When well situated, ERCs could deliver conservation outcomes in terms of conserving globally threatened species and their habitat. Key Biodiversity Areas (KBAs) that are not protected can be conserved by managing the site as an ERC. Biodiversity conservation can be part of the management objectives of an ERC while at the same time addressing other social and economic objectives.

First introduced in 2004, ERCs represented a break with previous management policies for Indonesia's production forests, which account for nearly half of Indonesia's forest estate. For three decades, the management of production forests had focused exclusively on timber exploitation. However, with the introduction of ERC licenses, designated production forest areas can now be managed for forest restoration, conservation and multiple forest use, rather than logging. ERC licenses are normally for a period of 60 years. In the case of Hutan Harapan, it has two licenses; the first license is for the southern part which is valid for 100 years, while the second is for the northern part which is valid for 60 years. This allows ERC managers to plan for the long term while presenting the possibility that conservation efforts in a production landscape have a better chance of success.

Unlike other types of forestry concessions, ERCs do not require harvesting of timber for commercial purposes resulting in a *de facto* logging moratorium at these sites.

With timber production no longer part of the management focus, ERCs have shifted the forest management paradigm from timber-based towards an ecosystem-based approach. This allows management to integrate the economic, social and ecological objectives as deemed necessary according to the site conditions and context. The sustainable utilisation of non-timber forest products (NTFPs) and environmental services are encouraged as a means to generate income.

HUTAN HARAPAN ERC IN SUMATRA

Hutan Harapan (lit. 'Forest of Hope') is the first ERC site in Indonesia established with a clear intention of conserving the remaining lowland rainforest in Sumatra. Identified as having two Important Bird Areas (IBAs), the site was selected in 2003 by BirdLife Consortium (Burung Indonesia, Royal Society for the Protection of Birds and BirdLife International) as a joint undertaking to conserve the remaining lowland rainforest and its biodiversity.

Situated in the southern part of Sumatra, Hutan Harapan is 98,555 ha of logged-over forest area, which is administratively under Jambi and South Sumatra Provinces (Figure 1). Two ERC licenses were secured in 2008 and 2010 respectively and are held by a company set-up specifically to manage Hutan Harapan. The two IBA sites in Hutan Harapan are also Key Biodiversity Areas (KBAs). Research data up to 2013 shows that Hutan Harapan is a habitat for over 1,350 species of plants and animals, of which 133 are globally threatened, including the Sumatra tiger (*Panthera tigris sumatrae*), Asian elephant (*Elephas maximus*), Malay tapir (*Acrocodia indica*) and Rhinoceros hornbill (*Buceros rhinoceros*). Despite logging in the past, more than 50 per cent of tree species in Sumatra can still be found in Hutan Harapan and almost half of the bird species known in Sumatra are present (Table 1).

Surrounded by monoculture plantations, both oil palm and timber, Hutan Harapan plays an important role in maintaining ecosystem services including water supplies and carbon storage and sequestration. Although located in the lowlands, it protects the upstream of Batanghari Leko river system that supplies water to the neighbouring plantations and the larger population downstream.

Degraded but biodiversity rich secondary forest in Hutan Harapan
© Burung Indonesia/Aulia Erlangga

The natural forest in Hutan Harapan is also of important economic, social and spiritual values to the Batin Sembilan Indigenous peoples. Many of them are still heavily dependent on forest resources for their food security and livelihoods. In addition, there are small areas of rubber-dominated agroforests that are managed by Melayu communities for their livelihoods; these groups have been living in the concession since the early 1900s.

Table 1. Comparison of species richness in Hutan Harapan and Sumatra as of 2013 Source: Ministry of Forestry and Ministry of Marine and Fisheries (2010); Ayat (2013) in Silalahi et al. (2017).

Taxa	Total no. of species	Total no. of species (Hutan	Percentage of Sumatra's species
Birds	626	305	48.7
Mammals	194	64	33.0
Reptiles	217	56	25.8
Fish	589	123	20.9
Tree species	820	446	54.4

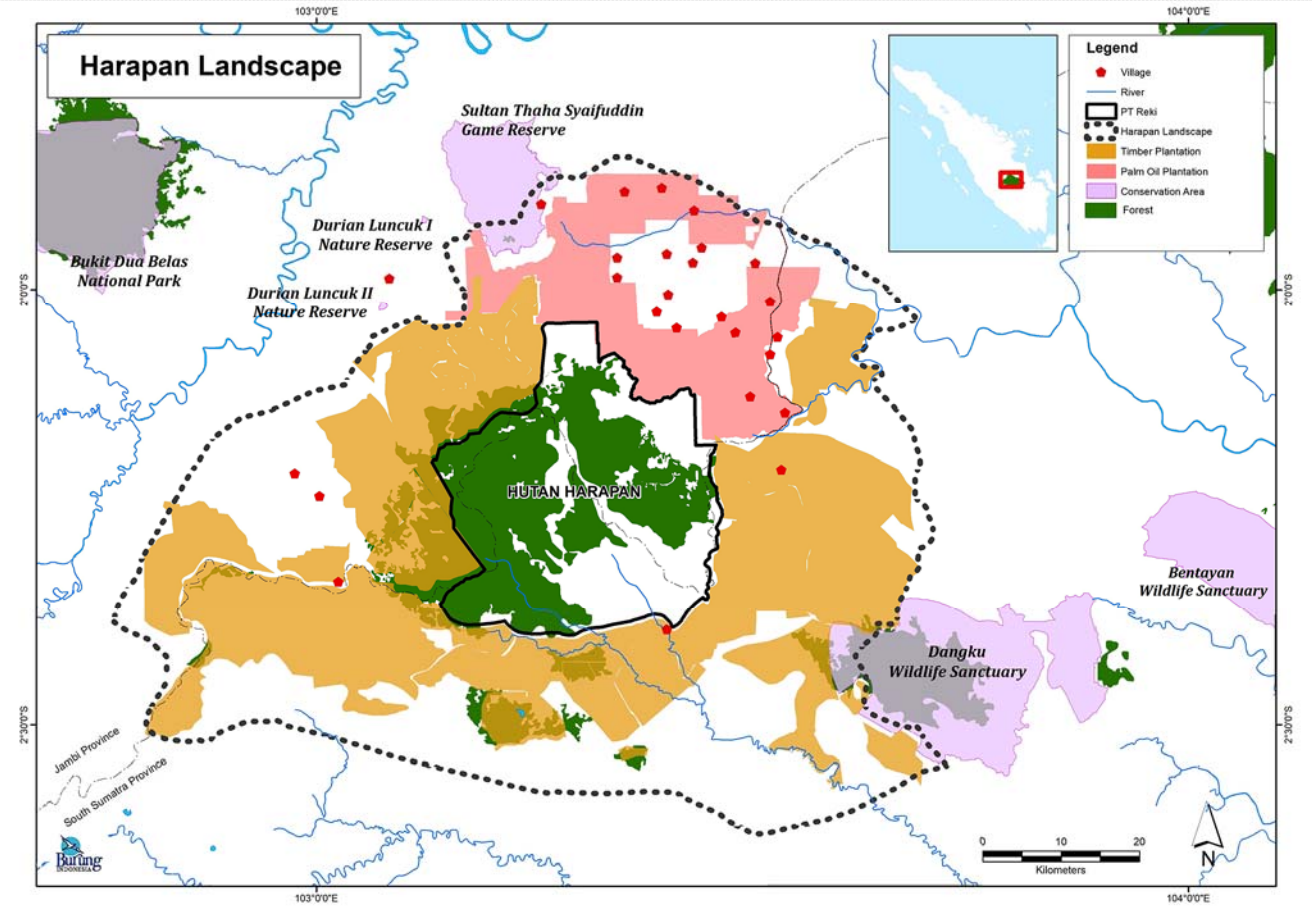


Figure 1. Hutan Harapan landscape

MANAGEMENT STRATEGIES

After more than two decades of logging by previous timber concessionaries, the forests in Hutan Harapan are no longer homogenous in terms of structure and composition. In parts of the concession, forests have been degraded and some areas have even been deforested. Of the 98,555 ha, to date, approximately 72 per cent or 76,918 ha remains intact with varying quality levels of forest cover. An estimated 21,000 ha (21 per cent) of the remaining concession area has been deforested from 2009 until today.

Considering the present land utilisation and the desired future conditions, Hutan Harapan's first strategy is to maintain the remaining natural forests within the ERC. A protected zone of about 45,246 ha (46 per cent of the ERC area) has been created as the core for this purpose in an area that still has good forest cover. The objective is to ensure that biodiversity is conserved and the ecosystem services are sustained. Therefore, protection is the main management intervention to ensure that disturbance is minimised so that the forests can regenerate. These include activities such as fire prevention and mitigation, anti-poaching and illegal logging patrolling, as well as access control to prevent other illegal activities in the forested area.

Outside of the protected core zone, the area is dominated by degraded secondary forest and degraded land. This area has been designated for production or utilisation purposes. The main management objectives for this area are sustainable production of NTFPs, agroforestry systems and land-use stabilisation. As noted above, some of this area is occupied illegally by migrants and mostly planted with oil palm. While the long-term plan is to gradually replace the oil palm with agroforestry systems, it is expected that through partnership agreements with the community groups that have moved into the concession, further forest clearing for agricultural commodities within the ERC can be reduced and ultimately stopped.

MANAGEMENT CHALLENGES

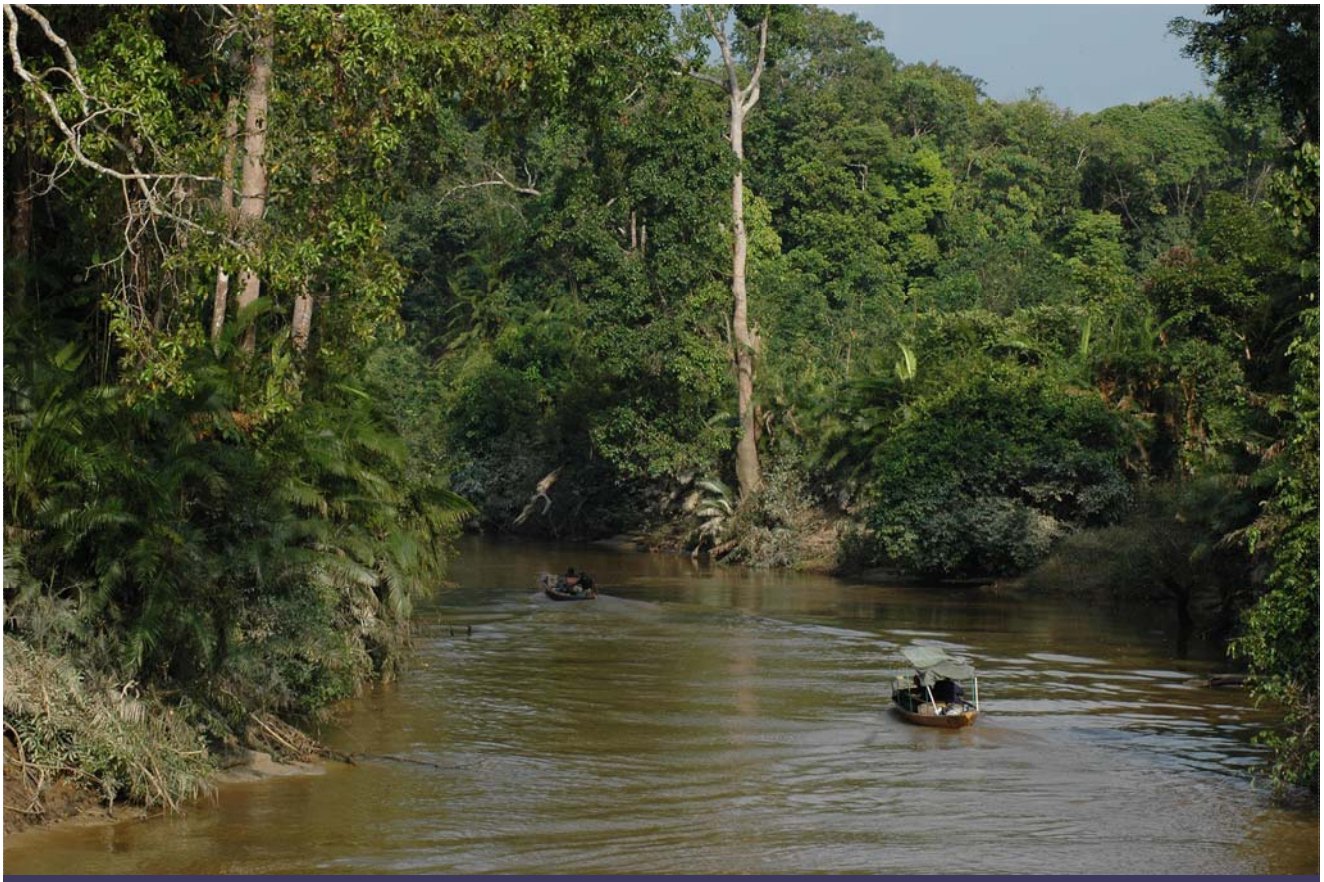
In recent years, Hutan Harapan has invested considerable resources to stabilise land use which is

critical to sustainable management and biodiversity conservation. Illegal clearing of forestland to produce agriculture commodities, especially oil palm, is the biggest threat. Beginning in 2009, encroachment, sometimes on a large organised scale, has resulted in further degradation of an estimated 21,000 ha of the remaining concession area. It has been illegally occupied by migrants from other parts of Sumatra and Java, who aggressively encroached the concession area to plant an area of oil palm which now totals about 10,000 ha. This challenge, however, is not unique to Hutan Harapan. As Silalahi et al. (2017) noted, the large number of competing land claims on Indonesia's forestlands is a challenge for all protected areas as well as ERCs in meeting their biodiversity and conservation objectives. There is a 'land race' as various groups and stakeholders lay claim to the same pieces of land.

In order to stabilise land-use, boundary demarcation is being carried out in conjunction with establishing partnership agreements that are facilitated by the Ministry of Environment and Forestry. To date, Hutan Harapan has established 10 partnership agreements out of 20 planned agreements with the communities living inside the ERC. These agreements, amongst others, outline the responsibilities of all parties, the community, company and government in conserving and protecting Hutan Harapan as well as identifying livelihood activities that are compatible with ERC restoration objectives.

Illegal clearing of forestland is also related to forest fires and land burning. This was evident in 2015, when about 13,400 ha (13 per cent) of Hutan Harapan was affected by fire. This figure does not necessarily represent forest loss due to fire, however, as the majority of the fires occurred in the encroached areas where the forest had been cleared or in areas without forest cover. The frequency and intensity of the fires in 2015, exacerbated by the El Niño conditions, were such that Hutan Harapan experienced fire damage greater than in previous years (Geh et al., 2018, in preparation).

Nevertheless, the challenges above also represent opportunities to build partnerships for sustainable conservation outcomes. Partnerships for collaborative land management are possible as long as the sustainable forest management objectives are taken into account.



Hutan Harapan maintains ecosystem services including water supplies, carbon storage and sequestration © Burung Indonesia/Aulia Erlangga;

Illegal logging and forest clearing are the threats for Hutan Harapan © Burung Indonesia/Aulia Erlangga

Preventing forest clearing, forest fires and eventually stabilising land-use requires significant resources as well as partnerships. Addressing the drivers of forest loss necessitates working with a range of stakeholders across the landscape. Indeed, the surrounding concessions have an interest in ensuring Hutan Harapan's ecosystem services are well maintained since it generates considerable benefits to the plantations through stabilising regional hydrology, containing pests such as wild boar or invasive species (Burung Indonesia, 2016).

Hutan Harapan is still struggling to develop a diversified portfolio of funding that will ensure financial sustainability. It is still heavily donor dependent to maintain its operations which now run to just over USD 1 million per year. Walsh et al. (2012) pointed out that ERCs are relatively new and as yet there is no evidence to indicate that they are financially viable in the long term. A number of studies (e.g. Bogor Agricultural Univ., 2009; Idris, 2010; Idris, 2011) recommended multi-product forest businesses to ensure their financial sustainability. But generating income from NTFPs, especially in degraded and secondary forests, requires additional investment to develop the business and a bankable business plan to attract investors. Upfront payment of the license fee, land taxes and the other initial capital investments are costly for a newly established ERC that does not have a guaranteed income stream. Income from NTFPs may not be able to recover these costs in the short term, not to mention the ongoing operational costs. The carbon markets may provide a potential source of income as Indonesia's REDD-plus strategy acknowledges the role of ERCs in halting degradation and deforestation. Nevertheless, there will need to be more policy direction from government before it becomes a possible income stream.

CONSERVATION EFFECTIVENESS

Establishing Hutan Harapan as an ERC was necessary to conserve biodiversity in the remaining Sumatran lowland rainforest. Without this measure, the site would have been converted to other purposes, which would have likely involved monoculture cultivation such as timber and oil palm plantations with concurrent loss of biodiversity conservation. Despite the increasing pressure to convert forests to agricultural commodities in Sumatra, Hutan Harapan has been able to maintain

approximately 72 per cent of its forest cover for the last 10 years.

When ERCs first received legal recognition in 2004, the regulatory framework was heavily dependent on logging concessions regulations and as such did not reflect the particular management needs of an ERC. As a result it was difficult for ERCs to implement an ecosystem-based approach, and hence to monitor the conservation effectiveness.

The regulations are now catching up with the reality on the ground and ERCs can now set their management objectives based on an analysis of the economic, social and ecological challenges confronting the concession. Hutan Harapan has begun to put into place a monitoring system that will allow it to monitor changes in the forests and biodiversity outcomes in real time. The various monitoring tools such as, i) data from forest patrol units, ii) change alerts to detect changes in land-use, iii) drones to assess forest cover, iv) key ecological indicators for key species, especially the Sumatran tiger, Asian elephant and hornbills and, iv) the agroforestry programme, are all being integrated into a holistic information communications network in order to better monitor and respond to conservation needs.

POTENTIAL AS AN OECM

Although ERCs are not recognised as a category of protected area in Indonesia, their long-term management objectives support national (National Biodiversity Strategy and Action Plan, Species Action Plans) and international conservation targets through the Convention on Biodiversity (CBD). These include maintaining natural forests, eradicating invasive species, connecting and protecting habitat, conserving species, managing and restoring essential ecosystems, supporting community livelihoods, enhancing ecosystem resilience as well as landscape connectivity (Burung Indonesia, 2016).

The creation of ERCs, such as Hutan Harapan, does not change the forest category, which remains as a production forest. If the ERC license expires or is revoked by the government, the management regime will be decided by the government, so sustainability is a key issue. To sustain its conservation outcomes, Hutan Harapan ERC is required to work on multiple fronts to address social challenges and financial feasibility. Some of the current management activities are not directly for, or reflective of, biodiversity objectives, but they are necessary for creating stakeholder support or financial sustainability to conserve biodiversity in the ERC for the long term. Indeed, political and policy support are needed for Hutan Harapan and the other ERCs to address some of these seemingly intractable issues.

The establishment of Hutan Harapan as an ERC provides an opportunity to manage one of the few blocks of remaining lowland forest in Sumatra for conservation in line with many of the criteria required for recognition as an OECM under Aichi Target 11 (Table 2).

CONCLUSION

The designation, establishment and management of ERCs, as piloted at Hutan Harapan, is proving to be an innovative and exciting opportunity to expand the conservation estate in Indonesia beyond the designated

Table 2. Hutan Harapan as measured against the draft OECM criteria (IUCN WCPA, 2018)

OECM Criteria	Hutan Harapan
Not recognised as a protected area	Under production forest category
Geographically defined space	Boundaries marked
Governed and managed	Hutan Harapan Partnership
Long-term	100 year concession for southern part and 60 year concession for the northern part;
Effective in situ conservation of biodiversity	Objectives of conservation and sustainable use Includes KBAs Threatened habitat, endangered species
Sustaining conservation outcomes	Partnership has authority over area Partnerships with local government and communities

protected area network. Following experiences in Harapan, fourteen other ERCs have been approved in Indonesia with a diversity of partners ranging from NGOs to private sector companies. The model is also being replicated elsewhere in South-East Asia with benefits for conservation of threatened lowland rainforest ecosystems and endangered species. Ecosystem Restoration Concessions as Other Effective Area-based Conservation Measures provide an exciting new model for reducing forest degradation and enhancing biodiversity conservation in the broader production landscape.

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RESUMEN

Las Concesiones de restauración del ecosistema (ERC, por sus siglas en inglés) ofrecen una oportunidad para que Indonesia complemente su red de áreas protegidas con áreas conservadas de alto valor de biodiversidad en bosques designados para fines de producción. Hutan Harapan es la primera ERC y pionera en la implementación de nuevas formas para la conservación a largo plazo del bosque lluvioso de tierras bajas de Sumatra y su biodiversidad. Aunque gran parte de la concesión de 98.555 hectáreas ha degradado bosques secundarios debido a la tala descontrolada en el pasado, es rica en punto a los valores mundiales de la biodiversidad. Se ha establecido una estructura de gestión para ofrecer resultados de conservación claramente definidos en términos de la protección de especies amenazadas a nivel mundial y la conservación de áreas clave para la biodiversidad (ACB) en un espacio geográfico definido. La experiencia de Hutan Harapan ofrece la oportunidad de ser evaluada como "Otra medida de conservación eficaz basada en áreas" (OECM). Por otra parte, el marco de políticas que apoya el establecimiento de Hutan Harapan bajo el esquema de ERC tiene una sólida base legal y ha llevado al establecimiento de más ERC en todo el país. Sin embargo, son muchos los desafíos que enfrenta Hutan Harapan; entre ellos, la invasión, los incendios forestales, la tala ilegal y la sostenibilidad financiera, que son similares a los que enfrentan las áreas protegidas en otras partes de Sumatra e Indonesia. El marco de ERC provee un medio para abordar estas amenazas habida cuenta de que reconoce la complejidad de los problemas de conservación. Sin embargo, para mantener los resultados de conservación se requerirá la combinación de inversiones humanas y financieras a largo plazo, así como la colaboración con una variedad de actores en múltiples escalas.

RÉSUMÉ

Les zones de Concessions de Restauration des Ecosystèmes (ERCs) offrent à l'Indonésie une opportunité de compléter son réseau d'aires protégées par l'ajout de zones conservées à haute valeur de biodiversité situées dans les forêts destinées à la production. Hutan Harapan est le premier ERC, pionnier de nouvelles méthodes pour conserver durablement la forêt pluviale de basse altitude et la biodiversité de Sumatra. Bien qu'une grande partie de cette concession de 98 555 hectares soit composée de forêt secondaire dégradée par l'exploitation forestière excessive du passé, elle est encore riche en valeurs de biodiversité. Une structure de gestion est en place pour fournir des résultats précis de conservation relatifs à la protection des espèces globalement menacées et à la conservation des zones clés pour la biodiversité (ZCB) dans un espace géographique défini. L'expérience de Hutan Harapan ouvre à cette zone la possibilité d'atteindre la classification d'«autres mesures de conservation efficaces par zone» (OECM). De plus, le cadre structurel qui soutient l'ERC de Hutan Harapan bénéficie d'une base juridique solide qui a permis à la création d'autres ERC à travers le pays. Cependant, de nombreux défis se posent à l'ERC de Hutan Harapan tels que l'empiétement, les incendies de forêt, l'exploitation forestière illégale et la viabilité financière, qui sont similaires aux défis auxquels sont confrontées d'autres aires protégées à Sumatra et en Indonésie en général. Le cadre de l'ERC, en tenant compte de la complexité des problèmes liés à la conservation, fournit un moyen de faire face à ces menaces. Cependant, il faudra une combinaison d'investissements humains et financiers à long terme ainsi que la collaboration de divers intervenants à plusieurs échelons pour maintenir les résultats de la conservation.

INDIGENOUS EFFECTIVE AREA-BASED CONSERVATION MEASURES: CONSERVATION PRACTICES AMONG THE DAYAK KENYAH OF NORTH KALIMANTAN

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ABSTRACT

The Aichi Targets agreed at CBD COP 10 in Nagoya, especially Aichi Target 11, recognised that biodiversity conservation is also occurring outside government protected areas and that Other Effective Area-based Conservation Measures (OECMs) could significantly contribute to achieving effective and equitable conservation by 2020 and beyond. This paper argues that territories and areas conserved by Indigenous peoples and local communities, or 'ICCAs', are good candidates for OECMs when the customary law, traditional knowledge and local institutions are still strong and valued within the communities themselves. One such example of Indigenous conserved areas is *tana' ulen* or 'restricted forested land', a tradition found among the Dayak Kenyah people in the interior of Kalimantan, Indonesia. *Tana' ulen* are areas of primary forest rich in valuable timber and non-timber forest products with high economic value for the communities. They have been strictly managed by limiting access and activities under the rule of the customary councils and the customary chief. The identification of ICCAs like *tana' ulen* as OECM could provide an appropriate form of recognition and incentive for communities to continue to conserve these areas. The recognition, however, also needs to be matched by adequate and appropriate support, and communities' institutions empowered through access to information, partnerships and skills sharing for effective conservation and sustainable use.

Key words: OECM, *Tana' ulen*, Dayak Kenyah Indigenous peoples, appropriate recognition, forest governance

INTRODUCTION

It is now commonly recognised that effective and vital conservation is not only occurring in national parks and other government-managed protected areas. Millions of hectares of forests, wetlands and lakes, and coastland areas are governed by Indigenous peoples and local communities to protect and conserve natural resources and ecosystem functions, maintain the basis of their livelihoods, and ensure food security for present and future generations, as well as forming part of their spiritual values and religious beliefs.

When Parties agreed at the tenth Conference of the Parties to the Convention on Biological Diversity (COP 10) the Aichi Targets for the 2011–2020 decade, 'Other Effective Area-based Conservation Measures (OECMs)' were negotiated into the text of Aichi Target 11 on area-based conservation. This opened the way to the recognition of 'other' conservation and actors like Indigenous peoples and local communities who hold strong conservation values and practise conservation of biodiversity.

Territories and areas conserved by Indigenous peoples and local communities (abbreviated to 'ICCAs') exemplify locally rooted conservation. In general, ICCAs can be defined as natural or human modified ecosystems which have significant biodiversity value and are voluntarily conserved through traditional laws and other means by Indigenous and local communities which depend on these resources culturally or for a livelihood. In general, ICCAs are for the most part commons or collectively governed lands (Kothari, 2006; Oviedo, 2006).

For Indigenous communities, conservation is neither just an environmental management category nor does it

only have economic value. Conservation is a holistic approach interrelated with sustainable use, and linking social, cultural, ecological and livelihood dimensions critical to the present and future of the community. ICCAs are recognised as a governance type ('Type D' on the IUCN Protected Area Matrix— a classification system for protected areas comprising both management category and governance). ICCAs are also potential candidates for recognition as OECMs as long as the circumstances are appropriate and the communities provide their free, prior and informed consent (FPIC).

Dayak Kenyah Indigenous peoples make their homeland in the upper reaches of some of the major rivers in the interior of Borneo along the border between Sarawak (Malaysia) and Kalimantan (Indonesia). It is in Kalimantan that the largest number of them now live. As forest-dependent communities, conservation and sustainable use of natural resources amount to the same thing for the Kenyah people: to care for the forest as a source of livelihood, food and good health, as well as cultural identity and the belief that forest resources, if well managed and governed, will sustain the community in the future. This approach is most evident in the tradition of '*tana' ulen*'. *Tana' ulen*, is *tana*, or land/forest, where use of resources is *m/ulen* or restricted (Eghenter 2003).

The tradition is still strong in the communities of the interior. For example, every Dayak Kenyah community in the District of Malinau, North Kalimantan, Indonesia, has at least one designated *tana' ulen* area. This results at the level of territory in a *tana' ulen* system of local conserved areas under Indigenous governance. They exemplify the conservation ethic of the Kenyah people and are an effective, area-based measure for the conservation of important biodiversity, and therefore are strong candidates to be OECMs (subject to FPIC).

POLICY AND SOCIAL CONTEXT OF INDIGENOUS CONSERVATION

Indigenous and community lands are estimated to cover 25 to 50 per cent of landscapes[1] or hold as much as 65 percent of the world's land area through customary, community-based tenure systems (RRI 2015). Indigenous Peoples and local communities manage at least 24 percent of the total carbon in the world's tropical forests (Rights and Resources et al 2016). We speak of ICCAs and Indigenous conservation when conservation results are the demonstrated effect of a governance system closely and uniquely embedded and influenced by strong cultural, spiritual and social connections between people and nature, and these conservation practices exist within and outside designated and official protected areas. ICCAs are one of the IUCN protected and conserved areas governance types. Several motions at the IUCN WCC in 2016 addressed the recognition of ICCAs overlapping with government protected areas and the protection of ICCAs from destructive development.

Following the first reference to OECMs in 2010, the CBD COP requested the Executive Secretary to develop voluntary guidance on OECMs to provide scientific and technical advice on the definition, management approaches and identification of other effective area-based conservation measures and their role in achieving Aichi Biodiversity Target 11. The current definition of an OECM, as developed by the IUCN World Commission on Protected Areas, is: "A geographically defined space, not recognised as a protected area, which is governed and managed over the long-term in ways that deliver the effective in-situ conservation of biodiversity, with associated ecosystem services and cultural and spiritual values". The definition was largely retained at the recently held CBD Technical Expert Workshop (Feb 2018): "A geographically defined space, not recognized or reported as a protected area, which is governed and managed in ways that achieve the sustained and effective in situ conservation of biodiversity, with associated ecosystem services and cultural and spiritual values." Notably, this will likely further evolve after additional inputs by CBD Parties.

The draft definition seems to reinforce a fundamental shift in the understanding of conservation not so much based on intention for conservation, that is, whether conservation is the primary or secondary or ancillary objective of conservation actors, but instead result-based, i.e., the lasting biodiversity conservation results. These are made possible by strong conservation values and knowledge, and governance institutions, mechanisms and processes that effectively regulate the sustainable and equitable use of biodiversity. Governance becomes the key dimension in securing lasting conservation results. The latter also depend on the capacity of the conservation actors to exercise authority and responsibilities over conservation, and equitably share its benefits.

ICCAs and traditional conservation initiatives are dependent on the vigour of traditional knowledge and values, and the strength of the enforcement of customary law by the communities themselves. This is evidence of how social capital and natural capital are not only very high but also historically and effectively

interlinked. Indigenous peoples' and local communities' institutions thus need to be sustained and empowered through recognition, access to information, capacity building and skills sharing for effective leadership in long-term conservation and sustainable use.

'CONSERVATION' THE DAYAK KENYAH WAY

A *tana' ulen* is a forest area rich in natural resources and ecosystem services of high economic and cultural value for the local community, such as rattan (C*alamus spp.*), sang leaves (*Licuala sp.*) used for sunhats, and quality hardwood for construction (e.g., *Dipterocarpus spp.*, *Shorea spp.*, *Quercus sp.*). Access is restricted, and the type and quantity of products that can be harvested are also controlled. The size of a *tana' ulen* area varies from 3,000 hectares to over 12,000 hectares. *Tana' ulen* are an integral part of the whole Kenyah Indigenous territory and can be considered to represent the 'zone with highest protection level' of their territory.

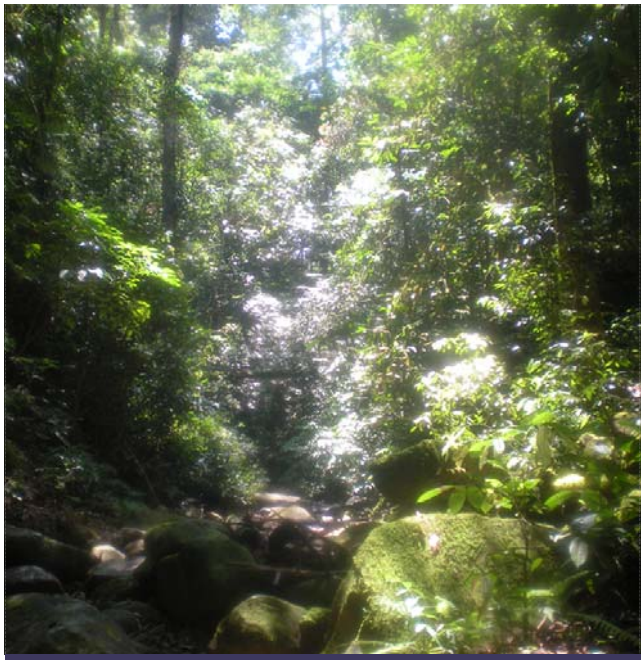
In the past, *tana' ulen* functioned mostly as forest reserves managed by the aristocratic families on behalf of the entire community. The forest was considered a public good for which the aristocratic leaders were entrusted to govern and administer the strict limitations to the area. Religious beliefs required the organisation of celebrations throughout the year to mark the agricultural cycle and other social occasions like the safe return of war parties and traders. The customary chief acted as prime host. He gave hospitality to travellers and delegations from other communities that visited the area. He also had to prepare the meals for the people of the community working in his fields. All these responsibilities implied that he and his family needed to ensure there was enough food, especially fish and game, for the guests. In addition to food, construction timber for multi-family longhouses was also an important resource found in the *tana' ulen*. As a norm, in every village, the chief designated a *tana' ulen* area. This also includes the times when the community moved or migrated to another area. Criteria for choosing a *tana' ulen* location were based on the following characteristics of the area: a good hunting ground; a stream or tributary good for fishing; valuable hardwood (for construction); rich in non-timber forest products (NTFP) with high economic value for local people. The boundary of a *tana' ulen* was the natural boundary of the watershed area that stretches to the estuary of the

View of the primary forest in the Tana' Ulen of Sungai Nggeng, Long Alango, Hulu Bahau, Malinau © Andris Salo

conserved stream or tributary. In general, *tana' ulen* areas are strategically located near the village so that their management and control are carried out effectively.

Nowadays, responsibilities for the management of the forest reserves have been transferred to the customary councils that together with the community manage *tana' ulen* forests according to customary law and traditional knowledge. Over ten *tana' ulen* have been documented, mapped and registered in the Bahau Hulu and Pujungan customary lands in North Kalimantan, under a strong Indigenous governance system. Some are now included in the Kayan Mentarang National Park, but others de facto represent examples of ICCAs that extend conservation of important biodiversity beyond the state protected area and contribute to national targets. Subject to local assessments, such areas are strong candidates as potential OECMs.

Beside the cultural and livelihood values, *tana' ulen* areas also effectively (size and limited use) conserve important biodiversity and ecosystem services. The forest of *tana' ulen* has never been cut down hence it is old-growth and primary forest. Moreover, access and use are limited to protect the resources for long-term utilisation. Special and strict customary regulations apply. For example, contrary to other forest areas in the village territory, the forest of *tana' ulen* may not be cleared to open rice fields. Collection of specific NTFP like rattan, *gaharu* (Agarwood) and resins is regulated and restricted in terms of times of collection (only every 2–3 years, for example), tools and methods employed (no chemical poison may be used to catch fish in the streams, for example), and quantity and kind of products hunted (no wild cattle may be hunted and only five wild pigs may be killed on one hunting expedition, an example from the village of Apau Ping). Collection of certain forest resources is undertaken on a collective basis. Violations are prosecuted and fined according to forms of payments agreed by the customary council, either money or heirloom items like machetes (*parang*) or gongs. Fines are specific to the kind and gravity of violations.



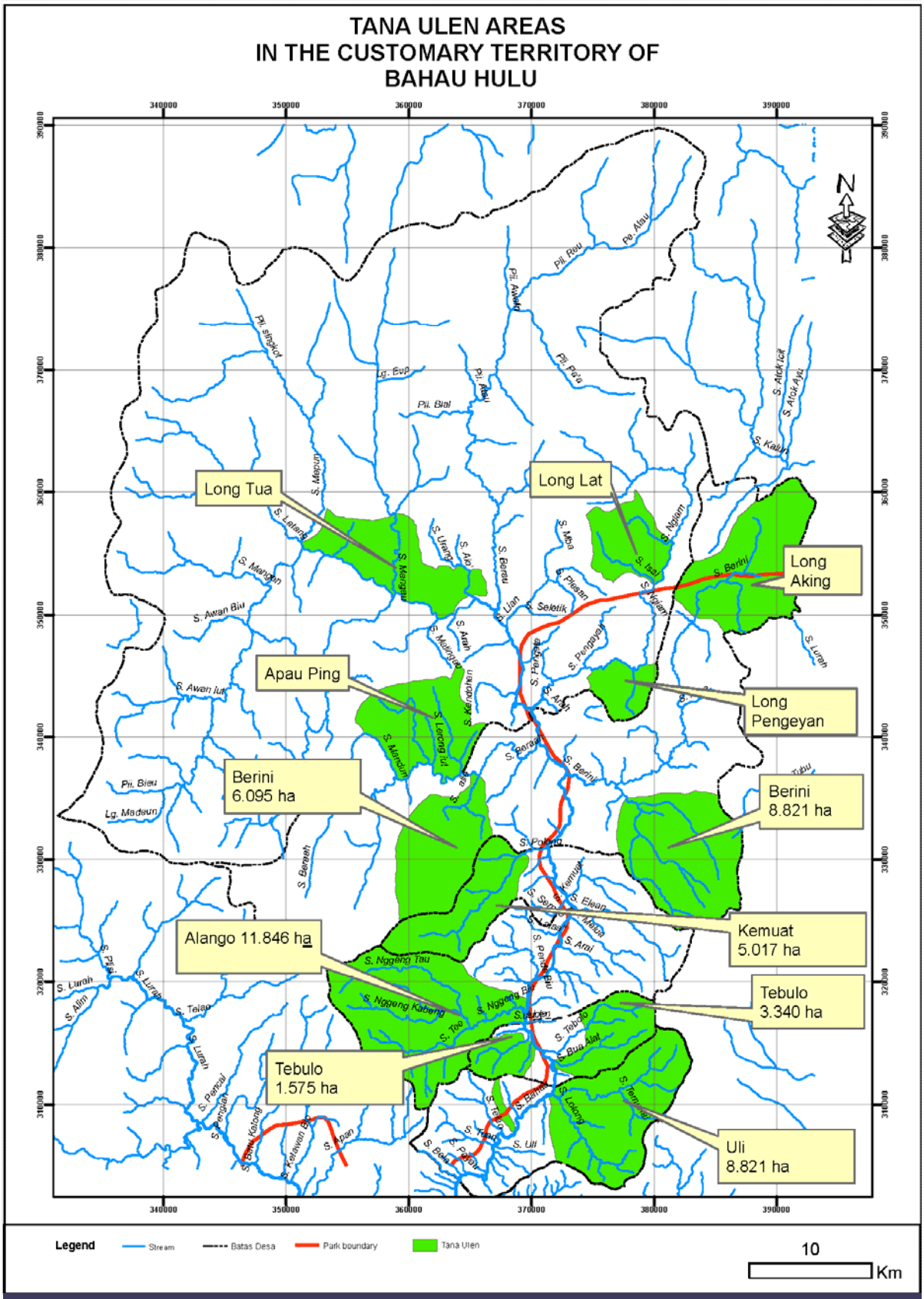
Tana' ulen forest of Long Uli © Yutaang Bawan

The conservation practice of *tana' ulen* aims to secure sustainable and inter-generational use of natural resources by means of restriction, limitation and strict enforcement. Conservation is really part of the community livelihood strategy and integrated in the socio-cultural and ecological context of the community. Very importantly, the *tana' ulen* management is part of the larger land use plan of the territory.

Governance matters

According to Kenyah traditions, it was the customary chief who decided when, and for how long, to 'open' the *tana' ulen* area to activities of the community like hunting, fishing or harvesting of NTFP such as rattan. The proceeds from the activities would be divided among all or would be used to hold large communal ceremonies or special community projects. Traditionally, there were also special allocations for the poorest and most vulnerable individuals of the community like widows and orphans.

More recently, the governance model has undergone a profound adaptation due to the process of democratisation of local leadership and widespread education and schooling. While the basic regulations for the use of products and the protection of the *tana' ulen* have not changed, the decision making and accountability for the management of the conserved forest have been transferred to the customary council. Nowadays, the council together with the community govern the *tana' ulen* areas and ensure that traditional values and knowledge are maintained. The change should not be seen as a sign of weakening governance. On the contrary, the transformation is an indication of the resilience and strength of the *tana' ulen* model that can adapt to changing circumstances and continue to secure conservation and sustainable use of the area. In all the six villages of the Indigenous territory of Bahau Hulu, *tana' ulen* areas are now under the responsibility of the customary councils, with the authority often



Tana' Ulen areas in the customary land of Bahau Hulu, Malinau, North Kalimantan (Map by WWF Indonesia, BRWA and Bahau Hulu Customary Council

vested jointly in the customary chief and the head of the village. Only in the village of Long Alango, the customary authorities have decided to establish an additional management committee (*Badan Pengurus Tana' Ulen* or BPTU) in order to strengthen the protection of the *tana' ulen* and help the customary council in its responsibilities. The decision was also based on the need to secure the community voice in the management of the Kayan Mentarang National Park where their *tana' ulen* is located.

As set out above, customary laws are the basis of *tana' ulen* management and regulate the use of resources inside the forest area. They are based on principles of conservation and sustainable use. Regulations exist at village level and at Indigenous territory or *wilayah adat* level. They are not fixed norms handed down unchanged from one generation to the next. At annual meetings, which usually coincide with the harvest festival, members of the customary councils meet to discuss and update regulations, and deliberate on social matters and natural resource management. Modifications in the regulations is a form of 'historicity' of the Indigenous conservation model. They are often necessary because of changing circumstances, the negative effects of intensified harvesting pressure by outsiders, and/or other changes in the natural environment and economic conditions.

Tana' ulen areas still exhibit intact forest and high levels of biodiversity[2]. There is strong compliance with the regulations by local people. While there is no formal monitoring system or tool used for measuring effectiveness, local people going to the forest can report changes in the availability of key species. They also monitor the presence of outsiders that might enter the area to look for *gaharu*. *Tana' ulen* is still a strong tradition among Dayak Kenyah communities, and forest values retain a central place in these communities. This provides an additional assurance that the traditional practice of conservation and governance model of *tana' ulen* will not easily disappear if the right support and appropriate recognition are provided.

Appropriate recognition matters

Tana' ulen are examples of effective Indigenous conservation that are not yet formally recognised in Indonesia. It is a kind of conservation governance that was created, developed and shaped by Indigenous people over time, based on traditional knowledge of the ecology of the local forest, hence effective. While each *tana' ulen* will have specific social-ecological characteristics, they show potential for being recognised as OECMs or as a protected area under the governance of an Indigenous people.

Logo of the *Badan Pengurus Tana' Ulen*

Even more significantly, *tana' ulen* are examples of areas that are integrated in the broader landscape (Aichi Target 11: ".... integrated into the wider landscapes and seascapes") as they are managed as part of the traditional territory zonation system. Looking into the future of *tana' ulen*, this element is critically important. It encourages us to take a landscape approach and recognise that the cultural and natural values of landscapes and customary territories are inextricably linked, and that local and Indigenous communities are central to effectively and equitably sustaining them.

From a local and traditional perspective, *tana' ulen* are recognised and effectively supported by regulations and the management decisions of customary councils. They represent models of more holistic conservation that integrates various aspects: livelihoods, food and water security, conservation and environmental security, and cultural identity. The social and cultural aspects that underpin the management system and governance model, and the ecological knowledge are still widespread in the communities. Moreover, since a few years ago, villages have started drafting and endorsing more formal village regulations with the purpose of providing additional legal protection, although only at local level, and strengthening protection of *tana' ulen*

areas. This signals the strong commitment of the community to stand by the tradition of *tana' ulen*. The communities have also mapped the entire territory and the *tana' ulen* within it. These are additional steps taken in the face of new threats to the security of the community territory in the form of road construction and oil palm plantations, but also the uncertain and weak implementation of collaborative management in the Kayan Mentarang National Park.

In their paper, Jonas et al. (2017, p. 64) explore the question of "under what conditions recognition as OECMs might make a positive contribution to territories and areas conserved by Indigenous Peoples and local communities (ICCAs)". Drawing on this approach, it is useful to ask whether the recognition of a *tana' ulen* as an OECM would make a difference in terms of ensuring the sustainability of the traditional governance model and the conservation of important biodiversity?

Increasingly, ICCAs are under threat, predominantly from external factors, but also from internal ones. In the case of *tana' ulen* areas in the interior of Kalimantan, the threats have been from the increasing number of outside commercial collectors coming to the forests of the interior in search of *gaharu* and entering conserved areas illegally, that is without the approval and knowledge of customary authorities. Expanding mining and forest conversion for oil palm plantations have resulted in higher competition over resources that threaten traditional management practices by Indigenous and local communities. Development plans aiming at improving infrastructure and access for the communities of the interior can also threaten *tana' ulen* areas when planning is not undertaken together with the communities and the latter are not meaningfully consulted on the trajectory of the planned road, often cutting across the most valued forest of the communities including *tana' ulen* areas.

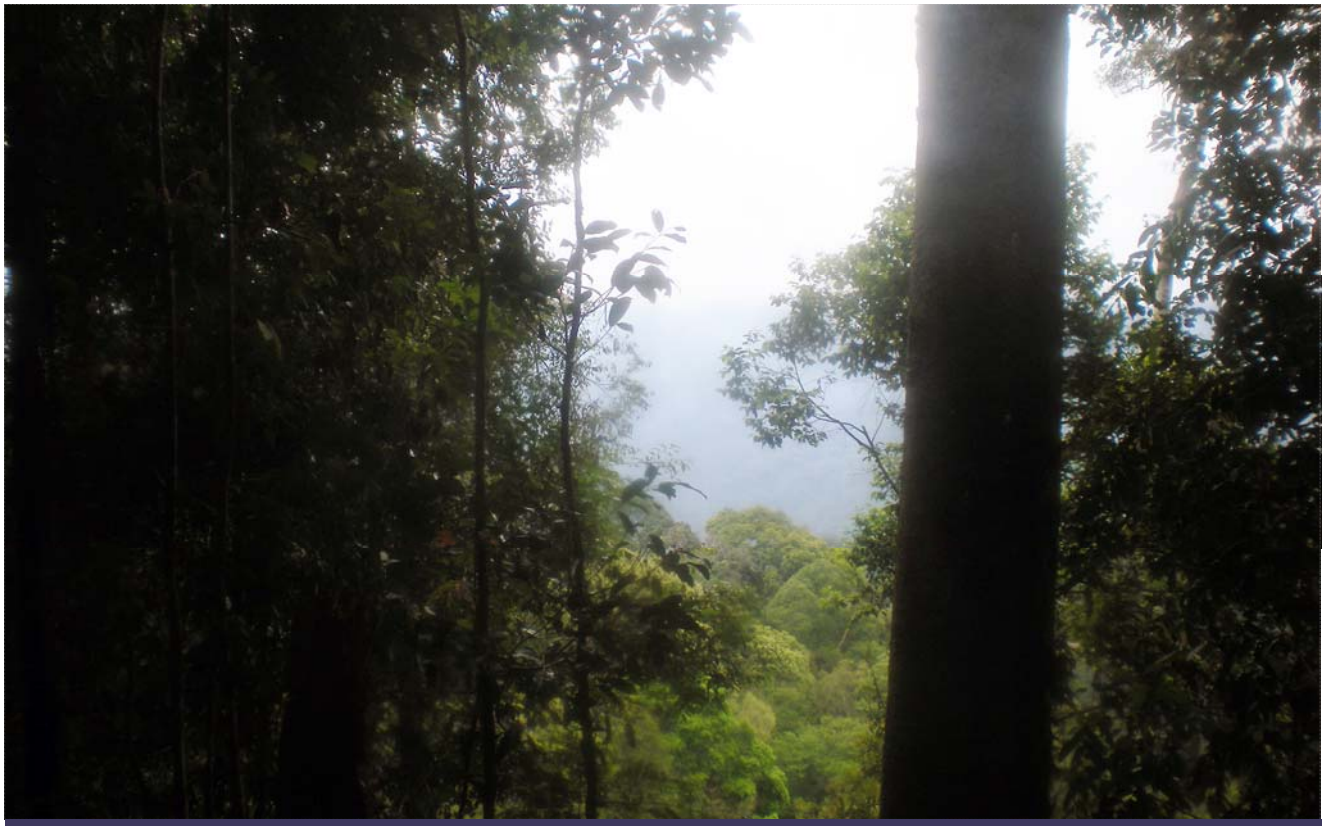
During repeated documentation sessions, several of the guardians of *tana' ulen* expressed their concerns and identified formal 'recognition' as a way to promote security and long-term protection for the areas. The same concern became a key recommendation at the *Tana' Ulen* Congress held in Tanjung Selor (North Kalimantan) in 2015. Some of the customary leaders of the lowlands where exploitation and land grabbing has been highest conveyed the urgency of legal recognition to secure their land and threatened *tana' ulen* areas. Besides provincial and district regulations, being recognised and reported as an OECM might provide a means to support long-term security for ICCAs that Indigenous and local communities are protecting against unwanted destructive development.

From a rights perspective, the recognition of specific *tana' ulen* as OECMs would be the realisation of the economic, environmental, social and cultural rights of the Dayak Kenyah communities. Their recognition can balance the need for protecting critical forest areas and biodiversity while securing the rights of local and Indigenous peoples (cf. Colchester 2007). The recognition of the right of a group to devise their own institutions and participate in the management of resources would increase the legitimacy of rules devised and agreed upon by all stakeholders and rights holders, and strengthen compliance (Ostrom, 1999, 2008).

The dilemma of conservation versus development is never far away from the conditions of customary communities, especially when threats in the form of mining, exploitation and conversion happen around and inside their areas and territories. Communities aspire to economic development but also have the right to choose which development path to follow, including the choice for sustainability through community initiatives that add conservation and social value to forest commodities and natural resources to increase benefits for those communities.

Two factors become essential in making sure that the recognition is appropriate and results in effective and equitable security of the Indigenous conserved areas like *tana' ulen*: one is the internal solidity and strength of the community conservation governance, and the other is the support and reward that recognition as an OECM could provide.

Kenyah women during a ritual celebration in Long Berini
© Mubariq Ahmad



A view from the mountain ridge of the *tana' ulen* of Long Uli © Yutaang Bawan

Presently, *tana' ulen* areas and their communities greatly vary in terms of their resilience and internal cohesion. Their strength as traditional conservation initiatives depends as much on the existence of international and national legal instruments as much as on the strength and vitality of the customary institutions and governance mechanisms, the vigour of regulations and values of the communities themselves, and the solidity of the connection between the communities and their *tana' ulen*. In their own words, much depends on "how strong and committed we are". Local institutions need to be sustained and strengthened, and empowered through information, innovation, capacity building and skills sharing, to ensure that local champions of conservation are empowered and effective conservation practices are sustained. As the Kenyah people say, the security and sustainability of the community depends on the respect for their forest values among the present and future generations: "There is no Dayak community without forest."

If *tana' ulen* areas and similar Indigenous OECMs are recognised and counted as a national contribution to Aichi Target 11, they need support in return. When assertions of exclusionary rights are complete and there is tenure certainty, the traditional governance system based on common property and communal control remains strong under pressure from rising resource values. Indigenous conserved areas "should be offered stronger security and protection from many of the over-powering phenomena (mining, oil and gas concessions; large infrastructures; palm oil, sugarcane, eucalyptus and other biodiversity-desert monocultures; intensive grazing; industrial pollution..." (Borrini-Feyerabend, 2016). An effort to provide recognition and support to Indigenous OECMs would establish conditions similar to the formal protected area system whereby biodiversity conservation is recognised as a public good and enabled by financial and technical support. It would amount to a more meaningful and equitable 'counting' of biodiversity contributions towards Aichi Target 11.

Recently, there has been a mounting policy momentum in Indonesia that could open the way to a more inclusive conservation approach and help ensure that all key actors who share similar conservation values and conservation practices are recognised and meaningfully engaged. As part of the agrarian reform agenda, the government is also committed to promoting the recognition of forest areas by Indigenous peoples (*hutan adat*), following the Constitutional Court decision in

2012 that customary forest is not state forest and constitutes a separate category of forest rights. In this context, the recognition of *tana' ulen* areas and similar traditional conservation governance practices as OECMs can contribute to improving long-term biodiversity and sustainability for all. Recognising and engaging the guardians of *tana' ulen* and other conservation actors and practices may be the only way to achieve Aichi Target 11 and to improve the management of protected areas to be effective and equitable.

CONCLUSIONS

If communities support the idea of recognition of *tana' ulen* as OECMs, most likely they expect to obtain security and the right support for their local practices and institutions in return. As stated by Jonas et al. (2017), "recognition by government and the incorporation of ICCAs in existing legislative frameworks and schemes is not a panacea, and due attention should be paid to ensuring that the communities retain control over their institutions and processes, and are informed and involved in planning and decision-making". Guaranteeing respect and recognition of rights is a necessary precondition, but other human and social dimensions like communication, dialogue and relationships also need to be considered and transformed. These dimensions might not be regulated in policies but can be strengthened by mutually agreed-upon rules of engagement based on respect for local culture, understanding of the history and socio-economic conditions, and nurtured by respect and trust. Building mutual accountability and equitable partnerships between the guardians of *tana' ulen* and the state managers of protected areas is essential to ensure appropriate and equitable recognition of *tana' ulen* and other Indigenous conservation practices as OECMs.

ENDNOTES

[1] Statement by the ICCA Consortium to the 17th Session of the UN Permanent Forum on Indigenous Issues, United Nations Headquarters, 19 April 2018

2 Kayan Mentarang National Park. In the Heart of Borneo (2006) WWF Indonesia and Danida. Monitoring reports and data collection conducted at Lalut Birai Tropical Forest Research Station, Long Alango, Hulu Bahau, North Kalimantan, 1992–2010.

ACKNOWLEDGMENTS

Dedicated to Anye Apuy, great Dayak Kenyah Indigenous Leader, mentor and proud keeper of the *tana' ulen* tradition of his people in North Kalimantan. Many thanks to Andris Salo who tirelessly mapped *tana' ulen* areas and the Indigenous territory, and to the people of Hulu Bahau and Pujungan who shared stories and teachings of Indigenous conservation.

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RESUMEN

Las Metas de Aichi acordadas en la COP 10 del CDB en Nagoya, especialmente la Meta 11 de Aichi, reconocieron que la conservación de la biodiversidad también está ocurriendo fuera de las áreas protegidas establecidas por el gobierno y que otras medidas de conservación eficaces basadas en áreas (OECM, por sus siglas en inglés) podrían contribuir significativamente al logro de una conservación eficaz y equitativa para 2020 y más allá. El presente artículo sostiene que los territorios y áreas conservadas por pueblos indígenas y comunidades locales, o "ICCA", son buenos candidatos para OECM cuando el derecho consuetudinario, el conocimiento tradicional y las instituciones locales aún son fuertes y valorados dentro de las propias comunidades. Uno de esos ejemplos de áreas indígenas conservadas son las *tana' ulen* o "zonas boscosas restringidas", una tradición vigente entre los pueblos dayak Kenyah en el interior de Kalimantan, Indonesia. Las *tana 'ulen* son áreas de bosques primarios ricos en maderas valiosas y productos forestales no maderables con alto valor económico para las comunidades. Se han gestionado de forma estricta limitando el acceso y las actividades bajo el control de los consejos consuetudinarios y los jefes de aldea. La identificación de ICCA como *tana 'ulen* dentro de OECM podría proveer una forma apropiada de reconocimiento e incentivo para que las comunidades continúen conservando estas áreas. El reconocimiento, sin embargo, también debe ir acompañado de un apoyo adecuado, y las instituciones de las comunidades deben ser empoderadas a través del acceso a la información, las alianzas y el intercambio de conocimientos para la conservación y el uso sostenible.

RÉSUMÉ

Les objectifs d'Aichi issus de la COP 10 de la CDB à Nagoya, et notamment l'objectif 11, reconnaissent que la conservation de la biodiversité peut se réaliser ailleurs que dans les aires protégées gouvernementales, et que d'autres mesures de conservation efficaces par zone (OECM) ont la capacité de contribuer de manière significative à une conservation efficace et équitable d'ici 2020 et au-delà. Cet article fait valoir que les territoires et les aires conservées par les peuples autochtones et les communautés locales, ou «APAC», sont de bons candidats pour devenir des OECM tant que leurs connaissances traditionnelles et leurs institutions communautaires demeurent solides et valorisées. On peut citer comme exemple d'une aire conservée indigène le tana 'ulen ou «forêt réservée», une tradition trouvée chez les Dayak Kenyah à l'intérieur de Kalimantan, en Indonésie. Les tana 'ulen sont des zones de forêt primaire riches en bois précieux et en produits forestiers non ligneux à haute valeur économique pour les communautés. Ils sont gérés de manière stricte sous l'ordre des conseils coutumiers et du chef coutumier, qui limitent l'accès et les activités. Le fait d'accorder aux APACs tels les tana 'ulen un statut d'OECM serait un moyen de reconnaitre ces communautés et de les inciter à continuer à conserver ces zones. Cette reconnaissance, cependant, devrait s'accompagner d'un soutien adéquat et approprié, afin de rendre plus autonomes les institutions communautaires quant à leur accès à l'information, aux partenariats et au partage de compétences pour une conservation efficace et durable.

CONTEMPORARY PASTORAL COMMONS IN EAST AFRICA AS OECMS: A CASE STUDY FROM THE DAASANACH COMMUNITY

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ABSTRACT

Despite growing policy interest in the conservation values of territories and areas conserved by Indigenous peoples and local communities (abbreviated to 'ICCAs') at the global level, our understanding of the ICCAs in East Africa is meagre at best. We explore the existence of ICCAs in East Africa, focusing on the case of the Daasanach pastoralists of Ileret, Kenya. We examine their existence through ethnographic approaches, including participant observation, semi-structured interviews and focus group discussions. We explore whether these particular ICCAs fit the criteria to be recognised as 'other effective area-based conservation measures' (OECMs), with specific attention to their customary management systems. Our work evidences the existence of pastoral ICCAs amongst the Daasanach, challenging the widespread assumption in the scientific literature that traditional pastoral commons are insignificant in today's East African context. Such ICCAs have played a central role not only for local livelihoods, but also for the maintenance of biodiversity and ecosystem services, aligning with the current definition of OECMs. Yet concerns about the rapidly changing socio-ecological system may defy such categorisation. In closing, we offer some remarks on the management criteria for OECMs and propose improved guidelines for measuring the effectiveness of OECMs.

Key words: OECMs, customary law, community-based conservation, ecosystem services, pasture governance, customary norms, sustainability

INTRODUCTION

A notable shift in conservation paradigms in the last decades has been the growing recognition of the role of territories and areas conserved by Indigenous peoples and local communities (abbreviated to 'ICCAs') in maintaining cultural and biological diversity (e.g. Berkes, 2007; Kothari et al., 2013; Domínguez & Benessaiah, 2015).

It is estimated that ICCAs currently cover up to 12 per cent of the world's land surface, providing numerous ecosystem services as well as livelihoods to millions of Indigenous peoples and local communities while contributing to the *in-situ* conservation of thousands of species and habitats (Kothari, 2008; Kothari et al., 2013). As such, many of these ICCAs – that are not state 'protected areas' – may represent a substantial share of the world's 'other effective area-based conservation measures' (OECMs) as referenced in Aichi Target 11 of the Convention on Biological Diversity (Jonas et al. 2014; Jonas et al., 2017; IUCN WCPA, 2018).

ICCAs could be counted in hundreds of thousands across the African continent providing ecosystem services such

Daasanach herder, Ileret © Daniel Burgas

as water, food, energy, medicine, shelter, fodder, income, recreation, spiritual sustenance and disaster prevention to millions of people (Kothari, 2006). Growing research shows that Indigenous peoples and local communities (IPLCs) in East Africa have designed robust institutional arrangements for successfully governing common-pool pastoral resources (Goldman & Riosmena, 2013). Yet, research attention towards East African pastoral commons remains meagre at best (Lane, 1993).

For millennia, pastoralists have been grazing sustainably in coexistence with wild mammals (Fratkin & Mearns, 2003; Notenbaert et al., 2012). Despite recurrent competition for resources or direct consumption of wild animals, local/traditional herding governance systems can also have positive implications for wildlife and landscape heterogeneity that allows for the creation of different biodiversity pools (Fynn et al., 2015). Where conventional protected areas fall short of preserving species and unique natural phenomena, pastoral-related OECMs might have a key role in, for example, conservation of savannah ecosystems (Fynn et al., 2015). However, the conservation value of such pastoral systems is largely under-evaluated, with the discourse of modern pastoralism as a livelihood that conflicts with conservation relying on a weak empirical footing (Reid & Ellis, 1995). This may have hindered progress towards the consideration of pastoral ICCAs as OECMs.

In this context, the present study aims to examine the governance of the pastoral commons and their conservation values focusing on the case of the Daasanach Indigenous peoples of northern Kenya (Figure 1), and evaluates whether these commons could meet the criteria to be recognised as ICCAs and be considered as potential OECMs. To do so, we analyse the relevance of the Daasanach customary institutions for governing pastoral commons in Ileret Ward

(Marsabit Country) and the perceived ecological implications of their management systems. In the next sections, we briefly describe the case study and the methods used. Our results are organised under two subsections: a) a description of the identified ICCAs, and b) an overview of the management and positive conservation outputs of pastoral ICCAs, in the context of growing progress towards identification and recognition of potential OECMs as well as the imminent threats they could be submitted to. We finally discuss the policy implications of our findings, highlighting the challenges involved in measuring the effectiveness of areas in which conservation might not be the primary goal, but is nevertheless an outcome.

METHODS

The traditional territory of the Daasanach extends between a narrow strip of South Sudan, Southern Ethiopia and Northern Kenya, occupying the northern shores of lake Turkana, the lower stretch of the Omo river valley and its delta. There are about 13,000 Daasanach living in Kenya and about 48,000 living north of the border in Ethiopia (IHSN, 2007; KNBS, 2013). Their territory is under a bimodal annual rain cycle, with annual precipitation averages under 200 mm (Liebmann et al., 2014). In such arid and isolated land, livelihoods depend foremost on nomadic pastoralism.

We conducted ethnographic fieldwork between November and December 2016, having been granted free, prior and informed consent (FPIC) from each community and individual participating in this study. We conducted semi-structured and open-ended interviews as well as focus group discussions, mostly focusing on the institutions, norms and practices related to the management of pastoral resources. We aimed to identify: a) the role of the community in decision-making on natural resource management; b) the communal rules underpinning the conservation of pastoral resources; and c) perceived changes in, and threats to, the governance of pastoral commons. We interviewed 75 respondents and conducted eight focus groups (5–10 respondents) varying in age (see Table 1).

RESULTS

Interviews and focus groups revealed that the Daasanach social structure has long been formed to support the governance of the pastoral commons. All grazing grounds are communal and may be used by all the Daasanach, no matter to which group they belong. The central defining principle of the Daasanach social organisation is the age-set (generation-set) called the *haari*. When boys become *kaabana* in their teens or early twenties, they assume with this transition the responsibility for their respective family's herds. While the *kaabana* search for pastures and lead the livestock, the elders (*karu)* play an advisory role in the management of resources, advising and blessing herders, and setting punishments when rules are disobeyed. The *karu* are responsible for teaching norms and taboos and also assign directives to the *kaabana* to reinforce natural resource utilisation values within Daasanach land. Within the system, however, decision-making takes place through group consensus. Everybody has the right to participate in communal discussions. Even though, some voices have more influence than others, and seniority plays an important role. A few figures represent leadership at the section and generation-set level, and have important roles in conflict resolution and sanctioning (punishment, fines and/or curses).

Are there ICCAs in Daasanach lands?

Three basic principles define ICCAs: a) An IPLC that has a strong and profound connection with a territory or area; b) A People or community is a major player in decision-making and implementation of decisions (governance and management) regarding that territory or area, implying that a community institution exists and has the capacity to develop and enforce regulations; c) The People's or community's governance decisions and management efforts lead to the conservation of nature in the territory, area or habitat, and to the

Table 1. Participant count from semi-structured interviews and focus group discussion sessions.

	Men	Women	Age			Total
			< 31	31–50	> 50	
Semi-structured interviews	73	2	22	38	15	75
Focus group discussions (8)	50	6	21	27	8	56
						131

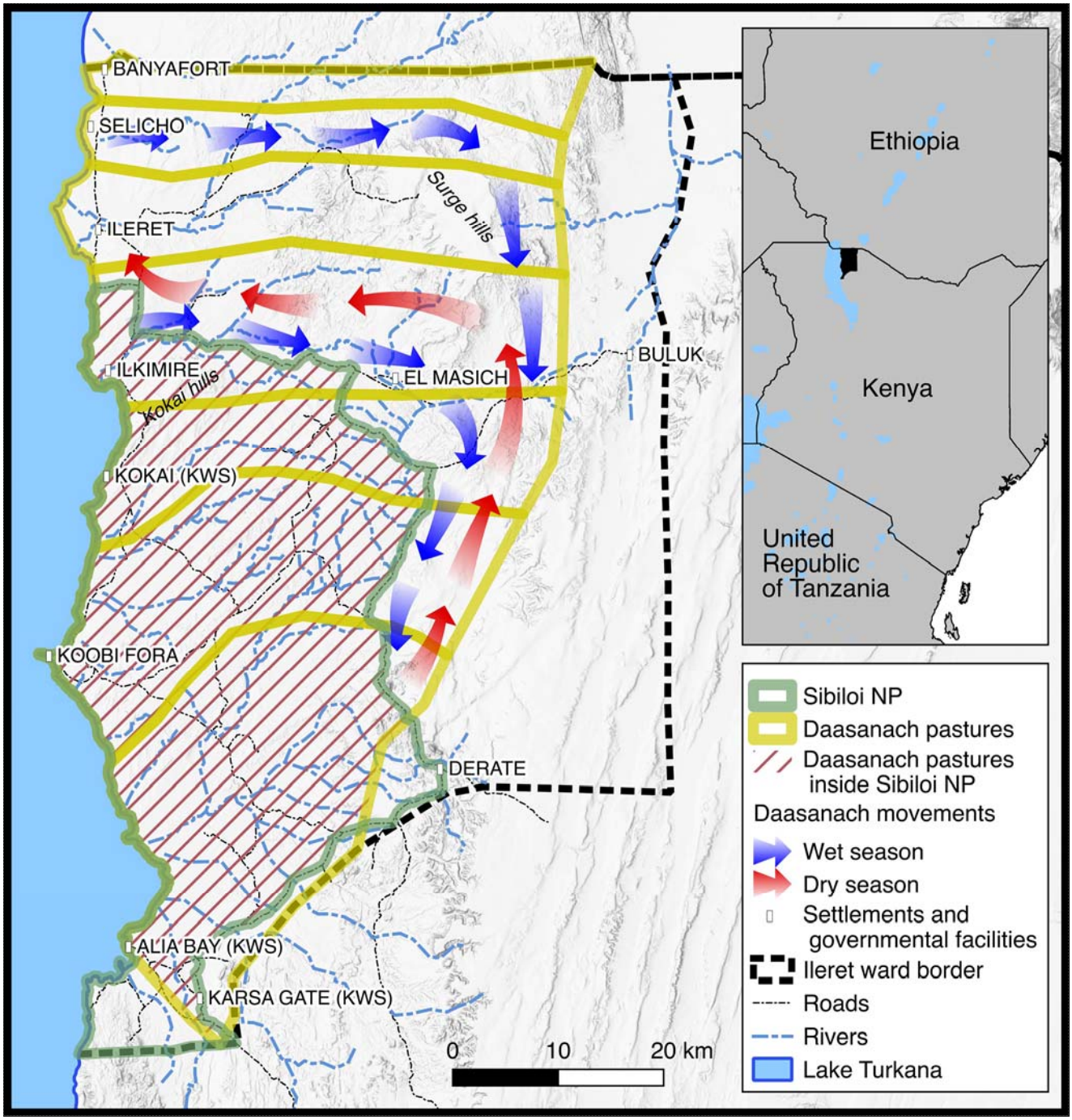

Figure 1. Approximate delimitation of the seven Daasanach community pasture areas in Kenya. Arrows illustrate typical seasonal movements between lowlands closer to lake Turkana (dry season) and highlands (wet season).

associated conservation of cultural values and community well-being (while the conscious objective of management may be different than conservation per se, and be, for instance, related to material livelihoods, water security, safeguarding of cultural and spiritual places, etc.) (Borrini-Feyerabend, 2013; Kothari et al., 2012).

The Daasanach of North Kenya organise herding in seven spatially separated pastoral commons (Figure 1). Three of these areas are no longer under full community management jurisdiction, due to the spatial overlap with Sibiloi National Park, established in 1973. In fact, elders and herders reported that they would wish to be involved in the governance of the area which is now

managed by the park authorities. During focus group discussions, a village elder said, "I wish the Government would allow us to use our norms in the management of our former land (park). I am sure good changes will occur within five years. Wild animals will be grazing alongside our livestock the way it used to happen before and there will be few conflicts." All focus group participants approved his sentiments. The four functioning commons have descriptions that fit that of ICCAs, as described above: communally-owned resources (e.g. pasture, water and biodiversity); utilised and managed by all members through communal governance; protected and conserved through the community's eight clans-hierarchy customary norms governed through the seniority hierarchy, ascribed by all community members; and reinforced through strict punishments and fines.

Herding is conducted jointly with all clan members and their livestock may graze in any of the designated grazing areas during different seasons. Our results also established that Daasanach community land is subject to strong seasonality with a growing number of barriers (Ethiopian border, National Park borders and neighbouring pastoralist groups). These substantially affect the regulation of grazing lands within Daasanach territory in Kenya, which is largely influenced by elevational gradients and the courses of seasonal rivers. Herders move to higher elevation areas during wet seasons, while moving closer to lake Turkana's north-eastern shore during dry seasons (Figure 1). During focus group discussions, elders reported that it is a norm not to graze livestock in one area for more than one month, as this protects pasture from being depleted beyond the capacity to regenerate. The movements, however, vary for different livestock (sheep, goats or cattle) and between territories. Land use is systematically controlled by the elders through collective community agreements, and anyone contravening these agreements is severely punished.

Daasanach ICCAs as potential OECMs

Given the similarities between the definition of ICCAs and the principles of OECMs, we aim to examine to what extent the identified pastoral ICCAs of the Daasanach community would warrant recognition as OECMs (subject to Daasanach FPIC and a site-by-site assessment). In this section we address the elements that define OECMs and assess whether the Daasanach areas comply with such requirements. We stress that the following reflections stem solely from ethnographic work, and that ecological assessment of their effectiveness is not provided here.

Geographically defined space

The standard definition of an OECM implies a spatially-defined area with agreed and demarcated boundaries (IUCN WCPA, 2018). The Daasanach indeed govern and manage their pastoral commons in well-defined areas north-east of lake Turkana (Figure 2) and have ICCAs which are clearly demarcated by seasonal rivers recognised by the community.

Not recognised as a protected area: While some of the ICCAs in the region overlap since 1973 with a national park (Sibiloi National Park) and even their self-governance capacity has been largely diminished, they thus do not meet the definition of OECMs. Nevertheless, other large adjacent areas to the park can still be identified as OECMs (Figure 1).

Governed

An OECM should be under the authority of a specified entity, or an agreed upon combination of entities. OECMs can be governed under the same range of governance types as protected areas, namely by government agencies, private interests, Indigenous peoples and/or local communities, or in a shared arrangement (Dudley, 2008; Borrini-Feyerabend et al., 2013). Daasanach areas have been traditionally governed through their eight-clan customary institutions which are ascribed as traditions by all community members and have cultural and spiritual values attached to their land. Still today, customary institutions administered through age-sets and an 8-clan structure govern the management of the common resources. The Chief and Ward administrator figures link the customary institutions to national and county government levels, yet they do not play a role in resource management. For example, a 43-year-old herder reported that "We entirely depend on our clan elders' directives concerning livestock migration, marriages, weather forecasting, and water and wildlife protection. We go to the Chief's office when applying for national Identity cards, or when we are reporting cases of livestock disease outbreak and in some cases, when the Government has some programmes such as immunisation of children."

Managed

An OECM should be managed in a way that leads to positive biodiversity conservation outcomes. According to elders, the Daasanach have managed their areas for at least several centuries to support their pastoral livelihoods. These practices have indirectly promoted the in-situ conservation of biodiversity and ecosystem services. In particular, they support the conservation of grasslands, and, most importantly, the conservation of

hardy vegetation and biodiversity in the riverine forests of the seasonal rivers of the area (Figure 2).

In this section, we highlight six regulatory mechanisms that reflect government and management of these spaces, supporting the conservation of biodiversity.

1. Livestock divided across community land so as to utilise sustainably limited available pastures. Elders reported that this strategy is essential not only for pasture protection and management, but also as a risk management practice against disease outbreak and cattle rustling from their neighbouring communities.

2. Elders and herders reported that they practise seasonal migration of livestock to facilitate pasture regeneration for successive grazing seasons. Grazing areas during the dry months (August to October, January to March) are concentrated near the shores of the lake with a grazing land area of approximately 750 km², and during wet seasons (November to December, April-July) grazing is carried out in the highlands.

3. Herders reported that they are not allowed to graze in one location for more than a month and that this is a requisite to ensure that grass height is maintained at a 'little span height' (10–15cm) so as to guarantee its regeneration for successive seasonal use by livestock and those contravening this norm are flogged by the *Kaabana* and fined depending on the magnitude of damage caused to the grasses.

4. Ninety-seven per cent of respondents reported that the riverine forests along seasonal river banks yield fallen leaves that are used to feed calves, goats and sheep. During dry spells with a scarcity of fallen leaves, locals are allowed to cut side twigs of some trees to feed young livestock rather than cutting the whole tree. It is a chargeable offence to graze mature/large cattle in the riverine ecosystems because they may degrade these areas relatively faster, thus only goats/sheep or calves are allowed to graze as they have lower ecological impacts. Mature cattle/donkeys/camels are grazed mostly in zones with no restrictions. Anyone caught grazing mature cattle/donkeys/camels in these protected areas or cutting down whole trees to feed young livestock is whipped by the *kaabana*, and required to slaughter his fully-grown bull or to buy one elsewhere and slaughter it for the elders to feast.

5. Ninety-five per cent of respondents reported that four well-functioning ICCAs are established along major seasonal rivers on Daasanach land (Figure 1) which offer numerous ecosystem services that benefit the community. These rivers support a wide array of wildlife, including numerous bird species such as ostriches and guinea fowls, as well as large mammals such as leopards, cheetah and antelopes. Locals utilise these wild animals as game meat during periods of food scarcity and also utilise ostriches' feathers and leopards' skins for the *Dimi*[1] and *Guol*[2] cultural rites, while some rivers yield red ochre used for decoration by girls and

Figure 2. Seasonal river in Ileret with lake Turkana in the background © Daniel Burgas

warriors during cultural rituals. All elders interviewed reported having participated in these compulsory rituals which they also believe exorcise and drive off curses and natural calamities from their land and people. Other reported benefits of these ICCAs include significant shallow water wells, pasture, firewood, wild edible plants, reeds used for thatching houses, provision of pasture to livestock during the dry seasons, as well as sacred and medicinal plants.

6. It is a taboo to destroy the fencing of temporary settlements when migrating to other areas. Reutilisation of abandoned fencing is promoted because this helps to minimise the depletion of the scarce trees and bushes. Elders and herders reported that this norm helps in conserving indigenous trees and anyone contravening this norm is cursed by the elders. A 48-year-old woman said,

> We are not permitted to use manyatta sticks or poles as firewood, and perpetrators are beaten by their husbands and cursed by elders. No woman in Daasanach can do such a thing!

THREATS TO DAASANACH LANDS

Despite the ICCAs identified and their potential co-benefits for biodiversity conservation, some concerns were expressed. These concerns reflect the widespread erosion of certain customary regulations.

Seventy-eight per cent of the respondents reported the decline of water availability especially in shallow wells along seasonal rivers, reduced pasture, increased soil erosion during the rainy season and reduced wildlife within ICCAs. During focus group discussions, a 72-year -old elder said, "some wildlife species we used to see when young – such as giraffe and elephants – have become extinct in our area", and when asked the reason for extinction, he said, "they were killed by people outside of Daasanach". Many of the interviewees reported that many animals have gone, denoting large defaunation in the area. Hunting is rarely acknowledged as a livelihood of the Daasanach but it has certainly been important. In songs of praise, the killing of larger animals like hippo (*iye*), lion (*luoch*), rhino (*gure*), elephant (*arab*) and buffalo (*garich*) is still honoured. However, we did not encounter any reference to the regulation of hunting. Seven per cent of the respondents reported that Daasanach's rites (e.g. *Dimi*) may be injurious to the ecosystem in the long run because these rites demand ostriches' feathers, giraffe or oryx tails and the skins of leopard or cheetah; but 93 per cent said they re-use trophies previously used by their predecessors.

Seventy-nine per cent of the respondents associated the construction of the Gibe III dam in Ethiopia with a reduction of water and pasture around the lake and the river Omo delta. A herder aged 34 said,

> For the past few years, water in the lake has become more saline, and unfit for us and livestock to drink. Pasture and other vegetation around the lake and Lokwaria Island, which our livestock feeds on during the dry season, has dried up, and some areas have no vegetation while other areas have new alien vegetation which is not palatable to livestock. This is useless to us! Also fish, crocodiles and hippos are decreasing in the lake because of low levels of water from the river Omo, and its delta no longer supports as many livestock as before.

With the landscape beyond the ICCAs becoming increasingly inhospitable, the pastoral commons of the Daasanach become islands of conservation, threatening their long-term ecological viability.

Furthermore, elders are worried about the rapid erosion of customary institutions and traditions that impinges negatively on local adaptation to ecological change. During focus group discussions, a 55-year-old elder said,

> Those who have abandoned our customs are the ones eaten by crocodiles, killed by wild animals or bitten by snakes, because a Daasanach who abides to the norms cannot be bitten by snakes, and if a snake does bite, one may not die and he/she can swim in crocodile infested waters in the lake, river Omo and across to Lokwaria Island unharmed and none of the livestock will be attacked by crocodiles or hippos.

All participants of our six focus group discussions (100 per cent) concurred with this elder. Although some 76 per cent reported that these customary norms are binding on all community members, 24 per cent of respondents reported that these norms are rapidly on the wane.

DISCUSSION

This study set out to explore the potential conservation values of East African pastoral ICCAs at the same time as contributing to demonstrate their present and historical relevance in East Africa which is largely unrecognised and poorly studied. In so doing, we also evaluated if some of these pastoral commons could eventually be recognised as OECMs. We acknowledge that this study is exploratory in nature and, as such, it does not evaluate the conservation effectiveness of ICCAs and it does not allow to infer generalisations for pastoral ICCAs in East Africa. Nonetheless, the study has highlighted several issues that deserve further attention in the context of OECMs. While the management of Daasanach ICCAs includes different ways of controlling unsustainable uses of biodiversity (e.g. through customary laws and sanctions), whether this means they can be considered as 'effective' remains an open question.

Progress in defining, identifying and reporting OECMs has been generally slow (Leadley et al., 2014), arguably due to uncertainty about what to report and how to measure the effectiveness of these sites (Jonas et al., 2014). In order to qualify as an OECM, an area has to 'effectively' deliver sound conservation outcomes (IUCN WCPA, 2018). However, with biodiversity conservation not necessarily being a primary goal of an OECM, these areas may actually support the conservation of certain biodiversity (e.g. grass species), while neglecting or impacting negatively on other biodiversity. In this sense, an ICCA can be failing to conserve large carnivores locally yet be one of the most effective means for improving landscape connectivity for large carnivores at a broader scale, or it may improve the presence of certain grass species that would be lacking without human intervention. This might be the case of the riverine forests of the seasonal rivers in the Daasanach ICCAs, which seem to play an important ecological role in supporting connectivity between different conservation areas in an otherwise heavily grazed landscape, thereby contributing to the long-term viability of larger ecosystems including the national park.

The Daasanach are an East African pastoralist group with potentially important pastoral ICCAs deeply embedded in a socio-ecological system (Carr, 1977). Similar socio-ecological systems are common among other East African pastoral groups, which have long contributed to shape the rich and biodiverse landscapes existing in the region. While these socio-ecological systems have throughout history promoted sustainable use of resources (e.g. Fynn et al., 2015), they are facing severe challenges that are compromising their effectiveness due to, amongst other things, rapid social transformations (see also Carr, 1977; Cabeza et al., 2016). This is the situation for thousands of similar systems throughout the African region (Cotula, 2007; Turner, 1999; Haller et al., 2013). In the case of the Daasanach pastoral commons studied here, such transformations challenge some of the defining principles of an OECM, including the 'long-term', 'effective' aspects of governance and management, thus questioning the eligibility of some of these areas as OECMs. Yet perhaps a lack of recognition of their current conservation values may incur larger biodiversity losses in future, as these systems may have protected a large share of African diversity to date and may still serve as buffer zones and migration corridors for national parks.

While shortfalls in conservation effectiveness are allowed in certain protected areas (at least temporally), with 'effectiveness' not always being a pre-requisite to designate a particular protected area, this seems not to be possible in the context of OECMs, which must be considered as 'effective' before their designation. Based on the findings presented in this paper, we question whether areas such as those studied here, which have retained biological values for so long but are currently facing challenges, could be considered as 'potential OECMs' only if their conservation values are properly assessed. Similar concepts of conditionality and governance are being discussed at large in the context of protected areas (Eklund & Cabeza, 2016). While substantial progress has been made in operationalising clear indicators of protected area effectiveness (e.g. Chape et al., 2005; Le Saout et al., 2013), there are still no clear principles on how to define and operationalise a measure of 'effectiveness' for OECMs where conservation may or not be a primary objective, but is nevertheless a certain outcome. Greater work on this aspect is essential.

CONCLUSION

This research among the Daasanach of Ileret illustrates the potential, as well as the challenges, for recognising East African pastoral ICCAs as OECMs. Nevertheless, already from the obtained data, we can state that the Daasanach are a human group with important pastoral ICCAs, deeply embedded in their social and cultural structures, as much as in their bio-ecological context. Further research, including on the relationship between their governance of local ecosystems and natural resources and conservation effectiveness will enable an assessment of whether these areas can be considered 'potential OECMs'.

Although the Daasanach's institutions are in a delicate situation, facing important challenges and transformations, in the opinions of the local people facing such loss of territorial control, it becomes evident that these institutions still have a great local legitimacy and importance. With this case study and the reflections it has brought about, we call for practical steps for defining biodiversity values of interest, in order to better monitor and report on the categorization as OECMs.

ENDNOTES

[1]The Dimi cultural ceremony is a rite of passage accorded to a first-born daughter in a family.

[2]The Guol is a cultural ceremony for initiating girls into adulthood.

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RESUMEN

A pesar del creciente interés que a escala mundial generan los valores de conservación de las áreas y territorios conservados por los pueblos indígenas y las comunidades locales (ICCA, por sus siglas en inglés), nuestro conocimiento acerca de las ICCA en África Oriental es, en el mejor de los casos, escaso. Exploramos la existencia de ICCA en África Oriental, centrándonos en el caso de los pastores daasanach de Ileret, Kenia. Examinamos su existencia a través de enfoques etnográficos, incluyendo la observación de los participantes, entrevistas semiestructuradas y debates con grupos focales. Analizamos si estas ICCA específicas se ajustan a los criterios para ser reconocidas como "otras medidas de conservación eficaces basadas en áreas" (OECM, por sus siglas en inglés), con especial atención a sus sistemas consuetudinarios de gestión. Nuestro trabajo evidencia la existencia de ICCA pastoriles entre los daasanach, desafiando la suposición generalizada en la literatura científica de que los bienes comunes tradicionales de los entornos pastoriles son insignificantes en el contexto actual de África Oriental. Dichas ICCA han desempeñado un papel central no solo para los medios de vida locales, sino también para el mantenimiento de la biodiversidad y los servicios de los ecosistemas, alineándose con la definición actual de OECM. Sin embargo, las preocupaciones sobre los rápidos cambios en el sistema socioecológico podrían desafiar tal categorización. Para finalizar, ofrecemos algunas observaciones sobre los criterios de gestión para las OECM y proponemos directrices mejoradas para medir la eficacia de las OECM.

RÉSUMÉ

Malgré un intérêt politique croissant pour les valeurs de conservation des territoires et des aires conservées par les peuples autochtones et les communautés locales (abréviation «APAC») au niveau mondial, notre compréhension des APAC en Afrique de l'Est est faible. Nous examinons l'existence des APAC en Afrique de l'Est, en nous concentrant sur le cas des communautés d'éleveurs Daasanach d'Ileret au Kenya. Nous étudions leur existence à travers plusieurs approches ethnographiques, dont les observations des participants, les entretiens semi-structurés (n=75 adultes) et huit groupes de discussion. Nous examinons si ces APAC particulières correspondent aux critères reconnus comme 'autres mesures de conservation efficaces par zone' (OECM), en accordant une attention particulière à leurs systèmes de gestion habituels. Notre travail met en évidence l'existence d'APAC pastorales parmi les tribus Daasanach, remettant en cause l'hypothèse largement répandue dans la littérature scientifique que les pâturages communs traditionnels sont insignifiants dans le contexte est-africain d'aujourd'hui. En effet, ces APAC ont joué un rôle central non seulement pour les moyens de subsistance locaux, mais aussi pour le maintien de la biodiversité et des services écosystémiques, s'alignant ainsi avec la définition actuelle des OECM. Pourtant, des préoccupations découlant de l'évolution rapide du système socio-écologique risquent d'entraver une telle catégorisation. En conclusion, nous offrons quelques remarques sur les critères de gestion des OECM et proposons des lignes directrices améliorées pour mesurer leur l'efficacité.

RETHINKING NATURE CONSERVATION IN COLOMBIA: A CASE STUDY OF OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES

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ABSTRACT

In Colombia, a country of great cultural and ecosystemic heterogeneity, there are many conservation strategies beyond protected areas that stem from both legal frameworks and local territorial processes. After much debate, these have been termed Complementary Conservation Strategies (CCSs), and their identification and recognition are necessary to achieving the country's conservation objectives. At the international level, under the leadership of the IUCN's World Commission on Protected Areas, progress has been made in defining criteria to identify 'other effective area-based conservation measures' (OECMs), and the uptake of these guidelines by the Convention on Biological Diversity (CBD) is expected during the next Conference of the Parties meeting (COP 14). In Colombia, we have run the draft criteria for OECMs against several case studies to identify the main similarities and differences. This paper presents in detail three CCS case studies that show whether and to what degree these include elements relevant to OECMs. The criteria and principal considerations regarding them are analysed. We conclude that, given the similarities, the international debate provides an opportunity to identify, recognise, report and enhance these strategies in Colombia.

Key words: complementary conservation strategies, Colombia, protected area systems, other effective area-based conservation measures, OECM

INTRODUCTION

Since the creation in the 19th century of the first national park in the United States, Yellowstone, protected natural areas represent one of the most relevant tools to conserve nature and biological diversity *in-situ* (Bahia de Aguiar et al., 2013). Its conception traditionally focused on the creation and management of wilderness areas (Rojas Lenis, 2014). However, in 2004, the IUCN had already established that, although the number of protected areas worldwide was growing (WDPA Consortium, 2003), the loss of biodiversity was increasing (IUCN, 2004). It became evident that in order to stop biodiversity loss and maintain the ecological processes and the functionality of a transformed matrix landscape, it was necessary to move from the protection of isolated areas to the management of protected area systems that are connected at the landscape level and include other strategies such as biological corridors and joint management models in concert with areas under collective and private ownership, among others (Arango -V. & Díaz-M., 2007; Dudley, 2008). Therefore, the present challenge for conservation in protected natural areas relates to planning and management efforts on the matrix of the surrounding landscape through strategies that help maintain ecological processes, their conservation objective, as well as minimise restrictions on human use (Hansen & DeFries, 2007).

Colombia's territory not only includes great ecosystemic heterogeneity with marked changes in land-use (Etter & van Wyngaarden, 2000; IDEAM, 2017), but its social dynamics are moulded by multi-ethnicity and cultural diversity (Colombian Political Constitution of 1991) and

an armed conflict accentuated by differential access to land, resulting in large part from an exclusionary model of agrarian development (CNMH, 2016). Such heterogeneity has spurred different types of conservation strategies that respond to local, social and natural conditions but are not formally recognised (PNNC, 2015).

OTHER EFFECTIVE AREA-BASED CONSERVATION MEASURES (OECMs) AND COMPLEMENTARY CONSERVATION STRATEGIES (CCS) IN COLOMBIA

Since the twentieth century, Colombia has implemented conservation strategies that have promoted the use and sustainable management of biodiversity based on human occupation of the territory (Solano, et al., 2006; Rojas Lenis, 2014). Configurations range from public, private to community-based, and even international designations, a result of the country's signing of international agreements and conventions. Some of these strategies have a legal basis, while others may be brought together as de facto conservation areas.

In 2010, Colombia regulated the management categories of protected areas that comprise the current National System of Protected Areas (SINAP) (Figure 1) with the intention of organising its national protected area system and to comply with the Programme of Work on Protected Areas (PoWPA) (SCBD, 2004). This regulation had as its objective to define the categories of protected areas and exclude the multiple denominations given by the territorial administrative entities that, according to the constitution and environmental law (Law 99 of 1993), are specifically obliged to conserve their natural heritage (Rojas Lenis, 2014).

Efforts by territorial administrative entities, civil society and ethnic and local communities remained outside the categories of SINAP. Legal opinion was that it was impossible to assign new protected area categories because of the lack of previous regulations (Rojas Lenis, 2014). In consequence, these conservation areas that were not framed in the SINAP categories ended up being referred to as in-situ conservation strategies or complementary conservation strategies (CCSs). Subsequently, in 2010 the concept of CCSs was first introduced in law but without a clear definition. In the following years, the concept was widely discussed at the national level and the following definition put forward:

> An area with clearly defined boundaries, where a community, a private owner or an institution implements actions to ensure conservation, restoration or sustainable use of biological and cultural diversity, that is complementary to protected areas and contributes to connectivity (PNNC, 2015; Alonso, 2015).

This definition was presented at the second Colombian Congress on Protected Areas (PNNC, 2015), which concluded that CCSs provided an opportunity to contribute to the connectivity of SINAP, as well as recognising and visualising different conservation efforts in territories with a diverse range of governance systems. It also concluded that the country needed to continue identifying these initiatives and should push for their regulation so that they may be included in regional planning policy (PNNC, 2015).

To this day, several types of CCSs have been identified in Colombia, and each regional protected area system (SIRAP) has different terminology. The most recurrent are listed in Figure 2. Presently the Ministry of the

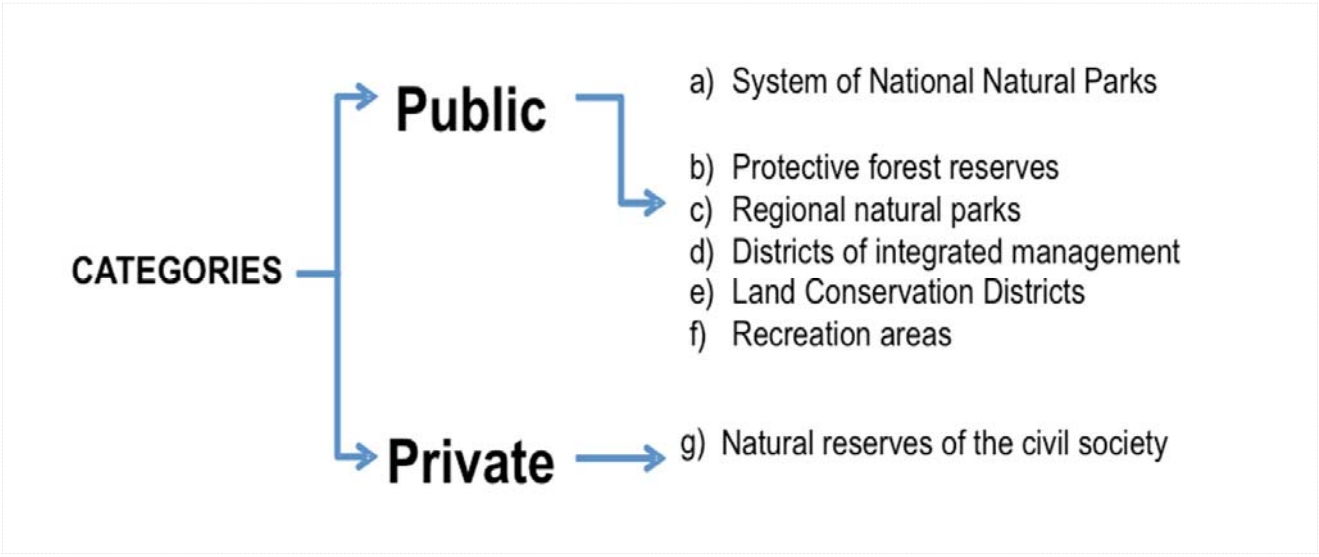


Figure 1. SINAP protected area categories (Decree 1076 of 2015)

Governance type A	Governance type B	Governance type C	Governance type D
• Forest Reserve of Law 2 • Lands acquired for watershed protection • Protected lands included in local land management plans • Municipal or urban protected areas. • Ecosystems protected by special laws (Paramos and wetlands)	• Protected rivers • Ramsar wetlands • Biosphere reserve • Important Bird Areas-IBAs • Forest Reserve of Law 2 • Lands acquired for watershed protection • Protected lands included in local land management plans • Conservation agreements	• Unregistered civil society natural reserve *	• Territories and areas conserved by Indigenous peoples and local communities – TICCA * • Indigenous reserves * • Collective territories of afro-descendent communities * • Peasant reserves *

Figure 2. Types of CCSs grouped by the four types of governance (based on the National Agreement on Complementary Conservation Strategies, PNNC, 2015). Type A = Governance by the State on different levels: national, regional and local; Type B = Shared governance; can be established between the State and private and/or community-based organisations; Type C = Governance by private individuals and private organisations, usually the owners; Type D = Governance by Indigenous peoples and/or local communities.
*** Only if they recognise themselves as CCSs.**

Environment and Sustainable Development (MADS) is in the process of elaborating a legal proposal to recognise CCSs and incorporate these in regional planning policy. This shows the efforts by the State to make visible and recognise diverse actors in biodiversity conservation processes as well as to contribute towards a more complete protected area system.

At the same time as these discussions took place within the country, Colombia, as signatory to the Convention on Biological Diversity (CBD), identified the steps needed to implement the PoWPA. This programme urges all signatory countries to establish systems of effective and representative protected areas, which shall include not only strictly protected core areas and their buffer areas, but also other conservation strategies. Subsequently, the tenth Conference of the Parties to the CBD (COP 10) approved the Strategic Plan for Biodiversity, which contains 20 Targets to be achieved by 2020. Target 11, in particular, mentions that the aim of conserving 17 per cent of terrestrial ecosystems and 10 per cent of the marine area should be achieved through 'systems of protected areas and OECMs' (CBD, 2010).

With the aim of providing an OECM definition, the CBD requested technical support from the IUCN World Commission on Protected Areas, which in 2015 created a Task Force on OECMs. The objective of this group was to generate guidelines for the recognition and reporting of OECMs, which received feedback from members of that Task Force and, subsequently, from the Parties to the CBD. These guidelines include a definition[1] to be discussed at the CBD meetings to be held in 2018 (SBSTTA 22 and COP 14).

This has led to the need for an evaluation of similarities and differences between the definitions of OECM and

High mountain ranching system with hedges for soil protection, Encino municipality, Santander © Janeth Bougard, Fundación Natura.

Table 1. Comparison between OECM and CCS definitions

Elements	OECM Definition	CCS Definition
Delimitation	A geographically defined space	An area with clearly defined boundaries
Management and governance	which is governed and managed	where a community, a private owner or an institution implements actions
Term	over the long-term	
Objectives	in ways that deliver the effective *in-situ* conservation of biodiversity, with associated ecosystem services and cultural and spiritual values	to ensure conservation, restoration or sustainable use of biological and cultural diversity
Relation with protected areas	not recognised as a protected area	that is complementary to protected areas and contributes to connectivity

CCS, both of which have elements in common (Table 1), as well as one crucial difference: CCS are designed specifically to support connectivity in the landscape surrounding protected areas, so as to contribute to the integrity and functionality of the systems. Recognising OECMs not only adds to Colombia's efforts to comply with Aichi Target 11 but to achieve this goal in a qualitative way, meaning that protected area systems are representative, complete and connected. Within a framework of compliance with international agreements, identification of OECMs becomes an opportunity to make visible and recognise these strategies (Jonas et al., 2014).

Criteria to identify OECMs were applied to three different types of CCS and the results are presented in the following section for each of the three case studies. Then, these are evaluated and discussed, bearing in mind the differences and similarities between both definitions and the applicability of these criteria.

CASE STUDIES

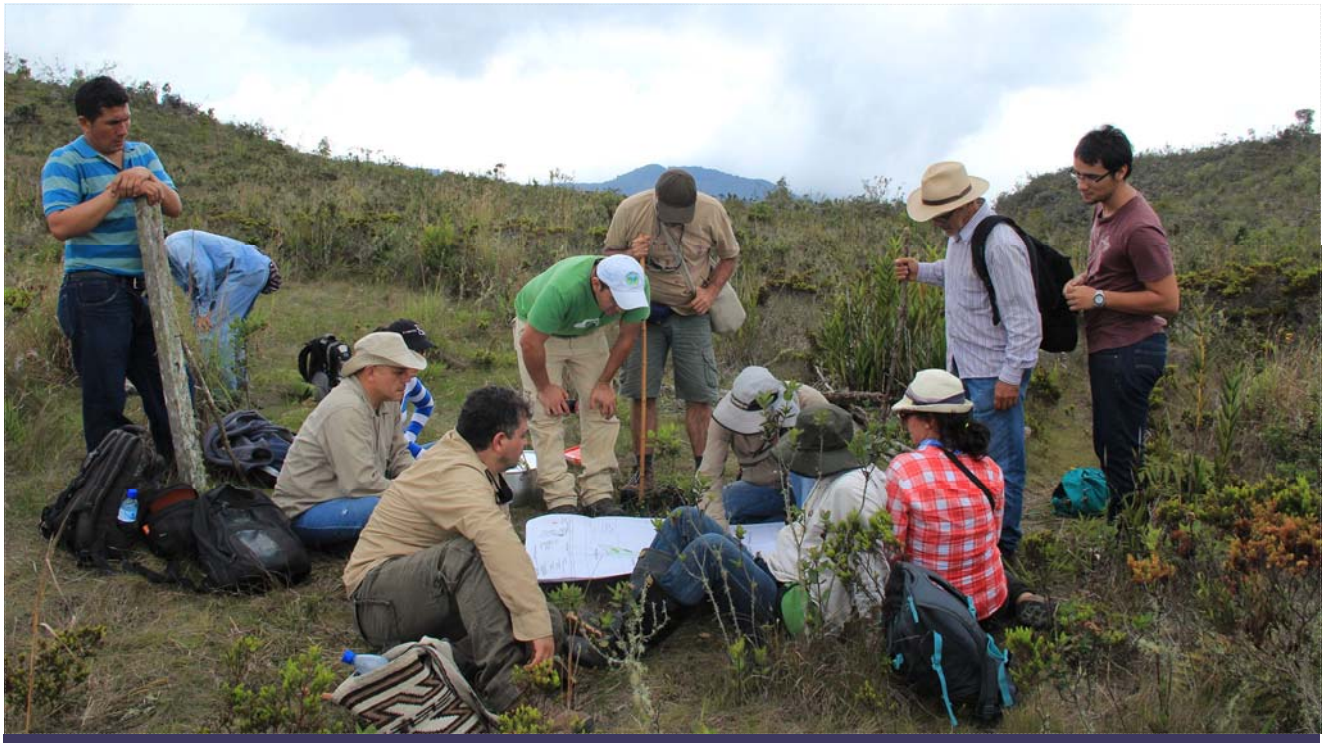
Reciprocal Water Agreements (RWA)

The main objective of this CCS is to improve the connectivity, quality and regulation of water, as well as to reduce the risks of avalanches in the area known as 'Las Cruces', a micro-watershed in the municipality of San Vicente de Chucurí (Santander). The area is located in the Serranía de los Yariguíes National Natural Park, a key area for the preservation of the Gorgeted wood quail (Odontophorus strophium). Its waters provide the effective flow for an aqueduct that supplies water to more than 12,800 people located in the San Vicente de Chucurí urban area.

The Reciprocal Water Agreements are part of a Payment for Ecosystem Services (PES) scheme; contracts are signed between landowners and the water administration company, in which the landowners are required to care for the forest, and the water administration company pays them for it through the PES scheme. To date, 61 agreements have been signed (in properties ranging from 1 to 10 ha) that cover a total area of 1,194 ha, representing 490.5 ha of Andean and riparian forests and 703.5 ha of cocoa and coffee productive systems, as well as grasslands managed according to good agricultural practices (Céspedes, in press).

The scheme of governance of this CCS involves different stakeholders from the micro-basin, such as the owners of the properties located in the upper areas, the beneficiaries of the water resources in the lower zones, the residents of the San Vicente de Chucurí municipality who benefit from the aqueduct, the provider of the aqueduct service and the municipal government. In this sense, governance is shared between municipal government, civil society organisations and private owners. This structure guarantees direct results not only in terms of micro-basin conservation but also contributes to the conservation of biodiversity mainly through the vegetation associated with water sources. In this way, even though biodiversity conservation is not a main objective of the CCS, it is a secondary conservation outcome.

The strategy involves the design and implementation of a participatory ecosystems monitoring programme, currently taking place. The main objective is to evaluate the efficiency of the RWA programme so as to improve the quality, volume and regulation of water in the micro-basin, changes in vegetation cover, the presence of species and ecological connectivity (Céspedes, in press).



Monitoring of conservation results. Zapatoca, Santander © Bibiana Diaz, Fundación Natura

Exclusive artisanal fishing zones (ZEPA)

In 2008, the Colombian Farming Institute (ICA), at the time responsible for country-wide regulation of fishing and water farming activities, decreed exclusive artisanal fishing zones in the northern Pacific. The area comprises 100,000 ha, along a 2.5 nautical miles wide band from the coastline. The declaration had been sought by the mayors of the municipalities of Juradó and Bahía Solano, ethnic authorities, the community council (Consejo Comunitario General Los Delfines), regional authorities and fisher organisations (Vieira et al., in press).

The objectives of the measure are to promote the recovery of fishing along the coast and improve the livelihoods of fishers and their families. Biodiversity conservation is thus perceived as an ancillary outcome, and includes the conservation of rocky shore ecosystems, mangrove zones, seabeds structure and cetacean migration zones.

In this area only traditional and sport fishing are allowed, whereas all high-impact fishing gear is excluded. What is sought is the recovery of fish populations of species such as the Yellowfin tuna (*Thunnus albacares*), the Green jack (*Caranx caballus*), the Bigeye trevally (*Caranx sexfasciatus*), the Yellow snapper (*Lutjanus argentiventris*), the Pacific dog snapper (*Lutjanus novemfasciatus*), the Bluestriped chub (*Sectator ocyurus*), the Almaco jack (*Seriola rivoliana*), the Spottail grunt (*Haemulon maculicauda*), the Rock hind (*Epinephelus* sp.) and the Pacific bearded bortula (*Brotula clarkae*).

The area has shared governance led by the National Aquaculture and Fishing Authority (AUNAP), which is the body presently governing fishing in Colombia. There is also a coordinating committee chaired by the traditional fishers' representative body. A governance agreement has been forged with actors assuming different roles, such as the fishing communities, the productive sector, regional, municipal and ethnic authorities, all present at a coordination commitee focused on obtaining results which has sustained the measure for over 15 years.

The AUNAP and the regional environmental authority (Codechoco) are responsible for surveillance and control. Fisher communities perform monitoring of fishing resources and carry out social control over big fisheries that use prohibited nets. The positive effect has become measurable in fish populations.

Sacred site – Jaba Tañiwashkaka of the Linea Negra, Sierra Nevada of Santa Marta

This site is located in the Department of La Guajira, municipality of Dibulla, in the Caribbean region of Colombia and forms part of the Linea Negra, a sacred

Flooded savannah at Paz de Ariporo municipality, Casanare © Alexander Naranjo, Fundación Natura

site of the Kogui Indigenous people. In this area, the Indigenous communities obtain materials such as shells and seeds. The area has coastal lagoons that have a spiritual connection with the Sierra Nevada de Santa Marta and has marshlands in the process of recovery; lakes used as nesting place by alligators, turtles and fish; and mangrove areas and dry forests used by migratory birds.

The area is 230 ha in size and represents the first seashore sacred site recovered for the Indigenous people of the Sierra Nevada de Santa Marta. The land was bought and is in the process of incorporation into the Kogui Malayo Arhuaco reservation. In 2012, the Ministry of Culture declared this territory a National Cultural Asset due to the historical, aesthetic, and symbolic value of this natural and traditional area.

Although four different communities share ownership of this place, the Kogui people are in charge of management, supported by different organisations such as the Amazon Conservation Team (ACT). Any decisions in relation to the management of the area are taken collectively during an assembly. Every element of biodiversity has its own meaning and must be managed in accordance with the law of origin of the Indigenous peoples of the Sierra Nevada, so that the balance in the cycles of nature and the welfare of the territory is ensured (Sauna et al., in press).

The results of this strategy have been measured through monitoring projects that include comparison of before / after photographs, water sampling to analyse quality, direct observation of wildlife, record books to keep track of changes in natural dynamics, observation of animal tracks and development of land cover maps to establish comparison baselines. In addition, six young Indigenous people were trained to manage the sacred site. The Mamos (Indigenous sacred authority) visit the community on a more frequent basis to conduct traditional tasks and keep track of the connections that have been re-established with uphill sites. The Indigenous authority and the support team meet on a regular basis to evaluate management results, also increasing numbers of Indigenous people are participating in the activities and visits.

ANALYSIS ON TESTING OF THE DRAFT GUIDELINES ON OECMS

The working group on CCS[2] evaluated the elements contained in the Guidelines for Recognising and Reporting Other Effective Area-based Conservation Measures (IUCN WCPA, 2018) for the above-mentioned cases, as well as 15 other case studies. This case review was submitted to the OECM Task Force and led to the following results for each element proposed in the guideline:

The first element of the definition of an OECM, geographically defined space, is aligned with the Colombian proposal for CCSs, where all the evaluated areas have defined boundaries where a measure is being implemented. The cases analysed range in size from 1 to 250,000 ha. It is worth noting that many sites,

particularly those under private governance, form part of conservation networks, increasing connectivity at the landscape level and therefore contributing to biodiversity conservation (e.g. WRA). In this sense, a recommendation was made that the conservation outcomes of an area should take into account the context and its role at landscape scale.

The second element, not recognised as a protected area, applies to CCSs in Colombia. However, there are several CCSs that comply with the definition of protected area but fail to be recognised by the government as a consequence of the current regulation of SINAP, which neither includes local and urban areas nor community governance (afro-descendent, peasant and Indigenous). Some self-recognised CCSs overlap with protected areas and in many cases they do exert effective governance and active management, whereas the protected area lack them. In these cases, the guidelines for OECMs would not include these areas, but in Colombia the debate on considering them CCSs or not, is still open.

As has been established in the guidance, the cases analysed show a type of governance arrangement (third element) that is established to comply with an explicit objective. However, we found that these objectives can be secondary (e.g. the ZEPA case) or even an ancillary outcome (e.g. a military base considered an Important Bird Area). Most areas have community, private or shared governance with a long-term vision that enhances conservation purposes. As many of these areas do not have legal or normative support, there are some with complex governance arrangements, which add up to a large number of institutional, private and community stakeholders organised in inter-institutional round tables (e.g. the WRA case), directive committees or cooperatives. Although these arrangements require time to build up, they show better biodiversity conservation results in the long term (e.g. the ZEPA case).

Most cases showed the existence of a community, an organisation or owner in charge of the management of the area through a planning instrument or equivalent tool (fourth element). These instruments include management plans formulated by owners (civil society nature reserves), agreements on resource use (e.g. the ZEPA case, RWA), decisions of community councils (e.g. the Indigenous sacred area case), among others.

One of the most complicated aspects to analyse in the cases evaluated was the long-term element, as some CCSs do not have the legal basis or support that may guarantee their long-term permanence. The cases vary in the short-, mid- and long-term. However, most have a long-term intentionality, which means that governance structures and planning instruments guarantee the stability of their efforts over time. As an example, the confluence in ZEPA of actors with clear commitment cannot be overlooked, leading to long-term stability. Other tools or instruments have been used, such as ecological testaments[3] and loan agreements for private properties that guarantee long-term permanence. Conservation areas within Indigenous reserves or collective territories of afro-descendant communities have a special legislation that guarantees their legal status in the long term. It is possible that some areas, such as those with contested ownership or located in occupied but untitled lands have a lower chance of becoming established in the long term. Debates on CCSs should include the consideration of normative proposals to be included in regional planning to guarantee measures (use restrictions, formulation of planning instruments, zonification) in support of longer -term outlooks.

Regarding effectiveness of in situ conservation (sixth element), the conservation objectives are explicit and include several hierarchical levels of biodiversity in most of the cases that were evaluated. However, there are no tools or methodologies to measure this element within the CCS framework in Colombia, and that are equivalent to those used to measure Protected Areas Management Effectiveness (PAME). The cases analysed show that only a few areas have particular effectiveness measures focused on species used or consumed (e.g. the ZEPA case) or in the change of vegetation cover or land uses (e.g. the ARA case). It is recommended for a tool to be developed according to the specific characteristics of each area, such as governance, or available resources, among others. For small OECMs, it is proposed to consider effectiveness tools applied at the landscape scale, considering how the measure could improve the connectivity of a larger system.

In the last elements, *ecosystem services and cultural and spiritual values*, many areas are intended to conserve ecosystem services, such as water resources (e.g. the WRA case). However, in a few cases cultural and spiritual values are included as conservation objectives, such as in the case of the sacred sites.

CONCLUSIONS

In Colombia, CCSs have been perceived as an opportunity to recognise forms of conservation that are currently not included in SINAP. They include local conservation and diverse governance arrangements, such as the conservation carried out by Indigenous groups, afro-descendants, peasants, civil society and the

productive sectors, among others. They also include arrangements with normative support that contribute to the objective of a more complete and ecologically representative system of protected areas, as well as integral management of biodiversity and benefits derived from it.

Analysing CCSs in the light of criteria established for OECMs, and comparing the elements to each definition, we can see that there are many similarities but there is a central difference: CCSs are conceived, by definition, to increase the connectivity of existing protected areas[4]. Regarding the other elements, similarities between both definitions can be clearly identified: both have a defined boundary; are generally not recognised as protected areas (with some exceptions for CCSs where there is overlap); they have clearly defined, objective-oriented governance schemes, which are very varied and commonly include diverse actors; and they have well defined primary or secondary conservation objectives that enhance management actions in the area or have ancillary conservation outcomes. Effectiveness in area management and long-term intentionality, which conform to both definitions, are perhaps the most difficult to identify and report at the national to international scale.

The draft IUCN guidelines on OECMs afford a great opportunity to make visible the path taken by Colombia in terms of CCSs. In this sense, the international debate about OECMs has deeply contributed to reopening national debates about CCSs and the need for their identification and recognition, in order to highlight the role of these areas and their models of governance in biodiversity conservation.

Looking ahead, when definitions and criteria to identify OECMs are adopted by the CBD, Colombia will likely see important advances. Based on the analyses conducted, it is estimated that many CCSs will become amenable to inclusion as OECMs. It is proposed that even if particular areas do not fulfil all criteria from the start, transitional regimes are envisaged.

Additionally, it could be established that the most effective way to recognise CCSs are regional planning tools, because they define the way in which the territory should be used and its purpose. In Colombia, such tools are formulated and adopted at municipal levels including land management plans (*planes de ordenamiento territorial)*. The principal challenge is to include CCSs within the regional planning processes to achieve their conservation objectives and become tools to aid the resolution of land use conflicts.

ENDNOTES

[1] "A geographically defined space, not recognised as a protected area, which is governed and managed over the long-term in ways that deliver the effective *in-situ* conservation of biodiversity, with associated ecosystem services and cultural and spiritual values" (IUCN WCPA 2018).

[2] Composed of the authors of this article.

[3] "The ecological testament refers to the transmission of a set of heritage relations by one person in favour of another, who will obtain the title to the relationship through the legal mechanism of succession after death. The author of the will specifies the use for conservation and sets out whether it is limited in time or for perpetuity" (Solano, 2010).

[4] The definition includes the element but continues to be a contested issue considering that CCSs can hold intrinsic conservation value.

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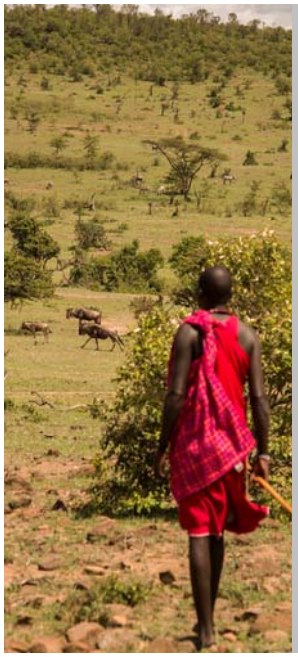
RESUMEN

En Colombia, un país de gran heterogeneidad cultural y ecosistémica, existen muchas estrategias de conservación más allá de las áreas protegidas que se derivan tanto de los marcos jurídicos como de los procesos territoriales locales. Después de mucho debate, se les ha denominado estrategias complementarias de conservación (ECC), y su identificación y reconocimiento son necesarios para lograr los objetivos de conservación del país. En el plano internacional, bajo el liderazgo de la Comisión Mundial de Áreas Protegidas de la UICN, se ha avanzado en la definición de criterios para identificar "otras medidas de conservación eficaces basadas en áreas" (OECM, por sus siglas en inglés) y se espera la adopción de estas directrices por el Convenio sobre la Diversidad Biológica (CDB) durante la próxima reunión de la Conferencia de las Partes (COP 14). En Colombia, corrimos los criterios preliminares para las OECM contra varios casos de estudio para identificar las principales similitudes y diferencias. Este artículo presenta en detalle tres estudios de caso sobre ECC que muestran si incluyen elementos pertinentes para las OECM y en qué medida. Se analizan los criterios y consideraciones principales con respecto a ellos. Concluimos que, dadas las similitudes, el debate internacional brinda la oportunidad para identificar, reconocer, reportar y fortalecer estas estrategias en Colombia.

RÉSUMÉ

En Colombie, pays d'une grande hétérogénéité culturelle et écosystémique, il existe de nombreuses stratégies de conservation autres que celle des aires protégées, liées la fois aux cadres juridiques et aux infrastructures territoriales locales. Après de nombreux débats, ces stratégies ont été qualifiées de Stratégies de Conservation Complémentaires (SCC), et leur identification et reconnaissance ont été jugées nécessaires pour atteindre les objectifs de conservation du pays. Au niveau international, sous la direction de la Commission Mondiale des Aires Protégées de l'UICN, des progrès ont été accomplis dans la définition de critères pour identifier d'autres mesures de conservation efficaces par zone (OECM). L'adoption de ces directives par la Convention sur la Diversité Biologique (CDB) est attendue lors de la prochaine réunion de la Conférence des Parties (COP 14). En Colombie, nous avons appliqué les critères correspondants aux OECM à plusieurs études de cas afin d'identifier les principales conformités et disparités. Ce document présente en détail trois études de cas concernant les SCC afin de déterminer dans quelle mesure elles comprennent des éléments nécessaires pour les OECM. Notre analyse examine ces critères et leurs répercussions principales. Nous concluons que, compte tenu des conformités que nous avons trouvées, le débat international permet en effet d'identifier, de reconnaître, de signaler et d'améliorer ces stratégies en Colombie.



THE ROLE OF POTENTIAL OECMs IN SAFEGUARDING SPACE FOR NATURE IN KENYA: A CASE STUDY OF WILDLIFE CONSERVANCIES

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ABSTRACT

Militant and confrontational conservation policies and practices during and immediately after the colonial era in Kenya undermined later efforts by the government to establish new, or expand existing protected areas. However, a different conservation approach that engaged communities and private landowners living in priority wildlife areas in the mid-1990s resulted in the creation of wildlife conservancies that have more than doubled the area under some form of protection in just 20 years. These conservancies, mainly located adjacent to national parks and reserves, host a large proportion of the national biodiversity and are contributing to the long-term viability and ecological integrity of Kenya's protected area system. An assessment made in June 2017 to establish whether the conservancies would qualify as "other effective area-based conservation measures" (OECMs) concluded that they all satisfied the criteria, except that some had no guarantee of sustained conservation outcome over the long term. The main reason for the very close compliance with the OECM guidelines can be attributed to the fact that these conservancies were established in areas identified as important for conserving Kenya's biodiversity using a scientific approach based on biological, social and economic considerations. More conservancies continue to be established.

Key words: protected areas, other effective area-based conservation measures, conservancies, Kenya, partnerships

INTRODUCTION

Kenya has made tremendous progress in the last 20 years to reclaim space for nature through community and privately owned and managed wildlife conservancies that vary in size from a few thousand to millions of hectares. Against incredible odds and driven by a hope for a better future, with many challenges still to overcome, local communities and private landowners continue to work towards protecting more areas for wildlife. This initiative originates from the efforts of landowners who live in traditional wildlife territories to address livelihood problems and reduce human–wildlife conflict that has evaded long-term solution since 1895 when Kenya became a British colony. The government of Kenya, acting through the Kenya Wildlife Service, with support from non-governmental organisations and development partners has been instrumental in driving this process. This collaborative effort has, to a certain extent, made it possible to protect large areas of valuable wildlife habitat, turn wildlife from being considered a 'liability' to an 'asset', promote co-existence between people and wildlife, integrate conservation and development, provide a pathway for devolving the rights and responsibilities for biodiversity conservation from national to local levels, and make wildlife and biodiversity an important component of livelihoods. This initiative, though still in fledgling stages, demonstrates that it is possible to reclaim space for nature if the right approaches are used and genuine partnerships are established.

KENYA: BIODIVERSTIY INTERTWINDED WITH HUMAN NEEDS

Kenya lies astride the equator. Only 20 per cent of the land area can be classified as medium to high potential agricultural, with the rest being mainly arid or semi-

arid. Nature-based tourism, agriculture, livestock, forestry and fisheries account for most of the employment, economic output and export earnings. Biodiversity is so intertwined with human needs that its conservation is of national strategic importance. The country's constitution (GoK, 2010) and legislation (GoK, 2013) give priority to proper management of the environment and natural resources.

The country is known for its protected areas and iconic wildlife. Protected areas comprise 23 terrestrial national parks, 28 terrestrial national reserves, four marine national parks, six marine national reserves and four national wildlife sanctuaries, all covering eight per cent of the land. Many of these are less than 100 sq. km and sixteen of them are either fully or partially fenced. Forest reserves cover an additional four per cent of the land.

The country's human population has risen from about 4 million in 1948 (Blacker, 1972) to about 46 million in 2017 (KNBS, 2017), exerting great demand on land and posing significant challenges to any attempts to create new, or expand existing protected areas. Given these realities, OECMs (i.e. areas that *prima facie* align with the OECM criteria) are probably the only avenue for Kenya to contribute to meeting both the qualitative and quantitative aspects of Aichi Target 11. The fact that most of Kenya's wildlife and biodiversity exist outside protected areas (Ogutu et al., 2016) and that most large mammals spend significant time outside protected areas during the course of the year (Ojwang et al., 2017) make OECMs crucial for the long-term conservation of nature in the country. Currently, about 65 per cent of wildlife exists in wildlife conservancies (KWCA, 2016), while another substantial proportion occurs in other areas that are either corporately, privately, communally or government owned. So important for conservation of wildlife and biodiversity are the conservancies, that 38 per cent are now reported in the WDPA.

This paper discusses the role of conservancies in safeguarding space for nature in Kenya and assesses whether they qualify as potential OECMs. A review conducted in 2017 (Waithaka, 2017) indicated that the conservancies generally comply with the elements of the OECM guidelines (IUCN WCPA, 2017).

A lioness with her cubs at Naboisho Conservancy, Maasai Mara © Kaleku Senchura

TRADITIONAL WAYS OF LIFE IN THE PRE-COLONIAL ERA

During the pre-colonial period, Kenya comprised 42 native ethnic communities, each with its own unique values, language and cultural practices. Each of these communities either stayed in one place for generations or periodically moved from one place to another according to seasonal dictates. They depended on tilling the land, herding, hunting, fishing and gathering for subsistence. Food, water, diseases and droughts shaped their demographics, while intercommunity relations defined ethnic boundaries. Land in most cases was communally owned and was used for many purposes, and had physical, intellectual and spiritual values; hence no land was considered wasteland. The communities developed norms, rules and practices that helped to achieve sustainable resource use within their environments. Responsibility for enforcing community regulations was usually vested in the elders. For most communities, village councils also existed to settle disputes over use of resources. Respect for the environment was almost universally practised. Some of the traditional natural resource management approaches were based on belief systems that included prescriptions for restraining excessive resource use. It was a taboo, for example, to kill a living organism without cause.

These traditional resource management systems remained effective until 1895 when Kenya became a British protectorate. They declined rapidly thereafter due to changes in environmental governance and have faded into insignificance in most communities.

COMMUNITIES ISOLATED FROM NATURE

From the outset, the British government made significant efforts to protect wildlife in Kenya and to spearhead efforts to create uniform game regulations and law enforcement procedures within the African continent. Game reserves were created in which it was unlawful to kill wild animals "except animals such as lions, leopards, hyenas, wild dogs, otters, baboons, some monkeys, large birds of prey, crocodiles, poisonous snakes and pythons" (Sorrenson, 1965) which were categorised as "vermin". These were to be eradicated both inside and outside protected areas.

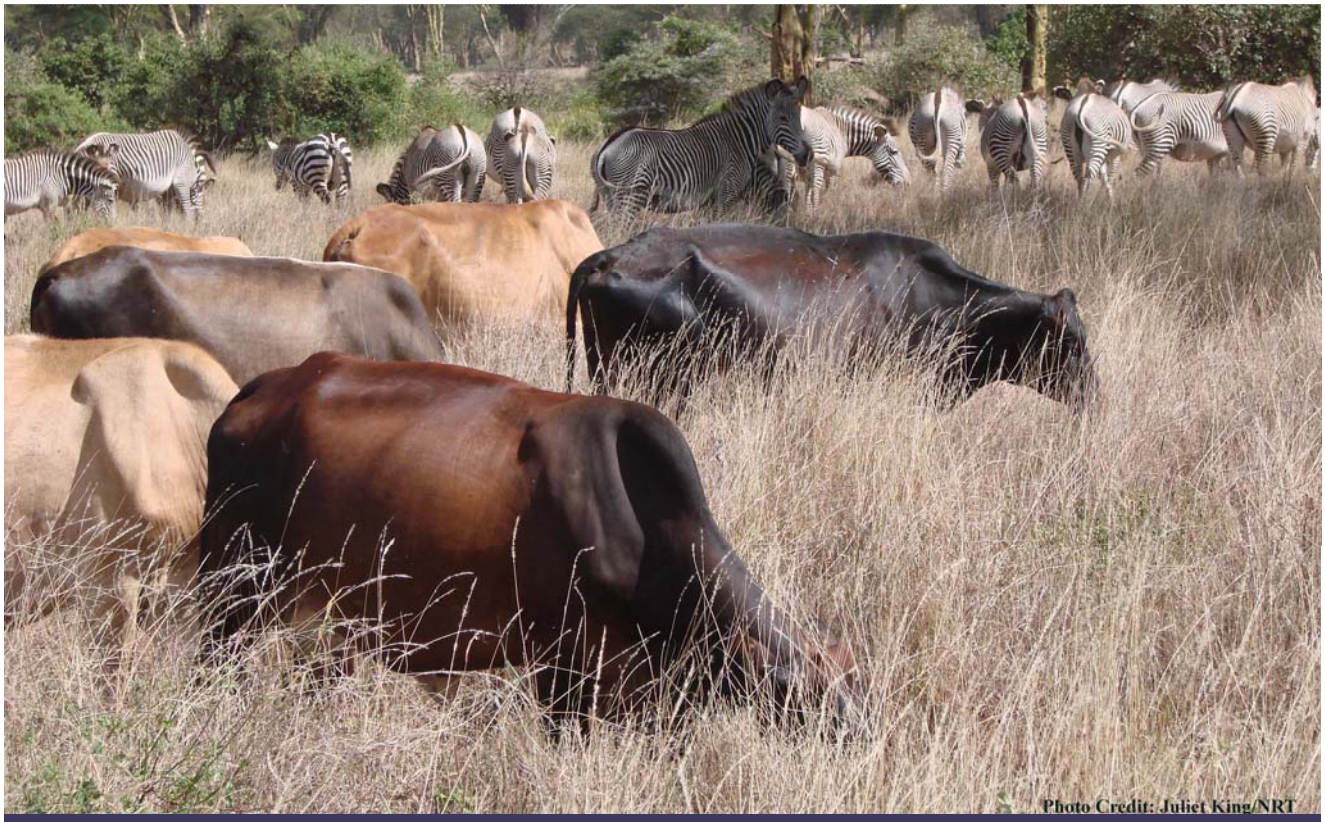
A series of land laws were passed throughout the colonial period to justify expropriation of lands from Indigenous people to give to colonial settlers and create game and forest reserves (Weller, 1931). The wholesale forcible removal of entire populations from their native lands was carried out without any form of compensation. Foreign governance systems and institutions were imposed on the native peoples, and political structures were established that disempowered them. Tough legislation in favour of wildlife created conflicts with local people. For example, legislation on hunting practically extinguished traditional subsistence hunting rights, since the vast majority of Indigenous people could not afford the licenses demanded by law. Subsequent game laws banned traditional hunting techniques on the grounds that they were cruel to animals, effectively declaring subsistence hunting illegal. On the other hand, sport hunting was introduced to the disgust of the native people who could not understand the basis for killing animals for self-gratification while they were being denied their traditional means of livelihood and subsistence (Mungehm, 1966).

Many African adult males were punished and imprisoned for petty offences, experiences that solidified their negative attitudes towards wildlife. For the first time, many African communities associated wildlife with suffering as it became increasingly difficult for them to co-exist with wildlife without breaking the law. As a result, the colonial game reserves were surrounded by hostile communities that had no sympathy for protected areas, the wildlife or conservation in general (Weller, 1931).

CONSERVATION IN INDEPENDENT KENYA

The same colonial policies and practices continued to be applied after the country gained political independence in 1963. More protected areas were created by decree, wildlife laws were brutally enforced, and human–wildlife conflict became even more widespread (Capone, 1971). Centralised decision making and the denial of traditional rights continued to widen the rift between national and local interests. The government assumed control over resources, even when it lacked the means to manage them effectively and 'conservation' became synonymous with the exclusion of local people from national parks and reserves in the interest of protecting large animal species and their habitats. There was also the perception among many communities that protected areas were created for the benefit of foreigners.

On the other hand, wildlife on community and private land remained a nuisance, both in terms of disease, damage to crops and danger to human life. By the 1980s, traditional land tenure practices in pastoral areas were progressively undermined by the government and replaced with policies that encouraged land subdivision, leading to ecosystem fragmentation, overgrazing and land degradation. Consequently, wildlife populations



Livestock and Grevy's zebra grazing together within the Lewa conservancy, Isiolo. Lewa's more than 300 resident Grevy's zebra represent a significant proportion of the remaining global population © Juliet King, NRT

outside protected areas declined by between 30-50 per cent between 1977 and 1995 (KWS, 1996a).

THE BIRTH OF THE CONSERVANCY MOVEMENT

Driven by the need to address the human–wildlife conflict crisis in areas neighbouring protected areas, the Kenya Wildlife Service (KWS) embarked on a campaign called 'Parks Beyond Parks' in 1995 (KWS, 1996b). This campaign was championed by the KWS director at the time, Dr. David Western, with the aim to create space for wildlife, promote local conservation initiatives outside parks and encourage the integration of wildlife conservation and management objectives with those of landowners. According to Western (KWS, 1996b), "wildlife would never be truly secure in Kenya no matter how many parks and reserves existed in the country so long as the agency continued to ignore people's needs and rights". At the time, the most important wildlife conservation areas in the country overlapped with the areas of highest poverty where communities lacked means and opportunities to benefit from wildlife.

How much space would be enough to sustain protected areas?

No numerical area-based targets were set under the 'Parks Beyond Parks' campaign. Key to achieving this goal was to promote community-based conservation and natural resource management as a means of winning space for wildlife and biodiversity in the rural landscape through the Minimum Viable Conservation Area (MVCA) approach. This approach was used to identify and define the critically important areas for long-term conservation of biodiversity in the country based on three criteria: biological, economic and social. The biological criterion identified the areas needed to sustain the protected areas and their dispersal zones, as well as non-protected areas critical to sustaining Kenya's biodiversity. The economic criterion identified additional areas needed as links in tourism circuits or to sustain such ecological services as watersheds, for example. The social criterion included culturally valued habitats. For each protected area, the MVCA consisted of the adjacent areas that were considered necessary to maintain the integrity of the constituent biological communities, habitats and ecosystems, support important ecological processes and meet the habitat requirements of wide-ranging species. Through this mechanism, most areas of outstanding biological representativeness, high level endemism, high species richness, or important for the conservation of endangered, unique or rare species were included in the MVCA. Stakeholders and their interests and conflicts

were identified in each MVCA, and terms and conditions for meaningful engagement of landowners and community groups in biodiversity conservation agreed upon. Waithaka (1998) provides more details of the MVCA methodology. Once established, the MVCA formed the basis for ecosystem planning, human–wildlife conflict management, community engagement and integrating national parks into the wider landscape.

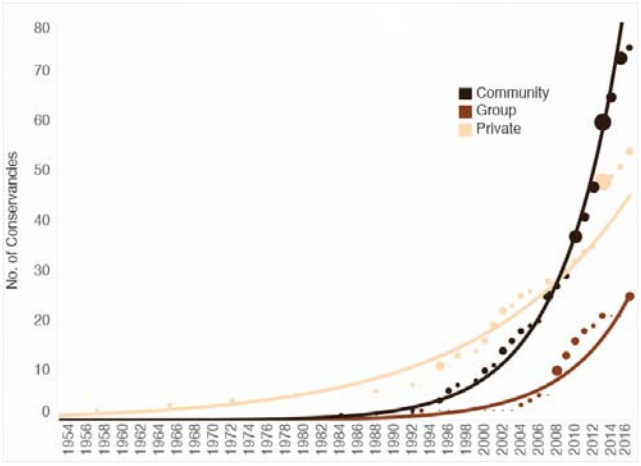
'Parks Beyond Parks' strategy becomes a reality

Within the identified MVCA network, KWS, working in partnership with non-governmental organisations, carried out intensive community outreach, education, awareness and sensitisation campaigns to promote community-based wildlife management programmes that combined wildlife conservation with nature-based enterprises. Other initiatives included developing capacity of communities and landowners in skills necessary for wildlife conservation, tourism development and management and other nature-based enterprises that had a strong potential for economic viability and sustainability.

Grants to set up conservancies and ecotourism enterprises were provided through the Kenya Wildlife Service, non-governmental organisations and a broad range of donor organisations. Landowners were free to form partnerships with tour operators, investors, NGOs and KWS to set up ecotourism enterprises, hire and train community scouts and implement conservation and management plans. The first community wildlife sanctuary (later referred to as 'conservancies') following the Parks Beyond Parks campaign was established in 1996 at Kimana, next to Amboseli National Park. Community scouts were trained by KWS and played a vital role in protecting wildlife, providing security for tourists and managing human–wildlife conflicts.

By 2005, the outcome of these strategies for winning space for wildlife beyond protected areas had started to show positive and encouraging results (Western & Waithaka, 2005). Tolerance of 'problem animals' had improved and conflict had decreased in response to the wildlife benefits accrued and conflict mitigation measures, leading to fewer animals killed in reprisal. The number of conservancies increased from fewer than 10 in the 1990s, all on private ranches, to 160 in 2016 (Figure 1). These conservancies, now existing in 28 out of the 47 counties in the country, cover 11 per cent of Kenya's land surface compared to 8 per cent under national parks and reserves (KWCA, 2016). They employ over 4,800 people (comparing favourably with KWS, which employs 5,200 people) and provide benefits to over 700,000 households. According to KWCA (2016), 54 per cent of the conservancies are on

Figure 1 The cumulative growth of conservancies in Kenya. Note the exponential growth of community conservancies after the 1995 'Parks Beyond Parks' campaign



community land and cover 89 per cent of the total area under conservancies, 32 per cent are on private land, while 16 per cent are on group land (which are an amalgamation of privately held lands). Group conservancies are mainly found in the Maasai Mara region and it is clear that the world famous Maasai Mara National Reserve owes its long-term survival to the land owned by the surrounding communities. Most private conservancies are in Laikipia. Conservancies in Northern Kenya cover 55,952 sq km, more than the entire area covered by all national parks and reserves combined.

Conservation gains, connectivity and ecological representation

Conservancies in Kenya are contiguous with protected areas and together create a bigger and more connected space for wildlife. The conservancies in northern Kenya serve as a useful example to illustrate the role conservancies are playing in enhancing both structural and functional connectivity. Before the establishment of these sanctuaries, there were only a few, relatively small and ecologically isolated protected areas. Within the last 20 years, the entire landscape has been connected through a system of conservancies which are now offering protection to many species and ecosystems, including sites of high biodiversity value. For example, 72 per cent of the Southern white rhino population held in private conservancies are in this region. The region also hosts 90 per cent of the global population of wild Grevy's zebra and nearly the entire global population of the Hirola antelope. The region also hosts 15 per cent of the national lion population, the third largest population of cheetahs in Kenya and the sixth largest global population of wild dogs (KWCA, 2016).

Members of Maasai community walking along a safari trail within the Naboisho conservancy, Maasai Mara © Tufayn Mangal/Basecamp Explorer

Protected areas in the region are gradually being integrated into the wider landscape and the habitats and species within this well-connected landscape will now function as part of a large, interconnected network, allowing easier flow of ecological processes and ecosystem services. Conservancies in other landscapes, including Maasai Mara, Amboseli and Tsavo are playing similar roles, some to a lesser extent. Countrywide, conservancies are grouped under 11 regional associations designed to promote an ecosystem approach to conservancy development. A strong national umbrella body called the Kenya Wildlife Conservancies Association has been set up to influence conservation and management policies and regulations, enable conservancies to safeguard wildlife and deliver benefits to local communities, unite communities, strengthen governance, provide a platform to exchange information and best practice, preserve cultures and traditions that support conservation, and support the growth of the conservancy movement.

CAN CONSERVANCIES BE RECOGNISED AS OECMS?

Wildlife conservancies from across the country were used as case studies in June 2017 during a workshop held in Nairobi to test the IUCN World Commission on Protected Areas draft Guidelines for Recognising and Reporting OECMs. Besides testing these guidelines, a major aim of the workshop was to determine whether conservancies would qualify as OECMs and hence be considered when reporting Kenya's contribution to meeting Aichi Biodiversity Target 11. The workshop was attended by conservation experts from government agencies, non-governmental organisations and representatives from community conservancies. The guidelines were applied to each individual conservancy irrespective of its governance type. The initial assessment concluded that all wildlife conservancies satisfied the OECM criteria, except that of guaranteeing sustained conservation outcome over the long term as sections of Kenya's Conservancy and Sanctuary Regulations, 2017 (GoK, 2017) allowed conservancies to be deregistered on weak grounds (these regulations have since been amended to enhance compliance with the OECM Guidelines).

CONCLUSIONS: OPPORTUNITIES AND SUSTAINABILITY CHALLENGES

Looking at the broad picture, the movement to create conservancies has been a game-changer in the conservation of biodiversity in the country. Based on 20 years' experience in creating conservancies, there is sufficient national understanding and appreciation of their social, economic and ecological benefits and a hope that the existing success stories will serve as a guidance

to scale-up community conservation efforts in all areas that have been identified as critical for the conservation of native species, biodiversity and ecosystem services. Already, the conservancies are increasingly being seen as a way to achieve rural development, attain better land management, and conserve wildlife and biodiversity into the future. They are providing a pathway for devolving the rights and responsibilities for biodiversity conservation from national to local levels and making wildlife an important component of livelihoods based on maximising the benefits and minimising costs and conflicts (Western et al., 2015).

However, many conservancies are struggling to balance their books. From the perspective of a landowner, wildlife conservation, being a form of land use, is expected to generate benefits comparable to other competing land uses. Conservancies generate benefits through tourism and other non-consumptive wildlife uses but according to KWCA (2016), many either lack tourism potential or capital to effectively invest in enterprises that generate benefits. Furthermore, wildlife -based tourism is a complex business that needs marketing expertise and resources not readily available among many stakeholders.

KWCA (2016) reported that the issue of generating benefits is a significant challenge for conservancies where membership runs into several thousands and the benefits accruing from existing revenue sources fail to meet expectations of improved livelihoods. In addition, the costs of conservation in terms of alienated land, restrictions on resource use and damage to life and property continue to be experienced by conservancy owners. In situations where there are no benefits to offset these costs, some landowners may opt to go into other more profitable forms of land use purely on the basis of the need to eke out a living. To thwart such eventualities, providing affected communities and landowners with appropriate incentives needs to be accorded serious consideration given that the burden of conserving resources of national and global importance should not be borne by a few poor people. The global recognition that nature needs space should go hand in hand with the realisation that landowners who are willing to accommodate dangerous elements of nature on their land must reap good returns. Such incentives would encourage landowners to create more space for nature, help offset costs associated with wildlife and place conservancies on a path to sustainability. Recent intentions by the government to amplify benefits to landowners through wildlife consumptive utilisation options are a step in the right direction (GoK, 2018).

ABOUT THE AUTHORS

John Waithaka is the Regional WCPA Vice Chair for East and Southern Africa. He joined the IUCN in 1992 as a member of the SSC – African Elephant Specialist Group. Over the years, he has worked for protected area agencies and conservation NGOs in Africa and North America. John participated in the development of the MVCA concept that was used as the basis for establishing wildlife sanctuaries in the country and also played an important role in the creation of the first community wildlife sanctuaries in Kenya - efforts for which he received the Whitley International Award for Nature Conservation in 2003. He is a strong proponent for OECMs in Kenya.

Gladys Warigia Njoroge is a lawyer with specialisation in environmental law. She is the Policy Coordinator at Kenya Wildlife Conservancies Association (KWCA) since 2013. She has provided leadership for the conservancy members and the organisation in advocating for supportive legislative and policy reforms that are supportive to growth of conservancies. Gladys is also one of the founding members of KWCA where she has facilitated organisational development, leading to a functional network of conservancies. She is also in the management team of the organisation and maintains the programmes and strategic partnerships with government and conservation organisations.

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RESUMEN

Las políticas y prácticas militantes y de confrontación en materia de conservación durante e inmediatamente después de la época colonial en Kenia socavaron los esfuerzos posteriores del Gobierno para establecer nuevas áreas protegidas o expandir las existentes. Empero, un enfoque de conservación diferente que involucró a comunidades y propietarios privados que vivían en áreas de vida silvestre prioritarias a mediados de la década de 1990, dio lugar a la creación de zonas de conservación de vida silvestre que en tan solo 20 años han duplicado la superficie bajo alguna forma de protección. Estas zonas de conservación, ubicadas principalmente junto a parques nacionales y reservas, albergan una gran proporción de la biodiversidad nacional y contribuyen a la viabilidad e integridad ecológica a largo plazo del sistema de áreas protegidas de Kenia. Una evaluación realizada en junio de 2017 para determinar si las zonas de conservación calificarían como "Otras medidas de conservación eficaces basadas en áreas" (OECM, por sus siglas en inglés) concluyó que todas se ajustaban a los criterios, a excepción de algunas que carecían de garantía en términos de un resultado sostenido de conservación a largo plazo. La razón principal para el cumplimiento con las pautas de las OECM puede atribuirse al hecho de que estas zonas de conservación se establecieron en áreas identificadas como importantes para la conservación de la biodiversidad de Kenia mediante la utilización de un enfoque científico basado en consideraciones biológicas, sociales y económicas. Se siguen estableciendo más zonas de conservación.

RÉSUMÉ

Les politiques et pratiques de conservation militantes et conflictuelles mises en place pendant et immédiatement après l'ère coloniale au Kenya ont sapé les efforts ultérieurs du gouvernement pour établir de nouvelles aires protégées ou pour étendre celles qui existaient déjà. Cependant, une autre approche de conservation menée au milieu des années 1990, qui impliquait les communautés et les propriétaires privés vivant dans les zones fauniques prioritaires, a encouragé la création de réserves fauniques et doublé la superficie du territoire sous protection en seulement 20 ans. Ces aires de conservation, principalement situées à proximité des parcs et réserves nationaux, hébergent une grande partie de la biodiversité nationale et contribuent à la viabilité à long terme et à l'intégrité écologique des aires protégées du Kenya. Une évaluation réalisée en juin 2017 pour déterminer si ces aires de conservation pourraient être qualifiées d'«autres mesures de conservation efficaces par zone» (OECM) a conclu qu'elles répondaient toutes aux critères, bien que certaines ne garantissaient pas de résultat de conservation durable à long terme. Leur étroite conformité aux directives des OECM peut s'expliquer par le fait que ces aires de conservation ont été établies dans des zones déjà identifiées comme importantes pour la conservation de la biodiversité du Kenya, selon une approche scientifique basée sur des considérations biologiques, sociales et économiques. De nouvelles aires de conservation continuent de s'établir.