MAY 2016 • *Issue 10*

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CBD NEWSLETTER FOR CIVIL SOCIETY

SPECIAL FOCUS

THE TIME FOR MAINSTREAMING BIODIVERSITY IS NOW

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Private actors helping to achieve Aichi Target 11

Privately Protected Areas help safeguard biodiversity

Mainstreaming CBD targets through the 2030 Agenda

Mainstreaming biodiversity policies across all sectors critical

The language of science: Essential ingredients for indigenous participation

Technical terminology choices can undermine and create barriers to engagement

Convention on Biological Diversity

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This newsletter aims to present a diversity of civil society opinions. The views expressed in the articles are the views of the authors and do not necessarily reflect the views of the Parties to the Convention on Biological Diversity, its Secretariat or the CBD Alliance.

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Convention on Biological Diversity

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MESSAGE FROM THE EXECUTIVE SECRETARY

The time for mainstreaming biodiversity is now

Braulio Ferreira de Souza Dias
Executive Secretary of the Convention on Biological Diversity

Now that we have passed the halfway point of the United Nations Decade on Biodiversity we stand at an important crossroad. Over the last five years, the Strategic Plan for Biodiversity 2011-2020 has catalysed concerted action, in particular under the Convention on Biological Diversity (CBD) and other biodiversity-related conventions, but also the wider United Nations system, the NGO community, academia and increasingly the business sector. There is no question that progress has been made in implementing the Strategic Plan and achieving the Aichi Biodiversity Targets. However, the mid-term review of progress by the twelfth meeting of the Conference of the Parties (COP 12) to the CBD, on the basis of the fourth edition of the Global Biodiversity Outlook (GBO-4) and the fifth national reports, concluded that while significant progress has been made towards meeting some components of most of the Aichi Targets, the status of biodiversity will continue to decline without urgent action to scale up implementation.

Information that has become available since the preparation of the GBO-4 doesn't make the picture much better. On average only about 15 per cent of countries are on track to achieve the Aichi Targets or the corresponding national targets. Moreover, in many cases, the national targets established by countries in response to the Aichi Targets either are less ambitious or leave out important aspects addressed in the Strategic Plan. Consequently, we have to make more compelling arguments for the inclusion of biodiversity considerations in all aspects of decision making, as reversing these trends will require enhanced dialogue and coordinated action by all sectors and stakeholders.

It is clear that if we are to achieve the goals and targets of the Strategic Plan for Biodiversity, we will have to abandon business-as-usual approaches and mainstream biodiversity into our development and poverty eradication planning, governance and decision-making. We will have to mobilize the resources needed to address key capacity gaps that prevent many from taking the steps needed to achieve these goals. Addressing biodiversity loss and the opportunities to enhance the benefits from biodiversity in a meaningful way will require the involvement of those sectors which depend on biodiversity for their sustainability but which also have a large impact on biodiversity.

The need to mainstream biodiversity into sectors and across different actors has been widely recognized by Parties to the Convention, and other key entities that contribute to its implementation. The concept of "mainstreaming" has developed as a means of addressing the false belief that biodiversity and ecosystem services are distinct from, and sometimes even contradictory to, the goals of development and growth. The concept of mainstreaming was included in the CBD article 6(b) which called on contracting parties to "integrate as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programs and policies." Mainstreaming is also embedded in the Strategic Plan. In particular, Goal A is about mainstreaming across government and society while B is largely about mainstreaming in sectors such as agriculture, forestry and fisheries.

Mainstreaming biodiversity into productive sectors and into cross-sectoral policies is a key discussion point in forthcoming meetings under the Convention on Biological Diversity in preparation for COP 13 in Mexico, in December this year. Both the twentieth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA-20) and the first meeting of the Subsidiary Body on Implementation (SBI-1) will address the mainstreaming of biodiversity across sectors including agriculture, forests, fisheries and tourism.

Mexico, as host of COP 13, will use the High-Level Segment of the meeting to highlight the importance of biodiversity mainstreaming for the achievement of the Aichi Biodiversity Targets and also to contribute to the achievement of the Sustainable Development Goals. Being held prior to the COP, the High Level Segment will give political impetus to the deliberations and it is anticipated that ministers will consider and adopt a declaration to emphasize the importance of mainstreaming biodiversity in specific sectors and in cross sectoral policies, highlight success stories, and promote a whole-of-government response to biodiversity issues.

At COP 13, the Conference of the Parties will address, *inter alia*: "Strategic actions to enhance national implementation, in particular through mainstreaming and the integration of biodiversity across relevant sectors, including agriculture, forests and fisheries". The relevant pre-session document describes mainstreaming as "integration of biodiversity across sectors and cross-sectoral policies" and suggests that "key actions might include, for example, the use of legislation, national accounting, spatial planning frameworks, communication, education and public awareness, and the more effective use of biodiversity-related information in support of decision making."

We do not have an easy task before us. With five years left to implement the Strategic Plan we need to significantly increase our efforts. I trust that the work of SBSTTA 20 and that of the first meeting of the Subsidiary Body on Implementation can help prepare the ground for bold steps by the Conference of the Parties towards achieving our 2050 Vision: that, "by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

We would do well to realize the potential of mainstreaming to bring about full accounting and modify human behaviour entrenched by centuries of institutions and markets that, in many cases, have taken for granted its reliance on nature. The future is happening now and we all have a role to play. Biodiversity cannot be viewed as a luxury or as an externality. It is a vital part of human life on Earth.

Message from the Board of the CBD Alliance

by **S. Faizi** and **Gadir Lavadenz** ● CBD Alliance

The Convention on Biological Diversity (CBD) is a balanced treaty, balanced along the conservation and development axis, and along the North-South axis. This balance, however, as embodied in the triple objectives and the operative Articles of the Convention, was not exactly maintained in the nearly two decades of implementation, as it was also often overlooked in the discourse on the Convention - a concern expressed by a significant section of the civil society. Several of the critical CBD articles, such as 16 (access to technology), 18 (scientific cooperation) and 19 (access to biotechnology), still remain largely unimplemented and ignored even in the Aichi Biodiversity Targets. However, with the Conference of the Parties (COP) taking up the issue of the biodiversity-poverty eradication linkage a few years ago, and with the entry into force of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, the environment began to slowly change, although work related to poverty eradication must still be taken to a more meaningful level.

The establishment of the Subsidiary Body on Implementation (SBI) gives new hope in strengthening the enforcement of the Convention. However, a document (*Further Options for Mechanisms to Support Review of Implementation*) prepared by the Secretariat for the first meeting of the SBI is rather disappointing, in that it sidesteps the critical implementation issue of breaches of the treaty obligations. The SBI and the COP should reform their respective agendas to consider and address issues of breaches and infractions in order for the Convention to have an active and meaningful life. This is also a statutory obligation of the COP. And while capacity building issues are important, they alone are not implementation issues. The CBD process has a lot to learn from CITES on implementation - both for the Parties and for civil society.

The EU makes a major step in implementing Article 8h and Aichi Target 9

by **Valentina Bastino and Stefan Leiner** ● Biodiversity Unit of Directorate-General Environment, European Commission
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The European Union (EU) and its 28 Member States, all Parties to the Convention on Biological Diversity, have recently made major progress in fulfilling their commitment to implement Article 8h of the Convention.

Invasive alien species (IAS) are a significant and growing problem across the EU. In addition to being one of the major sources of biodiversity loss, they also cause significant economic and social damage. Altogether, they are estimated to cost the European economy over €12 billion per year, with this figure growing all the time.

Aichi Biodiversity Target 9 reads *'by 2020 invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated and measures are in place to manage pathways to prevent their introduction and establishment'*. This target has been fully integrated into the EU biodiversity strategy adopted in 2011 (target 5).

In line with these commitments, the EU has adopted a new 'Regulation on Invasive Alien Species' which establishes a coordinated Europe-wide framework for action to prevent, minimise and mitigate the adverse impacts of IAS on biodiversity and ecosystem services, and to limit their damage to the economy and human health.

The new Regulation entered into force on 1 January 2015. At its core is a list of invasive alien species of Union concern, which is to be drawn up and submitted for approval to a Standing Committee made up of Member State representatives (known as the IAS Committee).

This Union list of 'worst offenders' is intended to target species that cause or can potentially cause such significant damage in affected Member States that it justifies the adoption of dedicated measures applicable across the Union, including in the Member States that are not yet affected. Species will only be listed if these measures are likely to effectively prevent, minimise or mitigate their adverse impact.

The Regulation lays down a series of criteria that must be met in order for a species to be included on the Union list. One of these relates to the need for a scientifically robust risk assessment. As not all IAS have such risk assessments in place, the Commission has started with those that do.

Establishing a first list

The first step towards establishing the list was to check that each risk assessment was comprehensive and covered all the elements set out in the IAS Regulation (Article 5(1)).

The next step was to determine whether the species met all the criteria stipulated in Article 4 of the Regulation. The draft list was then submitted to the attention of the IAS Committee, which approved the list. Formal adoption will follow.

The EU has adopted a new 'Regulation on Invasive Alien Species' which establishes a coordinated Europe-wide framework for action to prevent, minimise and mitigate the adverse impacts of IAS on biodiversity and ecosystem services, and to limit their damage to the economy and human health.

In total, 37 species are included on the Union list. They include such well known invasives as the ruddy duck *Oxyura jamaicensis*, common slider *Trachemys scripta* and the red swamp crayfish *Procambrus clarkia* from North America, as well as the yellow legged hornet *Vespa velutina* from South East Asia and the water hyacinth *Eichornia crassipes* from South America.

They also include more discrete yet equally dangerous species like the African curly weed *Lagarosiphon major* or the floating primrose-willow *Ludwigia peploides*.

This first list aims to get the actions going on tackling IAS in the EU. Regular updates are foreseen as new species risk assessments meeting the requisite standards are completed, with the next update likely to be at the end of 2016.

What happens now?

Once a species has been placed on the Union list, the IAS Regulation requires three distinct types of measures to be taken:

- Prevention: species on the Union list are effectively banned from the EU and a number of robust measures will be put in place to prevent them from entering the EU in the first place, either intentionally or unintentionally.
- Early warning and rapid response: Member States will also put in place an early warning system to detect the presence of these species as early as possible and take rapid measures to prevent them from becoming established.
- Management of already established invasive alien species: some IAS on the Union list are already well established in the EU territory. Member States will need to carry out a range of practical measures to eradicate or at least contain them so that they cannot spread any further and cause further harm.

(For more information: http://ec.europa.eu/environment/nature/invasivealien/index_en.htm)

The Salto Morato Nature Reserve in Brazil is home to around 200 species of birds, mammals, reptiles and amphibians. (Credit: Brent Mitchell)

Private actors helping to achieve Aichi Target 11

by **Brent A. Mitchell** ● QLF Atlantic Center (brentmitchell@qlf.org); **Kent H. Redford** ● Archipelago Consulting; and **Nigel Dudley / Sue Stolton** ● Equilibrium Research

Privately protected areas will be an essential component in achieving the Convention on Biological Diversity (CBD) Aichi Biodiversity Target 11 on completing ecologically representative protected area networks around the world. Through providing the opportunity for voluntary contributions to conservation, privately protected areas complement the role of governmental agencies, indigenous peoples and communities in caring for nature.

The shape, scale and stewardship of privately protected areas vary greatly. They range from a 3,250 km² private nature reserve in Patagonia purchased by an individual (Pumalín Park) to a single, ancient tree protected by thousands of people (the Czech Union for Nature Conservation). "Private" can mean individuals and families, but also societies of people banding together for nature as well as corporations and for-profit owners, universities and religious institutions.

Privately Protected Areas (PPAs) are under-recognized by governments and the public, under-represented in national protected area systems and under-reported globally, all despite the fact that they are a rapidly growing element of the conservation estate and offer unique potential for meeting Aichi Target 11. For example, the decisions of the CBD did not mention privately protected areas until the twelfth meeting of the Conference of the Parties (COP 12) in Pyeonchang in 2014. The Specialist Group on Privately Protected Areas and Nature Stewardship of IUCN's World Commission on Protected Areas is working to elevate the recognition, understanding and integrity of private conservation world-wide.

Definitions

A privately protected area is a protected area, as defined by IUCN (*a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*.) under:

- private governance (i.e. individuals or groups of individuals) by;
- non-governmental organizations (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.

Why establish a PPA?

Individuals and groups have been involved in establishing PPAs for well over a century: there are already millions of PPA owners and supporters, including NGO members. Many are driven by philanthropic motives, research interest, interest in endangered species or the desire to leave behind a positive conservation legacy. Others want to preserve particular places against development change because they have cultural, religious or spiritual importance. Other motivations include wanting to shelter beloved areas from development to maintain a quality of life. Corporations set up PPAs as part of development projects or as a condition of resource use (e.g. as part of forest or agricultural certification systems). Incentive schemes make the difference between conservation and exploitation for some landowners.

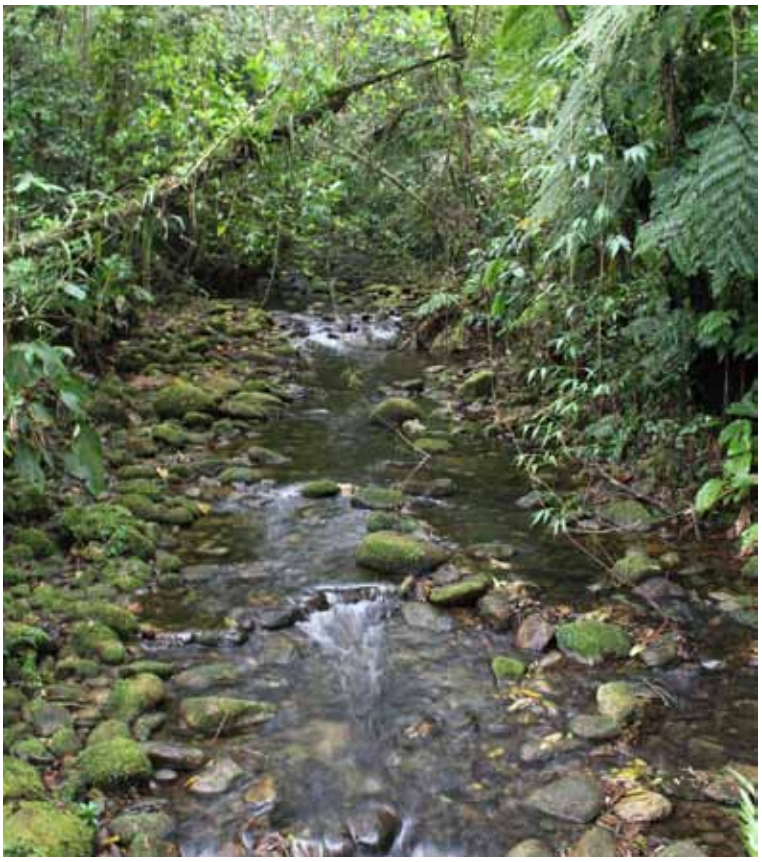
Though relatively little discussed in global fora, there are social concerns with PPAs that focus on how land was acquired, and whether it involved 'land grabbing', particularly when a PPA owner is a non-national. IUCN addresses this unequivocally by stressing that protected areas should not be used as an excuse for dispossessing people of their land. On the other hand, PPAs on land purchased by NGOs supported by thousands of individual donations are perhaps the most bottom-up of all protected area types. A broader question relates to the extent that the state is shifting environmental responsibilities towards civil society and the private sector and thus shirking its own responsibilities. No matter the motivation, PPAs are numerous and growing and are often in need of incentives to maintain their potential. In turn they must be monitored to ensure that their creation is beneficial to both public and private actors.

Emergence

IUCN and the global conservation community have long focused on the management categories, or objectives of protected areas—the *what* of conservation—protected areas were mainly assumed to be the province of governments. But only in the past 15 years has attention expanded to include governance, or *who* is doing the protecting in protected areas. This shift has largely been driven by indigenous and other communities organizing for recognition of their role in conserving nature over millennia; now expressed as *Indigenous and Community Conserved Areas (ICCAs)*. Today we think in terms of a spectrum of governance that includes government, ICCAs, privately protected areas, and combinations of any (co-management, or shared governance).

> Privately Protected Areas use private mechanisms to provide public benefits like safeguarding biodiversity.

The global coverage of PPAs remains unknown due to a variety of factors, but principally the fact that many governments do not formally recognize PPAs nor report them to the World Database on Protected Areas. A 2014 study, *The Futures of Privately Protected Areas* by Sue Stolton, Kent H. Redford and Nigel Dudley is the first global study of PPAs, shining light on the potential for leveraging private initiative for biodiversity conservation and laying out what needs to be done to strengthen and encourage the creation and maintenance of PPAs (The report is available at: www.IUCN.org).



Hailed as a model in nature reserve management, Salto Morato was named a World Heritage site by UNESCO in 1999. (Credit: Brent Mitchell)

AICHI BIODIVERSITY TARGET 11

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.

Mainstreaming CBD targets through the 2030 Agenda: Opportunities and challenges

by **Friedrich Wulf** ● Head, International Biodiversity Policy, Pro Natura (Friedrich.Wulf@pronatura.ch)

The need for mainstreaming biodiversity policies across all sectors is an important point on the agenda of the upcoming twentieth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA 20) and the thirteenth meeting of the Conference of the Parties (COP 13) to the Convention on Biological Diversity (CBD). The third edition of the Global Biodiversity Outlook (GBO-3), published in 2010, saw the limited amount of mainstreaming of biodiversity across sectors as an important reason for not having achieved the 2010 target of halting biodiversity loss. The Rio+20 process provided an opportunity to enshrine biodiversity issues in a global common agenda, as declared by ministers and heads of delegation present at COP 12 in the Gangwon Declaration on Biodiversity for Sustainable Development.[1]

The 2030 Agenda

The process has delivered, thanks to a good result of the open working group involving the major groups in July 2014, the will for agreement and the able leadership of the two co-chairs. The 2030 Agenda for Sustainable Development adopted last September in New York is a comprehensive global agenda on the way to reaching global sustainability and equity by 2030. Its 17 goals, which are defined in more detail in the 169 related targets, contain 2 goals directly reflecting targets to maintain and sustainably use marine and terrestrial ecosystems, but biodiversity targets are also contained in other sections, such as Goal 6 on water.

The 2030 Agenda revives the links between poverty alleviation and biodiversity that is already included in the CBD, notably by acknowledging the rights of indigenous and local communities in the preamble and in Articles 8j, 10c and 15. The 2030 Agenda aims to end poverty (Goal 1), strengthen the role of indigenous peoples and local communities in securing genetic diversity and traditional knowledge (targets 2.3 and 2.5), reduce inequalities (Goal 10) and regulate access and benefit sharing (15.6.). The linkages between biodiversity and poverty alleviation mean that the ways to reduce poverty need to take biodiversity into account; but it also means that actions for saving biodiversity rely on, and need to respect, the rights of indigenous peoples and local communities.

Other important linkages include agriculture - the need to ensure agricultural practices help maintain ecosystems (target 2.4), water - the need to provide sustainable water supply, inter alia by protecting and restoring water-related ecosystems (target 6.6), or the need to strengthen resilience to climate-related hazards and natural disasters (target 13.1). The linkages are numerous and it is important to see the 2030 Agenda as a coherent, universally accepted package. This means that the biodiversity community must resist the temptation to merely look at the two ecosystem-related goals and also take new connections on board.

However, this is not the only challenge that has to be met. Three of the more important ones include:

1. Finance: negotiations have failed to agree on a fair global system for generating public money (i.e. taxes) for the implementation of the 2030 Agenda. The Agenda's financing instrument – the Addis Ababa Action Agenda – therefore relies heavily on private support, such as private-public partnerships or "blended finance". There is a danger that this will lead to a dependency on private investors, at the cost of the role and possibilities of democratically elected governments and civil society. The lack of finance further increases the temptation to look at biodiversity as marketable assets and providers of ecosystem services rather than a value in itself, something that is already suggested under the new and innovative financial mechanisms discussed under the Convention.
2. Indicators: The 2030 Agenda will be tracked by a set of indicators that are currently being developed by the Interagency and Expert Group on Sustainable Development Goals Indicators (IAEG-SDG). The official proposal at the time of writing includes 1 indicator for each of the 169 targets; discussions suggest these may be boiled down to 2 or 3 for each of the 17 goals, i.e. less than 50 altogether. However, most of the goals, such as that on terrestrial ecosystems, have a diverse set of related targets that cannot easily be summarized under such a limited number of indicators. The CBD AHTEG on Indicators has developed a proposal in appendix 1 to CBD/SBSTTA/19/INF/5, and SBSTTA 19 has requested the Executive Secretary to work closely with the IAEG-SDG to make the indicator systems for both processes as coherent as possible. While it would be helpful to include a large proportion of the indicators for the Strategic Plan for Biodiversity 2011-2020 in the Sustainable Development Goals, there are issues with some of them. NGO representatives have highlighted the need to disaggregate the indicator "forest area" because otherwise monoculture plantations will be included as well, and the ecological disaster of conversion into plantations will be concealed behind a reassuring number of decreasing forest area loss.

> The key mainstreaming topic for SBSTTA 20 will be the mainstreaming of biodiversity into agriculture, forestry and fishery.

1 www.cbd.int/hls-cop/gangwon-declaration-hls-cop12-en.pdf

Credit: Thinkstock

3. National implementation: The 2030 Agenda could give the implementation of the CBD a new push, also by finding new allies, and governments and NGOs alike are calling for developing national action plans to put the Agenda to work. But having developed a comprehensive global agenda which is much larger than the traditional development agenda does not mean national means increase – in fact, there are cases where the budget to finance the development agenda has even been reduced despite the much broader agenda, and additional action for biodiversity remains lip service.

While all of these are and remain relevant for the CBD process in general, the key mainstreaming topic for SBSTTA 20 will be the mainstreaming of biodiversity into agriculture, forestry and fishery. Industrialisation of agriculture has recently been confirmed as one of the key issues for biodiversity loss in the European Union[2] and is likely to have similar effects in other parts of the world. The upcoming Trondheim conference, from 31 May to 3 June 2016, will deal with interlinkages between biodiversity and agriculture, and it is to be hoped that COP 13 adopts bold decisions on how to make agriculture more sustainable for biodiversity.

2 EU Bioidversity strategy midterm review, http://biodiversity.europa.eu/mtr/biodiversity-strategy-plan/eu-mid-term-review-conclusions

Biodiversity mainstreaming — The differences in practice

by **Rosalind Goodrich** ● Research Communications Manager, International Institute for Environment and Development (IIED) (rosalind.goodrich@iied.org)

What exactly does 'mainstreaming' mean? Outside the development sector no one would use the verb and yet we talk about mainstreaming climate finance, mainstreaming natural capital accounting and mainstreaming biodiversity. For biodiversity, mainstreaming is about influencing development decisions and improving outcomes for biodiversity and poverty reduction, and in practice it leads to a variety of activities.

The African participants from countries involved in 'Mainstreaming Biodiversity into Development Policy and Planning', a project managed by UNEP-WCMC (World Conservation Monitoring Centre) and the Institute of Environment and Development (IIED), have shared their experiences of working with journalists, NGOs, the private sector and across government to get the mainstreaming process going. They have worked at the national and municipal level to influence policy and budgetary changes, or even just to get the right people talking to each other.

First phase

The first phase of the project, from 2012-2015, included representatives from Uganda, Namibia, Botswana and Seychelles, with Zimbabwe, Malawi and South Africa interested in the project too. The second phase, from 2015-2017 sees Malawi and Zimbabwe officially joining the project, along with Ghana and Zambia.

Malawi's capital Lilongwe is known as the Garden City by its residents. Forests, savannah woodlands and botanical gardens break up the urban space and provide a home to diverse species. (Credit: Gome Jenda)

The outcomes that the project members describe are not necessarily revolutionary: more often than not they are small everyday changes with the potential to turn into something big; change that will lead to biodiversity being valued and protected, as much as it is used.

Take the example of Lilongwe in Malawi, known as the 'Garden City' by its residents. It has had a long history of earmarking space for afforestation and conservation, but as the population has expanded, new settlements have encroached into protected areas and inhabitants seeking fuel for cooking and heating have depleted forests and polluted fresh water sources. In recent years, the Malawian government has gone through revising its National Biodiversity Strategy and Action Plan, highlighting the economic and social benefits of biodiversity via food, shelter, medicine and income. Part of this process has involved the government mapping Lilongwe's biodiversity profile.

At the same time, the government has connected with the ICLEI-Local Governments for Sustainability's Cities Biodiversity Centre, at meetings for the Convention on Biological Diversity. The centre has been working with 21 local governments to improve ecosystem management, and has awarded Lilongwe a place on the programme as a pilot project.

Coming together

These two events coming together have been serendipitous. While the city council decided to develop an in-depth biodiversity report, assessing the state of Lilongwe's wetlands, parks, planted forests and natural resource management arrangements, the government seconded two staff members from the Environmental Affairs Department (EAD) to Lilongwe City Council to share their experience of developing the national biodiversity strategy with a newly-formed taskforce.

When we interviewed Monipher Musasa from the EAD, she recalled that a few of the taskforce - city council officials from finance, urban planning, trade or recreation departments - had heard of the term biodiversity. By exploring the different services provided by Lilongwe's ecosystems, this number began to grow. Staff working with the water and electricity boards described how their budgets were being spent on clearing invasive species; Wildlife and Tourism representatives described how the city's parks were under threat from development.

"For the first time," said Monipher Musasa, "officials understood the role and value of biodiversity in the city and its relevance for their work programmes." After the city biodiversity report was published, the taskforce put together an action plan to integrate biodiversity issues into all planning processes, restoring natural resources as part of delivering on broader development aims.

For the first time, officials understood the role and value of biodiversity in the city and its relevance for their work programmes.

The fact that a cross-council taskforce owned the action plan and is collaborating with government departments to implement it is a big step forward. For Lilongwe, this is what biodiversity mainstreaming means. Our other project members provided different examples. From the Namibia project partner it was a cross-government initiative with NGOs including traditional leaders and academics, to draft a new law stopping biopiracy. From Zimbabwe it was ongoing work with journalists to understand and communicate about biodiversity in the press and radio. In South Africa it was a collaboration between mining companies, civil society groups and government departments to draft mining and biodiversity guidelines for taking account of biodiversity in practical mining operations.

All the country project members stress that what they have shared so far are small examples in a much longer and complex process. They still have much to learn about the right way to present their case, the language to use, the most effective ways to communicate for biodiversity to be considered in development plans as a matter of course. They also recognise that they need to think about development priorities in their biodiversity strategies, and the National Biodiversity Strategy and Action Plan is one place that they can make sure that happens.

(The other country examples of the beginnings of biodiversity mainstreaming can be read about in Stories of change: Mainstreaming biodiversity and development: www.iied.org/nbsaps)

(The Mainstreaming Biodiversity into Development Policy and Planning project is funded by the Darwin Initiative through the UK government and the German Federal Ministry for Economic Cooperation and Development (BMZ).)

FEATURE INTERVIEW

Rosie Cooney ● Chair, IUCN CEESP/SSC SULi: Sustainable Use and Livelihoods Specialist Group

Sustainable wildlife management best achieved by engaging communities as active and motivated partners

The IUCN Sustainable Use and Livelihoods Specialist Group (SULi) is a global expert network formed by IUCN as a joint initiative of the Species Survival Commission (SSC) and the Commission on Environmental, Economic and Social Policy (CEESP). Their mission is to promote both conservation and livelihoods through enhancing equitable and sustainable use of wild species and their associated ecosystems. We asked Rosie Cooney, Chair of the IUCN (International Union for Conservation of Nature) Sustainable Use and Livelihoods Specialist Group (SULi), a set of questions on sustainable wildlife management.

1) What prompted you and your collaborators to organise a series of symposia and workshops on 'Beyond Enforcement' where you searched for indigenous peoples and local community based solutions to combat the wildlife crime crisis?

My colleagues and I had been following discussions in 2013 and 2014 on the urgent need to counter the alarming spike in poaching for the illegal wildlife trade (IWT), and were concerned by what we were seeing. There was a dominant emphasis on law enforcement along the trade chain as well as demand reduction in consumer states. This was where the attention and the funding was flowing. While we saw both of these (if well targeted) as critical ingredients in effective responses, the whole dimension of the communities who live with wildlife — and the choices facing them as to whether to assist poaching or protect wildlife — was either missing or mentioned but left very vague. Worse, we were seeing reports from the field of very heavy-handed IWT law enforcement targeting the wrong people and leading to human rights abuses and increased resentment against authorities — making the situation worse rather than better for conservation.

2) What are the practical and innovative lessons — beyond the standard approaches — that participating stakeholders including the donor community took home?

We've now held two workshops — one international one with a focus on southern/east Africa and one regional workshop for West/Central Africa, and seen many tens of case studies presented. One clear lesson that has strongly emerged is an old one, not a new one, but one that has perhaps been forgotten in the rush to respond to IWT, and that is about benefits. In general, people who live with wildlife need to benefit more from having and conserving wildlife than from supporting poaching. While financial benefits from conservation and sustainable use are important and sometimes transformative, this is also about intangible non-financial benefits — community empowerment, enabling people to play a bigger role in managing wildlife resources themselves, cultural and spiritual values of wildlife. Law enforcement focuses on making the costs of IWT high — but we also need to make the benefits of wildlife and conservation high. Another key lesson is that we need to transform our concept of effective enforcement in the IWT context. We know from standard policing literature that enforcement is most effective when there are strong relationships and trust between authorities and communities and the community provides intelligence. We need to take this understanding into the IWT context — the best enforcement will be co-produced with communities as willing partners, based on trust and cooperation. Building this, of course, then comes back to benefits...

3) In your view, and in the view of participants, what are the key recommendations stemming from the symposium and workshops for the workstreams on 'Sustainable wildlife management' in the context of the CBD and CITES, and posssible other policy-setting arenas?

The overarching lesson is that addressing the major challenge of IWT and more broadly, achieving sustainable wildlife management, can best be done by engaging communities as active and motivated partners — with all the attention to governance, rights, incentives, and livelihoods that this requires. For the CBD's work on sustainable wildlife management, including through the Collaborative Partnership on Wildlife, it means we have to place communities and incentives at the forefront of our thinking across all the key areas of sustainable wildlife management — reducing poaching, supporting food security while conserving species used for bushmeat, reducing human-wildlife conflict. For CITES, we need to recognise the importance of how wildlife trade regulations affect communities and their rights and livelihoods — this is not only an ethical question but also a question of effective conservation. We know from experience that tighter trade restrictions don't always equate to better conservation outcomes — we have to understand in much more detail how specific CITES trade restrictions and their implementation will affect local incentives on the ground for communities to conserve wildlife (on one hand), or to either get rid of it via clearing or conversion, or use it for short term gain via illegal exploitation.

4) How is the Specialist Group contributing to achieving the 'Sustainable Use' part of the triple objectives of the CBD, given the fact that some countries (such as India) completely ban the taking of wildlife species by the IP and LC for meeting their livelihood needs?

We work through generating knowledge and synthesizing knowledge products; convening and communicating; and influencing policy and practice. We are currently pursuing four major (and overlapping) focal areas: legal and sustainable wildlife trade; community-based approaches to combating IWT; hunting and sustainable wildlife management; and promoting integration of Traditional Knowledge and science in wildlife management approaches. An overarching approach is to increase understanding and awareness of the relevance and effectiveness of sustainable use-based approaches to conservation and livelihoods (whether of animals or plants). Certainly some countries, such as India, don't embrace this approach for animals, and of course local and cultural considerations will shape what is an appropriate approach in specific circumstances. On the other hand, India's Forest Rights Act has led to advances in tribal peoples gaining the rights to manage, protect and sustainably use forest resources, which is a very powerful conservation model.

5) Many hold the view that the provision of sustainable use for the IPs and LCs provides a strong tool to check the illegal taking of wildlife. How do you see this; especially in the context of the series of symposia and workshops on 'Beyond Enforcement' that you have been conducting?

Sustainable use is very important in countering illegal take of wildlife. There are a number of dimensions to this that have emerged from our Beyond Enforcement work. First, one reason for resentment of conservation and of conservation authorities among many IPLCs is that customary rights to use wild resources have been removed under formal wildlife laws. This can be very unjust, cause great hardship, and/or criminalise people's livelihood strategies. In one case presented, people who were in practice relying on wild meat as a major protein source had no legal means to harvest any of those animals, while simultaneously having no viable alternative meat sources. In situations like this law loses all legitimacy and respect. Second, sustainable use can be a way to make wildlife and conservation valuable to people. This can be through traditional subsistence use (e.g. indigenous hunting in the Congo Basin), hunting or gathering of wild species/products for sale in national or international markets (e.g. medicinal plants, fungi, timber, flowers, fibres like vicuña or guanaco, etc.), sport hunting concession payments (e.g. in many African countries, Central Asia, North America) and tourism (e.g. community tourism enterprises, joint ventures). Increased benefits can lead to lowered poaching, increase in habitat devoted to wildlife, more willingness to work with wildlife authorities, and better conservation outcomes.

While financial benefits from conservation and sustainable use are important and sometimes transformative, this is also about intangible non-financial benefits—community empowerment, enabling people to play a bigger role in managing wildlife resources themselves, cultural and spiritual values of wildlife.

Developing decision support tools to control aquatic invasive species in the Canadian Prairies

by **Vladimir Kricsfalusy and Zhaochang Zhao** ● School of Environment and Sustainability, University of Saskatchewan (vladimi.k@usask.ca) (zhz135@mail.usask.ca)

Aquatic invasive alien species (IAS) have become a significant and growing problem worldwide. The consequences of aquatic IAS are far-ranging – including degradation of water quality, food-web disruptions, depletion of native biodiversity, as well as secondary economic impacts on fishing, tourism, and other industries. Over the last decades the introduction of several aquatic IAS have been observed in the plains of central North America, posing a high risk to waterways and wetlands, particularly in the Canadian Prairie provinces. Management of invasive species is difficult, expensive, and requires a long-term commitment and coordinated effort. Therefore, governments, conservation agencies, NGOs, Aboriginal peoples and other stakeholders should focus their resources, targeting the species that cause major threats and the areas that are significantly impacted.

STUDY AREA: FACTS AND NUMBERS

Saskatchewan is situated in the heart of the Canadian Prairies. With a total area of 651,900 km², it is larger than any European country. Water areas cover approximately 9% of the province. The North Saskatchewan River watershed covers a total of 41,000 km². It includes three cities, about 100 towns and villages, 51 rural municipalities, 29 First Nations with lands, and 17 Indian Reserves (Saskatchewan Watershed Authority 2008). The Redberry Lake watershed (Figure 1) received a UNESCO designation in 2000 as the only biosphere reserve in Saskatchewan. It covers 1,122 km² and is well-known for a saline lake which provides essential habitats for almost 200 bird species, including several threatened species.

Fig. 1:The Redberry Lake watershed (Credit: Vladimir Kricsfalusy)

Science-based approach

To address these challenges scientists from the University of Saskatchewan's School of Environment and Sustainability developed a framework to conduct a risk assessment of aquatic IAS in the province of Saskatchewan. Over the past ten years, the province has experienced unprecedented economic and population growth, giving rise to increased water demand for industrial, municipal and irrigation uses, and for the production of energy. At the same time, sustainability, health and quality of life require that water quality and important aquatic ecosystems be protected.

The scientists aim to design decision support tools that will help conservation organizations and agencies effectively use their limited resources to control the threat of aquatic IAS in Saskatchewan. A multi-spatial scale approach was selected for the risk assessment: 1) regional – the province of Saskatchewan (50km × 50km), 2) sub-regional – the North Saskatchewan River watershed (1km × 1km), and 3) local – the Redberry Lake watershed (100m × 100m).

Impact assessment

A risk assessment framework developed by Kelly et al. (2013) was modified and applied in this study. The assessment process consisted of answering ten questions designed to assess the relative level of threat and allocate target species into different risk categories. The assessment was carried out for 16 aquatic IAS, including 8 plant, 3 mollusk, 3 fish, and 2 crustacean taxa. These species were selected based on their presence and regulated status in Canada, Saskatchewan and the neighbouring Prairie Provinces (Alberta, Manitoba), as well as in two adjacent American states (North Dakota, Montana). The species were assessed, scored, and ranked into impact categories of high, medium and low. Three out of the 16 aquatic IAS assessed at the provincial scale fall into high risk category, 10 species fall into medium risk category, and the remainder (3 species) fall into low risk category.

Among the recorded species, purple loosestrife (*Lythrum salicaria*) (Figure 2) is the only species falling into the high-risk category at all three spatial levels (regional, sub-regional and local). This matches the fact that the purple loosestrife has been recorded widely throughout the province, threatening native biodiversity and ecosystem services. According to the Saskatchewan Ministry of Environment (2003), the province spends C$7 million per year on prevention and control of purple loosestrife. In addition to the species impact on environment, it influences many recreational activities, creating a negative effect on the social and economic well-being of local communities. With the loss of recreational land for fishing, boating and hunting, the local communities may also lose revenue from tourism.

Community involvement

The suggested categorisation of aquatic IAS provides a basis for which different organizations, from the local to the provincial level, can focus their attention and resources. In order to employ a variety of tools for integrated management of aquatic IAS, a variety of survey and inventory techniques can be applied. People from local communities are encouraged to learn these techniques, to collect and submit data on aquatic AIS spread and infestation, and to help control most severe species in the area.

To enhance knowledge transfer, an awareness workshop was held at Hafford Central School on 24 June 2015. Schoolchildren and members of the local community were involved in study, monitoring and management of aquatic IAS. After a short theoretical introduction, participants learned how to collect data in the field and report sightings of invasive species using tools such as *iMapInvasives*, an online GIS-based data management system developed by NatureServe.

Fig. 2: Purple loosestrife (Lythrum salicaria) *(Credit: Vladimir Kricsfalusy)*

To minimize the spread of aquatic IAS in Saskatchewan, several key recommendations were suggested:

- Raise awareness among governments, conservation agencies, NGOs and other interested groups to encourage them to take actions to prevent the introduction of target species
- Build an effective communications network to improve coordination between key stakeholders, avoid duplication of effort, and ensure the most effective use of resources for early detection, rapid response and effective management of target species
- Undertake monitoring activities in geographic areas at high risk of target species introduction, especially near-border locations and in transboundary waters
- Share monitoring data with neighbouring administrative units and with the federal government to improve the ability to detect and respond to threats caused by target species
- Enhance enforcement of invasive species legislation, regulations and policy to prevent the introduction of banned species (e.g. border crossings).

Mangroves: The roots of the sea

by **Alfredo Quarto** ● Executive Director, Mangrove Action Project (alfredo@mangroveactionproject.org)

I first stumbled upon mangrove forests and the shrimp aquaculture industry that threatened them back in March 1992. Traveling in southern Thailand I visited several fishing communities located along the Andaman Sea for an article I was writing. I noticed a common thread of problems faced by the fisherfolk I interviewed – outside investors were ruining their lands and livelihoods by cutting mangroves to make way for shrimp farms, devastating their local fishery and agriculture.

One village headman spoke about the shrimp farms that threatened Andaman fishing communities. His father had been murdered by the shrimp mafia for opposing their cutting mangroves. Speaking with deep with deep emotion, he noted: "If there are no mangrove forests, then the sea will have no meaning. It is like having a tree with no roots, for the mangroves are the roots of the sea."

There are about 248 bird species found in Sunderban national park, including a large number of migratory birds from higher latitudes that visits the park in winter months. (Credit: P. Das)

His words inspired the creation of the Mangrove Action Project (MAP). Mangroves are a cornucopia of life, a rainforest by the sea, surviving in inter-tidal zones of tropical and sub-tropical regions. Passing through a healthy mangrove forest by small boat at high tide has long inspired me. Over the last 23 years, I've visited many shrinking mangrove forests throughout the world. I have wound through countless branching channels that cut through the tangle of mangrove roots and branches, and watched from below the roosting egrets and spoonbills, king fishers and herons alight in the arching canopy. I've witnessed mudskippers in mini-battles for territory, and monitor lizard race across the glistening surface of mudflats towards the safety of deeper pools.

I have also walked in the mud at low tide, losing more than one sandal to the thick ooze of the mangrove substrate that in places can sink you thigh deep. I've seen fresh pugmarks of Bengal tigers in mud channels where they crossed in the Sundarbans of Bangladesh, proboscis monkeys peering from trees in Malaysia, and immense sea crocodiles launching themselves from primordial shores towards our boat in emerald enclaves of India's Bhitarakanika sanctuary. All of this I've witnessed and more on the shores of Asia, Africa and the Americas, but I've also seen and felt their loss too often in too many places.

Mangroves are the markets for traditional communities. They provide food, tannins, fuel wood, medicinal remedies and building materials. Simultaneously, they protect shorelines and property from storm damage and erosion and prevent silt and polluted runoff from reaching fragile coral reefs and seagrass beds. Mangroves are amazing carbon sinks, sequestering five times the amount of carbon than any other forest type, and storing that carbon for millennia.

Before the 2004 Indian Ocean tsunami, mangroves were often described as wastelands, but these forests have been increasingly recognized and appreciated as one of the most productive and biodiverse habitats on Earth. Yet they remain one of the most threatened habitats with 1-2 per cent annual loss, outpacing other tropical rainforests. An estimated 15 million hectares remain. That is less than half their original area. Their disappearance is primarily due to over-harvesting for timber and charcoal, urban expansion, pollution, coastal road construction and industrial developments. Cleared forests and ruined wetlands are turned into shrimp ponds, oil ports, tourist hotels, golf courses and marinas

The rapidly expanding shrimp-aquaculture industry, fueled by voracious consumer demands in the United States, Japan, and Europe, poses one of the gravest threats to the remaining mangrove forests and the wildlife and communities they support. Millions of hectares of coastal wetlands, including mangroves, have been cleared to make room for shrimp ponds excavated a meter deep into the wetland substrate then filled with brackish water and shrimp. The Philippines and Thailand have lost over 65 per cent of their mangroves, while Indonesia, Cambodia, India and Bangladesh are close behind.

Today, approximately 400,000 ha of abandoned ponds exist, closed by disease and pollution – telling signs of this boom-and-bust industry. MAP has been working to halt this destruction of mangroves and promote their sustainable use and restoration, involving local communities and NGOs in the process. Given the severity and proliferation of the shrimp farming threat, addressing this issue is one of MAP's primary goals.

Though the rate of mangrove loss has lessened, have things really changed? Recently in Honduras I witnessed bulldozers clearing mangroves to re-establish two abandoned shrimp farms that were illicitly constructed in a declared Ramsar "protected wetland site of international importance." Later, concerned citizens of Antigua Island reported illegal clearing of mangroves by a Chinese firm building a mega-tourism development replete with golf courses, marinas, casinos and starred hotels, almost mirroring a similar Chinese development on Bimini Island in the Bahamas.

Yet, there is hope, as the global mangrove movement is growing. Several organizations are now supporting mangrove conservation and restoration efforts globally. MAP is collaborating with Mangrove Watch from Australia, the IUCN's Mangrove Specialist Group, the Zoological Society of London, The Nature Conservancy and Mangroves For the Future to name a few of the larger NGO organizations. As well, MAP works with many grassroots, community-based NGOs in the Global South.

We need to build a broad, cooperative effort to halt the rapid decline of mangroves and restore damaged wetlands back to health. Just recently, Sri Lanka announced its plans to be the first nation to give full protection to mangroves. This will require much work to ensure, but hopefully Sri Lanka's ambitious and welcomed initiative will inspire a growing world movement to protect coastal wetlands. However, this cannot be done without involvement of local communities and community-based NGOs working with the cooperation of local government and educators in this process of conserving and managing their coastal resources. Just as mangroves are the "roots of the sea," it is hoped that this expanding network of partners and projects will continue to strengthen and spread its roots throughout the world.

(For more information, visit www.mangroveactionproject.org. A short overview video about the growing importance of mangroves to the health of the planet is available at: www.youtube.com/watch?v=UcUwYZ9CI0A&hd=1)

The aim of the Community Conservation Resilience Initiative is to contribute to providing policy advice on effective and appropriate forms of support for community conservation. (Credit: Ronnie Hall / Critical Information Collective)

"Fostering Community Conservation Conference" illustrates contributions of collective action and ICCAs to achievement of Aichi Targets

by **Holly Jonas** ● Community Conservation Resilience Initiative and ICCA Consortium (holly@globalforestcoalition.org); **Simone Lovera** ● Global Forest Coalition (simone@forestcoalition.org); and, **Isis Alvarez** ● Global Forest Coalition (isis.alvarez@globalforestcoalition.org)

There is increasing scientific, political and legal recognition that conservation and restoration initiatives by indigenous peoples and local communities contribute significantly to biodiversity conservation and to resilience and adaptation to climate change. In Decision XII/3 (paragraph 29), state Parties to the Convention on Biological Diversity (CBD) recognize the role of collective action and non-market-based approaches (including indigenous peoples' and community conserved territories and areas, or ICCAs) in achieving the objectives of the Convention and resolve to include activities that encourage and support such approaches into reporting under the Convention.[1] ICCAs have been the subject of a dedicated CBD Technical Series[2] and a wide range of publications,[3] and are recognized in multiple CBD Decisions.[4] However, these initiatives face

1 CBD COP Decision XII/3: www.cbd.int/decision/cop/default.shtml?id=13366.

2 Kothari, A., with C. Corrigan, H. Jonas, A. Neumann and H. Shrumm (eds.), 2012. *Recognising and Supporting Territories and Areas Conserved by Indigenous People and Local Communities-- Global Overview and National Case Studies*. Technical Series No. 64, Secretariat of the Convention on Biological Diversity, ICCA Consortium, Kalpavriksh, and Natural Justice, Montreal, Canada.

3 In particular, see: Kothari, A., and A. Neumann, 2014. *ICCAs and Aichi Targets: The Contribution of Indigenous Peoples' and Local Community Conserved Territories and Areas to the Strategic Plan for Biodiversity 2011-20*. Policy Brief of the ICCA Consortium, No. 1, co-produced with CBD Alliance, Kalpavriksh and CENESTA and in collaboration with the IUCN Global Protected Areas Programme. For a selection of other publications, see: www.iccaconsortium.org/?page_id=30.

4 See, for example, recent decisions on protected areas (XI/24), sustainable use of biodiversity (XI/25), ecosystem conservation and restoration (XII/19), Article 8(j) and related provisions (XI/14 and XII/12), and biodiversity for poverty eradication and sustainable development (XII/5).

a range of external and internal threats. All too often, the forms of support provided by external actors such as donors and government agencies are neither identified nor requested by the peoples and communities concerned. Some forms of support may actually undermine their resilience, regardless of intentions.

The Community Conservation Resilience Initiative (CCRI) aims to provide community-determined, bottom-up policy advice on effective and appropriate forms of support for community-driven conservation and restoration initiatives as a contribution to the implementation of the CBD's Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets. Over at least the next four years, and in at least 20 countries, communities and supporting organisations will conduct bottom-up participatory assessments of the resilience of their conservation initiatives and determine forms of legal, political, technical, moral and financial support that should be provided to sustain and strengthen them.

All too often, the forms of support provided by external actors such as donors and government agencies are neither identified nor requested by the peoples and communities concerned. Some forms of support may actually undermine their resilience, regardless of intentions.

In 2014 and 2015, CCRI processes have been started in over 60 communities in Ethiopia, Uganda, South Africa, Iran, Russia, Solomon Islands, Samoa, Panama, Paraguay and Chile. The preliminary results of these assessments were presented and discussed at the "Fostering Community Conservation Conference", which took place from 31 August to 4 September 2015 in Durban, South Africa. The event welcomed more than 100 participants from almost 40 different countries, including at least 50 representatives of indigenous peoples and local communities. The conference underscored the central importance of community conservation initiatives for sustainable livelihoods and biodiversity, and formulated a number of recommendations to enhance the resilience of such initiatives.[5]

Supporting community conservation matter of human rights

A recurrent theme in the recommendations is the recognition of and respect for the fundamental rights of indigenous peoples, local communities and women, including to self-governance and collective land and resource tenure.[6] Although it is acknowledged that the CBD is not a human rights treaty, an increasing number of CBD decisions refer to the UN Declaration on the Rights of Indigenous Peoples and specific human rights such as (free) prior informed consent. More broadly in the UN system, there is growing awareness of interlinkages between human rights and the environment, as illustrated by an extensive legal mapping project by the Special Rapporteur on Human Rights and the Environment[7] and a recent joint statement on climate change and human rights by 28 UN Special Procedures on World Environment Day 2015.[8] Parties to the CBD are strongly encouraged to implement their obligations under the Convention in conjunction with their obligations under the respective human rights treaties to which they are party.

Appropriate recognition and support for ICCAs and sacred sites

The conference also issued strong recommendations on appropriate recognition and support for sacred sites and ICCAs. It called for halting the further expansion of state-controlled protected areas on indigenous and community lands, and empowering communities to take the lead in shared governance and co-management arrangements, where they choose to do so. These recommendations are particularly relevant to the CBD Programme of Work on Protected Areas (including the many COP decisions concerning Element 2 on governance, participation, equity and benefit-sharing) and the implementation of Aichi Target 11 in general. The latest mid-term reports on the implementation of the Aichi Targets demonstrate a widening gap between, on the one hand, progress in the expansion of state-controlled protected areas and, on the other, a significant lack of progress in the protection of traditional knowledge, innovations and practices and recognition of 'other effective area-based conservation measures'. If biodiversity policy is to contribute to sustainable development in general, as suggested by the recently adopted Sustainable Development Goals (SDGs), there is a clear need to re-orient the implementation of Aichi Target 11 to focus on area-based conservation measures driven and supported by the communities who live in these areas and depend directly upon them for their identities and livelihoods. Effective implementation of Task 3 of the Plan of Action on Customary Sustainable Use,[9] which specifically concerns indigenous peoples and local communities and protected areas, could contribute significantly in this respect. The upcoming review of the implementation of this Plan of Action by the forthcoming 9th meeting of the Working Group on Article 8(j) and Related Provisions is thus of great strategic importance for the implementation of both the Aichi Targets and the newly adopted SDGs 14 and 15 on marine and terrestrial ecosystems.

ICCAs and collective action ignored in GBO-4

There are other contradictions and concerns to be addressed over the coming years. For example, despite the broad recognition of the importance of ICCAs and other forms of collective action by the parties to the CBD – and two rounds of written comments on the technical reports, underscoring that the Strategic Plan and Aichi Targets "simply cannot be achieved without ICCAs"[10] – the fourth edition of the Global Biodiversity Outlook (GBO-4) contains nary a mention of ICCAs or the contributions of collective action to the Strategic Plan and Aichi Targets. This glaring omission highlights a need to better implement supportive Decisions such as XII/3 and significantly improve reporting on the contributions of indigenous peoples and local communities, including through the GBO, National Reports, and especially the as yet to be defined indicators to review SDGs 14 and 15. If these indicators fail once again to recognize the intricate link between collective action for biodiversity conservation and sustainable livelihoods, biodiversity policy itself will continue

5 The conference report will be available by the time of publication at www.globalforestcoalition.org.

6 For a recent analysis, see: Almeida, F., with G. Borrini-Feyerabend, S. Garnett, H. C. Jonas, H. D. Jonas, A. Kothari, E. Lee, M. Lockwood, F. Nelson and S. Stevens. 2015. *Collective Land Tenure and Community Conservation*. Policy Brief of the ICCA Consortium, No. 2. The ICCA Consortium in collaboration with Maliasili Initiatives and Cenesta, Tehran.

7 http://srenvironment.org/mapping-report-2014-2/.

8 These include UN Special Rapporteurs and Independent Experts. www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=16049&LangID=E.

9 CBD COP Decision XII/12/B: www.cbd.int/decision/cop/default.shtml?id=13375.

10 Kothari and Neumann, 2014, page 2.

to be seen by most policy-makers as something only marginally relevant for sustainable development in general.

Trees as a threat to biodiversity and community conservation

More generally, it is of utmost importance that the implementation of all the targets under SDG15 contributes to biodiversity conservation. However, it is not necessarily certain that this will be the case. One of the most remarkable threats to biodiversity and community conservation that was identified by the Fostering Community Conservation Conference consisted of none other than trees. Not just any kind of trees, but the often alien and even invasive trees that dominate modern-day monoculture tree plantations. A recurring issue in international forest policy is that the FAO definition of 'forest' includes industrial monoculture plantations of any kind of trees, and even invasive trees. The conference – as well as the Civil Society Alternative Programme, held alongside the 14th World Forestry Congress in Durban in early September – reiterated a long-standing call to revise the forest definition to exclude such plantations, which have become a leading cause of deforestation, particularly in the tropics. Not simply a matter of semantics, the implications of this definition are even greater now that the United Nations has adopted the SDGs. Under Goal 15, Target 15.2 aims to halt deforestation by 2020 as well as "substantially increase afforestation and reforestation".[11] If the establishment of plantations is counted as "afforestation" or "reforestation", Target 15.2 will have incentivized the continued replacement of grasslands, peatlands and genuine forests by monoculture tree plantations. The devastating impacts of this trend on biodiversity, watersheds, ICCAs and sacred sites, and forest-dependent communities around the world have been widely documented and could be seen in the countryside near Durban itself. This is but one of the open contradictions in the SDGs that could undermine the aim for transformation. Hence, the need for a proper definition of forests should be considered as a matter of priority for parties to the CBD, particularly in relation to Aichi Target 3 on eliminating harmful subsidies and the Expanded Programme of Work on Forest Biodiversity.

The XIV World Forestry Congress, hosted by the Republic of South Africa, brought together the global forestry community to review and analyse key issues and to share ways of addressing them. (Credit: Ronnie Hall / Critical Information Collective)

Mothers or lesser sisters? The strange case of "conserved areas"

by **Grazia Borrini-Feyerabend**[1]
Global Coordinator, ICCA Consortium (gbf@iccaconsortium.org)

In late January 2016, in a cold but rather unusually sunny Cambridge, a bunch of scientists and environmental activists from several continents spent nearly three days discussing a rather abstruse concept: "other effective area-based conservation measures"—OECMs for short—which was thankfully renamed "conserved areas" by the end of the meeting. The result of their deliberation was to be important as it would inspire an IUCN Information Paper for the Twentieth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and further Convention on Biological Diversity (CBD) decisions. I participated in a personal capacity, but kept the ICCA Consortium at heart.

The acronym OECMs comes from Aichi Biodiversity Target 11of the Strategic Plan for Biodiversity 2011-2020. Spelled out in full, Aichi Target 11 recites: "*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*."

I have been interested in OECMs for quite some time. I believe I was the first to propose calling them "conserved areas"[2] because they represent a security valve for areas that are conserved *de facto* and wish to be recognised for the benefits and values they provide for society, but do not wish to be constrained by fitting the definition of protected area of IUCN,[3] CBD[4] or any relevant government. (Noticeably, the IUCN's and national definitions of protected areas often diverge, but this does not seem to bother many)

Conserved areas

In a political sense, the introduction of "conserved areas" in Aichi Target 11 represents an open recognition of the value of the territories conserved by indigenous peoples, local communities or private owners who refuse to fit and comply with any protected area definition elaborated and adopted outside of the realm of their own self-determination and rights.[5] For me, it also represents the recognition that in no country the formal protected area system comprises all that deserves to be conserved. Pre-existing the protected areas declared and managed by the state or other actors, all landscapes and seascapes include territories, features and relationships that enormously contribute to keeping nature alive. Such "conserved areas" are, so to speak, the "mothers" of protected areas. They are the strong humus over which communities and legislators brought to bear the protected area institution.

Much of the Cambridge meeting took an entirely different course. Focusing on how IUCN should advise the CBD to define "conserved areas" or— more politically important— we were to identify the intrinsic characteristics of conserved areas that would make them *count* for Aichi Target 11. Should those areas be "effectively managed"? Should they have "conservation of nature" as their primary objective? In case of conflict among diverse objectives of such areas, should "conservation of nature" prevail? How valuable for conservation should they be? The meeting was a gathering of top level conservationists from around the world, and their key concern was that countries should not be allowed to dilute Aichi Target 11 by listing and counting for the target any sort of "poorly protected" areas (i.e. tree plantations, time-bound fishery closures and municipal water catchments).

The debates during the meeting were frank and interesting. At the end, it seemed to me that most participants continued to see conserved areas as "lesser sisters" of IUCN-defined protected areas. For them, conserved areas need to prove themselves, so to speak, by adhering to much of what is included in the IUCN definition of a protected area and, in particular, to possess an *effective management regime* and the *intent/purpose to conserve nature*. In all likelihood, this will be the essence of the Information Paper that the IUCN will submit to the CBD Secretariat.

I had a few main concerns and a clear minority position regarding the interpretation of conserved areas. Concerns: if some indigenous peoples and local communities refuse to fit and comply with the IUCN protected area definition, why would they wish to fit the even-more-demanding definition of a lesser sister? If we care only for areas that are intentionally "dedicated, recognised and managed" for conservation, what do we make of all the territories where conservation takes place *in absence* of that? Shall we consider those unimportant and abandon them to their destiny?

My minority position was as follows: let us take the bull by the horns and define "conserved areas" as *all* territories that are *valuable* and conserved *de facto*. If more precise wordings are desired I would propose: "Conserved areas are natural and modified ecosystems, including significant biodiversity, ecological functions and cultural values that— *regardless of recognition, dedication and management*—are *de facto* conserved and/or in a positive conservation trend and likely to maintain it in the long term". Notably, "regardless" includes full recognition, dedication and intentional management for conservation… as well as nothing of that. So defined, conserved areas have an important degree of overlap with protected areas, but they do not necessarily coincide with them (see Fig 1). The first zone of no overlap regards formally-recognised protected areas that are not conserved *de facto* (yellow but not green). And the second regards conserved areas that do not fit the IUCN's, CBD's and/or national definitions of protected area (green but not yellow).

1 Grazia would like to thank Ro Hill, Peter Bridgewater, Taghi Farvar, Barbara Lausche and Barbara Lang to their positive and constructive comments to an earlier version of this article.

2 Borrini-Feyerabend, G. and Hill, R. (2015) 'Governance for the conservation of nature', in G. L. Worboys, M. Lockwood, A. Kothari, S. Feary and I. Pulsford (eds) *Protected Area Governance and Management*, pp. 169–206, ANU Press, Canberra.

3 In particular they do not wish to be "recognised", "dedicated" and "managed" for the conservation of nature, and they do not wish to maintain that, in case of conflict, "conservation" is their undisputed primary objective.

4 In this case, they do not wish to be "designated" or "regulated and managed".

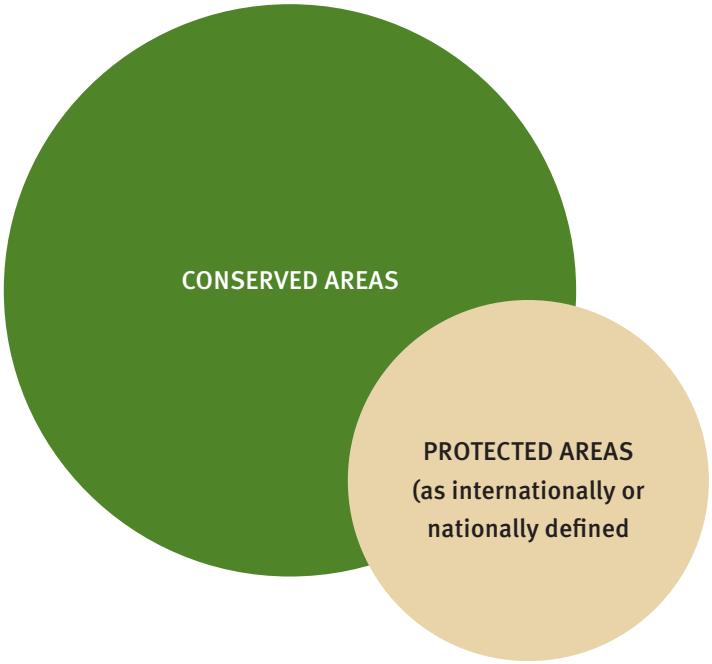
5 This remains true even when, as today, many indigenous peoples declare their own ICCAs and voluntarily adhere to conservation goals (M. Taghi Farvar, personal communication, 2016).

Examples of areas in the green but not yellow portion above that have a reasonable expectation to sustain conservation in the long-term span commercial hunting operations designed to restore and maintain the habitat of given species; organic farming systems and well-managed watersheds and mangrove forests intended to sustain community livelihoods; military no-go areas; and territories conserved by indigenous peoples who refuse to comply with any specific statement or conditions demanded of them but still secure *de facto* conservation results. The examples I have just listed lack the conditions of "dedication for conservation", "recognition for conservation" and "intentionality for conservation"—meaning that these areas were *not* established, and are not primarily managed, for the conservation of biodiversity. All have other reasons to be, but some are managed in ways that support conservation and are pleased to do so (secondary voluntary conservation) while others truly achieve conservation as a fully unintended consequence[6] (ancillary conservation). Examples of areas where biodiversity may be thriving *regardless of management* include inaccessible cliffs and other economically uninteresting steep slopes and remote areas where birds and other animals find crucial habitats. All the areas just mentioned do not fit the IUCN definition of protected areas. They may also not be included in the national protected area system of the country at stake. But they *do* contribute to conservation and it may be reasonable to imagine that this could remain true in the long term.

I believe that a country reviewing its system of protected and conserved areas to report to CBD about progress towards Aichi Target 11 should have a *base count of all areas that contribute to conservation of nature*— including both protected and conserved areas— and that conserved areas should include secondary voluntary conservation, ancillary conservation as well as areas conserved simply because they are un-managed and left alone. This "base count" would be valuable *per se*, even if, for the Aichi Target, it may need to be reported with a correcting factor that takes into account the target's preamble, namely that areas have to *have value (*ecologically representative, have special importance for biodiversity, are crucial for connectivity) and *be secured* (effectively and equitably *governed*[7] and managed, well connected and integrated). A definition of conserved areas as *all territories conserved de facto* coupled with a strong interpretation of Aichi Target 11 *("we count only what has value and is secured")* would be logical and robust. It would also have the merit of highlighting the efforts of all those rightholders who sustain the opportunity costs of maintaining undisturbed and unexploited areas that are important for conservation but are not necessarily "recognised, dedicated or managed for it".[8] It would, in particular, highlight areas that are not large, visible and impressive, but dispersed, difficult to identify, organically shaped and changing (e.g. a river's delta) and/or consciously destined to fit the specific needs of the social actors governing them… but still essential for many conservation results—and for ecological connectivity first and foremost! Lastly, a strong interpretation of Aichi Target 11 *("we count only what has value and is secured")* should apply to "conserved areas" but also to "protected areas", which should prompt important in-depth reviews of national conservation systems.

Some possible problems lie ahead if we embrace my minority position. First, finding out how to define and monitor all areas that are

Fig 1. Incomplete overlap between protected and conserved areas



"conserved *de facto*" is challenging, even for professional conservationists. Having to do this for an entire country is definitely onerous. Second, the percentages included in Aichi Target 11 were agreed upon with a reference point to existing protected areas (usually only government-managed protected areas) and not to conserved areas. The unspoken aim was to "extend the coverage of official protected areas as much as politically feasible". The 17 per cent and 10 per cent values included in Aichi Target 11 may thus be figures with tenuous reference to *what is really needed* to maintain our planet in some form of ecological balance. In other words, clarifying the percent value of what we need to keep alive of the "conserved areas" in a given country… is truly still an open question.[9]

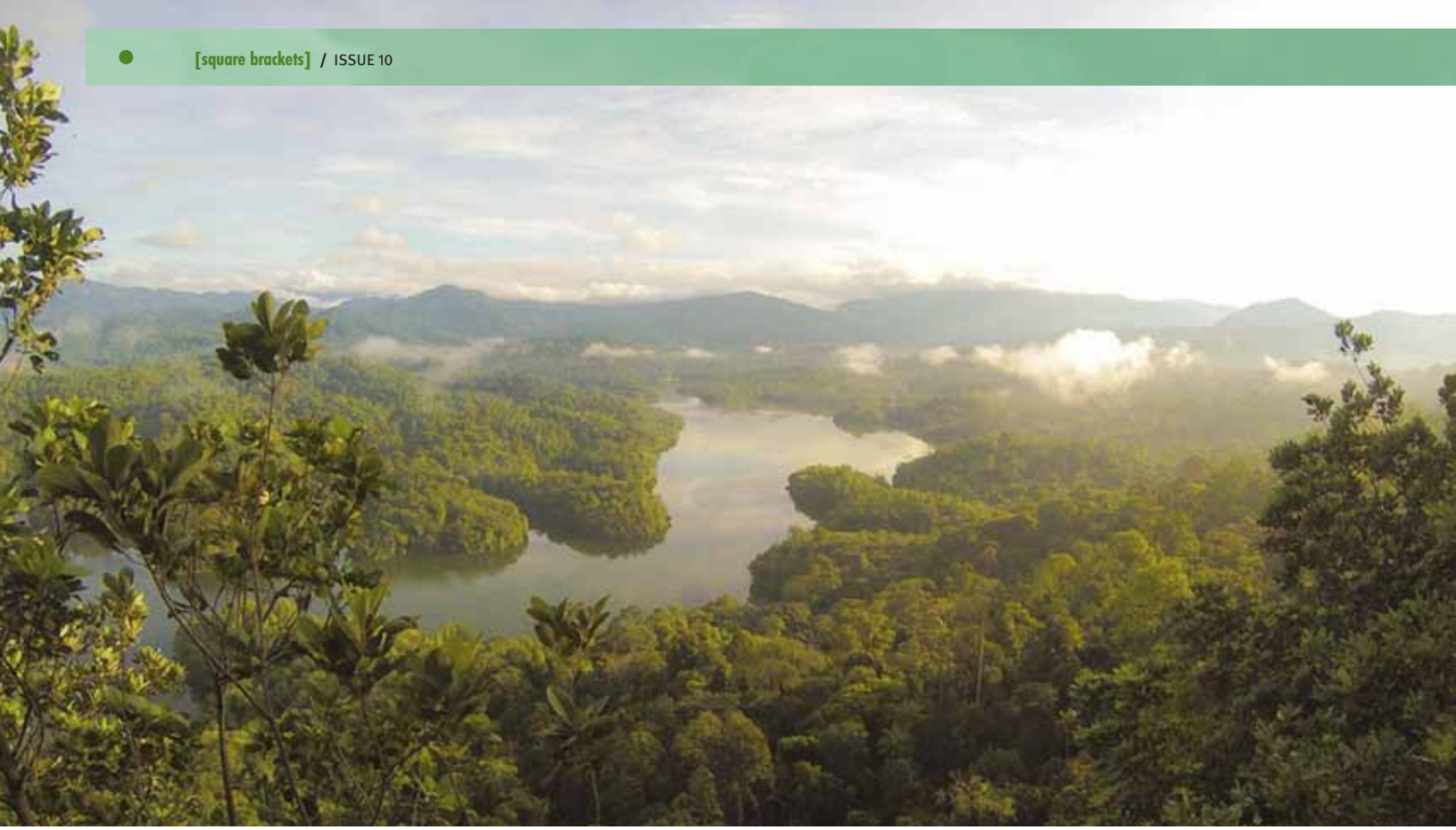
Heading to the train station after the Cambridge meeting I could not but wonder whether— more practical than any disquisition on "what counts for Aichi Target 11"— is not the question of "what happens to a territory that has been counted". In my view both the "protected areas" and "conserved areas" that a country will be allowed to "count" towards Aichi Target 11 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; urbanisation) that currently spell out the dismay and impoverishment of nature all over the world. As many of the areas at risk have been governed, managed and conserved for centuries by indigenous peoples and local communities, it would make enormous sense to take effective steps to support and secure their claims to collective land rights and security from undesired destructive developments. For the moment, however, this is far from being a clear consequence of counting "conserved areas" for Aichi Target 11… neither as mothers, nor as lesser sisters.

6 For instance, the area of Chernobyl, abandoned because of radioactive pollution, is currently a refuge for biodiversity.

7 I add the term "governed", which is missing in Aichi Target 11, as not including it was a widely recognised oversight.

8 Some conservationists even maintain that much of what goes under the name of "management for the purpose of conservation" is actually damaging, and should be avoided… another clear minority position!

9 Ro Hill notes that the "Planetary Boundaries" assessments (Rockstrom, J. *et al*., "A safe operating space for humanity", *Nature*, vol. 461: 472-475, 2009) points at the fact that we have already crossed thresholds for biodiversity and suggest that the answer is simple: we need to keep all remaining working habitats, about 55% of Earth's land surface, and even add to that value by restoring many degraded ecosystems.



Credit: Eutah Mizushima/Unsplash

The language of science: Essential ingredients for indigenous participation

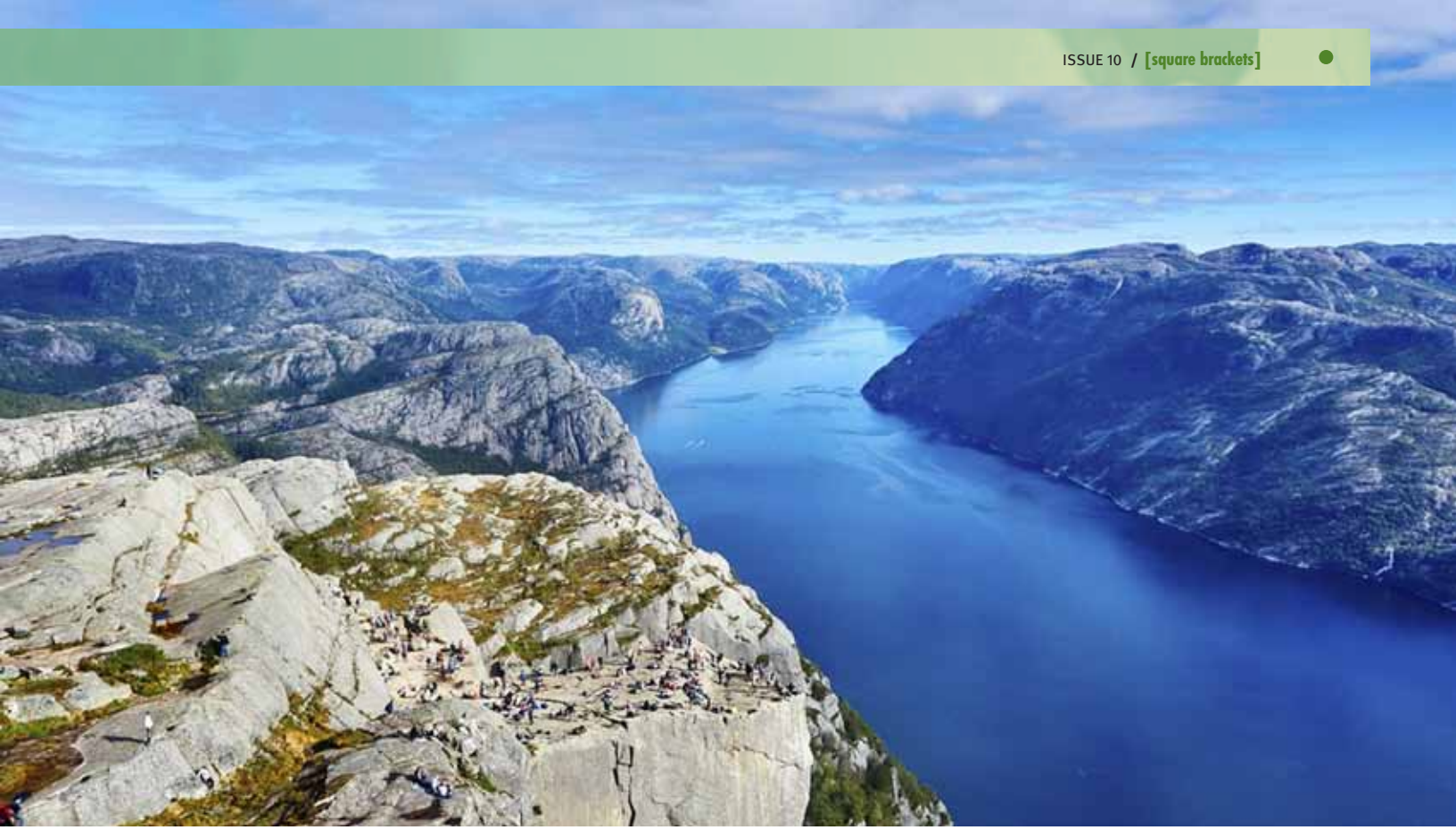
by **Emma Lee** ● melythina tiakana warrana Aboriginal Corporation, Tasmania (Emmae.lee@utas.edu.au); **Phillipa McCormack** ● Faculty of Law, University of Tasmania; **Pamela Michael** ● Institute for Marine and Antarctic Studies, University of Tasmania; **Shaun W. Molloy** ● Centre for Ecosystem Management; **Edith Cowan** ● University, Western Australia; **Tero Mustonen** ● President, Snowchange Cooperative, Finland; **Hugh Possingham** ● Director of CEED, Director of NESP Threatened Species Recovery Hub, ARC Laureate Fellow, Queensland.

The Sustainable Development Goals identify areas where we have failed to achieve the universal values of human rights, mutual respect and equity of all peoples. These goals provide opportunities to progress towards a more inclusive and respectful global community. As indigenous, traditional and non-indigenous authors, we wish to highlight the strengths of working together and provide input to agenda Item 8 of the Convention on Biological Diversity, 'Capacity-building, technical and scientific cooperation and technology transfer'. We discuss our experience in Australia as a case study representing opportunities for progress in other cross-cultural and global communities.

Growing collaboration

Collaboration between the Government of Australia and indigenous peoples on biodiversity conservation is growing and, for example, has contributed immensely to Australia meeting its obligations under the Convention's Aichi Biodiversity Target 11 for protected areas. This has resulted in Indigenous Protected Areas (IPAs), comprising 40 per cent of the National Reserve System (NRS) covering nearly 7.2 per cent of Australia's landmass. Participation and engagement from Major Groups, indigenous and science stakeholders is critical to implement the Sustainable Development Goals, particularly Goal 9.5, 'Enhance scientific research, upgrade the technological capabilities…and substantially increasing the number of research and development workers'.

Indigenous, traditional and mobile peoples are valuable resource knowledge-holders who can draw together the strands of tradition and science, when presented with opportunities to participate and learn science in culturally safe and respectful conditions. Indigenous empowerment can also contribute to strategic sustainable development and ecologically and socially beneficial conservation outcomes. Indigenous, traditional and mobile peoples not only have legitimacy through traditional knowledges, but can tailor their participatory, on-country experiences to technological adaptations and improvements that embed research collection and collaboration through cultural practices. Yet despite efforts to develop equitable conditions of fair participation, Australian indigenous peoples' inclusion in environmental science is limited.



Credit: Alexey Topolyanskiy/Unsplash

Indigenous, traditional and mobile peoples are valuable resource knowledge-holders who can draw together the strands of tradition and science, when presented with opportunities to participate and learn science in culturally safe and respectful conditions.

Language barrier

One of the major barriers to fair participation is the use of language developed by the cultural majority that can exclude or devalue the rich history and ongoing engagement of indigenous, traditional and mobile peoples with the subject matter of science. While highly-technical or short-hand 'jargon' can be challenging for any non-scientist to engage with, terms such as 'colonisation', 'assimilation' or 'invasion' can carry connotations informed by an individual's cultural identity. One practical example of this is recent developments in the terminology around translocations of animals and plants – in particular the term "assisted colonisation" vs "assisted migration".

Key arguments in favour of the term 'assisted colonisation' include (1) a desire to avoid confusing the intentional translocation of species with natural species migrations (e.g. migratory birds); and (2) to ensure the emphasis of the discussion is on the populations established at the destination, rather than the emphasis of 'migration' on the process of movement. Arguments against the assisted colonisation terminology include its hegemonic overtones and historical references.

It is critically important to ensure clarity of terminology for scientific research and decision-making, especially for controversial adaptation strategies, but we suggest that without participation and inclusion of a broad range of peoples and perspectives, technical terminology choices can undermine the purpose and utility of a concept, and create barriers to engagement.

A paper published in 2012 in *BioScience* by Schwartz et al used the term 'managed relocation' instead of 'assisted colonization', on the basis that: *"...it is value neutral and emphasizes all of the steps that one might take in adaptation, including source extractions; establishment; performance and affect monitoring; and, possibly, the control of established populations... [and] it includes ethical, social, and policy concerns" (p 733).*

We applaud the authors for considering the broader context of the terminology that is being used, and call for a similar approach to be taken at the international level in the preparation of policy documents like the IUCN's Technical Guidelines.

The changes needed to support these Guidelines include open discussions about the words used to communicate the science and show an appropriate degree of sensitivity to the impact those words may have on Indigenous, traditional and mobile peoples. To that end, scientists have an obligation to recognise that indigenous, traditional and mobile peoples may hear their words from within a paradigm of lore, history and circumstance that is, often, very different to their own.

Indigenous, traditional and mobile peoples often feel dominated by western science and conservation paradigms in two-way learning and hence they struggle to achieve what they perceive as real equity. To counter this, we encourage greater inclusion and participation of Indigenous, traditional and mobile perspectives in science. This would be facilitated by more thoughtful use of language.

Precautionary approach to synthetic biology needs to be translated into effective regulation

by **Almuth Ernsting** ● Biofuelwatch
(almuthbernstinguk@yahoo.co.uk)

The Ad-hoc Technical Expert Group (AHTEG) on Synthetic Biology[1] reaffirmed the need to observe the precautionary approach in relation to synthetic biology. Its report lists 15 potential adverse impacts of synthetic biology and emphasises the need for comprehensive case-by-case risk assessments. Disappointingly, no agreement could be reached as to "whether or not current methodologies to address the environmental impacts of the components and products of synthetic biology are adequate or even needed".

There are many important arguments and reasons why existing regulation of synthetic biology (both for intentional and unintentional releases) is wholly inadequate, highlighted in the "Principles for the Oversight of Synthetic Biology" supported by 111 civil society organisations. [2]

Synthetic and other genetically engineered microorganisms are almost always used in conditions which existing regulations defined as 'contained'. During the 1980s and 1990s, when governments were developing 'contained use' regulations for GE microorganisms, those uses were primarily in the medical sector, and thus inside laboratories. Even then, evidence of how inadequate such regulations were for preventing a release of genetically engineered microbes was emerging[3]. Inherent problems with 'containment' are analysed in the Secretariat of the Convention on Biological Diversity's Technical Report on Synthetic Biology, published March 2015[4].

Minimal regulatory risk assessments

Today, 'contained use' of genetically engineered microorganisms commonly means their use in biorefineries and other industrial plants which are entirely different environments from biotech laboratories. Regulatory risk assessments of supposedly 'contained' industrial uses of GE microalgae, fungi or bacteria are minimal, even when safe physical containment appears unlikely and biological containment may not even be attempted. This is illustrated by two examples:

The US synbio company Amyris has been engineering bakers' yeast to produce farnesene, a chemical not naturally produced by any microorganism. According to Amyris, this involved 13 different manipulations to the genome of S. cerevisiae[5]. Recently, Amyris has been focussing on another isoprenoid, farnesene to produce small quantities of biofuels and, primarily, personal care products. Amyris is reported to have been creating and testing 400,000 yeast strains per week and shipping the most promising ones to Brazil. The US authorities have waived the requirement for a full risk assessment and regulatory oversight[6]. In Brazil, Amyris's farnesene-producing yeast has been approved on the basis that baker's yeast is generally safe, as is the organism from which a gene was transferred, sweet wormwood.

Yet the yeast strains have been subjected to intensive metabolic engineering and bear little resemblance to any natural organism. They are designed to produce chemicals which no microorganism can produce in nature. A risk assessment based on the properties of ordinary bakers' yeast and sweet wormwood is clearly inadequate to assessing the risks of such a synthetic yeast. Because the GMO has been classed as 'safe', there is no regulatory oversight of containment procedures inside Amyris's refineries. Yet industrial refineries rely on engineers who have no academic background in biosafety and there are many more opportunities for GE microorganisms to escape than there would be in closed laboratories.

Another company which also uses synthetic microorganisms, and which obtained a waiver from regulatory oversight and from the requirement for a full risk assessment in the US, is Joule. Joule has been engineering cyanobacteria of the genus *Synechococcus* so that they directly convert carbon dioxide contained in seawater into hydrocarbon fuels.[7] According to one peer-reviewed article, *Synechococcus* is one of two genera of cyanobacteria which "*dominate the photoautotrophic picoplankton over vast tracts of the world's oceans where they occupy a key position at the base of the marine food web and contribute significantly to global primary productivity*".[8] Despite the keystone role of Synechococcus in marine ecosystems, not a single assessment of their potential ecological impacts or likelihood of genetically engineered strains surviving in nature has been published. All that separates Joule's genetically engineered bacteria from the open environment are two thin tubular plastic sheets, which need to be flushed out regularly[9].

A precautionary approach to synthetic biology will be meaningless unless it is translated into effective regulations that include so-called contained industrial uses of GMOs, in line with the Principles of Oversight developed by civil society.

1 www.cbd.int/doc/meetings/synbio/synbioahteg-2015-01/official/synbioahteg-2015-01-03-en.pdf
2 http://libcloud.s3.amazonaws.com/93/ae/9/2287/2/Principles_for_the_oversight_of_synthetic_biology.pdf
3 See for example www.genewatch.org/uploads/f03c6d66a9b354535738483c1c3d49e4/brief7.pdf
4 www.cbd.int/doc/publications/cbd-ts-82-en.pdf
5 www.fastcompany.com/3000040/rise-and-fall-company-was-going-have-us-all-using-biofuels
6 www.epa.gov/regulation-biotechnology-under-tsca-and-fifra/tsca-biotechnology-notifications-fy-1998-present
7 The initiation ketosynthase (FabH) is the sole rate-limiting enzyme of the fatty acid synthase of Synechococcus sp. PCC 7002, James Kuo and Chaitan Khosla, Metabolic Engineering, March 2014
8 Molecular biology of the marine cyanobacterial genera Proclorococcus and Synechococcus, David J. Scanian and Nyriee J. West, FEMS Microbiology Ecology, 1 April 2002
9 www.google.com/patents/WO2014064602A2?cl=en

Synthetic biology: A continuing challenge for the CBD

by **Helena Paul** ● EcoNexus (h.paul@gn.apc.org); and, **Silvia Ribeiro** ● ETC Group (silvia@etcgroup.org)

The Convention on Biological Diversity (CBD) pioneered the discussion on synthetic biology at the global level, with the vast majority of countries asking for the full application of precaution. Following the decisions taken at the twelfth meeting of the Conference of the Parties (COP 12) to the Convention and the report and recommendations of the Ad Hoc Technical Expert Group (AHTEG) on Synthetic Biology in 2015, the CBD still has a great deal of work to do on the issue. Above all, it must continue to lead in pointing out the risks, i.e., potential harms, and calling for the strict application of the precautionary principle.

Synthetic biology includes a number of modern biotechnology techniques, including many developed from standard genetic engineering. However, it goes beyond them in its use of human-made, computer-generated and often highly novel DNA, RNA and amino acids. Synbio processes are frequently automated enabling the production of thousands of slight variations on one organism with unpredictable consequences.

Synbio also involves the attempt to completely redesign metabolic pathways in ways that may never have existed before. Basically, this means that there is nothing to which the results can be compared, leading in turn to new risks and uncertainties that cannot be predicted. Synbio includes attempts to 'redesign' organisms that are critical to Earth systems, such as cyanobacteria, and turn them into production factories for novel fuels. Obviously there are serious risks if these escape into ecosystems.

Another major cause for concern is the rapid development of so called 'gene drives', an attempt at population engineering or 'editing'. The Convention may well consider these an appropriate object of study and concern, because of their potentially profound and irreversible impacts on biodiversity.

No guidance

It is difficult enough to assess the risks around genetic engineering, but synthetic biology greatly increases the level of complexity and the number of unknowns involved. Furthermore, we have no experience of how to deal with this. There have been no assessments to date; and there is no guidance or methodology for carrying out such assessments adequately.

Yet industry claims that synthetic biology will yield billions of dollars and does not need special regulation. They even want exemption from current biosafety rules. The largest energy, chemical, pharmaceutical and agribusiness corporations are involved, and certain governments have already decided that synthetic biology will be a major area of investment. Proponents often claim that new techniques enable greater precision, but it is important to remember that this does not make the impacts more predictable.

Faced with these challenges, the CBD has a special responsibility to act decisively in the public interest for the protection of biodiversity. Governments, populations and regulators need time to understand and assess the many implications of synthetic biology. For example, synthetic biology could generate novel kinds of invasive alien species on a scale that we have not seen previously. We cannot allow pressure from economic interests to increase risks to biodiversity and its sustainability.

Ensure proper risk assessments

We need to ensure that proper risk assessments will be undertaken that take into account all affected Parties. Thus, if synthetic vanilla were to be produced in one country and consumed there or in another, the impact on vanilla growers and biodiversity where vanilla is produced would also have to be taken into account. Parties have an obligation to protect the socio-economic, cultural and ecological role of peasant farmers and indigenous peoples – such as vanilla growers – in maintaining biodiversity and related livelihoods.

The approach taken throughout the AHTEG on Synthetic Biology to keep in mind all three objectives of the Convention is to be welcomed. So is the opinion expressed by the AHTEG that both living organisms and non-living products and components could adversely affect the achievement of those three objectives. Also welcome is the recognition that indirect effects must be taken into account.

However, the absence of representatives of indigenous peoples and local communities in the AHTEG is a major gap, and their views and perspectives must be sought and incorporated in any CBD decision, through discussions at meetings of 8(j) or other forums that they consider appropriate. It is also essential that they should have the space to reflect and to discuss the issues in a manner and on a timescale defined by them.

While the discussion within the CBD proceeds, it is vital to ensure that existing mechanisms and regulations that apply to Synthetic Biology are not overlooked. Living organisms derived from Synthetic Biology should be defined as LMOs according to the definition of the Cartagena Protocol on Biosafety and thus fall under its scope and obligations. They must also come under the scope of the CBD, especially with regards to socio-economic impacts.

Should they not fall under the definition of the Cartagena Protocol, the use of such organisms should be prohibited until regulation is in place that would ensure that no such organisms would be used or released that could lead to severe negative impacts on biodiversity, livelihoods, food security, also taking into account human health.

Finally, CBD deliberations on this topic should be guided by four central elements: the precautionary principle; the relevance of both living and non-living components and products of synthetic biology; the potential impacts of organisms, components and products on the three objectives of the Convention and the obligations of the Parties to the Convention; and, finally, consideration of indirect as well as direct effects, also taking into account full life cycle analysis.

Colombia: Moving towards sustainable hunting and legal bushmeat trade

by **Nathalie van Vliet** ● Wildlife and livelihoods expert, Center for International Forestry Research (vanvlietnathalie@yahoo.com)

In Colombia, hunting for subsistence is only allowed for personal consumption. Consequently, the trade of surpluses for subsistence purposes (housing, health, education, etc.) is illegal. Despite the fact that Colombian law gives provision for legal wildlife trade, the lack of regulations to actually make it operational makes it in practice impossible for rural communities to legally trade bushmeat (wild game). While the requirements to obtain a license for this activity may be well-adapted for private companies trading high-value products (e.g. pelts), for rural communities they are extremely difficult and expensive to comply with. This impacts rural communities through constant confiscations of bushmeat, which in turn leads to an underground local market.

Left: Gabriel, a hunter from Puerto Nariño, learning how to monitor offtakes through the KoboCollect app. (Credit: Francois Sandrin)

Right: Meeting of the Airumaküchi hunter's association. (Credit: Nicole Ponta)

National initiative to operationalize legal framework

Because the bushmeat trade in rural communities is mainly for subsistence purposes, and taking into account the important role bushmeat plays for cultural identity, nutrition and local economies; several Colombian environmental institutions organized a workshop to discuss operationalization of the legal framework for bushmeat trade. Conclusions reached at the workshop highlighted the need to differentiate the trade of surpluses by subsistence hunters in rural communities from those of large-scale commercial hunting, and to take into account the differences in scale, business purposes, governance systems and benefit distribution. Main recommendations included the adoption of participative adaptive management processes, where the list of tradable species, quotas and monitoring and evaluation systems are defined and locally developed based on the specificities of each social and ecological context, with the active participation of local communities. While the technical recommendations generated in the workshop shed some light on the way forward, there is still a long way to go before necessary regulations are written and adopted by the respective ministries.

Local initiative for sustainable use and trade of wildlife resources

For the hunters from Puerto Nariño (Colombian Amazon), discussions held during the aforementioned workshop motivated them to create Colombia's first indigenous hunters association. The idea was first hatched in 2013, when they began monitoring their off-takes and evaluating wildlife in their hunting grounds. Organizing an association stemmed from their need to improve their political representation in policy decision-making within their communities and towards governmental institutions, but also to improve the way they are perceived by others: as they are viewed as being anything from criminals to important agents which secure food, maintain traditions and conserve biodiversity. The hunters are particularly concerned about the nutrition children in schools and elders in hospitals receive. Most of the food provided by governmental institutions does not take into account local diets and food preferences, and is based on highly industrially processed food with unknown consequences for health.

The hunters call their association "Airumaküchi", which means 'Tigers from the water' in Ticuna. The aim of the association is to improve the quality of life and food security of indigenous and local communities—especially of hunters and their households—and to strengthen their culture through traditional knowledge related to hunting activities. The long-term plan is to lobby governmental institutions to allow for legal hunting and subsistence trade. First, however, they need to show that they can manage hunting in a sustainable manner, create trust vis-à-vis governmental institutions and NGOs, and change the way they are perceived by the public.

The association is presently focusing on a range of activities:

- Monitoring of offtakes: Through Kobocollect, a phone app that allows users to create surveys and upload responses to a common database, hunters can share results to generate discussion and inform decision-making.
- Agreeing on hunting rules: Working with an external expert to facilitate the decision-making process. The methodology used includes games and scenario building with agent-based models. The objective is to identify management scenarios that allow maximizing the multiple benefits according to the hunters' objectives.
- Evaluating wildlife: In 2014, the hunters assessed the presence and distribution of wildlife in their territory using 25 camera traps. In 2015, they used both camera traps and a "call method" for guara (Dasyprocta fuliginosa), traditionally used by hunters on their hunting trips. The idea is to compare both methodologies and evaluate whether the "call method" can be used for more regular wildlife assessments with low investment in time and resources.
- Restoring habitats for wildlife: Hunters believe selective timber extraction that removes important fruit producing trees is forcing wildlife away from communities. Accordingly, each family belonging to the association will restore habitats for wildlife by planting local fruit trees in their fallows.
- Working with children: Working in schools to improve children's knowledge about wildlife, its management and its importance for food security. The approach used will involve innovative methodologies that aim to enlighten children, and perhaps turn them into scientists and/or agents of change on issues related to wildlife, forests and nutrition.

Credit: UNEP

Convention on Biological Diversity

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