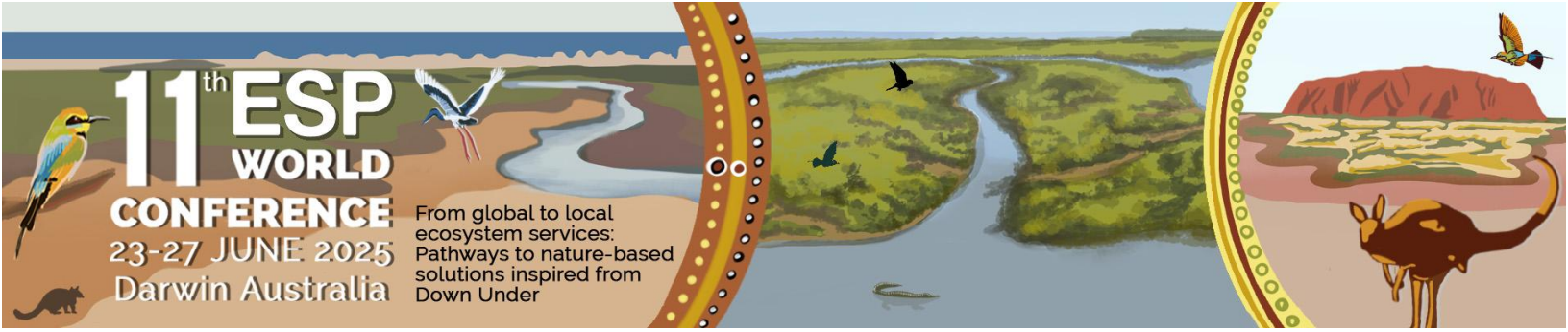


BOOK OF ABSTRACTS

I. SESSION DESCRIPTION

ID: S9b

Developing Nature-based Solutions (NbS) incorporating Indigenous peoples and local communities' perspectives

	Name	Organisation	E-mail
Host:	Kamaljit K Sangha	Charles Darwin University	kamaljit.sangha@cdu.edu.au

Abstract:

This session will focus on exploring existing and emerging NbS that operate to protect, manage, and restore nature on lands and waters managed by the Indigenous peoples and local communities (IPLCs) across the globe. We intend to have examples and case studies from across the globe highlighting a range of NbS/Nature-based Economies (NbE) or Payments for Ecosystem Services (PES) mechanisms, along with their advantages and disadvantages.

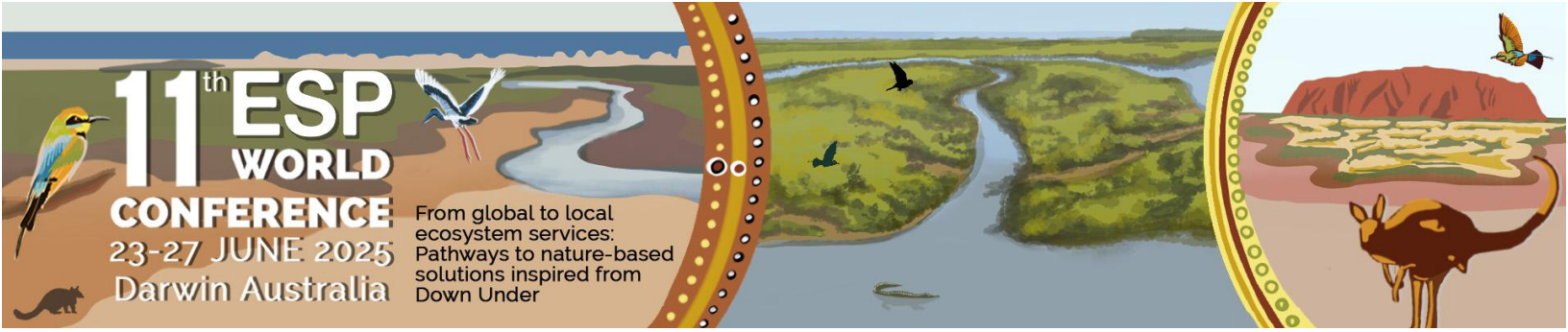
The session will help collate information from IPLCs' managed lands/seas across the globe where NbS/NbE/PES mechanisms would have been implemented/developed to support IPLCs. This will help us analyse information and develop a manuscript together focusing on global and regional perspectives, with all the presenters/participants interested in this session.

Goals and objectives of the session:

To collate and analyse information on the key elements required to develop and implement NbS/NbE/PES mechanisms suiting IPLCs

Planned output / Deliverables:

Most likely a paper publication and collaborative proposal to address the issue of developing locally appropriate NbS/NbE/PES.

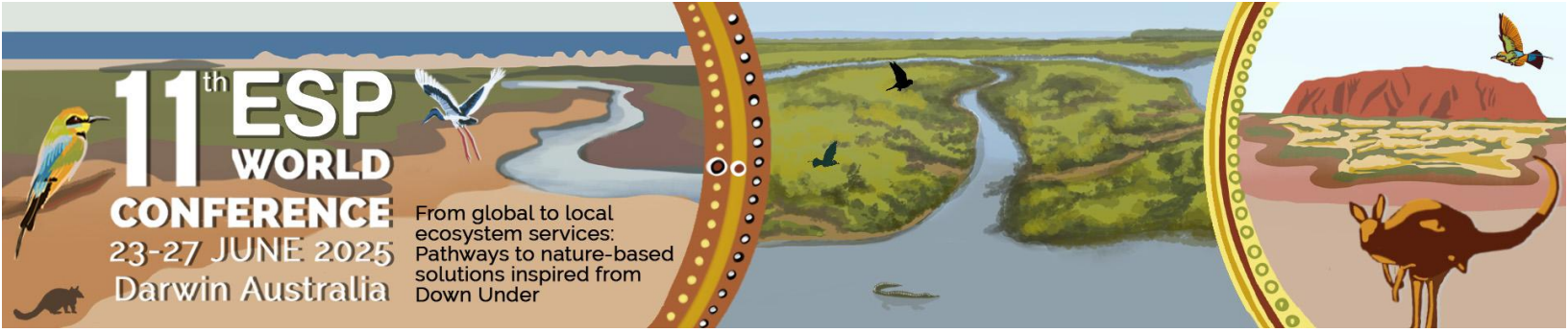


II. SESSION PROGRAM

Room: Madla 2
Date of session: 25 June 2025
Time of session: 10:30am - 12:30pm

Timetable speakers:

Time	First name	Surname	Organization	Title of presentation
10:30-10:32	Kamaljit	Sangha	Charles Darwin University, Australia	Welcome and Introduction of the session
10:32-10:42	Ronju	Ahammad	Charles Darwin University, Australia	A review of PES in Australia
10:42-10:52	Leigh-Ann	Woolley	WWF Australia	Australian North Kimberley Right-Way Fire - a NbS for Climate
10:52-11:02	Maya	Kocian	Earth Economics	Indigenous-Led Nature-Based Solutions: Advancing Sustainable Stewardship through Ecosystem Valuation
11:02-11:12	Aditi	Bhardwaj	Tata Institute of Social Sciences, Mumbai	Building Conservation Economies through Ecotourism in Kerala, Southern Western Ghats, India
11:12-11:22	Cristina-Gabriela	Mitincu	University of Bucharest, Romania	Inclusive nature-based solutions for local communities: Lessons from European case studies
11:22-11:32	Umi	Purnamasari	World Resources Institute Indonesia	Institutionalizing Nature-Based Solutions into IPLC-Led Forest Management: Historical Governance, Policy Evolution, and Impacts on Forest Protection in Indonesia and the Philippines
11:32-11:42	Javier	Montoya-Zumaeta	Universidad Científica del Sur, Peru	Smallholders' preferences for incentives for upscaling adoption of biodiversity-friendly cocoa agroforestry in the Peruvian Amazon
11:42-11:52 (Zoom link)	Emmanuelle+ Shane	Shacham + Orchard	IUCN Commission on Ecosystem Management	Exploring implementation of the IUCN Global Standard on NbS through the lens of case studies from around the globe
11:52-12:02	Thomas	Dick	Jagun Alliance Aboriginal Corporation	Caring for Country and Insect Phenology: Integrating Indigenous Knowledge for Resilient Horticultural Systems



Time	First name	Surname	Organization	Title of presentation
12:02–12:12	Lydia	Chibambo	Zambia Climate Change Network	Restoring Luapula landscape to support biodiversity conservation and community livelihood- Milenge District, Zambia
12:12–12:22	Oscar	Metcalf	Charles Darwin University, Australia	Situation analysis of the Martuwarra Fitzroy River catchment—toward ecosystem service economies respecting Martuwarra Living Waters and peoples of Martuwarra
12:22–12:30		Session Host		Closing of session

Zoom link: https://charlesdarwinuni.zoom.us/j/87555446491?pwd=pLKwabqWa3hKv7oiIsSp4TZbNtMYa9.1

Password: 005277

III. LIST OF ABSTRACTS

The first author is the presenting author unless indicated otherwise.

1. A review of PES in Australia

First authors(s): Kamaljit Sangha

First author affiliation: Research Institute for the Environment and Livelihoods, Charles Darwin University, Darwin, Australia

Other author(s): Ronju Ahammad, Jeremy Russell-Smith, Robert Costanza

Presenting Author: Ronju Ahammad

Presenting author affiliation: Research Institute for the Environment and Livelihoods, Charles Darwin University, Darwin, Australia

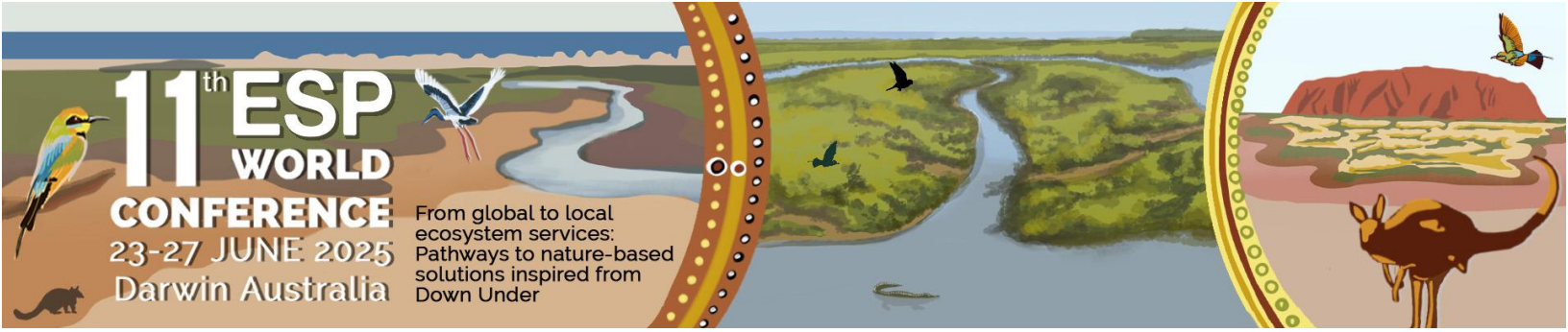
Contact: ronju.ahammad@cdu.edu.au

Keywords: Payment for ecosystem services, Incentivizing mechanisms, Natural resource management, Carbon farming, Indigenous peoples and local communities, Nature-based solutions

With recent growing interest and potential investment in nature-based solutions (NbS), a local, regional and global level understanding of what kinds of mechanisms or arrangements work effectively to deliver the required biodiversity and climate change outcomes is essential. This paper presents the status and opportunities for Payment for Ecosystem Services (PES) arrangements in Australia, with a focus on Indigenous peoples in northern Australia. We reviewed 62 studies related to the distribution and extent of the predominant PES schemes globally and nationally in Australia, including different ecosystems (e.g. forest, water, savannas, etc.), spatial scale (e.g. local, regional or global), types of payment methods used for ecosystem services (ES) transactions, types of ES providers and beneficiaries, funders, users, and contract arrangements and related challenges. Globally, 54% of the studies were supported by government investment, 17% by private-public, and only 29% by private investment. 80% of studies focused on forests as the most common ecosystem for PES, with 61% of the PES arrangements implemented at a local scale, 16% at a catchment scale and the rest (23%) at a national scale. In 33% of the studies, a single ES is the focus for the system, i.e. water quality or carbon sequestration; in 37% of studies a bundled approach was followed where typically > 1-2 services are included as a bundle; and in another 7% stacked ES were included. Within Australia, six main schemes were considered to be PES, i.e. Conservation Agreements, Water trading (buyback) in the Murray Darling Basin, Reef Credits, Carbon Farming, the Queensland Land Restoration Fund, and the Indigenous Protected Areas and Caring for Country programmes on Indigenous lands. About 90% these programmes are funded by the Australian Government, focusing on carbon or biodiversity outcomes, with little consideration of Indigenous values. From an Indigenous perspective, a bottom-up PES approach incorporating the social and cultural aspirations of Indigenous people is preferred. Traditional management with low transaction costs, combining both socio-economic and environmental attributes as verifiable measures, can yield conservation as well as positive socio-economic outcomes for Indigenous communities in Australia and elsewhere. Empowering local communities, recognising and supporting their skills and knowledge, ensuring equitable and just distribution of funds, sustainable and reliable co-designed incentives are essential for the success of these fast-emerging opportunities.

2. Australian North Kimberley Right-Way Fire: a nature-based solution for climate

First authors(s): Leigh-Ann Woolley



Other author(s): Wunambal Gaambera Aboriginal Corporation, Wilinggin Aboriginal Corporation, Dambimangari Aboriginal Corporation, Balanggarra Aboriginal Corporation, Tom Vigilante, Andrew Edwards, Sofia Oliviera

First author affiliation: WWF-Australia

Contact: lwoolley@wwf.org.au

Keywords: Fire, climate, disaster risk mitigation, carbon, Indigenous-led

The North Kimberley Right-Way Fire project is an exemplary Indigenous-led nature-based solution addressing climate change and biodiversity loss in northern Australia. This initiative is a collaboration between WWF-Australia, the North Kimberley Fire Abatement Project, and Charles Darwin University, and aims to protect and restore savanna ecosystems through Right-Way Fire management. This approach not only mitigates climate change but also: builds community resilience and grows the local economy; strengthens cultural authority on Country; and expands the impact of proven Indigenous land management practices.

A key innovation of this project is the development of a robust savanna fire management assessment framework for the new Australian Government Nature Repair Market. This framework integrates biocultural indicators, merging cultural data with biological and environmental information to provide a holistic view of ecosystem health.

The North Kimberley Right-Way Fire project serves as a model for how Indigenous leadership can drive effective, place-based solutions to global environmental challenges. It showcases the potential for market-based mechanisms, like biodiversity credits, to support traditional stewards of the land while addressing climate change and biodiversity loss.

By supporting initiatives like this, we can create a future where economic growth and environmental protection go hand in hand, guided by Indigenous wisdom and practices and designed for and by Indigenous leaders. This project not only contributes to Australia's climate and environmental goals but also offers valuable lessons for similar efforts worldwide, particularly in savanna ecosystems.

The North Kimberley Right-Way Fire project shows how Indigenous-led nature-based solutions can effectively address climate change, protect biodiversity, and empower local communities to lead the development of those sustainable solutions. It is a testament to the crucial role of Indigenous Peoples in global conservation efforts and a call to action for increased support and investment into these types of initiatives.

3. Indigenous-Led Nature-Based Solutions: Advancing Sustainable Stewardship through Ecosystem Valuation

First authors(s): Maya Kocian

Other author(s): No

First author affiliation: Earth Economics

Contact: mkocian@eartheconomics.org

Keywords: Indigenous Knowledge, Nature-Based Solutions, Conservation Finance, Indigenous-Led Conservation, Ecosystem Valuation

At Earth Economics, we work alongside Indigenous nations to develop nature-based solutions that integrate Indigenous knowledge with economic valuation to support long-term environmental and cultural sustainability. Indigenous peoples and local communities have stewarded ecosystems for generations, yet their governance systems and ecological knowledge are often underrepresented in conservation planning, nature-based solutions implementation, and frameworks that recognize the value of ecosystem stewardship. Our work aims to bridge this gap by ensuring that nature-based solutions are co-designed with Indigenous communities, reflecting their values, priorities, and realities.

Since 2009, we have worked with Indigenous nations and organizations across North America, including the Fond du Lac Band of Lake Superior Chippewa, the Nez Perce Tribe, the Nisqually Tribe, the Mowachaht-Muchalaht First Nation, and many others. Our work has supported Indigenous-led fisheries management, watershed restoration, forest conservation, and climate

resilience initiatives. Through projects such as Pacific salmon conservation, wild rice ecosystem valuation, and the Indigenous-led Salmon Parks initiative in British Columbia, we have helped assess the economic, cultural, and ecological benefits of Indigenous stewardship. These efforts demonstrate that Indigenous-led nature-based solutions not only restore ecosystems but also strengthen cultural sovereignty and long-term sustainability.

In this session, we will share insights from over a decade of experience working with Indigenous partners to implement nature-based solutions that support Indigenous-led stewardship. We will discuss successes, challenges, and lessons learned in integrating Indigenous perspectives into conservation finance and developing funding mechanisms that support long-term stewardship.

4. Building Conservation Economies through Ecotourism in Kerala, Southern Western Ghats, India

First authors(s): Aditi Bhardwaj

Other author(s): No

First author affiliation: Assistant Professor, Tata Institute of Social Sciences, Mumbai, India

Contact: aditi.bhardwaj@tiss.ac.in

Keywords: ecotourism, conservation based economy, decentralized governance

Ecotourism has been used as an alternative for mitigating the resource use pressures of local communities in many Protected Areas (PAs) of India. However, only a few of such initiatives have been able to elevate themselves to a level of strong conservation economies. Current study, carried out in three PAs of southern Western-Ghats, Kerala, India- Periyar Tiger Reserve (TR), Parambikulam TR and Eravikulam National Park, attempts to understand the processes and strategies employed in these areas for enabling this transformation.

Along with archival research and secondary literature analysis, focused group discussions with the representatives of local community, hoteliers, guides, tea estate managers and forest staff

were carried out in order to understand the ecotourism programme and the governance structures within which these programmes function. Data was also collected on the changes in resource use patterns, socio-economic conditions of local people as well as extent of involvement and benefits accrued to other stakeholders. This study reveals that in all these PAs, the governance mechanisms have been devolved to local communities in the form of Village Ecodevelopment Committees (VECs) with positive outcomes for resource dependency and socio-economic status of local communities. In addition, the programme which was initiated only with an intention to provide alternative livelihoods to VEC members, has gradually transformed into a nature based economy of itself aiding the protection of PAs, providing benefits to local communities and several other stakeholders as well as good wilderness experience to visitors. The success of these initiatives is attributed to the continuous need based innovation and adaptation of the ecotourism programme.

5. Inclusive nature-based solutions for local communities: Lessons from European case studies

First authors(s): Cristina-Gabriela Mitincu

Other author(s): Constantina-Alina Hossu, Alexandra-Maria Calotă, Mihai-Răzvan Niță, Ioan-Cristian Iojă

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Keywords: local communities, nature-based solutions, case studies, inclusion, ecosystem services

Nature-based solutions (NbS) are important tools that address biodiversity crisis and climate efforts while simultaneously providing co-benefits. However, some local communities are unevenly exposed to climate risks and NbS benefits. Therefore, the “win-win-win” proposition of NbS is challenged: i.e., the claim that NbS contribute by default to a socially inclusive, economically vibrant, and ecologically resilient society. Thus, it is essential to address both

existing and future inequalities and injustices when implementing NbS. This study conducts a systematic literature review to identify what accounts for inclusive NbS at the European level, with a particular focus on the pivotal role of local communities. A total of 13.027 publications were retrieved from Web of Science and Scopus databases. In the end we selected 280 publications for full article screening. We sketch lessons from case studies in which NbS were developed and implemented (i) with the involvement of local communities and (ii) in response to local community needs (i.e., NbS types, ecosystem services and benefits provided by NbS, trade-offs and constraints for inclusive NbS, specific social groups involved, methods for involving local communities). We found that locally engaging types of NbS (e.g., urban farms, community and allotment gardens) are recognized for their potential to enhance social cohesion, promote healthy food, and increase environmental awareness. Local communities must be better considered through inclusive participatory methods (e.g., learning alliances, open dialogue, knowledge-exchange platforms), alongside careful attention to their specific needs, and the fair distribution of ecosystem services (e.g., air quality regulation, food provision, social justice). Particular attention should be given to vulnerable groups (e.g., elderly, indigenous population, racial and ethnic minorities, low-income population) who may be affected by NbS development. Our study has implications in improving the understanding about the importance of inclusive NbS initiatives tailored to the local context and specific residents' requirements and knowledge.

6. Institutionalizing Nature-Based Solutions into IPLC-Led Forest Management: Historical Governance, Policy Evolution, and Impacts on Forest Protection in Indonesia and the Philippines

First authors(s): Umi Purnamasari

Other author(s): Dewi Sari, Mila Rizqiani, Gemasakti Adzan, Muhammad Afwani, Jayson Ibanez, Deddy Permana, Sarah Silitonga, Erlanggasakti Putra,

First author affiliation: World Resources Institute Indonesia

Contact: umi.purnamasari@wri.org

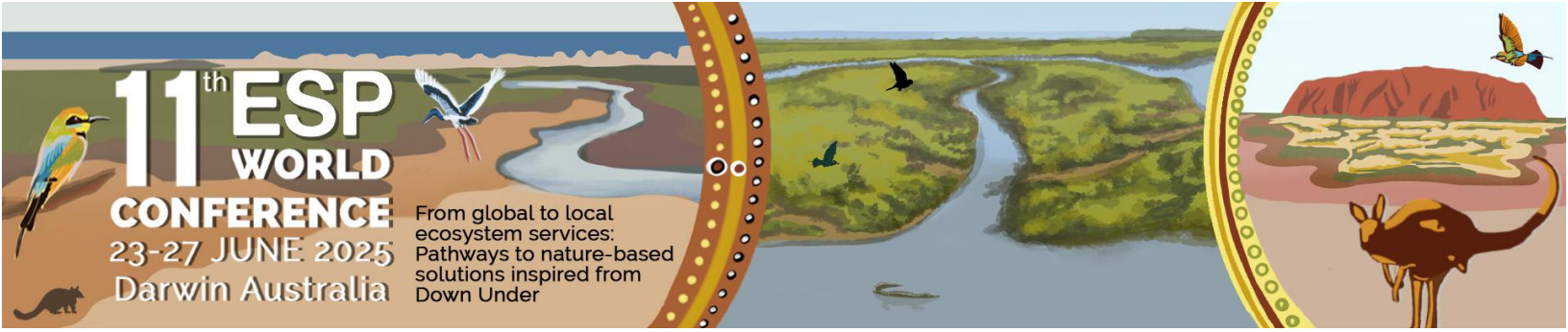
Keywords: Nature-based Solutions, Indigenous People and Local Communities, Community-based Forest Management, conservation outcomes

For decades, Indigenous Peoples and Local Communities (IPLCs) have played a crucial role in forest governance, biodiversity conservation, and climate adaptation. In Indonesia, the Social Forestry program and the legal recognition of Customary Forests (Hutan Adat) have strengthened IPLC tenure rights. Similarly, the Indigenous Peoples Rights Act (IPRA) of 1997 in the Philippines established a legal framework for recognizing ancestral domains under IPLC management. This study examines how these governance frameworks, alongside Nature-based Solutions (NbS), have influenced forest conservation, climate resilience, and community-led sustainability initiatives.

This research aims to: (1) analyse the historical development of IPLC-led forest governance in Indonesia's Social Forestry and the Philippines' IPRA framework, (2) assess the impact of IPLC land recognition on conservation, carbon sequestration, and deforestation rates, and (3) identify and evaluate policy mechanisms, financial incentives, and socio-economic conditions that institutionalize NbS within IPLC forest management.

Using a mixed-methods approach, this study integrates historical governance analysis to assess IPLC tenure security and land expansion, remote sensing to evaluate forest cover changes, and qualitative data from key informant interviews and focus group discussions with IPLC leaders, policymakers, and conservation practitioners.

Preliminary findings indicate that formal IPLC land recognition has significantly improved forest conservation. In Indonesia, Social Forestry and Hutan Adat policies have led to a 15-20% reduction in deforestation in IPLC territories, while in the Philippines, the recognition of Certificate of Ancestral Domain Titles (CADTs) under IPRA has enhanced forest protection and biodiversity conservation. However, socio-economic vulnerabilities, policy inconsistencies, financing gaps, and land tenure conflicts remain challenges for scaling up NbS-driven forest management. Enhance IPLC's traditional ecological knowledge integration with science, while strengthen financial mechanisms, capacity-building and knowledge sharing for sustainable livelihoods is essential in ensuring long-term ecological, social, and economic benefits.



7. Smallholders' preferences for incentives for upscaling adoption of biodiversity-friendly cocoa agroforestry in the Peruvian Amazon

First authors(s): Javier Gustavo Montoya-Zumaeta

Other author(s): Jericó Fiestas-Flores, Lech J. Gutiérrez-Díaz, Brenton Ladd

First author affiliation: Universidad Científica del Sur, Peru

Contact: jmontoya.iq@gmail.com

Keywords: choice experiment, agroforestry, agriculture, stated preference methods, biodiversity markets, local communities, trade-off

Although agroforestry is a promising approach to reconcile biodiversity conservation and local development, uptake has proven challenging particularly across the tropics, justifying the need for incentives to promote adoption. We conduct a discrete choice experiment with 300 smallholders from the province Padre Abad in the Peruvian Amazon, to gain insight about their preferences in relation to four attributes of a proposed biodiversity-oriented agroforestry-based payment for ecosystem services (PES) scheme: 1) the requirement for tree cover, 2) modalities for a bonus to boost biological connectivity, 3) farmers' participation in monitoring activities, and 4) the level of cash compensation required to make participation an economically viable proposition. Most farmers expressed their willingness to participate in a PES scheme, although enrollment rate would be limited by a high requirement for tree shade, as this might reduce cocoa yield. Introducing periodic compensation after the 5th-year of enrollment in the scheme, farmers' active participation in monitoring and delivering individual sponsorship bonuses on-top of the PES compensation for enrollment of neighboring plots all increase willingness to participate in the initiative. Based on differentiated preferences, farmers could be classified into two main groups. For the first and largest group, decision to participate in the scheme is sensitive to choices in assessed attributes underscoring that their decision is driven by instrumental values. For the second group participation was related to more intrinsic motivations linked to genuine desire to conserve biodiversity, nature relational values and confidence in the business case for

agroforestry systems. This evidences the necessity to introduce tailored incentives to address differentiated smallholders' preferences for increasing effectiveness of the proposed scheme.

8. Exploring implementation of the IUCN Global Standard on NbS through the lens of case studies from around the globe

First authors(s): Emmanuelle Cohen-Shacham

Other author(s): Edna Cabecinha, Shane Orchard

First author affiliation: IUCN Commission on Ecosystem Management

Contact: minacs@gmail.com

Keywords: Nature-based Solutions, NbS Global Standard, Indigenous and traditional knowledge, Indigenous Peoples and local communities' involvement

Nature-based Solutions (NbS) are actions to protect, manage and restore natural or modified ecosystems, which address societal challenges, effectively and adaptively, providing human well-being and biodiversity benefits. This definition for NbS and their 8 related principles were the basis for developing the Global Standard for NbS – a robust operational framework, to help stakeholders from different backgrounds, plan, implement, assess, improve and upscale successful NbS interventions. The Global Standard has 8 criteria and 28 indicators that cover the most important aspects to consider for strong NbS interventions, and provides a self-assessment tool that can be implemented by users to assess a planned, ongoing or completed intervention. In a recent IUCN Commission on Ecosystem Management publication, NbS interventions in 21 case studies around the globe were assessed using the Self-Assessment Tool, identifying their strengths and weaknesses. In addition, most of the case studies used Indigenous, traditional or local knowledge in their design and/or implementation, and most had Indigenous peoples or local communities involved in the NbS interventions.

During this presentation, the NbS definitional framework and the Global Standard for NbS will first be presented. Then, the involvement of Indigenous peoples and/or local communities in

these selected case studies, as well as the use of Indigenous knowledge in designing and implementing successful NbS interventions will be presented, showcasing how this can be done in very different contexts, and inspire future good practice.

9. Caring for Country and Insect Phenology: Integrating Indigenous Knowledge for Resilient Horticultural Systems

First authors(s): Thomas Dick

Other author(s): No

First author affiliation: Jagun Alliance Aboriginal Corporation

Contact: thomasdick@Jagunalliance.org.au

Keywords: Caring for Country, phenology, integrated pest management, Environmental

Understanding insect phenology—the seasonal timing of insect life cycles—is critical for sustainable horticultural management, particularly in the context of ecological pest suppression. While conventional approaches to phenology rely on climatic models and entomological surveillance, they often overlook the depth of place-based ecological knowledge held by Indigenous communities. This paper explores how the practice of Caring for Country, as understood by Aboriginal and Torres Strait Islander peoples, can offer valuable insight into insect behaviour, seasonal patterns, and land stewardship strategies that enhance horticultural resilience.

Caring for Country reflects a holistic and reciprocal relationship with land and all living beings. It is grounded in observation over generations, and expressed through fire regimes, ceremonial practice, kinship systems, and seasonal calendars that interlink human activity with animal, plant, and insect life cycles. Within this framework, insects are not only indicators of ecological change but are active participants in systems of knowledge and care. Drawing on examples from Indigenous-led land management and collaborative research, this paper shows how Indigenous seasonal knowledge—such as the appearance of specific insects aligning with fruiting events or pest outbreaks—can inform precise, adaptive horticultural

practices. Through the lens of the Pest-READI project, we are working with scientists and farmers to consider how traditional fire and planting strategies can support beneficial insect populations and suppress pest outbreaks through habitat management.

Rather than positioning Caring for Country as an alternative to scientific phenology, this paper advocates for integrated approaches that value both Indigenous and Western knowledge systems. In doing so, it demonstrates how culturally grounded ecological understanding can contribute to more nuanced and responsive horticultural planning, ultimately supporting biodiversity, productivity, and long-term ecological health.

10. Restoring Luapula landscape to support biodiversity conservation and community livelihood- Milenge District, Zambia.

First authors(s): Lydia Chibambo

Other author(s): Wilfred Miga

First author affiliation: Zambia Climate Change Network

Contact: lydiachibambo@yahoo.co.uk

Keywords: Biodiversity, Community, Conservation, Ecosystem, Livelihood

Biodiversity conservation is important for maintaining the ecosystem stability and build resilience of ecosystems, provide services to humanity and bolstering the capacity to with stand adverse impacts of climate change.

Despite its unique position along the Laupula wetlands, Milenge district faces a complex set of environmental and developmental challenges. These include the loss of biodiversity, because of habitat degradation, depletion in fish stocks, deforestation, and unsustainable land use practices, caused mostly by the expansion of agriculture and the overexploitation of natural resources. The province also faces adverse effects of climate change, which manifest in form of erratic weather patterns, impacting agricultural productivity, water resources, and the well-being of local communities. The high prevalence of poverty in the district and overreliance on traditional

farming practices and fishing among community members further contributes to resource depletion and vulnerability to external shocks. The ongoing threats of habitat destruction, pollution, and invasive species have led to the alarming decline of biodiversity across the landscape.

This abstract explores the importance of biodiversity conservation, the key challenges it faces, and the various strategies being implemented at local and national. These include supporting to establish and oversee community-managed biodiversity reserves, employing measures to mitigate habitat degradation and facilitate ecosystem restoration. Approaches such as habitat restoration, protected area management, sustainable land use practices, and community involvement are discussed as effective means to stop biodiversity loss.

The paper will attempt to share the experience of the role of local leadership and policy frameworks especially at community level planning and implementation, domestication in of international agreements like the Convention on Biological Diversity (CBD), is analysed in influencing conservation efforts. Emphasizing the importance of integrated and adaptive management, this study highlights the need for multi-stakeholder collaboration and the incorporation of biodiversity considerations into development planning, budgeting to ensure a sustainable future.

11. Situation analysis of the Martuwarra Fitzroy River catchment—toward ecosystem service economies respecting Martuwarra Living Waters and peoples of Martuwarra

First authors(s): Oscar Metcalfe

Other author(s): No

First author affiliation: Charles Darwin University

Contact: oscar.metcalfe@students.cdu.edu.au

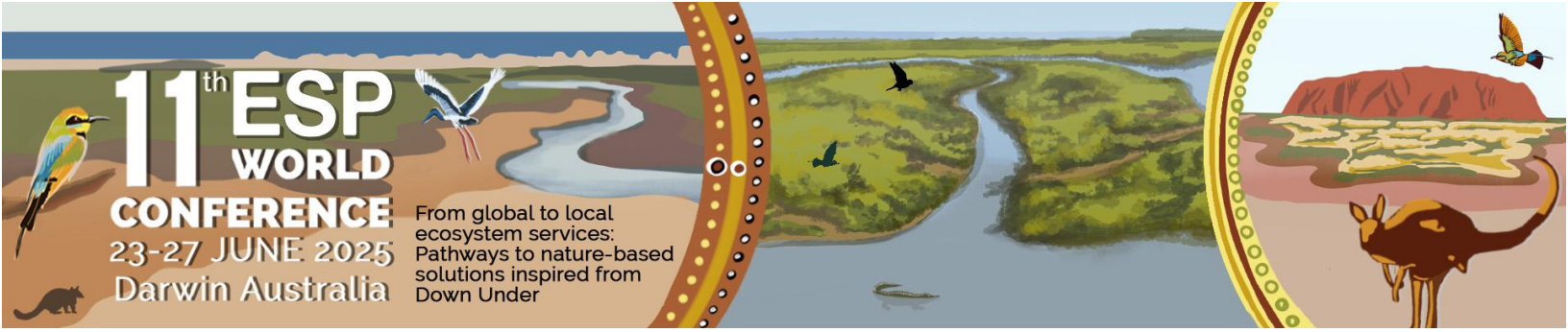
Keywords: Weaving, Ecosystem service economies, Self-determination, Indigenous economic development, Forever industries

Historically, development in the west Kimberley has prioritised non-Indigenous and non-resident private interests over local Indigenous resident communities' preferences which has supported the export of benefits and localising of harms. This article describes the development of a situation analysis using a two-toolbox weaving approach to support a holistic perspective by the Martuwarra Fitzroy River Council (MFRC) of the main economic activities salient to their promoting the long-term wellbeing of the ownees (peoples of or owned by Martuwarra) and Country of Martuwarra Living Waters via self-determined development pathways based on ecosystem services from healthy Country. Sectors assessed were beef pastoralism, mining and energy, irrigated agriculture and conservation-based carbon, tourism and potential Nature Repair-based industries. Mixed methods were applied that prioritised informing MFRC members of the current status and trends, favouring government and sectoral data with spatial and quantitative components. This analysis found (1) most Kimberley beef pastoralism is likely uneconomic when GHG emissions are priced in; (2) a save of extractive mining and energy development is likely with little local employment benefit; (3) that irrigated agriculture for cotton and hay or fodder is likely extensive with benefits flowing to pastoralists and minimal benefit to local communities absent water rights; and (4) the conservation-based sectors of carbon, nature repair and tourism are prospective for enduring, local community-benefiting 'Forever Industries'. This work strengthens the evidence base for self-determined, culturally-aligned alternative and complementary economic activity based on ecosystem services (ES) toward Indigenous preference-respecting policy and decision-making.

12. A Nature-based Solutions assessment framework integrating Indigenous biocultural and Ecosystem Services perspectives: an Australian example

First authors(s): Kamaljit K Sangha

Other author(s): No



First author affiliation: Charles Darwin University, Australia

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Keywords: Biocultural indicators, Indigenous peoples and local communities (IPLC), Integrated ecological and socio-cultural indicators framework, Nature-based Solutions (NbS), Nature repair market, Northern Australia

Assessing ecosystem services (ES) indicators has become vital to measuring the condition of ecosystems and their benefits, and informing policy and businesses for appropriate conservation and investment decisions. However, the ES indicators depending on ecosystem type, and the tools and measures developed to date mostly consider ecological attributes with little relevance to Indigenous Peoples and Local Communities (IPLC) contexts. Here, together with Australian Indigenous community participants, we assess and co-develop an integrated set of ecological and socio-cultural indicators, and associated assessment tools. We reviewed relevant global literature and conducted focus group meetings with three Indigenous groups, representing Traditional (Land) Owners, senior community members and rangers in northern Australia. Our literature review identified 30 ES indicators and associated assessment tools, addressing provisioning, regulating, biodiversity and culture services, primarily across the forest, agriculture, wetland and grassland ecosystems. Largely, biodiversity and regulating services encompassed ecological indicators rather than provisioning and cultural services. Notably, the IPLC context was not captured within the reviewed literature on indicator frameworks. The results from focus group discussions with Indigenous participants addressed this gap, describing 16 appropriate indicators (and associated measurement tools) for assessing Indigenous people's socio-cultural, ecological and economic experiences and aspirations. The proposed bottom-up, integrated biophysical and bio-cultural indicator framework empowers local communities and is useful for informing practitioners and emerging incentivising/Payment for ES schemes. Our conceptual framework is generic to adapt to any local context, and offers potential application in evolving Nature-based Solutions markets and for informing socio-economic, natural resource use management, and policy-related IPLC contexts in Australia and globally.