

Accounting for Indigenous perspectives in SEEA-EA in theory and practice

Paper for the 27th Meeting of the London Group on Environmental Accounting

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Summary

Indigenous Peoples' cultural knowledge and management practices play a key role in the management of ecosystems globally and inclusion of Indigenous perspectives within the development of integrated reporting systems such as SEEA-EA is important. The SEEA-EA has not substantively addressed the aspects of ecosystem accounting that may be of interest to Indigenous Peoples. This includes accounting for cultural assets within ecosystems, or for the cultural services provided by, and to, ecosystems. Our research explores how Indigenous cultural knowledge may be better accounted for in SEEA-EA. In this we examine how the cultural assets and cultural ecosystem services related to Indigenous management practices fit (or not) within the existing asset and ecosystem service classifications of SEEA-EA. We are also testing the practical application of SEEA-EA for the management of land by Indigenous Peoples, using an example from northern Australia and working collaboratively with the Yawuru people.

Our study highlights three useful aspects of SEEA-EA for supporting the priorities of Yawuru managers: (i) flexibility in the units used for the analysis; (ii) the extended time scale of the accounts; and (iii) ecosystem accounting's emphasis on capturing and reporting consistent data. Workshops with Yawuru managers have also identified gaps in SEEA-EA, where cultural assets and cultural services are either not defined or where the definition is not sufficiently broad to encompass the flows arising from Indigenous cultural knowledge and landscape management practices.

This research has important implications for the recognition of Indigenous People, knowledge, and data within accounting approaches in Australia and globally.

We acknowledge the Yawuru people, the Traditional Custodians of the lands and waters in and around Rubibi (the town of Broome, Western Australia). We acknowledge and respect their continuing culture and pay respects to their Elders past, present and future.

1. Introduction

The UN Sustainable Development Goals (SDGs) emphasise the need to include Indigenous practices in the management of cultural, environmental and economic resources (UNDESA, 2016). Ensuring this recognition requires the assessment of existing frameworks for monitoring and reporting, to ensure they are sufficiently broad to encompass Indigenous People, perspectives and knowledge. Foremost, review of the definitions, approaches and metrics used to report on the stocks and flows of environmental assets will ensure they are appropriate to represent the diversity of human perceptions of value.

Globally, over 370 million people identify as Indigenous, with around 40% of the planet's land area recognised under some form of Indigenous management (Garnett et al., 2018). These lands are crucial for biodiversity protection and conservation. It is estimated that around 80% of the world's biodiversity is contained within areas managed or owned by Indigenous Peoples or communities (UNDPI, 2020). Further, Indigenous land intersects with more than 40% of all terrestrial protected areas and ecologically intact landscapes, with important implications for protecting and conserving these ecosystems (Garnett et al., 2018).

Indigenous cultural and environmental management practices are being increasingly recognised for their important contribution to ecosystem function. For example, several studies undertaken on Indigenous lands have identified beneficial ecological services arising from Indigenous management activities, including increases to and protection of habitat diversity through weed management and regular cool season burning regimes (Barber and Jackson, 2017; Garnett and Sithole, 2008); enhancement of wetland water quality through ongoing traditional management of water sources (Pyke et al., 2018); and restoration of forest and soil resources through seed dispersal, revegetation and earthworks activities (Comberty et al., 2015).

Fundamentally, Indigenous People have the right to self-determine the use of their lands and associated natural resources (UNDPI, 2020). Given that the maintenance of the conservation values of a significant share of the planet depend on the institutions and actions of Indigenous Peoples (Brondizio and Le Tourneau, 2016), it is prudent that Indigenous perspectives are included in the development of environmental management frameworks. Yet, currently many approaches including the SEEA are lacking in their inclusion of Indigenous knowledge and data. We thus consider key challenges to including Indigenous perspectives within a SEEA-EA approach and present a collaborative case study as an example of how ecosystem accounts may be developed in partnership with Indigenous land managers.

2. Indigenous values and SEEA-EA

Given the rapid expanding global production of ecosystem accounts and finalisation of the SEEA-EA early this year, it is timely that the scope for Indigenous-based accounting applications to be included in the on-going use and development of the SEEA are considered. To date, the development and application of SEEA-EA has not specifically addressed the aspects of ecosystem accounting that may be of interest to or used by Indigenous Peoples.

The SEEA-EA mentioned Indigenous People, knowledge, perspectives or groups in three paragraphs:

- 4.40 which is on linking ecosystem extent accounts to economic data and “identifying the area of ecosystems (and the different ecosystem types) that are under common ownership or under the control of indigenous people”

- A5.4 in reference to methods for measuring ecosystem condition, specifically “Method 7 may be particularly relevant in capturing indigenous knowledge and perspectives”. Method 7 is about the use of expert opinion and says, “Several weaknesses are inherently associated with this approach”.
- 6.97 in the context of linking biomass provisioning services to cultural services and “traditional harvests undertaken by indigenous groups”

However, there are currently no published examples of the application of an ecosystem accounting approach to an Indigenous management context to test the usefulness of such accounts stated in paragraphs 4.40 of the SEEA-EA. To date, the extent of Indigenous inclusion within pilot studies has included:

- WAVES Partnership - Palawan, Philippines: Indigenous People were consulted about the preparation of the accounts that included their land and water, but the accounts were not for them or related to Indigenous interests. Cultural assets and services were not part of the account development (WAVES Partnership, 2016 p. 46).
- IDEEA Group - Geographe Bay, Australia: The authors recognised that key features of the study area are known to be: ‘highly valued by traditional owners... delivering social and cultural benefits such as maintaining connections to sea country’. However, measurement and accounting for cultural services was not in scope of the project (IDEEA Group, 2020).

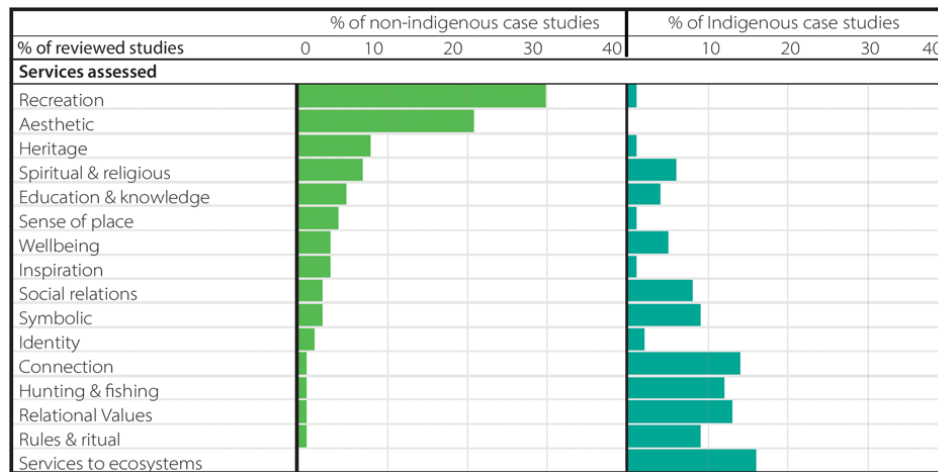
In part, the gap in Indigenous inclusion within ecosystem accounting may be attributed to misalignments in the definitions and measurement of cultural values between Indigenous and non-Indigenous contexts (Bark et al., 2015). It is prudent, here, to move into a phase of trial case studies, to more closely assess both synergies and gaps in the alignment of Indigenous values with SEEA best practice.

3. Challenges for including Indigenous perspectives

The integration of Indigenous knowledge and values within the SEEA-EA poses both conceptual and methodological challenges for a number of reasons. First, conventional approaches for accounting for ecosystem assets are unlikely to be compatible with Indigenous relationships with Country, which are embedded within understanding of a two-way reciprocal relationship between people and Country (Brazenor et al., 1999). This poses definition challenges, as Indigenous People tend to conceptualise ecosystem services differently when compared to non-Indigenous practitioners. For example, in a review to compare Indigenous and non-Indigenous cultural ecosystem service (CES) applications, we found that the Indigenous cases studies emphasised different services to those described by the MEA and CICES (Table 1). Indeed, the most commonly discussed services: services to ecosystems, connection (to others and the landscape) and relational values; represent value flows that are embedded in socio-ecological systems (Berkes et al., 2000; Comberti et al., 2015). This may be problematic for SEEA-EA integration, where currently stocks and flows are considered in terms of flows from ecosystems to people.

Within the SEEA-EA, the flows from Indigenous Peoples' use for the management of ecosystem assets are not well reflected by the notions of input of produced goods and services, labour and capital for the Indigenous management of ecosystems assets. Consideration of Indigenous People, or indeed any people, as an integral part of ecosystems, rather than as flows between people and ecosystems, also seems an area in need of more examination.

Table 1. Cultural services identified in a review of non-Indigenous (n=243) and Indigenous-specific (n=31) studies



Second, the datasets used to develop ecosystem accounts may not fully encompass Indigenous understandings of the continuity of Country. For example, the classification of ecosystems and their services into discrete classes risks undermining the dynamic and connected nature of Indigenous spatial ontologies and living cultural landscapes (Potter et al., 2016). It is thus important that any application of ecosystem accounting works pro-actively with Indigenous Owners and managers to adapt traditional accounting conventions to be both relevant and useful for their intended management purpose. Taking into account user needs in the production of SEEA-based accounts has been common failure in the development of accounts around the world (Vardon et al., 2016).

4. Case Study: Assessing SEEA-EA on Yawuru Country

To investigate how Indigenous perspectives may be considered in an accounting context, we are engaging with bottom-up, collaborative co-research to assess the usefulness of a SEEA-EA approach to support Yawuru Country managers in Broome, Western Australia (Figure 1).

In Australia, over 39% of the nation's land and sea territory (2.69 million square kilometres) is recognised under Native Title, referring to the legal acknowledgement of Indigenous People's rights to access and use their lands according to traditional laws and customs (Dodson, 2012; NNTT, 2020). The Yawuru People are one example of Indigenous Native Title holders who, operating through their organisational arm Nyamba Buru Yawuru (NBY), have emphasised the application of innovative policy and geospatial mapping technologies to guide strategic, information-driven post Native Title governance.

NBY are frequently required to engage in the negotiation of complex land-use decision-making related to mining proposals, and the growth of both pastoralism and tourism in the Kimberley region (NBY, 2019). Here, the development of collaborative research partnerships and the testing of management approaches through small-scale case studies has been important. Through a partnership with the Australian National University (ANU), NBY has engaged in several projects to document community demographics (Taylor et al., 2012), and identify and protect sensitive areas of Yawuru Country (Potter et al., 2016). In this context, in 2018 a joint workshop involving NBY's Native Title and Environmental Services (NTES) Unit and the ANU Fenner School of Environment and Society assessed the potential of applying ecosystem accounting to support NBY's environmental management agenda. A subsequent, practical investigation was endorsed by NTES to develop experimental accounts for key assets on Yawuru Country.

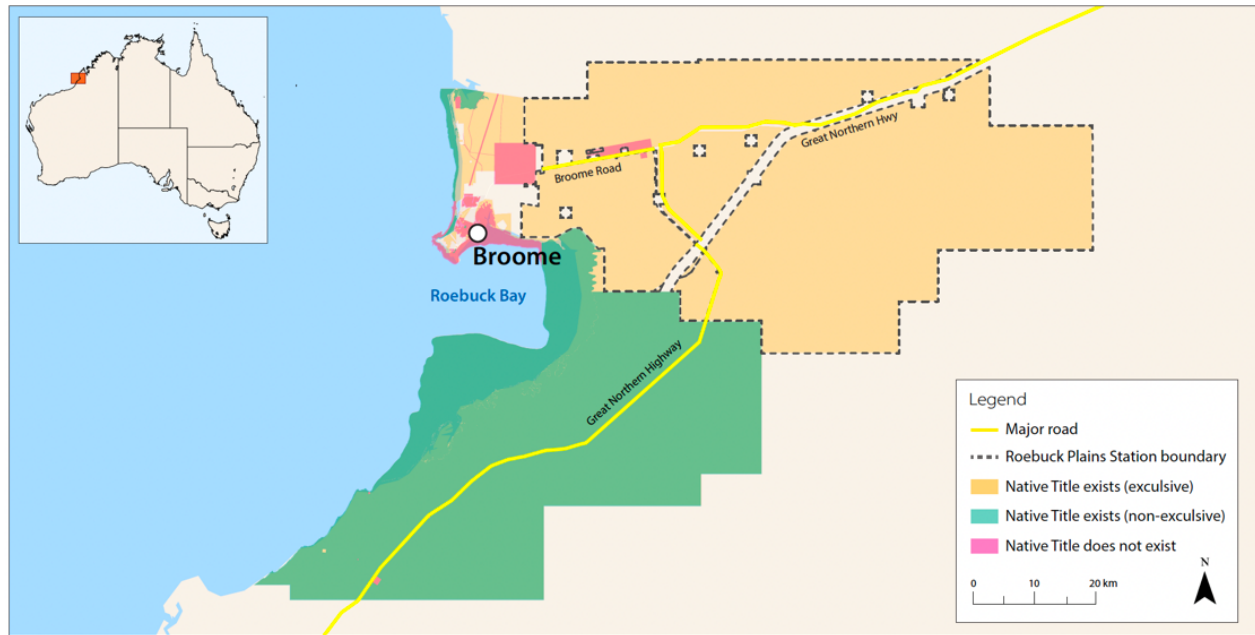


Figure 1. Yawuru People are the traditional custodians of the land and sea Country around Broome, Western Australia (122.23° E, 17.95° S). The Native Title determinations illustrated were granted in 2006 and include the land and sea country around Roebuck Bay and Roebuck Plains Station. Basemap: NNTT (2020).

4.1 Workshop findings

Workshops were conducted to gain a Yawuru perspective on the opportunities and challenges to developing an applied ecosystem accounting approach to support NBY’s management of Country. These workshops included senior Yawuru managers and accounting experts and undertook a thematic assessment of the potential uses, needs, challenges and opportunities for account development in the Yawuru context.

Figure 2 details the main themes and sub-themes extracted from the workshop sessions. First, opportunities for accounts were highlighted, principally as a form of empowerment for Yawuru, and other Indigenous People. It was discussed that the bottom-up development of a set of experimental accounts for managing Country could set a precedent for engaging with Indigenous Peoples globally and provide a seat at the table for Indigenous organisations in the development of inclusive national accounting standards. Second, accounts have potential uses to directly support Yawuru on-Country management. For example, accounting data could support the strategic monitoring of biodiversity (particularly in relation to managing tradeoffs), and outputs used to communicate change to relevant stakeholders. Third, challenges to account development were identified. Specifically, ensuring NBY has sufficient resources and expertise to develop accounts, such as technological resources and relevant datasets. Likewise, challenges were noted with the ecosystem accounting method itself; with the workshop participants concerned that there is no current precedent for including Indigenous cultural values and knowledge within SEEA-EA. Finally, the key requirements for meeting the identified challenges to the approach were noted. These included engagement with case studies to assess methodological appropriateness; and the building of organisational capacity to maintain accounts independently in the long-term.

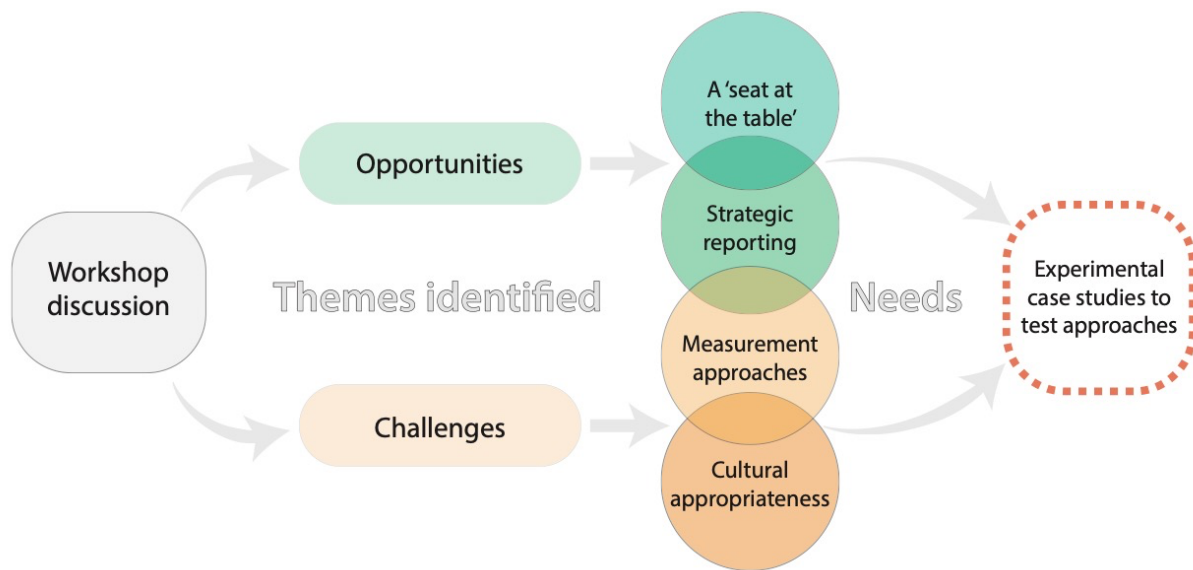


Figure 2. Themes and sub-themes identified during ecosystem accounting workshops with Yawuru managers

4.2 Pilot land cover and fire accounts

The workshop identified the need to trial a practical accounting approach in the Yawuru context. As such, we produced pilot land cover and fire accounts to assess their usefulness for supporting management on Roebuck Plains Station (RPS), a key asset of Yawuru Country. Both accounts were produced for the 20-year period 2000-2020 for wet and dry seasons (Figures 3-4). The account data were presented to Yawuru managers and a second workshop undertaken to assess the outcomes.

In general, our evaluation of the experimental accounts highlighted three key benefits for supporting the priorities of Yawuru Country managers:

- flexibility in the units used for the analysis
- the extended time scale of the accounts
- ecosystem accounting's emphasis on capturing consistent reporting data

NBY's managers compared the information from the experimental land cover accounts with their knowledge of RPS. Good correspondence was noted between the surface water data provided in the accounts, and the participants' observed water inundation patterns during the years 2016-2020. NBY's managers also commented that the relatively fine resolution of the land cover dataset (e.g. Landsat 8 imagery at 30 meter per pixel resolution), enabled the detection of surface water at a fine scale within individual paddocks, which was important for accounting for culturally important areas, such as small-scale groundwater soaks and springs.

On the applications of the land cover account, participants commented that the capture of consistent NDVI data over an extended period would provide a useful management tool for identifying areas where additional conservation activities, such as cattle exclusion and revegetation could be conducted. It was noted that the index for the relative landscape 'greenness' provided by the NDVI appeared to align well with cultural management aims for RPS, as it allowed for a more continuous capture of vegetation change across the landscape compared to a compartmentalisation of discrete ecosystems. It was also noted that work to specifically incorporate a cultural dimension to land cover condition reporting was needed. For example, by creating a land cover condition account

based on an assessment of the cultural health of Country. This would help ensure that future accounts better align with Yawuru cultural knowledge. Likewise, the collection of accounting data on a more regular basis, and in alignment with the six Yawuru seasons (Yawuru RNTBC, 2013) was identified as a way to improve the account’s alignment with NBY’s seasonal cultural management agenda.

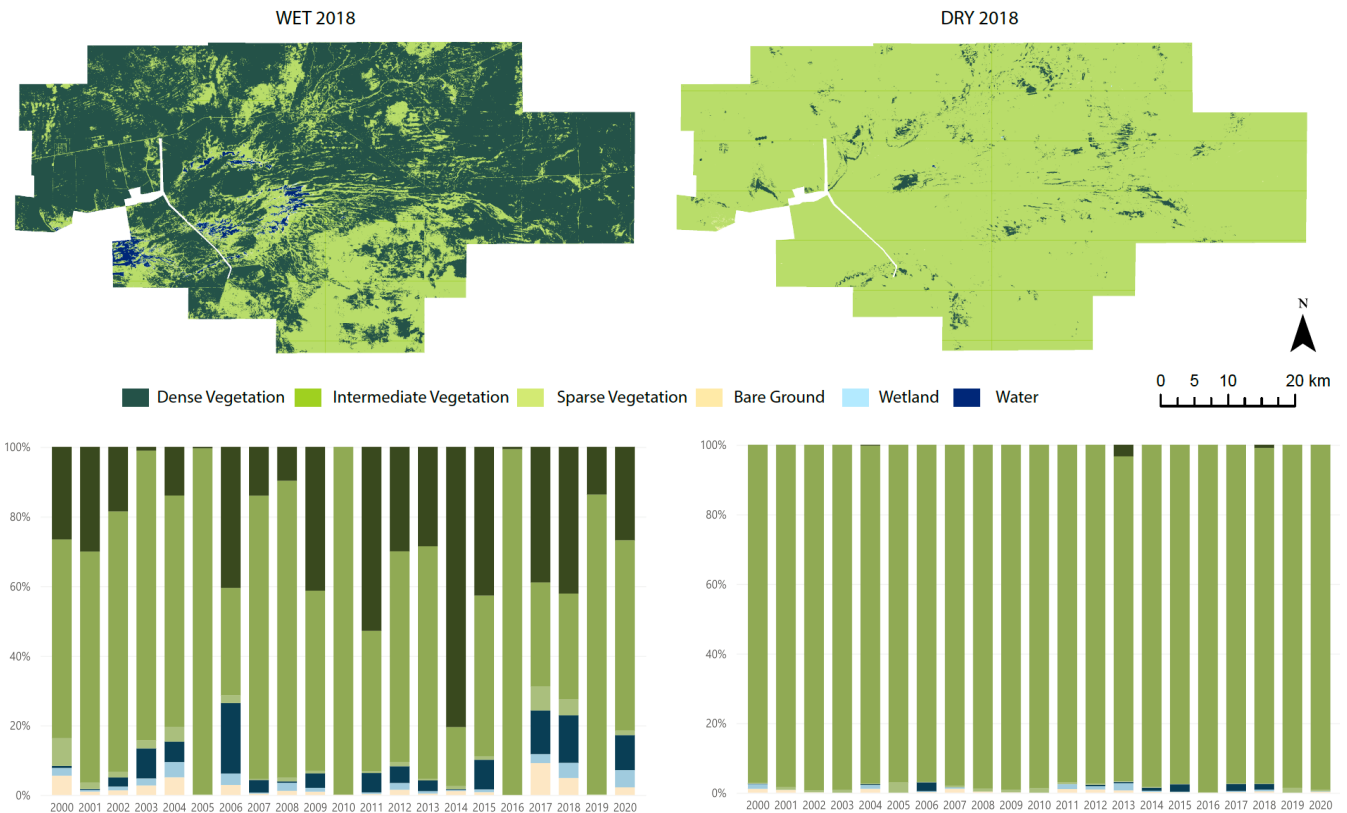


Figure 3. Landsat 7 & 8 derived land cover extent estimates for RPS for the wet and dry seasons 2000-2020. NDVI is used as a proxy measure for land cover. Wet areas are represented in blue, bare areas in cream and the vegetation gradient, sparse to dense, in greens.

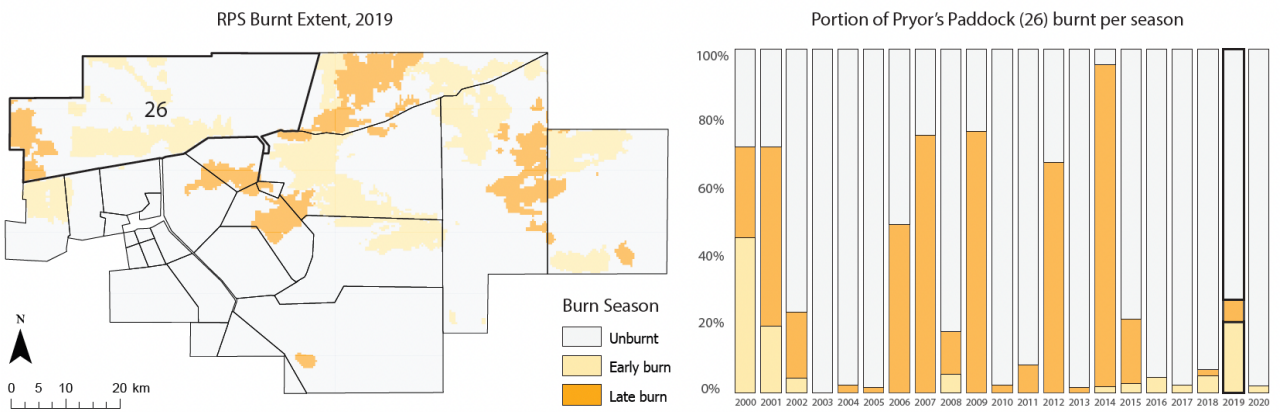


Figure 4. Example from experimental fire account for RPS showing seasonal burn extent in Pryor's Paddock (26) for the period 2000-2020.

The use of fire (also called burning) is a key component of NBY's management of RPS, and as such NBY's managers suggested that the experimental fire account would align well to the organisation's Monitoring, Evaluation, Reporting and Improvement (MERI) targets for management reporting. It would also provide NBY with an independent, timely and accessible source of information on fire management that could be used to communicate the social and ecological outcomes of cultural burning on Country. Here, it was suggested that the capacity to identify the seasonality and extent of fire on RPS at the paddock scale (e.g. Figure 4), could assist NBY to assess the specific ecological effectiveness of culturally informed fire management in terms of the corresponding impacts of burning on vegetation composition, weed presence and biodiversity. However, considering *where* and *how* the experimental fire account could be considered in relation to a broader SEEA-EA approach is a necessary next step in the account's development. For the pilot study, we considered cultural burning as a *management intervention*, with burn seasonality an indicator of the *type* (or quality) of management undertaken. It is worth considering, however, that cultural burning could also be reported as a *service to ecosystem*, where the extent and type of fire (e.g. early or late) determines the enhancement service to ecosystem function (e.g. see Figure 5). The distinction of a service to the ecosystem by people is different from notion of inputs of labour, capital and other goods and services for ecosystem asset management. This service would seem to be aligned with notions of inputs of human and social capitals but this is yet to be fully explored and are notions not explicitly within the scope of SEEA-EA.

5. Considerations and next steps

To assess Indigenous assets and cultural services comprehensively within the ecosystem accounting framework, we recommend that these issues are added to the SEEA-EA research agenda. This would help prevent the marginalisation of Indigenous Peoples' significant cultural, environmental and economic interests from future accounting approaches. While there appears to be great potential for ecosystem accounts to be useful through bottom-up application in an Indigenous context, further work is needed to integrate Indigenous perspectives and values with SEEA-EA. In particular, considering how conceptual definitions for ecosystem assets and flows, and the metrics used to measure these assets and flows in an Indigenous context will be important to ensure uptake of the SEEA-EA by Indigenous land managers.

5.1 Defining socio-ecological assets, services and flows

Defining socio-ecological values in a manner appropriate to both the SEEA and the diversity of Indigenous knowledges will be challenging. In this context, one option to include Indigenous cultural and environmental services may be an extension of the definition of 'ecosystem assets' in the SEEA-EA. Currently, the SEEA defines ecosystem assets as:

"containing either a specific combination of ecosystem characteristics (e. g. a tropical rainforest represented by a land cover unit) or areas that comprise a variety of combinations of ecosystem characteristics (e. g. a river basin encompassing wetlands, agriculture and settlements represented by an ecosystem accounting unit). . . for ecosystem accounting purposes, the focus is on the functioning system as the asset."

— UN (2014 p. 154)

Within this definition, there is scope to consider within ecosystem assets people as part of the characteristics and functioning of the asset – the specific mention of agricultural and settlements points to this. The area of land under Indigenous management would seem to align with this concept. As such, the asset (or area managed by an Indigenous organisation) would deliver unique socio-ecological services including cool-season burning, landscape protection (such as to groundwater) and hunting activities, that, in turn, provide enhancing, protecting and

regulating services to benefit people and the environment (Comberti et al., 2015). While a separate definition of cultural assets could be developed and related to ecosystem assets, this would fail to recognise the interconnections between the ecosystems and cultures of Indigenous People (e.g. Figure 5). For this, the fundamental question of to what extent humans are part of ecosystems needs to be considered.

5.2 Measurement, standardisation and engagement

Further to developing appropriate concepts and classifications for Indigenous asset and service flows, assuring that the metrics used to quantify these data are aligned with both Indigenous values and SEEA standards will be important. The extent to which qualitative data can be captured using quantitative measures needs attention. This is because data collection in the Indigenous context largely uses qualitative interview techniques (e.g. semi-structured interviews and surveys) that do not lend themselves to replicability over time (Lewis and Sheppard, 2006). Likewise, it is common for Indigenous research studies to include small sample sizes based on limited numbers of knowledge-holders with the authority to speak about cultural values (Guillemin et al., 2016). Considering how such data may be aggregated over broader scales to align with regional and national scale accounts will require testing through a diverse range of case studies. Monetising these measures may be useful, but it is not clear how these notions of value could be translated into exchange values.

Since studies of culturally specific minorities are useful for testing cultural ecosystem services frameworks (Bark et al., 2015), we suggest that there is a focus on conducting additional pilot studies across a range of contexts. It will be crucial that the research protocol for such studies acknowledge reciprocity, data privacy and collaboration as key priorities for all account development, to promote Indigenous perspectives equitably within account development globally (Fuery, 2009; Walter and Suina, 2019).

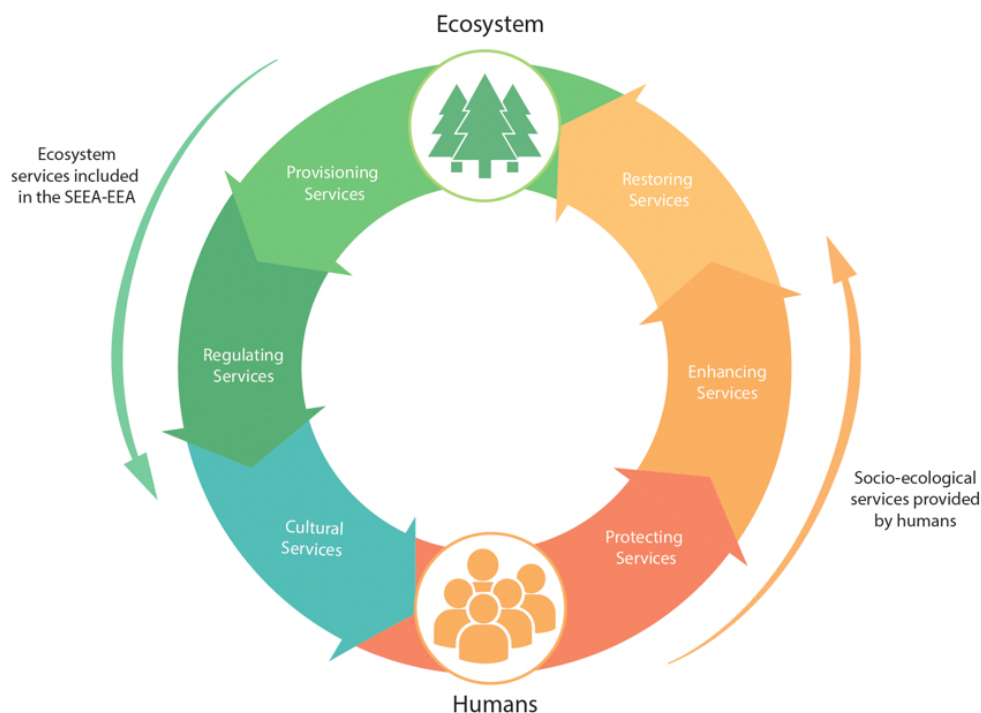


Figure 5. Schematic of the linkages by between socio-ecological and ecosystem services. According to Comberti et al. (2015), ecosystem services should not be conceptualised as just a one-way flow from the environment to humans, as humans also provide valuable services to ecosystems.

5.3 Questions for the London Group

- Do you agree that humans defined characteristics should be considered as part of ecosystems assets?
- How could the cultural services from humans to ecosystems be considered in the SEEA-EA?
- Do you agree that Indigenous cultural assets and ecosystem services should be added to the SEEA-EA Research Agenda?
- Is there any other research activity examining Indigenous cultural assets and ecosystem services in the context of the SEEA-EA?

Acknowledgements

We would like to acknowledge the Yawuru Traditional Owners of the lands and sea upon which this research was conducted, and pay respects to their Elders past, present, and future. The Australian National University and Fenner School of Environment and Society have a long-term collaboration with Nyamba Buru Yawuru based around the use of Geographic Information Systems (GIS) to assist with Native Title decision making. Thank you also to all the participants who generously took part in workshop discussions.

Thank you to the Fenner School of Environment and Society at the Australian National University, the Australian Government Research Training Program Scholarship, and the Westpac Future Leaders Scholarship for supporting this research.

Fieldwork was approved by the Australian National University Human Ethics Committee (Protocol Number 2017/309).

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