

Empowering young Aboriginal women to care for Country: Case study of the Ngukurr *Yangbala* rangers, remote northern Australia

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The late Cherry Wulumirr Daniels was a Ngandi Elder of the Ngukurr Community south-east Arnhem Land (Ngukurr, via Katherine, Northern Territory, 0852, Australia). The Ngukurr Yangbala rangers are a group of Young Aboriginal People from the Ngukurr Community. Shaina Russell is a Postdoctoral Research Fellow, and Emilie Ens is a Senior Lecturer at Macquarie University (North Ryde, NSW 2109, Australia. Tel: 0423 285 619; Email: sbaina.russell@mq.edu.au). This paper is part of the special issue 'Indigenous and cross-cultural ecology - perspectives from Australia' published in Ecological Management & Restoration.

Summary Globally, the role of women in conservation is gaining attention with increasing initiatives to support gender equity in environmental management and decision-making. In Australia, the role of Aboriginal women in natural and cultural resource management employed as rangers is also gaining recognition; however, female employment in this field remains underrepresented. This paper reflects on a cross-cultural partnership aimed at empowering young Aboriginal women in natural and cultural resource management, locally known as caring for Country, in Arnhem Land, a remote Aboriginal owned region of northern Australia. The project was led by local Ngukurr community *Ngandi* Elder and lead author, Mrs Daniels, and Macquarie University researchers who co-designed and co-delivered activities according to five project aims: (i) Community involvement; (ii) Biocultural research / learning on Country; (iii) Leadership and confidence building; (iv) Knowledge maintenance; and (v) Capacity building. Over three years of the project, over 60 youth participated in a range of on-Country and cultural learning, leadership and capacity building activities including cross-cultural biodiversity surveys, wetland monitoring, traditional language and knowledge recording and culture camps. Participant feedback and a biocultural learning assessment task noted growth in confidence, biocultural knowledge and desire for continuation of youth empowerment programs in conservation. To facilitate gender equity in Aboriginal natural and cultural resource management, structural and sustained support of women's empowerment and leadership, driven by local women with support of local communities, is required.

Key words: *Aboriginal-led, biocultural research, caring for Country, co-design, gender in conservation, youth.*

Introduction

In recent years, global conservation organisations have developed policies to address gender inequities and barriers to women's participation and leadership in natural and cultural resource management (WWF 2011; IUCN 2018; The Nature Conservancy 2018; Conservation International 2019). Despite this, the role of women, and indeed Aboriginal¹ women in Australian natural and cultural resource management, remains below parity (Sithole *et al.* 2007; Altman *et al.* 2018; Brock 2001). A recent review detailed several barriers inhibiting gender equity in conservation and natural

resource management. These barriers included the following: current socio-cultural structures; differences in the ways women interact with the environment; marginalisation of women's knowledge in conservation actions; and a lack of resources or dedicated effort to understanding and addressing barriers to women's engagement (James *et al.* 2021). Furthermore, intersectionality (race, ethnicity, indigeneity, age, religion, poverty and disability) further marginalises some women in conservation debates and actions (Evans *et al.* 2017). Originally coined to describe the discrimination experienced by someone who is both black and a woman (Crenshaw 1989), intersectionality is now used more broadly to describe the compounding factors contributing to oppression. James *et al.* (2021) stated that women need to be 'substantively and

meaningfully included in conservation', and to facilitate empowerment, women's roles, power and agency to inform decision-making must be supported.

Empowerment through collaboration can be viewed through the spectrum of public participation which aims to transition projects along a trajectory from informing to consulting, involving, collaborating and ultimately empowering community decision-making (International Association for Public Participation 2018). Research has shown that to facilitate empowerment through collaboration, co-designed projects require several key characteristics: reciprocity; trust and accountability; time; and ultimately, balancing power and allowing for equitable decision-making (AIATSI 2020; Woodward *et al.* 2020; Hill *et al.* 2021). Co-designed, and more so, Aboriginal-led projects, allow for research with Aboriginal

¹We have chosen to use the word Aboriginal as it was the preferred word of the lead author Mrs Daniels.

people rather than research on or for Aboriginal people (Smith 1999; Davies 2007; Koster *et al.* 2012; Suchet-Pearson *et al.* 2013; Tengö *et al.* 2014; Woodward *et al.* 2020; Hill *et al.* 2021; Maclean *et al.* 2021). Aboriginal knowledge is mainly transferred orally and learned through observation and practice. Therefore, projects involving 'learning by doing' and adaptive approaches, rather than overly prescriptive approaches, are especially suited to working with Aboriginal groups (Garnett *et al.* 2009; McCalman *et al.* 2009; Wexler 2011; Fogarty 2012; McNamara & Westoby 2016). Adaptive, co-designed projects support local involvement, learning by doing and critical engagement in natural and cultural resource management and decision-making (Borrini-Feyerabend *et al.* 2007; Fogarty 2012; Woodward & Marrfurra McTaggart 2016; Woodward *et al.* 2020).

This paper describes an Aboriginal-led, co-designed, adaptive and co-delivered cross-cultural project called the Ngukurr *Yangbala* (Young People) Project that aimed at empowering young Aboriginal women in natural and cultural resource management, locally referred to as caring for Country, in remote northern Australia. Here, we review the Australian context, the project location (Ngukurr, south east Arnhem Land, Australia), our Aboriginal-led an adaptive co-design approach, aims of the project, project outcomes, project participant feedback and learning assessment, outcomes beyond the project, challenges and lessons learnt.

Review of Australian Aboriginal Women's Roles in Conservation

In Australia, the colonial European documentation of and influence on Aboriginal societies was historically conducted by male dominated professions such as explorers, anthropologists, governors and missionaries who often focussed records on Indigenous men's knowledge and law (Rose 1996; Brock 2001). This centrality of men and the lack of documentation of women's law, agency, societal roles and power resulted in early settler written records that suggest Aboriginal societies were male dominated

and that women occupied a subservient role in social life (Rose 1996). With the advent of women from European descent escalating in positions of literary power, publications from the mid-20th century challenged the androcentric views assumed in Aboriginal gender dynamics (Berndt 1950; Gale 1970; Kaberry 1970; Merlan 1988; Lepervanche 1993; Diane 2002). While these analyses have been critiqued, literature continues to emerge that reinforces the important role of women in Aboriginal societies, and indeed in caring for Country or natural and cultural resource management activities (Bird *et al.* 2004, 2008; Wirf *et al.* 2008; Marika *et al.* 2009; Ens & Manwurk Rangers 2010; Daniels *et al.* 2012; Ens *et al.* 2016a; Davies *et al.* 2018; Gay'wu Group of Women 2019). Caring for Country is recognised as an Aboriginal term for natural and cultural resource management that encompasses not only maintenance and conservation of natural resources such as flora, fauna, ecosystems, soil and water but also the tangible and intangible cultural and spiritual aspects of Country such as kinship relationships, ancestral songlines, traditional knowledge, as well as artefacts and rock art for example (Smyth 1994). The legacy of men in positions of power and the politics of funding and has resulted in male domination in Aboriginal caring for Country pursuits despite broad acknowledgement among Aboriginal leaders that women have important roles and traditionally participated in caring for Country activities (Sithole *et al.* 2007).

Despite the documented gender inequity in some Aboriginal societies, Aboriginal people across Australia have cultural norms that highlight the role of women in caring for Country (Morphy 2008; Davies *et al.* 2018). For example, in south west Western Australia, *Noongar* harvest of tubers is primarily a women's activity and harvest has been shown to increase soil nutrients and bulk density of tubers (Lullfitz *et al.* 2020). Additionally, *Martu* women from the Western Desert hunt burrowing game by burning vegetation to expose prey tracks (Bird *et al.* 2004). These fine-scale burning practices have resulted in increased fine-grained mosaics and vegetation complexity, which supports higher prey densities and in turn increases hunting success

(Bird *et al.* 2004, 2008). Hunting of large game by men was not shown to have the same effect because large mobile game move in and out of habitats at the macro scale (Bird *et al.* 2004, 2008). These examples illustrate how women use the environment differently to men and have their own ideas and areas that require care and need to be managed, according to Aboriginal cultural protocols. However, in contemporary caring for Country, women can be marginalised due to the focus on 'men's work', such as large-scale fire management and invasive species control (Sithole *et al.* 2007).

In contemporary remote Australia, opportunities for Aboriginal engagement in caring for Country activities have been greatly facilitated by the Indigenous Protected Area (IPA) program (Australian Government 2021a). Initiated in 1997, the IPA system now comprises 78 IPAs accounting for more than 46% of the National Reserve System, providing considerable opportunities for Aboriginal employment as rangers (Australian Government 2021a). In 2021, there were 899 full-time ranger positions (spread across part-time, full-time and casual roles) (Australian Government 2021b). There are minimal publicly available data on the gender breakdown of these roles nationally. However, in 2014–2015, it was noted that Aboriginal women held 20% of part-time and full-time positions, or 36% when casual was included (Country Needs People *et al.* 2018). Women rangers are often considered role models and ranger work is desirable by women (Daniels *et al.* 2012).

In the Northern Land Council (NLC; Top End, Northern Territory) supported ranger groups, recent efforts have worked to create gender balance and women rangers now make up 47% of ranger roles (NLC 2020). The proportion of women in independent ranger groups, not supported by such peak bodies, are anecdotally much lower. To facilitate movement towards gender equity, the NLC Women's Employment Program empowered women into ranger and leadership roles (NLC 2020). In the Northern Territory, there have been several, albeit sporadic efforts to support women rangers in caring for Country work since 1999.

The first women's ranger forum was held near Maningrida (1999; Daniels *et al.* 2012) followed by the Ross River Women's Ranger Conference in 2010. In 2019, the 'Strong Women for Healthy Country' initiative was established by the Mimal Rangers in central Arnhem Land to share women's experiences and improve practices. Bridging institutions and partnerships have also played an important role in promoting gender equity in Aboriginal conservation such as gender specific (women's) ranger programs, conferences and training courses (as documented in Sithole *et al.* 2007; Daniels *et al.* 2012; Ens *et al.* 2012).

Project Location

Ngukurr is a remote Aboriginal community in south east Arnhem Land, Northern Territory, Australia (Fig. 1). The town was established in 1908 as the Roper River mission (Christian Mission Society) and centralised more than seven surrounding Aboriginal language groups (Berthon *et al.* 2008). The rich local traditional languages were largely replaced by Roper River Kriol over the following century and remain the *lingua franca* today (Sandefur 1985; Dickson 2014). Ngukurr's socio-economic

profile is like many other remote Aboriginal communities in northern and central Australia. In the last census, Ngukurr had a population of 1149 people, of which 93.4% were Aboriginal and 44.6% of the population was aged less than 20 (compared to 24.8% of Australia's population). The per cent of tertiary attainment was 0.8%, and adult unemployment was 28.3%, compared to the national average of 16.9% and 6.9% respectively (Australian Bureau of Statistics 2016). Therefore, Ngukurr has a very high Aboriginal population, a high youth proportion, low education rates and high unemployment.

Ngukurr Yangbala Project

Aboriginal-led and adaptive co-design

The Ngukurr *Yangbala* Project was conceived by lead author Mrs Daniels OAM (now deceased). She lamented that many young people, especially women, in her community of Ngukurr had "nothing to do" and were disconnected from their traditional culture and Country as a result of modern influences (Senior 2012; Ens *et al.* 2016a). The project was therefore created by Mrs Daniels in partnership with co-

author Emilie Ens who had worked together for 10 years prior on biocultural research projects with the local Yugul Mangi Ranger group (Daniels *et al.* 2012; Ens *et al.* 2012, 2016a,b) who manage the western half of the South East Arnhem Land Indigenous Protected Area (SEAL IPA). The intention was to develop the skills and confidence of young adult women (18–35), in meaningful ecological and cultural conservation projects as a pathway to Ranger and other work.

At the outset of the project, 23 local youth and women from Ngukurr attended planning sessions (Fig. 2) and discussed projects that they would like the *Yangbala* participants, locally called *Yangbala* rangers, to do over the three years of funding by international environmental non-government organisation, The Nature Conservancy, through their Gender program. Aligning with the contractual aims, five local aims were translated in the co-design process:

- 1 Community involvement
- 2 Biocultural research / learning on Country
- 3 Leadership and confidence building
- 4 Knowledge maintenance
- 5 Capacity building

The group collectively brainstormed cultural and environmental activities they were interested in doing under each of the co-designed project aims (Table 1). The group loosely planned the timing of activities for the three years using butchers paper, and for the following year using a white board calendar. The *Yangbala* rangers typed up the plan in a Microsoft word document on project laptops. In the planning phase, we also conducted budget workshops where the *Yangbala* Rangers were taught how to use excel to plan the expected costs of each activity. During delivery of the project, group members suggested new activities that aligned with the locally defined and contractual aims (adaptive co-designed activities). At the start of each project year, meetings were held to discuss progress and plan for the year ahead. The project activities aligned with project aims are outlined in Table 1. The timeline in Figure 3 illustrates the ongoing and one-off activities conducted throughout the project.

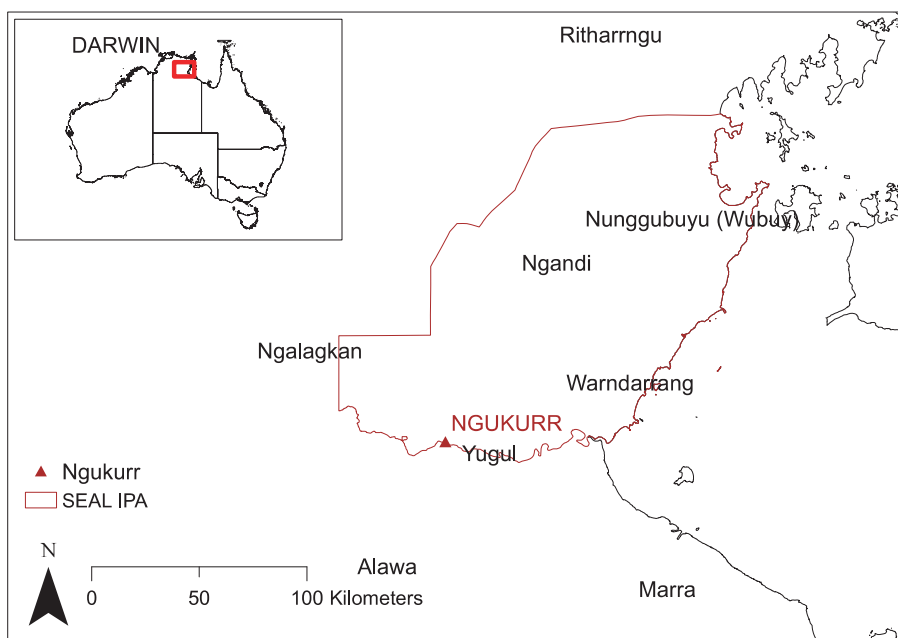


Figure 1. Location and surrounding traditional language groups of Ngukurr, south east Arnhem Land, Northern Territory, Australia.



Figure 2. Planning session October 2015: (clockwise from left) Geraldine Daniels, Pollyanne Ponto, Courtney Dixon, Linda Hall, Julie Roy, Martina Hall, Priscilla Dixon, Carlisa Roberts, Basil Wurramara, Maritza Roberts (writing on board), Mrs Daniels, Rhondelle Geoffrey and Jane Hall.

The outcomes of the co-designed aims are summarised below. Human Research Ethics approval for the activities and participant feedback was granted by the Macquarie University Research Ethics Committee (Reference numbers: 5201819182291, 5201828563229, 5201600360). All participants were asked whether they wished to remain anonymous or have their names included next to their statements. Where names are included, participants gave written consent.

Project Outcomes

The Ngukurr *Yangbala* rangers worked across several projects and activities during 2016–2019 (Table 2). Project participant Melissa Wurramarra, stated: *'The Yangbala project helps young people to build confidence and to interact with people in and out of the project. I am happy I joined this group as it gave me the opportunity to go back to University and to study and be a role model for my community'*.

Summaries of outcomes aligning with the five co-design aims

Community involvement

The *Yangbala* Project reached out to approximately 300 people from Ngukurr either as direct project participants, through community engagement activities

or youth via the local school (Ngukurr Community Education Centre). These activities are summarised below.

Maritza Roberts, regular project participant stated that the *Yangbala* Project *'... was very interesting getting all the different ladies and boys together from different tribes coming together to work as one big people of Yugul Mangi community'*.

Project participation. Over the three years of this project, 60 people between the age of 18 and 35 were variably employed on a casual basis. Although the project was initially designed to support women, there was some concern from the men in the community about the increased resourcing to women only. As a consequence, the scope of the project was broadened to include young men (11 were included) as a way of also supporting the women and avoiding conflict.

Community engagement. Local Elders and youth were invited to the on-Country culture camps, fauna surveys and bush tucker monitoring trips led by the *Yangbala* Project, sometimes in partnership with the local Yugul Mangi Rangers. Through feedback interviews with community members, the following statements were made about the community engagement activities:

Winston Thompson, Local Elder: *'I think this project should keep going, shouldn't stop. It should target kids that leave school under 18, and when they*

finish high school, good opportunity for them to build up their skills for starting looking for jobs, career and Yangbala group is the best way to approach this... to earn good money'.

Walter Rogers, Local Elder: *'I support the Yangbala project and with their experience they went out together with the rangers and they went out and got some animals we didn't see [for a long time], we don't see them here [in town] but they went out and found it [out bush]'*.

School activities. Community engagement was also facilitated through joint activities with Ngukurr School. During the project, six fauna surveys were conducted with school student and teacher participation. The Ngukurr *Yangbala* rangers also prepared and delivered workshops for senior classes on bush medicines, animals and billabong monitoring. Two *Yangbala* rangers also completed units of the Conservation and Land Management Certificate 1 with the senior school class.

Biocultural research – Learning on Country

The *Yangbala* rangers participated as co-researchers and co-authors in several research projects undertaken with Macquarie University researchers. These projects are outlined below.

Billabong research

The *Yangbala* rangers conducted research on billabongs including the effects of feral ungulate exclusion fencing (Ens *et al.* 2016b), billabong values (Russell *et al.* 2020b), eco-cultural condition of billabongs (Russell *et al.* 2021), drinking water safety (Russell *et al.* 2020a) and an investigation into pathogens in feral ungulates (Russell *et al.* 2020c).

Biodiversity surveys

The *Yangbala* rangers attended six biodiversity surveys, documenting over 200 species and recording cultural knowledge (Fig. 3). A cross-cultural electronic data collection application (for upload onto a tablet, Fig. 3) was collaboratively created by the team for this project

Table 1. Alignment of contractual and project co-design aims with proposed activities

Contractual aims	Co-design aims	Yangbala activities
1. Build Community support for and awareness of women's roles in Indigenous land management	<ul style="list-style-type: none"> • Community involvement • Leadership • Capacity building 	<ul style="list-style-type: none"> • Training • Employment (including ranger pathway) • School activities • Conference presentations • Community engagement activities • Produce communication materials such as fauna book, videos for YouTube, reports, blogs (Atlas of Living Australia (ALA))
2. Facilitate the intergenerational transfer of women's traditional knowledge and leadership development.	<ul style="list-style-type: none"> • Biocultural research/ learning on Country • Leadership and confidence building • Capacity building • Knowledge maintenance • Community involvement 	<ul style="list-style-type: none"> • Culture camps • Collaborative planning • Knowledge recording • One-on-one mentoring • Training in use of technologies • Conference presentations • Community activities and engagement
3. Share lessons learned	<ul style="list-style-type: none"> • Capacity building • Community involvement • Knowledge maintenance 	<ul style="list-style-type: none"> • Learn how to use Microsoft Word, Power Point and Excel • Upload cross-cultural fauna research and blogs to the ALA • Produce annual reports • Produce videos • School activities/engagement • Community activities and engagement
4. Demonstrate, through a measures project, the improvement of natural, social and cultural outcomes due to the specific role of women in the project.	<ul style="list-style-type: none"> • Biocultural research/learning on Country • Capacity building • Leadership and confidence building 	<ul style="list-style-type: none"> • Monitor fauna • Monitor billabongs • Monitor bush food places • Record feedback of Yangbala • Record feedback of Elders • Record participation and employment/training outcomes • Assess learning (knowledge of animals)

using CyberTracker. Part of this work has so far been published in an academic article (Ens *et al.* 2016b), through online Atlas of Living Australia (ALA, national species database) blogs and Species profile pages, and in a published local multilingual species reference guide: Cross-cultural Field Guide to some Flora and Fauna of South East Arnhem Land (Ens *et al.* 2020).

Bush Food monitoring

The *Yangbala* rangers conducted opportunistic observations of bush food patches and change throughout the project through on-Country trips with Elders. Quantified monitoring of target bush food species *Jupi* (*Antidemsa ghaesembilia*) and *Jalma* (Cheeky Yam, *Dioscorea bulbifera*) occurred between 2013 and 2018 at five and three sites respectively. During this time, a decline in fruit production was documented for *Jupi*, attributed to drought and non-traditional harvest methods (Ens *et al.* 2010). Monitoring of *Jalma*

was directed by Mrs Daniels, and decline was anecdotally attributed to digging and predation by feral pigs (see *Yangbala* YouTube Channel, Pollyanne's film about *Jalma*).

Freshwoda tedul (Freshwater turtle) mapping

The *Yangbala* Rangers also mapped *freshwoda tedul* (freshwater turtle) occurrences in the SEAL IPA based on interviews with local knowledge holders/hunters in the Ngukurr and Numbulwar communities. This was the first inclusion of regionally specific Aboriginal observational occurrence data and Aboriginal historical knowledge added to Australia's biodiversity knowledge database, the Atlas of Living Australia (Russell *et al.* submitted).

Seasonal Calendar

The *Yangbala* rangers also contributed to the *Yugul Mangi Rangers Fire en Sisan Calenda* (fire and season calendar) with

Elders and the Yugul Mangi Rangers (McKemey *et al.* 2020) through several field trips and knowledge exchange sessions.

Knowledge and Language Maintenance

The Ngukurr *Yangbala* rangers participated in seven culture camps (Table 3) and also worked on knowledge maintenance and language projects.

Regular *Yangbala* participant Maritza Roberts spoke about how she enjoyed learning about Country and culture: *'My favourite parts about the project was I love working with old Cherry, she is one of our Elders and I've learnt a lot from her knowledge about the bush, culture, everything you know...even language of the animals and the plants out there, it was so interesting and amazing, and [I've also learnt] from Em [Macquarie University ecologist]. So I've learnt both ways'*.



Figure 3. (clockwise from top left): Ngukurr *Yangbala* rangers Karmelina Daniels and Belinda Robertson recording fauna sightings at Bulubuluritj on a purpose built App; Mrs Daniels, Karis Robertson, Kiefer Hall and Belinda Robertson identifying a skink from Bulubuluritj using Indigenous and Western scientific knowledge; recording animals in the pit fall trap of a biodiversity survey with Rangers in a ‘good burn’ area at Bulubuluwen; frog surveys at night.

Tangible outputs included the production of a book, ‘Cross-cultural field guide to some plants and animals of South East Arnhem Land’ (Ens *et al.* 2020), and corresponding Atlas of Living Australia species profile pages containing cross-cultural knowledge of 275 species of plant and animals.

To assess participant learning, at the onset of the project (March, 2016) and at completion (February, 2019), the

Yangbala rangers were given a ‘test’ of cross-cultural animal and plant knowledge. This test was developed by project leader Mrs Daniels and Justine Rogers (a middle-aged community leader). It comprised of a table of 20 plant and animal photographs (species which the Elders wanted the *Yangbala* to learn about) and space for participants to write down the species names in English, Kriol and their traditional language. The results of

these tests are presented as a graph below. The learning assessment showed that over the 3 years of the project, the Ngukurr *Yangbala* rangers knowledge of 20 species (in three different languages) increased, as shown by survey responses from 11 (de-identified) *Yangbala* participants (Fig. 4).

Capacity building

Training

The Ngukurr *Yangbala* rangers received informal workplace skills training in several areas from project planning, budgeting, use of computers, word processing, audiovisual technologies and video production. They also worked with Elders and researchers to conduct ecological research and Aboriginal knowledge documentation (Fig. 5).

Employment

Of the 60 young women involved in the *Yangbala* Project, some young women worked across the three years of the project whereas some had short-term involvement. Some young women left the project as they had children, and some went on to work at the local Ngukurr clinic, shop or school. Fourteen transitioned to casual or part-time work with the *Yugul Mangi* Rangers during the project. Three *Yangbala* rangers started University education at Macquarie University in 2017; five participated in the Wuyagiba Study Hub (local University pathway project) trial in 2018

Table 2. Ngukurr *Yangbala* project activities timeline, per quarter (Q) each year

Activity	2015	2016				2017				2018			
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Planning	✓	✓	✓			✓				✓			
Biodiversity survey camps	✓						✓	✓		✓	✓	✓	
Annual cultural camps			✓					✓				✓	
Wetland monitoring	✓		✓		✓		✓		✓		✓		✓
Wetland fencing			✓				✓				✓		
<i>Jupi (An tidesma Ghaesembilla)</i> monitoring		✓				✓				✓			
<i>Jalma (Dioscorea bulbifera)</i> monitoring		✓				✓				✓			
Seasonal calendar recording			✓										
<i>Freshwoda tedul</i> (Freshwater turtle) recording											✓		
Work with Ngukurr School	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	
SEAL IPA Flora & Fauna Guide (+ online ALA version)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Community reporting	✓				✓				✓				✓
Conferences	✓			✓	✓			✓	✓				✓

Table 3. Summary of Ngukurr *Yangbala* Ranger culture camps

Year	Month	Location	Elders	Yangbala	Activities
2015	November	Bulbuluritj (Bullock Hole)	CD	7	Cross-cultural fauna surveys; Bush food mapping
2016	April	Burrunj (Lake Katherine)	CD, JR1, JR2	13	Cross-cultural fauna surveys; Bush food collection
	July	Ngilipitji	CD, GM, DM, MW, JR, YMR, NR, YR	26	East Arnhem tri-ranger women's culture camps; cross-cultural surveys; regional women's knowledge sharing; CD Leadership lectures
2017	April	Bulbuluwen	CD, GD	12	Frog surveys
	July	Wuyagiba	AD	7	Cross-cultural fauna surveys; Bush food collection; <i>Nalanala</i> making
2018	May	Garrayin (Walker River)	CN, NR	13	Cross-cultural fauna surveys; Bush food collection
	June	Wumajbarr	CN, NR	12	Cross-cultural fauna surveys; Bush food collection
	September	Wilton River	YMR	11	Cross-cultural fauna surveys; Bush food collection

CD – Mrs Daniels; JR1 – Julie Roy; JR2 – Justine Rogers; GM – Gurrundul Marika; DM – Djurambil Mununggurr; MW – Megan Wilfred; YMR – Yugul Mangi Rangers; NR – Numbirindi Rangers; YR – Yirralka Rangers; AD – Anthony Daniels; CN – Clive Nungugarlu.

(and went on to study at Macquarie University in 2019, among 7 others from Ngukurr); and nine participated in the Wuyagiba Study Hub 2019.

Leadership and confidence building

The Ngukurr *Yangbala* Rangers presented at seven conferences across Australia between 2015 and 2018 including two Atlas of Living Australia symposiums; two Ecological Society of Australia conferences; a Native Title conference; an Oceania Society of Conservation Biology conference; and the IUCN World Conservation Congress in Hawaii.

Regular *Yangbala* participant Maritza Roberts spoke about the influence of conferences: 'I've learned both ways, and the most part I loved was going out on conferences, telling other people what we do in our Country, what we doing to look after

it. I just love sharing the stories telling other people this is us, this is what we do back home'.

The school leadership activities conducted by the *Yangbala* project (as outlined above) and one-on-one mentoring by many local Elders and Rangers also contributed to the building of leadership and confidence of participants. At the Ngilipitji culture camp (2017), Mrs Daniels gave lectures on leadership and confidence building (Fig. 6).

Outcomes beyond the *Yangbala* Project

Based on the outcomes of the *Yangbala* project and previous foundational work by the project team, the project staff were recognised through various awards including: an Order of Australia Medal for Mrs Daniels (2017); Northern Territory Young Achiever Award (Melissa Wurramarra);

Australian Museum Eureka Prize for Innovation in Citizen Science (2017); and the CSIRO Indigenous engagement award for the Atlas of Living Australia work (2018).

The Ngukurr *Yangbala* Project changed perspectives and opportunities for women in work in south east Arnhem Land, ranger groups and beyond (through presentations and publications) and showed how Aboriginal and non-Aboriginal people can work together for mutual benefits. As a result of the *Yangbala* project, the educational needs of young people were realised and the local voice for enhanced higher education opportunities for remote Aboriginal people became louder. As the *Yangbala* Project funding was drawing to an end, funding partner The Nature Conservancy asked what the next big idea was. In reply, Mrs Daniels stated that a Bush University was needed to increase higher education opportunities on Country, and focussing on two-way knowledge and skills. In 2018, *Yangbala* representatives were invited to The Nature Conservancy's Women's Leadership Workshop in Brisbane where we were provided with business and project leadership mentoring. This allowed the Bush University concept to form into a tangible plan with vision, goals, strategy and budget. This enabled a trial of the concept in late 2018 which was attended by five *Yangbala* participants and 18 others from Ngukurr community. Coincidentally, the Australian

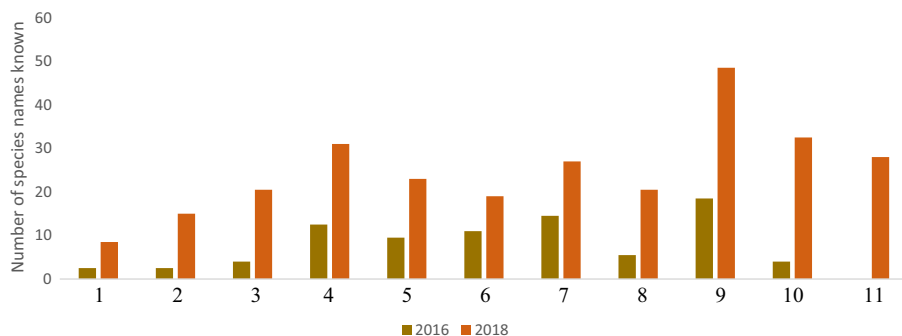


Figure 4. Graph showing before and after knowledge of species ($n = 20$) names in three different languages ($n = 3$) for 11 consistent de-identified *Yangbala* participants.

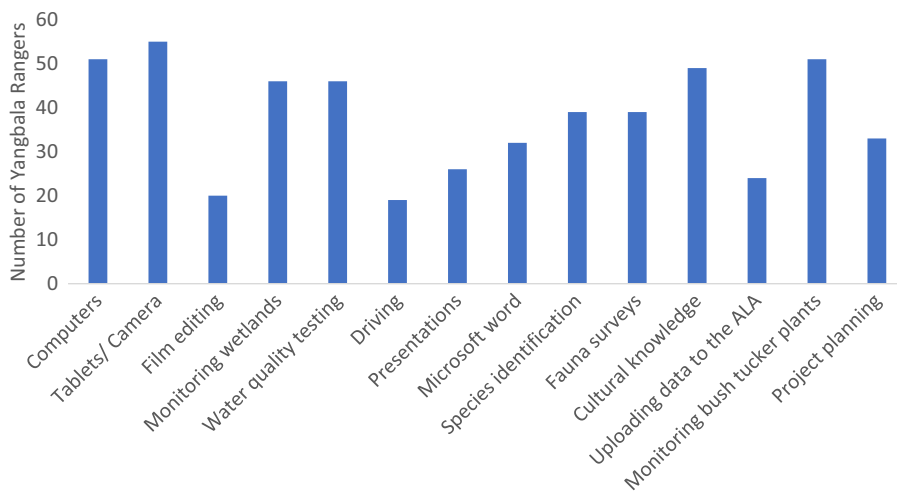


Figure 5. Number of Yangbala rangers who participated in each activity.



Figure 6. (left to right) Mrs Daniels teaching the Yangbala rangers about how they can overcome obstacles and the need for commitment in leadership; Mrs Daniels giving a leadership lecture at Ngilipitji and sharing cultural knowledge with visiting ranger groups.

Government announced ‘Regional Study Hub’ funding in late 2018 which aligned with the aims of the Bush University. An application for funding was compiled by Yangbala project and Macquarie University staff, and the project was successful in obtaining significant funding to develop what became known as the Wuyagiba Study Hub. This progression of the Ngukurr Yangbala Project attracted significant media attention from national television, radio and print media. In 2021, the Wuyagiba Study Hub offered accredited both-ways University micro-credential courses (via Macquarie University) as a pathway to entry in Bachelor degrees.

Discussion

Over three years, the Yangbala project engaged with 60 Ngukurr Yangbala

rangers and approximately 300 other Ngukurr community members. The project participants demonstrated learning about Country and culture (through the knowledge test) and conducted cross-cultural and collaborative biocultural research on billabongs, animals, plants and seasons, producing written and audiovisual publications to share cross-cultural knowledge. The Yangbala rangers built their leadership and confidence through training, mentoring, presenting their work at conferences and running workshops with school children. All of these activities aligned with the contractual and co-designed aims of the project which ultimately served to empower young women in caring for Country work in south east Arnhem Land.

Adaptive co-designed women’s empowerment projects, as described here for the Ngukurr Yangbala Project, can

serve to create employment pathways, strengthen networks and knowledge sharing and maintain knowledge and practice, and therefore, overcome some of the gender disparity in conservation (Jones & Solomon 2019; James *et al.* 2021). For Aboriginal communities, much cultural knowledge has already been lost as inter-generational oral knowledge transmission pathways continue to be interrupted by colonisation and globalisation. The maintenance of traditional Aboriginal Australian women’s knowledge and practice is at a crisis point as Elders continue to pass away and from competing interests of younger generations in dominant cultures (Baker & Mutitjulu Community 1992; Marmion *et al.* 2014). Furthermore, the dominance of men recording male Aboriginal knowledge and directing work opportunities meant that women’s knowledge was not as frequently recorded and women were, and to some extent still largely are, marginalised in the booming Aboriginal caring for Country programs across Australia (Rose 1996; Sithole *et al.* 2007). Projects that move from participation to empowerment of Aboriginal women’s work and education, such as the Ngukurr Yangbala Project, can substantially contribute to community development in remote Aboriginal communities which have been shown by the Australian census to have high unemployment, high youth populations and low tertiary attainment (Senior & Chenhall 2012). Hence, such programs can contribute to the national ambition to ‘Close the Gap’ in Aboriginal education and health statistics (Burgess *et al.* 2009) and address mandates of international policy and organisations to enhance gender equity in conservation (WWF 2011; IUCN 2018; The Nature Conservancy 2018; Conservation International 2019).

Challenges and lessons learned

Despite delivering measurable and significant outcomes for young women of Ngukurr community, this project was not without its challenges and lessons. The main challenges included organisational capacity and literacy; gender conflict;

and loss of traditional cultural knowledge.

An ongoing challenge for the Ngukurr *Yangbala* Project was project administration and organisation. As few women in Ngukurr were able to administer the grant, run pays and complete reporting requirements, which is a reflection of low education levels and employment experience (high unemployment), a non-Aboriginal project partner was required to administer the project (Senior & Chenhall 2012). The project aimed to build capacity of local participants (who were employed as staff), and we did succeed in this to some extent with many people gaining exposure to informal training in computers (see Fig. 5) and then going on to University or other work; however, there was a high turnover of participants, typical of local employment patterns in Ngukurr (Taylor *et al.* 2000) which made capacity building difficult. Participants also preferred to be employed on a casual basis, attend on-Country trips and do hands on activities rather than work on written reports and spreadsheets which was time consuming and challenged by low English literacy levels. This realisation drove the establishment of the Bush University – to spend time specifically building local people's computer, English literacy and organisational skills with an emphasis on developing these skills through a both-ways (academic and cultural) curriculum.

Despite the contractual funding focus on empowering women in conservation, there was immediate backlash from local men who expressed concern about the exclusion of men. Domestic violence was experienced by several female project participants who were forced to quit their involvement in the project. At early meetings, older men came into planning sessions and demanded that men be involved. The response from project leader Mrs Daniels was to allow young men to be involved in activities and remove the project from institutional affiliations so the project became independent, run by her. The name of the project was also changed to become gender neutral. After about one year, the male criticism subsided and the project continued without gender issues. Other women's

development projects have also documented gender violence in the conservation and leadership space (Jones & Solomon 2019). It was not possible to explore a separate young men's project, and due to the nature of the female leadership (Mrs Daniels and Macquarie University researchers), the project maintained its focus towards women's empowerment, while being inclusive of young men who wished to participate.

The final notable challenge of the Ngukurr *Yangbala* Project was loss of cultural knowledge and traditional languages. It was a clear aspiration of project leaders, reflected in the co-design aims, for maintenance of cultural knowledge and language. However, historical punitive approaches to practising culture and language and the replacement of traditional languages with Roper River Kriol interrupted drivers of knowledge and traditional language transmission (Sandefur 1985; Dickson 2014). The loss of traditional Aboriginal languages has been pervasive across Australia since European colonisation (Marmion *et al.* 2014). All traditional languages of those who settled in Ngukurr during the early missionary days are considered endangered, with a trajectory towards extinction as the last speakers of languages pass away. The Ngukurr *Yangbala* Project aimed to try and include traditional languages in work activities. The Ngukurr Language Centre has ongoing programs to document, maintain and revive several endangered local languages.

Future youth empowerment projects would be well served by the inclusion of both young men and women, and institutional support such as through the school and Rangers to provide ongoing learning, and structural and network support. Structural and network support has been noted in other gender empowerment research as important for change (Jones & Solomon 2019). In the case of networking support for women in the study region, despite sporadic previous attempts to develop an Aboriginal women ranger network, the 'Strong Women for Healthy Country' initiative has run events since 2019. Furthermore, a school-based 'Learning on Country' project that connects with the Yugul Mangi Rangers was recently

established in Ngukurr, expanding this program from northern parts of the Northern Territory (Fogarty 2012). The Wuyagiba Study Hub that followed from the Ngukurr *Yangbala* Project also aims to provide structural and ongoing higher education support to facilitate greater capacity building, English and computer literacy, and organisational skills that were all significant challenges of the *Yangbala* Project. In addition, increased support for Aboriginal language centres and integration into school programs, such as the bilingual program of Yirrkala School in north east Arnhem Land, are increasingly seen as vital to maintaining Aboriginal cultural identity, pride, and languages across Australia (Marmion *et al.* 2014). Aboriginal and non-Aboriginal people must work together to build capacity both ways, and shift Western male dominated conservation to be more inclusive to more holistically support healthy country and healthy people (Sithole *et al.* 2007; Wright *et al.* 2021).

Conclusion

Led by a local respected Elder, the Ngukurr *Yangbala* Project demonstrated to local Aboriginal communities of Arnhem Land and to national and international conservation conferences that women have a lot to offer natural and cultural resource management and that they are keen to contribute. This project showed that local programs that serve to empower Aboriginal women will benefit from having local leadership, employment of participants in projects, and involvement of participants in all stages of the project from the design of aims, identification of locally meaningful activities and communication of outcomes.

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Dedication

This paper is dedicated to the late Mrs Cherry Wulumirr Daniels OAM (deceased April 2019) who conceived the idea and was a key driver of the Ngukurr *Yangbala* [young people] Rangers Project. Cherry was a *Ngandi* Elder and instigator of many community development projects that focussed on caring for Country and culture in the town of Ngukurr, south east Arnhem Land (SEAL), including the Ngukurr Language Centre, Ngukurr Women's Centre, Yugul Mangi Rangers, SEAL Indigenous Protected Area, Ngukurr *Yangbala* Rangers and finally the Wuyagiba Bush University. For these efforts, she was invited into the Order of Australia in 2016, only the second person from Ngukurr to receive such an honour, after the Reverend Michael Gumbuli in 2010. She was a strong mentor for women, both Aboriginal and non-Aboriginal and was a strong advocate of learning both ways: using Aboriginal and non-Aboriginal knowledge.

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