



Indigenous perspectives of risk – Learning and sharing knowledge for climate change

Workshop report: 8 to 12 March 2021, Denham Western
Australia

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Malgana Elders

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Important notice

This report is based on a co-designed workshop with Malgana board members and Traditional Owners in Shark Bay. The Malgana Board approved this report in February 2022.

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Indigenous perspectives of risk – a workshop on learning and sharing knowledge for climate change with Malgana People

This report presents the results of a co-designed workshop with Malgana People in Shark Bay. The workshop focused on two knowledge-sharing tools, as prioritised by the Malgana Chair and ranger co-ordinator: seasonal calendars and mapping. Other goals of the workshop were to share information about western science understanding of climate change and to discuss tools that can help protect Indigenous knowledge and interests in research partnerships. Climate change is one of multiple issues that Malgana People are concerned about on their Country. Approaches to climate adaptation planning require a holistic approach that cut across sectors, such as mining and tourism, and will be both internally facing and seeking to engage others who share, use, and have interests in, Shark Bay.

Workshop with Malgana People on learning and sharing knowledge for climate change

Indigenous Peoples across Australia bring particular perspectives of climate risk and resilience related to their particular socio-economic, historical, political, cultural, and environmental circumstances. Risk perspectives are influential in shaping the priorities for adaptation planning. For Indigenous Peoples, the effects of climate change exacerbate existing institutional, social, economic, and environmental challenges. Action on climate change cuts across concerns that lie in sectors such as mining and tourism, and requires dialogues and engagement that work at multiple scales.

The workshop with Malgana People focused on three priority topics defined by members of the board and group. These were to:

- Learn about the western science on climate change
- Learn some tools for sharing and protecting Malgana People's knowledge about climate change with 'outsiders'
- Develop rules, protocols, and principles of two-way knowledge sharing and learning about climate change with researchers

The CSIRO team worked with the Malgana Aboriginal Corporation Board to finalise the workshop and gain approval to run the workshop with Malgana People in Shark Bay. Malgana board members, elders and rangers participated in the four-and-a-half-day workshop. One CSIRO staff member facilitated discussions on the ground, and others, including two team members and the CSIRO advisor on Indigenous Cultural and Intellectual Property (ICIP) joined by video conference (in response to COVID-19 travel restrictions).

The Malgana workshop participants discussed different types of seasonal calendars. These ranged from simple depictions of traditional seasons to much more complex 'dictionaries' or 'bibles' to inform Ranger groups' management programs. Malgana Traditional Owners at the workshop discussed the idea of creating several different seasonal calendars with different target audiences and purposes; however, their primary interest was to create internally focused calendars to share knowledge and support ranger management of Country. The Malgana workshop participants explored ways that seasonal calendars can be made more accessible and adaptable to represent changing seasons. The different uses and purposes of participatory mapping were discussed in the workshop. As with seasonal calendars, the priority use is to support ranger work on Country. Other audiences were also considered including tourists, and regional and state government agencies, to strengthen the dialogue of Malgana values and rights, with others who also have interests on their Country.

A set of protocols for research partnerships with Malgana Aboriginal Corporation was developed at the workshop. The protocols define some fundamental practice principles in developing research on Malgana Country and with Malgana People.

Tools such as mapping and seasonal calendars are important knowledge sharing and dialogue mechanisms to explore changes that are happening on Country and embed Indigenous knowledge processes in adaptation planning that includes engagement with external actors. For Malgana People, climate adaptation planning is internally and externally focused. The process is embedded in the broader contributions of society and industry to change happening in Shark Bay and the other interests that are part of the negotiation in looking after Country together, whether informally or through joint management planning.



Figure 1 Active Ranger Exchange between Malgana Rangers and Warraber Rangers from the Torres Strait

1 Introduction

Indigenous Peoples in Australia form the majority of populations in many remote, highly vulnerable environments, such as the Torres Strait and Central Australia, where climate change impacts on their Country are already evident, including extreme weather events, climate variability, and sea-level change (Green and Minchin 2014, Hill et al. 2020). For all Indigenous Peoples in Australia, and most globally, climate change compounds over-arching issues of socio-economic disadvantage and the burdens of the colonial history of dispossession and hostile policy settings, which often are of more immediate concern in Indigenous Peoples' lives.

For Indigenous Peoples in Australia, and most globally, climate change compounds socio-economic disadvantage, chronic poor health, and the burdens of the colonial history of dispossession and hostile policy settings. These often are of more immediate concern in Indigenous Peoples' lives. Indigenous Peoples bring particular perspectives of climate risk related to their particular socio-economic, historical, political, cultural, and environmental circumstances. This results in perceptions that are often specific to communities and their cultures, places, and regions with distinctive community values, resources, and policy circumstances.

Indigenous Peoples have also expressed their desire to understand climate change and how it may affect the environment, access and rights to lands and waters, customary practices and culturally important species, infrastructure and building, and health and access to services. These risks include the management of information, i.e., what is shared, how information is framed, its use once shared, and how this benefits and minimises harm to knowledge owners. Understanding these risk and resilience perceptions can potentially set the foundation for new pathways of research collaboration to better tailor climate science and information to meet Indigenous communities' priorities toward climate adaptation planning.

This project explores the risks and opportunities of two-way sharing and learning for climate change. It was significantly re-planned to a co-design workshop in response to the COVID-19 travel restrictions. This report shares the results of the co-designed workshop with Malgana People.

1.1 The project description and aim

Our project is focused on Indigenous perspectives of risk, informed by both scientific and Indigenous knowledge. It brings to the fore the question of how, and under what conditions, an improved understanding of risk enables preparation for risk reduction actions that are tailored to particular natural, social and institutional settings.

The overall aim of this project is to improve the inclusion and participation of Indigenous Peoples in understanding and using climate information for the management and protection of their traditional lands and seas, under conditions of an increasingly uncertain and changing climate. It begins here with the Malgana People and focuses on understanding the roles of traditional knowledge and western science in two-way knowledge sharing and learning, and the protections for traditional knowledge in climate initiative partnerships. This goal requires a long-term view and approach to partnership.

Project location

The Shark Bay World Heritage Area is renowned for its natural heritage value. The area covers 2,197,300 ha, close to 70% of which is marine environment. It is on the most westerly point of the Australian continent, approximately 800 km north of Perth, with approximately 1,500 km of coastline. As described in Herron et al. (2020, p.7):

It spans almost from Carnarvon in the north to the Zuytdorp Nature Reserve to the south. The western boundary is up to three nautical miles off the coast, whilst the inland boundary extends approximately 100 km towards the Northwest Coastal Highway. Although the township of Denham and the areas around Useless Loop and Useless Inlet are within the WH boundary, these are specifically excluded from the [World Heritage] property as they were already highly modified areas at the time of inscription in December 1991. Areas within the [World Heritage] property continue to be added to [the] conservation estate, the most recent being Dirk Hartog Island which was declared a National Park in 2009.

The exceptional natural features that contribute to the Outstanding Universal Value of the area include Shark Bay's extensive and diverse seagrass beds, salinity gradients and hypersaline environment, and stromatolites. It has one of the world's most significant and secure strongholds for protecting dugong and many other species assemblages – including some that are found nowhere else in the wild (Herron et al. 2020).

Shark Bay is also a place with strong Aboriginal heritage and value that is yet to be formally acknowledged in the World Heritage documentation. The Traditional Owners of Shark Bay are the Malgana People. Their language name for Shark Bay is Gutharraguda, which means 'two bays' or 'two waters.' This project workshop report recognises that Shark Bay's environmental and cultural heritage values are interdependent and under constant pressures of change and diminishment.

The Shark Bay World Heritage area was assessed to have high vulnerability to potential impacts of key climate stressors, with low capacity of the system to adapt to climate change (Herron et al. 2020). The loss of meadow-forming seagrass during the 2010/11 marine heatwave has received much attention. Continued losses in the seagrass meadows will impact species of high ecological and cultural values in the region. The observed effects and uncertainties of the continued impacts of climate change on the values of the region create an opportunity to open dialogue about adaptation planning across government, community, industry and Traditional Owners. It is imperative that the Traditional Owners, with thousands of years of connection to the region, continue to build their capacity to develop effective climate adaptation strategies that address their priority concerns. This project is a partnership that seeks, in the long term, to develop adaptation strategies based on multiple ways of knowing to support the inclusion of the Malgana People's values, interests and their custodian responsibilities into climate change adaptation planning.



Figure 2 Denham shoreline

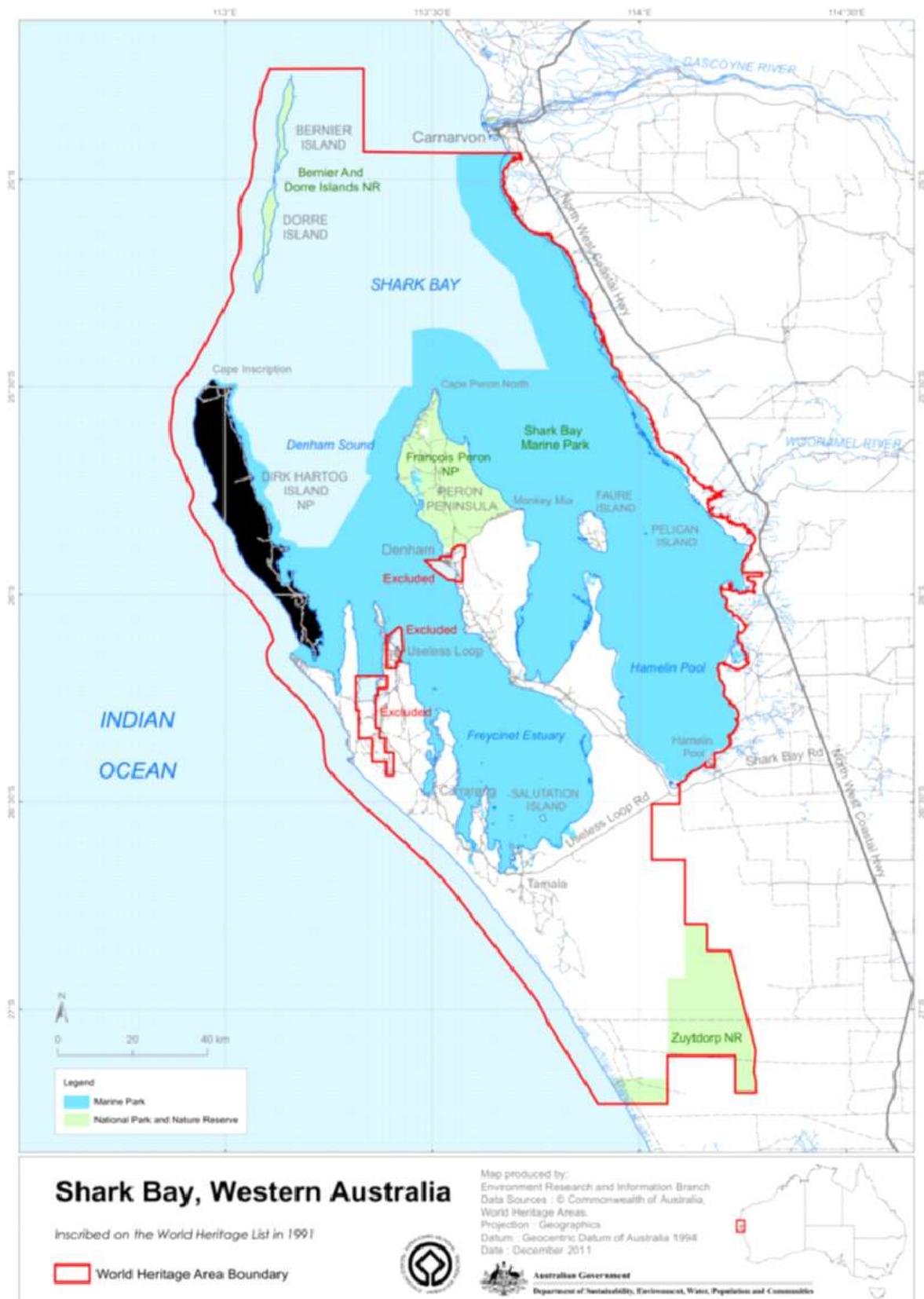


Figure 3 Shark Bay World Heritage Area (Source: Heron et al. 2020)

Project aim and method

This project involved a co-designed workshop with the Malgana People of Shark Bay and a literature review on Indigenous perspectives of climate change and risk from across the globe. The workshop focused on approaches to establishing respectful engagement with Malgana People to improve our understanding of the roles of traditional knowledge and western science in climate adaptation planning, and the ways that traditional knowledge can be protected in those partnerships. Perceived risks of knowledge sharing, informed decision-making, and engagement with Indigenous governance processes are critical foundational questions in commencing climate initiatives and research generally.

The Malgana People identified activities they wanted to undertake in this project workshop. These were to:

- Understand how seasonal calendars and cultural mapping can be used to talk about the changing environment and how to respond to climate change
- Learn about the western science on climate change
- Learn some tools for protecting Malgana People's knowledge can about climate change when they share it with 'outsiders'
- Develop rules, protocols, and principles of two-way knowledge sharing and learning about climate change with researchers

The activities for this project were significantly adjusted due to COVID-19 travel restrictions. The project was re-designed to a co-design workshop involving elders, rangers, and MAC board members. The adoption of the co-design process ensured that: the workshop focus was relevant to the Malgana People; the actions followed appropriate decision-making processes; and the workshop addressed the priority issues of concern to the Shark Bay Traditional Owners. The place-based approach of this research centred the discussion of knowledge sharing tools and the changing environment from the local institutional, environmental, cultural, and social contexts to the broader influences that affect capacities and resources to respond to a changing climate.



Figure 4 Sharing and showing Malgana knowledge and concerns about climate change, knowledge sharing, and linking to western science

The two-way knowledge sharing and learning workshop was conducted over four-and-a-half days. It was conducted in Denham with 27 Malgana participants including elders, board members, and rangers. One CSIRO staff member facilitated the face-to-face meeting, three other staff joined by teleconference. One Malgana Traditional Owner joined the meeting via teleconference in addition to some face-to-face attendance.

The workshop involved presentations, question and answer sessions, and discussions. As this was the first time the researchers and the Malgana People had worked together, a flexible workshop program was adopted. Appropriate time was allocated for the ethics process to ensure the Malgana participants had sufficient time to assess the perceived risk of participation, re-visit the project information and discuss concerns with the researchers.

The digital nature of the workshop enabled several experimentations with participation and knowledge sharing between Malgana People and other researchers working in Shark Bay and another Indigenous ranger group, the Torres Strait Regional Authority Warraber Rangers. The Malgana rangers supported the research team by taking photographs and notes on major topics or issues raised in the workshop.



Figure 5 Working in groups on what is important to Malgana people, what can be shared and what do we need from western science



Figure 1 Malgana working group

2. Workshop results

Malgana People are observing changes on their Country and are concerned about the combined and cumulative impacts that climate change, tourism, pastoral operations, and salt mining have on their Country. The workshop highlighted the importance of having access to information about the effects of each of these drivers of change, the types of actions that Malgana People can undertake, and the importance of having Malgana People be part of decision-making and being resourced to manage impacts effectively. This workshop was the first time the board members, rangers, and elders attended a joint event with researchers. It was also the first time that they, together, worked with a research consent process and explored the topic of Indigenous Cultural Intellectual Property (ICIP).

Below we present the workshop results beginning with reflections on the Ethics and Indigenous Cultural and Intellectual Property session. We follow this with the Malgana People's observations of changes on Country, the discussions on the seasonal calendar and mapping tools, and communication pathways in doing two-way research with Malgana People. The report concludes with the Malgana protocols for research and research priorities.

The workshop ethics consent process took a day and a half to complete, highlighting the importance of supporting discussion about Traditional Owners' concerns about sharing information and knowledge in a project partnership, particularly where a long-term relationship is sought. The consent process also highlighted the potential to review ethics agreements at various stages, including at the mid-way point and the conclusion of the workshop, giving participants the chance to reflect on and strengthen the agreement with new observations. It was also evident that long-term research partnerships planted in a strong foundation of trusted engagements can strengthen a consent process and vice versa.

The discussions in the workshop explored change on Malgana Peoples' Country broadly, to support a conversation that considers human-driven actions or policies that interact with environmental changes. The survival of Malgana People through historical changes, their continued presence, and knowledge of Country and their cultural protocols are strengths they highlighted throughout the workshop.

Aboriginal people are the greatest survivors.

We know this Country more than anyone. We have been here longer. Let's not forget that. You need to hear a lot more from Indigenous Peoples.

2.1 Ethics and ICIP discussion

Building a relationship on trust and respect for the Malgana cultural protocols was highlighted as central and foundational to a research partnership. Measures to protect ICIP would provide strong additional protections to Indigenous knowledge and knowledge holders, and the partnership.

There is strong interest within the Malgana Aboriginal Corporation (MAC) to create a formal arrangement for doing research together, from a verbal form to written text, with external actors based on Malgana protocols of ethical research practice. Some of the points raised by the Malgana workshop participants were:

- Malgana protocols are important for looking after Country
- Respect for cultural protocols – wrong Malgana person is asked for information (taking the time to know the right people in the community to gain permission to work together, to record knowledge that is collectively owned, and for consent to share information with the public)
- Cultural awareness training is important for outsiders wanting to work with Malgana People
- It is important that Malgana Peoples' Intellectual property for the seasonal calendar is clearly recognised and acknowledged.

Legacy of Knowledge Extraction

Malgana Traditional Owners have strong concerns about sharing knowledge with researchers, because their experience with science, academia, and external agencies has been one of knowledge extraction, loss, and re-location of important information in external agencies away from Country and Malgana People. For example, previous reports and surveys that are an essential resource to augment current and historical knowledge of Country have been difficult to access:

*One of the first things that went to the board (an action item) was for old surveys and reports done on Country, but we cannot access to information. We cannot find these so we can pass to the elders.
Monkey Mia. We really got to look at this now.*

There is, therefore, both strong reservation and caution to engage with science agencies, as well as interest to work with researchers to access and gather knowledge and information generated from, and with Malgana People. Fundamental to the Malgana Peoples' interest to develop research partnerships is capacity building and to control and access meaningful information to support Malgana decision-making for Country.

Trust. People are afraid to trust. How do we know someone hasn't lost our information? Re-trust science agencies, businesses? A lot of us are still unsure.

Partnerships to focus on re-building trust and benefit-sharing

Despite their concerns, this workshop and other new engagements will require Malgana People to trust the external ethical and consent processes. Any knowledge sharing agreement with Malgana People must communicate and deliver benefits, and not harm Malgana knowledge and knowledge holders. Malgana control of decision-making about the use of knowledge, where and how it will be shared and further used by other agencies are essential considerations in the ethics of Malgana research partnerships.

Why should we think everything has changed? Dealing with outsiders. How are we protected from sharing information?

We have a wealth of knowledge and we won't share unless knowledge is used appropriately... Who will access the information and why? ... Do we want to share with mining companies and government?

Sharing of Malgana knowledge must result in benefits for Malgana people, that 'Not to use [Malgana Knowledge]' to the detriment to the Malgana People.

This is the inter-generational trauma. This is why we don't trust... Most of us don't trust. We don't trust organisations. Process. That information we have shared confidentiality is shared. Information is never retained and kept in government departments for ever.

For Malgana People, trust-building includes understanding how their knowledge continues to be used beyond the knowledge sharing event and that agencies remain committed to informing Malgana of how their information is stored, transferred, of any requests to use their information and that the terms of use are adhered. The Malgana People made it clear to the researchers that they wanted to ensure any two-way sharing and learning did not cause harm and that the knowledge owners maintain control.

Sustaining the roles of different knowledge holders and Indigenous knowledge and the decision-making systems that support relationships to Country are essential considerations in two-way learning and sharing research partnership.

[Name of a Malgana Traditional Owner] here is a Malgana fisherman. Elder. Knowledge is his family business. Sharing knowledge, how he is confident that anything he shares won't be shared with others. Some information has disappeared (from past work with external actors). Traditional Owners to look after our Country first. We have mistrust of where information will end up. It is our personal information first. We are also professionals. We have kids. People don't know where the information will go and be stored. In the past, information wasn't protected (in work with external actors and through colonial history). The word trust and mis-trust from the past.

Strong internal governance is also critical in knowledge sharing partnerships:

If you're unsure of what you are sharing, and need to acknowledge someone else, don't share. If you're not confident to share don't share. We need to talk about these things, about what we can or cannot share.

External actors, such as CSIRO, have a role in supporting Malgana governance by taking the time to support decision-making and talking to and working with the right people. Any project that requires the sharing of Malgana knowledge must first be based on Malgana cultural protocols. This is both a way to protect knowledge holders and Indigenous knowledge

Internally we need to take care. Everyone knows at the start that this is a process of sharing knowledge and information. We have a system in place, cultural protocol of how to resolve this internally.

A solid understanding of ethics processes and ICIP can be developed through longer-term collaborations and two-way learning and knowledge sharing with Malgana People. Testing and putting the principles of ICIP into practice will be a crucial outcome of a two-way learning and knowledge-sharing project.

2.2 Changes happening on Malgana Country: A concern because everything is connected.

Malgana People have been observing and are concerned about various types of changes that are happening on Country. Some of these changes are the direct result of human action, others are slow changes happening in the environment; both raise concerns because of the immediate, cumulative, and knock-on effects on other parts of the environment and the overall health of Country. Some of the human activities include mining and the return and re-vegetation of pastoral leases that are now impacting wildlife that relies on the water sources created for livestock:

Some of the bores have been cut off. Hamlin, they are de-stocking. Cut off so they can re-vegetate before these feral animals were introduced. This has made a huge change. This is one change that is happening in Shark Bay. That Hamlin project is the erosion project. When pastoralists created water holes that native animals have got used to it. Those animals now have to find other water holes. The animals have come reliant on bore water... The problem is the public don't know that the animals are semi-domesticated. Visitors don't know. The issue is human created ... What we have talk about how we resolve this. In Monkey Mia this is a problem, Fishermen (Old people) use to give feed back (to the dolphins) then but now they feed them for tourists.

The Malgana People reiterated that they bring a holistic lens when they talk about changes to their Country. The Malgana People are concerned about the changes they are observing on their Country and future changes that are yet to happen on their lands and waters. These effects are of particular concern because:

- everything is connected on Country and changes can be more widespread than those observed;
- small changes can have a significant impact in the future (chain reaction).

The Malgana Traditional Owners raised concerns about the combined and differentiated effects of human activity and climate change in the bay, such as the effects on wildlife of reduced precipitation and water availability on pastoral stations. Their concerns also highlighted their hopes to understand the continuing impact of these changes and their opportunities to manage them.

Station bores are being closed without local consent. Kangaroos, rabbits and emus are now coming into town looking for water. There are ILUAs (Indigenous Land Use Agreements) for the pastoral leases.

Given the rising temperatures, we've got more marine animals coming in to graze. How do we tell the effects of human impact and over-grazing.

We can restore (seagrass) as much as we want, but if we can't manage the marine life. The season this (photo) was taken, the marine life would have been in abundance.

Malgana have native title over the seabed, but dredging and fishing damage the beds.

Table 1 Categories of types of changes and observed changes discussed by the Malgana workshop participants

Types of changes	Observed Changes
Direct human-driven changes	<ul style="list-style-type: none"> • Development such as the salt mine that is a key concern for the Malgana People, tourism, mining, and infrastructure development • Tourists making new tracks (not showing respect) in important places that are on the tourist trail • Large in-flux of tourists during tourist season • Historical loss of pearl shells. • Sand mines that have not been rehabilitated
Changes in the environment	<ul style="list-style-type: none"> • Lower banana and sandalwood harvest over the last three years • Fewer observations of spiders and birds in nature • 2011 and 2015 heatwaves that affected the seagrass and other marine life (e.g., crabs, mullets, red-eye fish) • 50C degree days (three days in a row) • Stronger winds and more frequent strong wind events • Less rainfall over the years (and concerns about the effects on plant reproductive cycles and pest and disease presence) • Warmer sands resulting in more female than male turtle hatchling • Sediment killing the seagrass, particularly after the recent cyclones. The cyclones have also brought water to dry river beds that are usually dry at certain times of the year. • The number of trees dying from termites and losing vigour.
Changes in marine life	<ul style="list-style-type: none"> • Changes in the health and presence of marine life, such as the health of crab bodies and the return of mullet in fishing spots
Changes on the coast	<ul style="list-style-type: none"> • Increasing erosion and the exposure of pearling camps that are now being washed away • Coastal erosion that is smothering oysters • Shifting sands is affecting the flow of sea in the Gulfs

There is a strong interest in understanding the changes happening on Malgana Country and working with western science to understand the driving forces of change and their potential impacts. The changes identified by Malgana People are both formally and informally monitored and checked by rangers and Malgana People visiting Country.



Figure 7 Discussion notes from the workshop

There are also perceived risks that are a concern to the Malgana People, which include:

One of the major changes the rangers are seeing is the movement of seagrass and seaweeds.... If you talk to Fishermen, there are patches that come and go, but there are large patches that are gone.

Salt mine walls also impact fisheries. Deputation to stop salt from starting wasn't successful. They got a special act of parliament. Ponds are right next to town, all around. Sea walls and causeways. Not allowed to build any more ponds, both in the water anyway, they may have more lease yet to be developed. [There is] nowhere to put the wastewater.

One thing that will affect this is the new mine... the amount of land that has been cleared. The other thing that worries me, when we started ... The water supply on the mines. This will have a huge impact on Shark Bay.

Those good rangers will get poached by miners. This is always an issue. Sometimes that's a great thing but a lot of the time it is the money and resources and career pathways. But we need to accept this.

Malgana People share multiple and ongoing concerns about changes on their Country that include the effects of climate change on seagrass and marine life and human industry, i.e., mining and tourism, and their impact on the local and regional environment. A further emerging issue is the changing socio-economic drivers and motivations that attract Malgana youth to employment in industries that may seem anathema to Malgana values and work focused on looking after Country. Climate change is one of many concerns Malgana People have about changes happening on their Country. Other concerns include the impact on Country of high numbers of tourists under the new COVID-19 travel restrictions.

Opportunities for strengthening Indigenous knowledge

Ranger and Malgana People's involvement in monitoring change, using both Indigenous and western science, is an important avenue to understand changes happening on Country. For the Malgana People, this is the first step to supporting Malgana People to make informed decisions about the breadth and scale of changes, and to support dialogue with other agencies and groups with interests in Shark Bay. Some of the responses about monitoring change on Country were:

Monitoring to better understand the impacts of tourism, pastoralism, and the removal of water from Country... as well as salt mining

Monitoring and involvement of Malgana People in managing people's travel and impact on Country

Monitoring to understand how biodiversity is changing on Country

Housing and services to support Malgana People to be on-country to look after Country

The DBCA volunteer program. I'm in the volunteer Malgana women's team. Warm sand results in female turtles. Now we check the temperature of the sand whenever we travel out.

Monitoring the effects of environmental and human industry on Malgana Country will assist Malgana People to understand the changes on their Country, communicate this with confidence with science and government agencies, and plan their response strategies. Programs and services that facilitate Malgana People to be on Country are deemed necessary to a broader program of looking after Country. Another concern raised by Malgana workshop participants is managing other Aboriginal groups using Malgana Country without permission.

Opportunities for improved consultation and benefit-sharing through tourism

Tourism raises multiple challenges for the Malgana People. While the Malgana People have a strong interest in having greater involvement in the sector, they also seek to understand and manage the impacts of tourists on their Country (e.g. increasing number of tourists entering restricted areas). Of significant concern to them are the limited consultation and acknowledgment by the sector of their interests, rights, and values on their lands and seas and the absence of benefit-sharing agreements with Malgana People.

[T]hey are take things out of the ocean, to Ocean's Park. It's not a rehabilitation centre. I'm not sure about what they are taking. Those animals are part of us. We need to be involved because they are too tourist orientated. Monkey Mia is another example. Last year there were 30,000 people in the whole year... Tourist operators and managers have not been consulted with Traditional Owners. There is another resort coming.

Suggestion for involving and generating benefits for Malgana Traditional Owners included:

Money from tolls to help corporations and rangers. The money to help Malgana.

Cultural awareness training through seasonal calendars and mapping and rangers and elders being involved will bring income to Malgana.

Important a fisheries officer to manage tourists

Monitoring of fishing in the bay to happen through formal program that includes an Aboriginal Fishing Officer and Rangers to monitor fishing boats (catches).

Management agreement over the bay that includes Malgana [Peoples values]

At the high level how can we put control measures in place. Native title has brought us to the table (Monkey Mia).

The Malgana People seek innovative approaches for benefit-sharing that support capacity development and economic opportunities to fund their priority programs to look after Country.

2.2.1 Seasonal calendar

Different types of seasonal calendars were discussed in this session. These ranged from simple depictions of traditional seasons in language, to much more complex 'dictionaries,' 'bibles,' 'scientific databases' to inform the Ranger group's management programs.

The Malgana participants highlighted the importance of an approach based on care, respect, and 'non-harm' in sharing knowledge to develop a seasonal calendar. Creating the Malgana seasonal calendar based on Malgana knowledge acknowledges the ongoing effects of removal through colonial history and the key role of cultural governance to support the process of knowledge sharing that considers all Malgana People. As stated by a Malgana participant:

ICIP and how people feel free to come behind the program. We need to guarantee people's safety that they will be respected when there are differences. The information comes into it, and we go through a process that we agree.

Developing a seasonal calendar can support multiple outcomes for the Malgana People. These outcomes include the documentation of knowledge, decision-making processes based on cultural protocol, knowledge sharing activities between elders and the younger generation, and communicating Malgana culture to outsiders on Country. The development of communication and planning tools based on Malgana knowledge, such as seasonal calendars, is viewed by some as the first steps toward building a stronger presence and material for dialogue for the inclusion of Malgana cultural heritage values in the Shark Bay World Heritage values.

The rangers are under-funded and under-resourced. The rangers and elders should be involved in [creating the] seasonal calendar. There is ongoing negotiations with DBCA, local shires, council. The plan for our park is to protect our areas, not just the world heritage areas.

Malgana Traditional Owners at the workshop discussed the idea of creating several different seasonal calendars, with different target audiences and purposes, including for tourists, their people, and the rangers. For example, some members were more interested in simpler calendars as an education or interpretation tool for children or Malgana people who had grown up elsewhere, about their culture and language. At the same time, the Rangers were interested in developing a more detailed calendar to document knowledge and inform ranger planning and as a monitoring tool.

How Malgana People want to use seasonal calendars

The Malgana People have clear aspirations of having their cultural heritage acknowledged and recognised as part of the World Heritage value of their traditional Country. The seasonal calendar was discussed as one tool to represent the cultural values intimately connected to those recognised under the World Heritage listing.

The Malgana workshop participants identified multiple uses for their seasonal calendar. The main interest expressed in the group was to have an Indigenous-led and knowledge-based tool for managing Country that supports knowledge sharing between Malgana People. The Malgana seasonal calendar is a tool that will help conversations and action to create planning tools that embed Malgana knowledge and governance in looking after Shark Bay:

Healthy country plan with DBCA... We need a seasonal calendar to develop a healthy country plan from our perspective. The plan needs to be written from our perspective. Also, data recording. The rangers have over 200 thousand recordings of flora and fauna. We can use to create this calendar.

What about how it ties into bush medicines. In winter season you find the tiny plants. Bush medicines, (we need) to protect from burning.

Table 2 The different use and sharing categories of the Malgana seasonal calendar identified by the Malgana workshop participants.

Area of use of the calendar	Who uses the calendar	Purpose	Shared Status
Managing Country	Malgana rangers and elders	<ul style="list-style-type: none"> • To return to Malgana People's way of looking after Country such as burning for particular plants • To turn Malgana People's way of looking after Country into a Healthy Country plan and joint management plan • To share and build knowledge between Malgana People • To create seasonal calendars that are unique to different ecological and systems of Shark Bay as well as land and sea 	Not Shared – Complex focused on managing Country and Malgana relationships
Tourism	Tourists and visitors to Malgana Country	<ul style="list-style-type: none"> • Educate tourists about Malgana culture and Country (e.g. what to do to help look after Shark Bay, places that they may only go together with a Malgana Traditional Owner). 	Shared – Simple easy to read
Education	Local school children and teachers	<ul style="list-style-type: none"> • Educate local school children about Malgana seasons • 	Shared – Simple for design for school children
Local Government	Regional Council	<ul style="list-style-type: none"> • Awareness raising and education of council staff of species that are important to Malgana People and can be jointly cared for 	Shared – Simple easy to read
Research	Universities and research agencies	<ul style="list-style-type: none"> • To do joint research with Malgana People on Country 	Shared

Having the choice to create multiple calendars for different uses was clearly articulated in the Malgana workshop. Participants expressed an interest in exploring different seasonal calendar structures and designs to record unusual changes happening on Country.

The Malgana People hope that in sharing some knowledge of important species, they can also encourage joint research to sustain the health of those plants and animals

Creating the Malgana seasonal calendar

The Malgana cultural protocols will be critical to the process of creating the Malgana seasonal calendar. As agreed to by the Malgana workshop participants, the elders have a crucial role in creating the Malgana seasonal calendar, as will rangers working on the Country and observing changes. A consultation process would need to be determined by Malgana People, based on Malgana cultural protocols to guide decisions about the right people to share knowledge and the knowledge that is to be shared for a calendar.

It is important, and a priority for Malgana People, that skills remain in the community through active involvement of Malgana Traditional Owners in creating the seasonal calendars.

Questioning how to represent changing seasons in a calendar

Malgana workshop participants questioned how they would create a calendar that accounts for seasonal changes under a changing climate. For example, it was mentioned that there was water running in rivers that local people had not seen water in previously. A question was also raised about representing information on events that don't have a distinct season, for example, some plants fruit or flower after rain. There was mention of changing rain patterns and strong southerly winds with changeable timing (at the earliest October, but usually November or December, though sometimes in January). Ideas about developing adaptable and adjustable calendars were shared in the workshop (e.g. calendars with moving and removable parts).

Generating multiple benefits through the creation of seasonal calendars

The creation and use of seasonal calendars were seen to offer various benefits for the Malgana People including:

Bush medicine, you need to be on-country to learn from the people not from paper. We want time with science, but we want time with elders. We don't want to overload one side. We don't want our traditional stuff left at the bottom.

It creates opportunities for artists. A seasonal calendar can help with artists and cultural tours.

Seasonal calendar for our mob that can be shared by the wider community to support us as Traditional Owners. It [the seasonal calendar] can act like scientific proof that we want to research this. It can help the rangers to get into areas to research.

This is a great tool to educate non-Indigenous people. They can be good to help us. This is a good education tool with our elders. Seasonal connections, this shows our calendars and that we are in that calendar.

Seasonal calendars can be used for cross cultural training. The rangers can do training at Monkey Mia. These are the things that are important to us, these are the seasonal changes that are happening, and important to us.

There are several stories (to deliver to tourists). This will benefit them too. We also need to protect that, just because you have the calendar does not mean you don't need a Malgana People.

The Malgana workshop participants identified opportunities for multiple benefits from the development of one or more seasonal calendars. These opportunities included knowledge sharing on Country between elders and the younger generation, opportunities to employ Malgana artists on the calendar design and simultaneously increasing ownership of them and promoting awareness of Malgana values with the broader population. The Malgana People reiterated that tools such as seasonal calendars, while useful, do not replace meaningful engagement between cultures. The purpose of tools is to support cross-cultural engagement and mutual understanding.

2.2.2 Mapping country

As with the creation of the seasonal calendar, cultural protocols (the right people making the decisions about the information that is to be shared) are critical to determining the information that is to be shared. The Malgana workshop participants identified two distinct categories for sharing, the first between Malgana People and the second with non-Malgana People, including tourists, researchers and government. Clear protocols for sharing are critical to the cultural safety of Malgana Traditional Owners. An approach based on respecting knowledge holders and supporting negotiation across members will be vital for creating maps of Malgana Country.

The workshop participants prioritised the rangers and elders as the leading partners for cultural values mapping of Malgana Country:

Wholly rangers managed by the elders. The Rangers are experts about caring for Country. You as the rangers are most qualified to inform them.

The primary audience of the cultural mapping of values of Country is the Malgana People. The Malgana People at the workshop felt that cultural mapping would be an invaluable knowledge-sharing process and tool on Country between rangers and elders, as well as a product to share information about Country with Malgana People who live far from their Country. The workshop participants considered their maps as useful education tools for children. The Malgana maps would support Malgana decision-making and management of Country.

The Malgana workshop participants shared various goals for a cultural values mapping process. The internally facing priorities included:

We have a native title map. If we drew a map with the correct boundaries for the future generations, it won't interfere with what has been done, we can show the younger generation what we know. There is conflict with our boundaries.

Resource sites and white fella sites. The names on the map are white people.

I agree with the mapping and food sources and traditional names for the younger generation that the knowledge is there with them. It is a good idea.

I'd like them (places) to be recognised, back in the days where they went and what they done, significant places. I'd like to know, bush foods. The names specific names to different areas to educate the younger generation. I believe there were some camps, some historical sites.

I'd like you to put those things (family camping sites) into the mapping as it is valuable for kids outside. How the mapping will be useful to people who don't live on Country and never been there. If we can put that on it will benefit them.

Monitor changes and indicators for change. To keep track of [changes to] Country.

The mapping and seasonal calendar helps us manage Country to provide scientific evidence of our sovereignty and connection to Country.

One of the benefits is we're learning western science as capacity building. First target audience is the Malgana People then outsiders. CSIRO staff to bring the support from western science education level and know what we can share. Even the education of the different terms.

With the workshop, have a hands-on crew to come and see the country-side with us here.

Important long-term benefits of mapping identified in the workshop included: reclaiming historical knowledge of Malgana Country, sharing Malgana knowledge (revitalising knowledge) between Malgana People, and capacity building. Mapping was also seen to facilitate the monitoring of Country that would help distinguish and communicate Malgana sovereignty to external agencies.

The Malgana participants expressed some clear goals about how they would like to use cultural values mapping to aid their engagement with external agencies. These included:

I was interested in the sea country IPA. We got 70% of our Country in sea and we have 3, 4 generations of fishermen...

More mapping of sea grounds and fishing grounds so fish can breed more, they can breed up. Safe Fishing zones would come from the fishermen. The elders know that information.

The elders should decide about this map. We need to have a couple of maps because of different audiences. It depends on what the elders decide. The mapping could benefit Malgana in many ways. The biggest impact is education of all, not just the Malgana People.

Maps are also an externally facing communication tool that the Malgana People would like to use to increase broader societal awareness of their culture and values. For example, a map can be helpful to support future discussions about an Indigenous Protected Area. Maps can also be utilised as communication tools to encourage visitors and community members to look after Malgana Country. Developing western science mapping capability is a central interest of the Malgana rangers.

Some mapping resources already exist within the community. One Traditional Owner reported having spent some time with a knowledgeable elder on Dirk Hartog Island, where they mapped 180 places. Additionally, rangers are using a computer program called Fulcrum to record locations. The rangers have been trained, and they have an extensive database. The rangers expressed strong interest in building their mapping capability, including assessing mapping layers to aid decision-making and dialogue with government agencies about looking after Country.

Map visualisation

The Malgana participants expressed strong interest to create map visualisations that are unique Malgana representations and that involve the youth and artists:

In different spots you have different animals and shells... Having different maps that stay in the Malgana group. Different changes in the environment.

A younger version that includes artwork, different icons. Indigenous mapping Australia are using common symbols. There is a lot of development of icons. We may make our own ones. The beauty is that there is old mapping to over-lay over the new stuff. There still needs to be 2D versions and 3D copies. We can share them with people.

Maps that we share internally or externally. There is a whole range that we can talk about in here. Also, not everyone in here has been there. We would love visualisation to fly you straight to ... virtual mapping... We can do a day in the life of the ranger.

2.3 Ways to learn and work together with Malgana People

Two workshop sessions were allotted to other agencies working on climate-related change; one was to the University of Western Australia (UWA) seagrass research team working in Shark Bay; the other was with the Warraber rangers in the Torres Strait. These sessions were important in connecting research happening in Shark Bay with the workshop discussion, and facilitating dialogue with another coastal ranger group working with some of the severe effects of climate change.

The sessions provided an opportunity to discuss options to improve knowledge sharing between western science and Malgana People and between Indigenous People. Reviewing presentations with Malgana Traditional Owners and co-presenting were strongly supported by the workshop participants. Several opportunities for western scientists to improve knowledge sharing practices were identified:

- Pitch the presentations for Malgana audience and present with Malgana Traditional Owners

Before scientists do a broader science presentation, they should pitch it at Malgana people... Suggest presenting to one or two Malgana people before presenting to the rest of the group to ensure that information is pitched at the right level for people to understand.

- Provide a separate science or project report for Malgana People that uses simple language, and non-technical terms

Science research reports are too scientific, the Indigenous group don't understand the words. There needs to be a science report and a 'cultural' report, so the findings are presented in a way that TO partners understand.

When you present us with the western science please use the clearest language you can, please don't use acronyms.

- Engage an interpreter or local facilitator

Communicate with the community in a way that they understand. Need facilitators that are good at interpreting the language that's being spoken so they can deliver it in a way that the community understands. Speak in layman's terms not science speak.

Include cultural awareness training

- Malgana research partners on the ground to co-present the work progress and results with the researchers

As projects come up you need people involved who have some knowledge about it to help communicate

- Support communication products for the community

Funding for newsletters and mail out to community. Newsletters are important because people look at photos and see what has changed. Additionally, communicating these changes to Malgana People who reside elsewhere and who may not have the chance to see Country as often as others is a priority for the Malgana board.

The digital ranger exchange, a phone conference, was a highly successful introduction and information-sharing event between the two ranger groups. The ranger groups ran this session.

There was interest in continuing the digital ranger exchange program and developing a mixed digital and in-person mentoring program between ranger groups. Some of the responses heard after this session included:

There is opportunity to be mentored by others. There is a lot of interest, for different reasons, and it can be used in a lot of different ways... I always say to the old people, I'm talking about... We are all one mob. With the Torres Strait people, we are all one mob.

We need to have more support for the ranger program. And right now, I would like the rangers to be sitting at the table with us.

I'm happy with what is happening here. I'm so happy with what the rangers are doing.

Rangers, more support for rangers, and more support to the board and getting more of these meetings (workshops) happening. It is more productive. This can be spread to the community.

The opportunity to learn across different ranger programs and from other rangers addressing similar climate-related events was raised as important future option to continue the ranger exchange event. As agreed by the Malgana workshop participants, such a program would also need to be guided by cultural protocols.

Rangers learning both ways from the elders and science to look after Country

The discussions about learning with and from scientists and from other ranger groups reinforced the importance of rangers, who continue to work with different knowledge holders and ways of knowing to look after Country. Learning both ways, through knowledge sharing with elders and western science researchers, is important to the Malgana People way of understanding Country and the changes happening on Country and to looking after Country. The Malgana rangers are the central brokers who will be using both ways of knowing to looking after Country.

Fishermen are the older people in the knowledge system, their knowledge comes from the old ways and cultural learning in their ways. The rangers, the younger generation, are learning the knowledge from the elders. They need to come together to learn both ways, the younger generation are learning science but not the survival and cultural learning. Some people still out there doing their thing, but they don't have the opportunity to share it, because they aren't being invited or engaged by scientists, younger people, and rangers etc. Older people sitting on their knowledge. Important to have the older people there who know where the sites are. We need to go out on Country with younger generations to pass on that knowledge. Context helps people to understand what's happening.

I'm pretty happy. I like the engagement from the rangers and the elders. I like the ideas of the elders and rangers and to keep those ideas in mind.

Rangers are the 'go-between' for projects, they are on the ground and see and know what's happening on the ground.

Feedback to the right people. Front and foremost in all these projects is the rangers on the ground in my book – they see it all, we don't see it.

The workshop discussion reinforced the importance of supporting the younger generation, rangers, and elders working together through future programs on Country. There was also strong support to involve Malgana university students on research projects in Shark Bay.

We have Malgana people studying marine science and marine biology and they should be included in research that happens in the bay. Rangers should be included as well... monitoring needs to be consistent so working with rangers and locals can ensure that the work is being carried on by locals in the bay. It should benefit both groups. Rangers have a great relationship with the seagrass researchers. Have requested for rangers to accompany the researchers so they learn too... We need a proper contract that can't be breached. They want to be involved in the research.

2.4 Malgana People protocols for researchers working on Malgana Country

One of the MAC board priorities is to develop a set of research protocols to guide and manage research partnerships with science agencies working on their traditional lands. One of the workshop aims was to create protocols that can be further developed through future research collaborations. The protocols are a set of principles that researchers agree to when seeking to work with Malgana People. The protocols establish an accountability for working and learning together and discussing benefit sharing from the beginning to the end of a research partnership. Establishing the Malgana research protocols was a necessary first stage level of protection and expression of rights of Malgana People.

The recent event in Juukan Gorge showed both the need for strong agreements with external actors but also that these are not sufficient protection for cultural heritage and knowledge. The first step is to have Malgana engagement protocols and policies to which external agencies must adhere and are accountable under a partnership to protect Malgana Knowledge, knowledge holders and culture. We're at a time when things are changing. When we have protocols, we become the first point of contact. With Juukan Gorge, they had an agreement but there was destruction. We need to talk to stakeholders to get in place policies and procedures (Malgana Traditional Owner).

We need a science plan, we need an action plan, when a researcher comes, we can say here are the guidelines and the protocols for working with us. WAMSI there's a World Heritage Committee meeting very secular and exclusive. SB world heritage committee.

Several points were highlighted as being foundational to a research partnership. These were:

- Researchers are to engage first with the MAC board to explore a research partnership
- Allow time for consultation and collective decision-making
- Acknowledge and recognise that Malgana knowledge is central to looking after Country
- Research partnerships must address Malgana priorities, work with Malgana decision processes and ways of being on Country
- Clear communication and agreement on a benefit-sharing arrangement

Table 3 Key points of consideration in developing the Malgana protocols for research partnerships

Protocol category	Points raised by Malgana workshop participants
Research partners to work through the MAC board when designing research in Shark bay	<ul style="list-style-type: none"> • The board will decide which elders will need to be contacted to give consent, depending on the content or subject of the research project – consent has to be given by Malgana Traditional Owners, in meetings, with majority rule
Allowing time for decision-making in the Malgana community	<ul style="list-style-type: none"> • Need to allow plenty of time for these processes • Wait until board members respond because you can't always get everyone together • All the board and the elders and rangers need to be in the loop about what's happening. Rangers can do home visits to elders to let them know what's happening • Have a timeline of consultation, planning, and approvals • Project proposals to be sent to MAC well in advance for discussion and input by the board
Involving Malgana People from the beginning, at the design and conception of a protect	<ul style="list-style-type: none"> • Having an understanding of the research before the research project starts • Involving the board from the beginning to ensure that funding for communication events such as workshops and inclusion of rangers in on-ground activities are included in proposal considerations • Include youth and what they would like to do •
Building capacity of Malgana People and acknowledge of Malgana Peoples' time and investment of knowledge	<ul style="list-style-type: none"> • Initial approach goes through the board, it is up to us to make sure there are considerations in the agreements to make sure that researchers work with the rangers, and with their students. We need an agreement in writing. • Training and Tagging • Checks and balances during boat trips • Know the group's capacity to participate (take time to understand this)
Agreed communication methods and pathways to keep MAC board members and appropriate people informed	<ul style="list-style-type: none"> • Consistent communication that maintains peoples' involvement • Clear communication protocols established with the external party (contact person, when responses are needed, dates and times) • Co-presentation by the research partners at events
Appropriate acknowledgement of Malgana Peoples' time, knowledge and roles on research projects	<ul style="list-style-type: none"> • What is the role of the ethics and cultural protocols? Are the elders aware and how are they involved? Have the elders approved this? We want elders involved. • Fees

The Malgana Peoples' protocols for researchers working in Shark Bay was drawn and developed from the discussions over the four days of the workshop. The Malgana Protocols are presented in Appendix 1.

2.5 Prioritisation of research results

A list of topics of concern, written over the first four days of the workshop, was presented back to the group as the basis of a prioritisation process for future research with Malgana People. This list was first discussed, edited, and confirmed before the Malgana workshop participants prioritised the list of concerns. The priority topics of concern as identified by the Malgana workshop participants were:

- Looking after land and sea Country under climate change
- Impacts of tourism (concerns were also raised about access to health services and the impact of increasing visitor numbers to the bay due to COVID-19 restrictions)
- Impacts of mining, industry, and infrastructure
- Impacts of population growth

The report clearly communicates that Malgana People seek to create sustaining and respectful research partnerships that are mutually beneficial and address their research priorities. MAC is the place to begin exploring partnerships with Malgana People. This workshop was an essential first step in the conversation of seeking guidance and finding a path to work together on climate change with Malgana People.

*This is our first workshop. It is all new for all of us. From the co-ordinators view, without something like this we need some... This will take a lot work and it's a big gig. We will make mistakes. We need to find solutions. We need to put solutions on the table.
Congratulations to the rangers. When everyone is away these guys are on the ground. Everyone is out there on the ground.*

2.5.1 Evaluation and reflections of the research team

While the feedback on the workshop from the Malgana Traditional Owners was positive, there remains room to improve our practice in the future. These include:

Use simple/plain language to help everyone understand what Indigenous Cultural and Intellectual Property means and use examples for each term.

Clear explanation at the start of the workshop that consent forms have to be signed at the start of the workshop

Simpler is better for others to understand

Simple explanations through examples – best way to explain

For the research team, joint planning and review of on-ground work, workshop programs, and evaluation of the health of the partnership with the MAC board will aid the success of future science collaborations. Taking time to understand the range of capabilities of the Malgana People with whom the research team engage requires early dialogue with the MAC board and the on-ground team.

Malgana review of communication materials and targeted knowledge exchange events will be important in sharing knowledge about changes that are being monitored and that are happening on Country. For researchers, understanding each step of the research process as two-way capacity building will be critical to a successful collaboration.

A few positive responses from the workshop that reinforced the importance of the topics discussed were:

I'm happy with what I'm hearing here, and I hope it goes on. I'm happy with everything and as long as we put in the cultural protocols.

I'm really happy with how everything is going. It is what we really needed. This is the good stuff this is the inspirational stuff.

The three-member research team was grateful for this opportunity to work with Malgana People. Some of their reflections on improving their practice are:

- Having good facilitation expertise on the ground and technology to support mixed forms (in-person and digital) interaction, such as microphones and higher resolution cameras
- Mixed form workshops and interaction, although not ideal, are planned into future projects to adapt to potential Government travel restrictions such as those imposed under COVID-19
- Explore multiple forms of engagement digital and physical face-to-face meetings
- Take the time to develop suitable science communication materials
- Collaborate, coordinate and share resources with other research agencies when working with the same Indigenous group while communicating independent research and accountability paths

Engaging early with MAC to guide the types of science practice and tools that would be most useful to the Malgana People's goals for looking after Country and People under a changing climate will aid efficiencies in supporting dialogue and planning for the potential impacts of climate change.

A.1 Appendix 1 Malgana Peoples' protocols for researchers working on Gutharraguda

The Malgana People are the Traditional Owners of this Country and have been looking after our land and sea for many thousands of years. Our knowledge is unique to our people, our Country and to our relationship with our Country. We have our own way of maintaining, growing, sharing and keeping our knowledge strong that is different to the western way. When you work with us, we will be working with two ways of knowing and you agree to ensure that there is two-way learning. This is our protocols for two-way learning.

1) Include Malgana People from the start to the end of the project

- Use the right path to talk to us, through the Malgana Aboriginal Corporation
- Talk to Malgana People when you are thinking about a project and as you design a project
- Put benefits for Malgana People into the research from the beginning and continue to negotiate this from the start to the end (e.g. working with rangers, include Malgana university students, training of rangers and students)
- Update us through every step

2) Come to build trust with Malgana People

- Take your time to know Malgana people and learn the right way of working with us
- Come to build a long-term professional and trusted relationship that has many new beginnings, no ending

3) Free, Prior and Informed Consent

- Work with us to make sure we understand how the research will be done, who will be involved and the effects it might have on Malgana People and Malgana Country if you want our consent
- Talk with us throughout the project about how our Indigenous Cultural Intellectual Property will be used, published and protected if you want our consent
- Talk to us about the time that we need to ask questions and make strong decisions for learning together and doing research on Malgana country
- Use plain language when you talk to us about western science ways of doing research

4) Appreciate that decisions and communication with our group takes time

- Talk to us early and many times
- Check in on us as well
- Give us time to read and consider reports

5) Communicate Research findings for two-way learning

- Use plain language to communicate research results
- Use pictures and less words and graphs (e.g. use pictures that show you are working together with Malgana People on Country)
- Focus on the parts of the research that are most useful and will benefit Malgana People (e.g. for rangers managing Country)
- Provide a second form of reporting that we can share with the Malgana community (e.g. plain language summary, video that includes rangers on Country, picture book)
- Work with a Malgana Facilitator (e.g. Malgana Aboriginal Corporation Board Member) who can check your presentation before you show it to a meeting with Malgana people
- Work with a Malgana facilitator who can interpret the science because they will communicate information the right way for Malgana People
- Use multiple lines of communication from the start to the end of the project to ensure that many Malgana members are receiving information about work on our Country
- Include field trips and on country activities in research work because we learn best on Country and by doing.

6) Learn from the project together from the start to the end

- At the end of the project talk about what we agreed to at the beginning and if our expectations were met
- Discuss how things happened differently to what we expected so we can both learn from working together
- Review the project results including the way the research was done and how information was collected and used or not used (can use survey or SWOT analysis)
- Discuss the lessons learnt from the project
- Understand what collaborations and contributions happened in the project (e.g. how Malgana people contributed to discussions and participated)

In signing this document you agree to the protocols and principles of working with the Malgana People.

Name of research agency _____

Name of research lead _____

Research lead signature _____

Date _____

A.2 Appendix 2 Workshop program

Day 1

TIME	ACTIVITY
9:00 – 9:45	<i>Introductions</i> <i>Project Background</i> <i>Discussion and Completion of Consent form</i>
10:30 – 10:50	<i>Morning Tea</i>
12:15 – 1:00	<i>Lunch</i>
	<i>Discussion and Completion of Consent form</i>
	<i>ICIP Presentation</i>
3:00 – 3:20	<i>Afternoon Tea</i>
	<i>ICIP Presentation</i>
4:00	<i>Reflection – “How are we travelling”?</i> <i>Close Day</i>

Day 2

TIME	ACTIVITY
9:00 – 9:45	Review and reflections of the previous day – (content and process) -Review of the days' protocols - What do we need to do differently?
	Discussion and Completion of Consent form
10:30 – 10:50	Morning Tea
	Discussion and Completion of Consent form
	Group Discussion ICIP - What were the most useful messages
12:15 – 1:00	Lunch
	Video Link - UWA – seagrass work - (Why working on seagrass is important to Malgana People?)
	Discussion about seagrass research by UWA
3:00 – 3:20	Afternoon Tea
	Presentation Western climate story (CSIRO)
4:00	Reflection – “How are we travelling”? Close Day

Day 3

TIME	ACTIVITY
9:00 – 9:30	Review and reflections of the previous day –s) Are we doing ok?
	Group Activity What does good research communication look and sound like for Malgana People
	Presentation Seasonal Calendars
10:30 – 11:00	Morning Tea
	Group Activity Reflection on how Malgana People want to use seasonal calendars and with whom? Report back on how Malgana People want to use seasonal calendars and with whom
12:15 – 1:00	Lunch
	Digital Ranger exchange with TSRA Rangers
	Discussion <ul style="list-style-type: none"> - Role of ranger exchange and knowledge sharing for Malgana Rangers
3:00 – 3:30	Afternoon Tea
	Presentation on Risks and Climate change
4:00	Reflect on 'How we are travelling' Close Day

Day 4

TIME	ACTIVITY
9:00 – 9:30	Review and reflections of the previous day) Are we doing our work right with Malgana People?
	Group Activity What changes are we seeing on-country
	Presentation Mapping change on Country
10:30 – 11:00	Morning Tea
	Presentation Mapping change on Country
	Group Activity Reflection on how Malgana People want to use maps and with whom to look after a changing country
12:15 – 1:00	Lunch
	Group Activity Report back on how Malgana People want to use maps and with whom to look after a changing country
	Review of Western Climate Story
3:00 – 3:30	Afternoon Tea
	Group Activity Report back on changes that we are seeing on-country
4:00	Reflect on 'How we are travelling' Close Day

Day 5

TIME	ACTIVITY
9:00 – 9:30	Review and reflections of the previous day –s) Are we doing ok? Re-stating the aim and interest in working with Malgana People on two-way learning for climate change
9:30 – 10:30	Activity Prioritisation of key concerns and issues raised during the workshop Discussion of benefits from doing research together
10:30 – 11:00	Morning Tea
11:00 – 11:45	Presentation of Malgana Protocols as researchers have heard from Workshop Group Activity Review of protocols by Malgana People
11:45 – 12:15	Closing of Workshop
12:15	Lunch

A.3 Appendix 3 Informed Consent Form for the Malgana Workshop

INFORMED CONSENT FORM FOR WORKSHOP

Workshop on Developing **Proper Way Protocols and Principles** for Sharing and Learning Together about Climate Change

Workshop 08 – 12 March, Denham, Shark Bay

This Informed Consent Form is about your participation in the: Workshop on Developing **Proper Way Protocols and Principles** for Sharing and Learning Together about Climate Change
From 08- 12 March 2021.

What is the Informed Consent Form?

The Informed Consent Form tells you about the Workshop you will be doing with the researchers. If you agree to sign, this makes an agreement between you and CSIRO.

This paper outlines what you are being asked to do and the rights and obligations of you and CSIRO if you agree to work together in this workshop. It will give you all the information that you need for you to decide if you want to do this workshop. This includes potential risks and benefits of the project.

There is also an agreement between CSIRO and the Malgana Aboriginal Corporation. This means that CSIRO will also be working through and with the Malgana Aboriginal Corporation.

If you agree, there is space for you and the CSIRO Meeting Facilitator to sign this form at the end. We want you to initial each page to show that you are the person who has answered the questions.

DECLARATION BY PARTICIPANT AND CSIRO

CSIRO proposed this project to the Malgana Aboriginal Corporation and requested advice about who to work with from the Malgana Group.

1. My understanding about the aims of the Workshop.

The aims of this workshop on the **Proper Way Protocols Sharing and Learning Together about Climate Change for Malgana People** are to:

- Share the western science on climate change
- Talk about some of the ways that tools like mapping and seasonal calendars can be useful to talk about and look after Country
- Support different ways of knowledge sharing that benefit Malgana People
- Build trust between Traditional Owners and scientists
- Support Malgana People to talk about proper way rules and protocols of how Malgana People want to share knowledge and their experience about changes they are experiencing on their Country with researchers and the public

I understand the aims of the Workshop

Yes ☐

No ☐

2. My understanding about the activities in this Workshop

The workshop will include presentations from CSIRO and group discussions about the topics raised in the presentations. The discussions will help Malgana People to build their proper way rules and protocols to share knowledge and their experience about changes they experience on their Country with researchers and the public.

I understand the activities we will do in the Workshop

Yes ☐

No ☐

3. My understanding about the reports from the Workshop

A Draft Summary Report and Final Summary Report and a research paper will be written about activities that support the aims of the Workshop. The report will not include any other information without your Free Prior and Informed Consent.

- I understand that a Summary Report in writing with photos will be prepared showing our activities at the Workshop.
- I understand that the records of the Workshop in writing and photographs may be included in other reports such as newsletters, web pages, journal articles and longer reports.
- I agree for my picture and my words to be included in these reports.

Yes ☐

No ☐

4. My understanding about reviewing the reports on the Workshop.

The Draft Report and Draft research paper will be sent to the Malgana Board Members, rangers and workshop participants. You will have three weeks after receiving the report to review, make comments and ask for any changes. Workshop participants can e-mail Pethie Lyons (Pethie.Lyons@csiro.au) if they need more time.

- I agree to review the summary report in writing and photographs from the workshop
- I understand that I will have 21 days to look at the reports in writing or ask for more time if I need it.
- I know that I can ask for changes if my ideas have not been understood.

Yes ☐

No ☐

5. My understanding about the publication of the report on the Workshop.

The report from this project will be published free online with a Creative Commons Attribution Licence 4.0 (attached).

- I understand that the Final Report will be published under a Creative Commons Attribution Licence and will be freely available.

Yes ☐

No ☐

My understanding about the ownership of the report of the Workshop.

The University of Tasmania (UTAS), the lead agency running the Marine Biodiversity Hub for the Department of Agriculture, Water and the Environment, will hold the copyright of the report. Copyright is a type of legal intellectual property ownership.

- I understand that the report of the Workshop report will be owned by UTAS.

Yes ☐

No ☐

6. My understanding about the ownership of the Traditional Owner's knowledge shared at the Workshop.

All the knowledge that belongs to Traditional Owners, including knowledge shared at the Workshop, and knowledge in the Draft Summary Report and Final Summary Report remains owned by Traditional Owners. For the purposes of publication and the provision of the Creative Commons Licence, UTAS, the lead agency for the Marine Biodiversity Hub will put its name to the report. Ownership of any and all Indigenous Cultural and Intellectual Property will be retained by the Traditional Owners.

- I understand that the all the knowledge that belongs to Traditional Owners, including knowledge shared at the workshop, remains owned by Traditional Owners, and not by UTAS.

Yes ☐

No ☐

7. My participation in this Workshop

- I agree freely to participate in the research at this Workshop. I have made up my own mind to agree to participate.
- I know that I don't have to participate in it if I don't want to. I know that I don't have to answer any questions I don't like.

Yes ☐

No ☐

8. My understanding that I can withdraw from the Workshop at any time

- I know that I can stop participating at any time. The researchers from CSIRO won't think badly of me if I do this.

Yes ☐

No ☐

9. Getting paid for participating in the Workshop

- I understand that I will be paid fees for my participation at the rates agreed with me.
- I know that if I choose to withdraw, I will not be paid for those parts that I did not attend.
- I am aware that the YMAC will act on behalf of MAC to pay the fees and pay my travel to attend the Workshop.

Yes ☐

No ☐

10. My understanding about having my input removed if I withdraw from the Workshop

- I can ask to have my ideas removed if I chose to withdraw. The Project Team will do their best to remove my ideas. In group work, some of the ideas I contribute may be difficult to separate or remove as they will be mixed in with everyone's ideas.

Yes ☐

No ☐

11. My consent to being recorded in writing and photographs

- I understand that the workshop will be recorded in writing and photographs.
- I agree to being recorded in writing and photographs.
- The project team will stop taking photographs or notes if I ask them to.

Yes ☐

No ☐

12. The use of my name

- I want my name to be used in photographs, video footage and next to my comments in writing.

Yes ☐

No ☐

13. My consent for sharing of the reports in writing and photographs.

- I understand that the report will be shared: on websites, by email, in workshops, in conference presentations, by telephone and in flyers.

Yes ☐

No ☐

14. My consent for the use of my pictures

If I have agreed to be photographed during the Workshop and for these recordings to be included in the project reports:

- I also give my permission that photos of me may be used by CSIRO and the NESP Marine Biodiversity Hub and the Earth Systems and Climate Change Hub for project related communications in general presentations, public media and web sites, not just the Workshop reports.

Yes ☐

No ☐

15. My understanding of the possible risks and possible benefits of this project

- I know that the risks of the project are that there may be some topics or questions that I may not wish to discuss. I know that I can choose not to discuss these.
- I also know that some other people may bring up topics that make me feel uncomfortable. I know that I can choose not to discuss these.
- I understand that the workshop has benefits. The practical tools in this workshop may help Malgana People to establish protocols about sharing climate knowledge and their experience of climate change with scientists and the public.
- I understand that photos and knowledge that I have given permission to be used in the Project and in any reports and presentation will be put on the internet and in a digital form and this means that anyone can download it and look at it from anywhere in the world.

Yes ☐

No ☐

16. I understand that the information collected at this Workshop will be kept in a safe place.

- I understand that any records of what I said during the Workshop will be kept by CSIRO in a password protected computer, with any paper copies kept in a locked cabinet at CSIRO. This will be shredded after 7 years. CSIRO will retain 1 copy of the data stored as an archival record on a secure server

Yes ☐

No ☐

17. Intellectual property and copyright and Indigenous Cultural & Intellectual Property

- I understand that I will not lose the copyright on any of my own Background Intellectual Property (such as my own photos, and my own written reports and documents) that I give to this project.
- I understand that the copyright of the written report produced by this project will be owned by The University of Tasmania.

- Owning the copyright of the written report does not include ownership of the Indigenous Cultural and Intellectual Property (ICIP) content of the report.
- I understand that I am giving permission or a licence to the University of Tasmania to use the Indigenous Cultural & Intellectual Property that I agree to share, in the written report and other things like presentations and websites and flyers.
- I understand that the University of Tasmania will make sure to include a notice (a “ICIP Notice”) that we both agree on which describes how we expect people to use and respect the ICIP I share (see an example).
- I understand that the University of Tasmania and the Marine Biodiversity Hub will provide free licences for the world-wide use of the information, this includes Malgana Aboriginal Corporation.

Yes ☐

No ☐

18. Complaints

This project has been cleared in accordance with the ethical review processes of CSIRO within the guidelines of the National Statement on Ethical Conduct in Human Research. Please do not hesitate to contact us if you have any questions or concerns.

- I know that if I am worried about the project I can contact the Project Leader or the CSIRO Ethics Contacts.

Yes ☐

No ☐

<p>Project leaders' details</p> <p>Dr Peci Lyons (Pethie)</p> <p>CSIRO (Cairns)</p> <p>0477755076</p> <p>pethie.lyons@csiro.au</p>	<p>CSIRO Ethics Contacts</p> <p>Manager, Social Responsibility and Ethics</p> <p>CSIRO Brisbane</p> <p>07 3833 5693</p> <p>CSIRO Social Science Human Research Ethics Committee csshrec@csiro.au</p>
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Participant details

Name: _____ Date _____

Signature: _____ Email _____

Phone _____

Postal address _____

CSIRO Meeting Facilitator

Name: Nat Raisbeck-Brown Date _____

Signature: _____ Email nat.raisbeck-brown@csiro.au

CSIRO Project Leader

Name: Dr Pethie Lyons

Date _____

Signature: _____


Email Pethie.Lyons@csiro.au

Phone 0477755076
Queensland

Postal address

Box 12139 Earlville BC, Cairns 4870,

Annex 1: Example of a Creative Common – Attribution Licence.



Attribution 4.0 International (CC BY 4.0)


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No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as [publicity, privacy, or moral rights](#) may limit how you use the material.

Annex 2: Example of an ICIP Notice:

This licence describes what people can do with the written report – for example they can change it, copy it, share it with other people, even use it to make money. All they need to do is give credit to the owner of the report. (We can draft the attribution to include people in this workshop

Indigenous Cultural and Intellectual Property Notice: The information shared by Traditional Owners may include Indigenous knowledge which cannot be protected by copyright and hence a Creative Commons licence. [Regardless], we as Indigenous knowledge holders assert our ownership (which may be collective ownership), authority and control over our Indigenous cultural and intellectual property (ICIP) expressed in words or captured in images [photos] or shown through a form of visual representation in this document. Our ICIP includes language and names; cultural practices, governance, values and responsibilities; knowledge about plants, animals, and land and sea; stories and their meaning; and reference to culturally important sites. We assert our rights to our ICIP and ask that you acknowledge and properly attribute who and where it came from, that you respect it, that you maintain its integrity and not use it out of context, that you treat it in the right way, and that you contact us to learn more and to create mutually beneficial opportunities and partnerships for the future.

Glossary

MAC – Malgana Aboriginal Corporation

ICIP – Indigenous Cultural Intellectual Property

CSIRO – Commonwealth Science Industry Research Organisation

References

- Green, D., and L. Minchin. 2014. Living on Climate-Changed Country: Indigenous Health, Well-Being and Climate Change in Remote Australian Communities. *EcoHealth*:1-10.
- Heron, S.F., J. C. Day, C. Cowell, P.R. Scott, D. Walker, and J. Shaw. 2020. Application of the climate vulnerability index for Shark Bay, Western Australia. Perth, Western Australia: Western Australian Marine Science Institutions.
- Hill, R., F. J. Walsh, J. Davies, A. Sparrow, M. Mooney, C. L. Council, R. M. Wiser, and M. Tengo. 2020. Knowledge co-production for Indigenous adaptation pathways: Transform post-colonial articulation complexes to empower local decision-making. CSIRO – Commonwealth Science Industry Research Organisation. *Global Environmental Change-Human and Policy Dimensions* 65. doi: 10.1016/j.gloenvcha.2020.102161.



**Earth Systems and
Climate Change
Hub**

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