









# A front lines look at peer-to-peer sharing of Indigenous knowledge and academic science

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## Abstract

Indigenous knowledge systems and non-Indigenous academic science are recognized as important components of the evidence base that Indigenous leaders can use to manage marine protected areas (MPAs). Nevertheless, the use of both Indigenous and academic knowledge in marine management is still evolving. Indigenous academics, i.e. people of Indigenous heritage with advanced academic training, are increasingly acting as the agents to integrate Indigenous knowledge, academic approaches, and marine management. While attention in the literature has been paid to knowledge sharing between Indigenous knowledge holders and academic researchers, far less has been written about peer-to-peer knowledge sharing between Indigenous academics working in marine science and management. Here, we describe the frontline details of a workshop focused on the sharing of Indigenous knowledge and academic science by Indigenous academics. The workshop, held in Taiwan, brought together Indigenous academics and community leaders from across the Austronesian region. The central technical challenge was facilitating effective cross-cultural knowledge exchange between diverse Indigenous communities and Indigenous academics and researchers. The workshop employed several technical approaches that likely have broad application beyond Indigenous peer-to-peer knowledge sharing. We used a co-designed planning process that prioritized Indigenous protocols over common academic formats. This involved remote meetings and iterative agenda revisions to address cultural sensitivities and ensure collaborative input from all participating Indigenous groups (Amis and Polynesian). The workshop deliberately moved away from panel presentations to utilize culturally resonant activities like ceremonies, gift-giving, and circle discussions in a longhouse; this helped to create a foundation of trust and respect, essential for authentic knowledge sharing. We undertook an active listening approach in which our most senior and most junior participants were charged with making sense of the proceedings and creating the post-workshop analysis of the meeting's outcomes. We found that four key elements were important to the success of our knowledge exchange: build relationships, raise awareness about Indigenous academic science, engage in active listening, and allow for enough time.

## Introduction

### Indigenous academics and lessons for sharing science

While much has been made recently of the need to better incorporate Indigenous knowledge in marine management and even academic research, far less has appeared in the literature regarding how academic researchers can do a better job of ensuring that academic research meets the needs of Indigenous communities. Co-designing science with Indigenous commu-

nities will likely require new ways of working and new ways of knowledge sharing.

There are more and more Indigenous academics (Enari et al. 2025)—Indigenous people who are both holders of traditional and Indigenous knowledge and are trained in academic approaches (including five of the eleven authors of this paper—Barón-Aguilar, Koka'ua, Rongo, Vavia, and Quesnot, Tsai is a long-time member and former executive secretary of the 'Etolan community). Indigenous academics personify liv-

ing bridges between Indigenous communities and academic institutions, and between Indigenous ways of working and knowing and those from academia.

We report on our experiences working with a group of Indigenous academics, including one Indigenous leader with academic training, who were invited to an Indigenous community in Taiwan to share knowledge about how they have used academic approaches in their own work regarding marine management. We use this opportunity from the front lines of Indigenous knowledge sharing to report on how these Indigenous academics chose to share knowledge among themselves and with the local Indigenous community. These experiences help to highlight key issues that all academic marine researchers might want to consider when engaging with Indigenous communities, but this is not intended as a “how-to” guide, nor is it a paper about the specific academic tools and approaches that can be used in Indigenous-led marine protected areas (MPAs).

This paper’s format weaves together background and descriptions of sharing knowledge and academic science by and among Indigenous people with context provided from the meeting we had about using academic research approaches for MPAs. This format reflects how we ourselves distilled what we learnt about Indigenous knowledge sharing from our experience in the field. Much of our original writing started in the form of “talanoa in written form” (Enari *et al.* 2025)—a type of first-person narrative used in many Indigenous Pacific journals. This narrative form of discourse has been adapted in this manuscript to have a format that is a compromise between this more Pacific Indigenous style of writing and the more academic approach that is commonly found in the *Journal of Marine Science*.

### The increasing importance of Indigenous knowledge in conservation and ecological management

There is growing recognition of the value of Indigenous knowledge in conservation and ecological management (Ellis *et al.* 2021) and the inherent science behind many Indigenous knowledge approaches. While Indigenous knowledge systems have often been sidelined in favor of non-Indigenous academic scientific approaches, Indigenous approaches have emerged as a critical evidence base that can be used to inform environmental management decisions, including marine management (IPBES 2019, Nunn *et al.* 2024).

Indigenous knowledge is an experiential (and embodied) way of knowing. Indigenous communities have lived in close relationship with their lands, seas, and ecosystems for thousands of years, acquiring a profound understanding of local biodiversity, ecological processes, and environmental cycles. This knowledge evolves over generations through a process of adaptive learning (Davidson-Hunt and Berkes 2003); learning allows for Indigenous knowledge to be constantly updated and modified based on lived experience, often intertwined with cultural, spiritual, and social dimensions.

For instance, Indigenous communities in the Arctic possess intricate knowledge of sea ice and its relationship to animal migration, which can provide valuable information for climate change adaptation (Ford *et al.* 2006). Similarly, Indigenous peoples in the Pacific Northwest of North America have long used Indigenous knowledge to inform the harvesting of salmon, including practices such as selective harvesting, sea-

sonal fishing, and the protection of spawning habitats (Munstonen *et al.* 2022). Indigenous knowledge about tidal patterns, marine species migrations, and the behavior of key marine species helps to provide important insights into ecological processes that are not always captured by conventional scientific methods.

Indigenous people have historically been important stewards of biodiversity (Ellis *et al.* 2021). Even after centuries of settlement and displacement, Indigenous peoples continue to have tenure rights or exercise *de facto* management of ~38 million km<sup>2</sup> of land (Garnett *et al.* 2018, Fa *et al.* 2020). This includes many coastal areas and expanses of coastal and open ocean. As a result, an increasing number of MPAs are being designed and managed by Indigenous communities (e.g. in the Bering Sea, in coastal areas of Canada, Malaysia, Chile, Zanzibar, and Polynesia, and recently proposed on the island of Taiwan).

In the Solomon Islands, Indigenous communities have traditionally monitored and managed marine resources through “tabu” or sacred areas, which are analogous to modern MPAs. In Polynesia, *ra’ui* or *rahui* also serve as *de facto* marine management areas (Bambridge 2016). **These locally managed areas, based on traditional knowledge, have been shown to help restore fish populations and maintain the health of coral reefs** (Johannes 2002).

### The importance of peer-to-peer knowledge sharing between indigenous communities and indigenous academics

Compared to pre-colonial times, there are now large gaps in the traditional Indigenous knowledge base. Traditional Indigenous knowledge has been eroded over time in many places, especially in Oceania. The causes include a variety of social, economic, and political changes (Friedlander 2018, Nunn *et al.* 2024), like colonization, urbanization, the use of digital technologies (GPS, smartphones, etc.) to replace traditional ways of knowing, and changing relationships with nature. There is an urgent need to support these communities in saving, transmitting, and reviving their traditional ecological knowledge, as well as acknowledging Indigenous peoples’ rights more broadly.

As climate change, habitat degradation, and other global environmental changes impact ecosystems worldwide, peer-to-peer Indigenous knowledge sharing is likely to become essential for adapting Indigenous socio-ecological practices. Peer-to-peer knowledge sharing could allow Indigenous knowledge holders to discuss and evaluate how traditional practices might be adapted to address these new challenges while maintaining local trust and efficacy. Peer-to-peer knowledge sharing among Indigenous peoples can also strengthen inter-community relationships and improve the collective capacity of Indigenous peoples to address common environmental challenges (Chapman and Schott 2020).

Many Indigenous communities are now turning to each other to share Indigenous knowledge. There now are large gatherings of Indigenous knowledge holders from across cultures (e.g. Cordillera Day in the Philippines (Maestro 2019), the Amis Musical Festival in Taiwan (Guy 2021), the Festival of Pacific Arts in Oceania (The Pacific Community. Festival of Pacific Arts and Culture 2025), and Te Mana o Te Moana (Te Mana O Te Moana 2025) and Tiaki Moana both in Polynesia (Tiaki Moana 2025). New global networks have

been created to share Indigenous knowledge across cultures, including the Indigenous People's Knowledge and Leadership Network (Indigenous Peoples' Knowledge and Leadership Network, 2025), the Wayfinders Circle (Wayfinders Circle 2024), the ICCA Consortium (ICCA Consortium 2021), and Snowchange Cooperative (The Snowchange Cooperative 2025).

Indigenous knowledge sharing across cultures and languages is rarely straightforward, nor is its facilitation. Within Indigenous communities, knowledge is often shared through oral traditions, storytelling, artifacts, and experiential learning, often lacking a written knowledge base. The hyper-local knowledge that underpins much Indigenous knowledge presents both challenges and opportunities for knowledge sharing. Because Indigenous knowledge systems are often highly localized, they can offer site-specific insights tailored to local ecosystems and particular decision-making systems (Berkes 2008). While this local specificity can sometimes limit broader applicability, it also means that peer-to-peer knowledge sharing between Indigenous communities could yield new insights and out-of-the-box thinking (by being exposed to radically different social-ecological systems). On the other hand, hyper-local knowledge may be difficult to put in context if other participants are not familiar with these places and the ecological and human nuances that are needed to understand this knowledge.

Oral knowledge can be particularly difficult to share when languages differ among participants. As a result, inter-community knowledge sharing between Indigenous researchers, knowledge holders, and communities often requires face-to-face interactions that must contend with cultural, social, and linguistic differences. These meetings and efforts to work cross-culturally to share Indigenous knowledge are substantial and necessary steps towards creating spaces to promote Indigenous knowledge sharing, but how to do so is not well documented. In this paper, we seek to extend these learnings by sharing our frontline experiences in Indigenous knowledge sharing. We use the occasion of a cross-cultural knowledge exchange meeting to share Indigenous perspectives on marine protection and management and to describe our recent experiences in sharing Indigenous knowledge across cultures. The goal is to document for a wider audience the opportunities and challenges that arise in working cross-culturally and the solutions that are implemented.

### The role of Indigenous academics in marine management

Combining academic scientific approaches with local, traditional, and Indigenous knowledge can help both Indigenous communities that depend on the ocean (Moller et al. 2004, Johnson et al. 2016) and marine managers. Indigenous knowledge contributes a deep ecological understanding and sustainable, proven practices, while academia and technology offer tools to design MPAs and assess their management (Iphar, *Inpress*).

The need for evidence-based decision-making has been well-documented for MPAs (Pomeroy et al. 2002, Grorud-Colvert et al. 2021). Traditional leaders and Indigenous communities also are likely to benefit from sound knowledge and evidence about the status of and changes in local marine ecosystem health, species abundance and biodiversity, as well as threats to these conditions. Scientific approaches clearly are important to understand the health and status of large marine ecosystems that often include Indigenous- and

non-Indigenous-managed areas, and this includes the degree to which Indigenous-led marine protection affects ecosystem health.

Academic scientific approaches, however, are not necessarily appropriate for or easily integrated into traditional decision-making practices. Traditional decision-making may rely on already familiar traditional and local means of gaining knowledge about local ecosystems, their status, and threats. Traditional leaders may also be unfamiliar with academic scientific methods, tools, and data.

Getting academic science to work for Indigenous leaders and communities can be a challenge. Social and cultural barriers may lead to a lack of trust of non-Indigenous researchers and their work. In addition, some tools used by scientists may not align with local cultural aspects. For example, conventional cartography, with its delineations between humans and their environment, contrasts with the multifaceted continuums found among Oceanian communities (Anderson 2019, Quesnot et al. 2024).

There is a small but growing number of Indigenous academics, researchers, and knowledge creators who are trained in academic methods and are also knowledgeable about uniquely Indigenous ways of knowing. Many of these Indigenous academics and researchers work directly with local communities to protect and manage marine biodiversity, creating a bridge between academic and Indigenous ways of knowing and between academic science and Indigenous decision-making. Finding ways to share knowledge and experience between these Indigenous academics is key if they are to play an expanded role in marine management.

### The opportunity in Taiwan

The Marine Conservation Act (Executive Yuan 2024) in Taiwan formally recognizes the importance of involving Indigenous people and communities in the design of local marine management and protection. This act has significant repercussions for the potential influence of Indigenous communities and practices in marine ecosystems of high biodiversity value. The island of Taiwan has 1566 km of coastline; one-tenth of the world's marine species are found in the nation's surrounding waters (Shao et al. 2012, Chung and Jao 2022). Taiwan has a vibrant Indigenous population that includes 16 officially recognized Indigenous peoples (Cheng and Ludäscher 2020). The opportunity for Indigenous-led protected areas is substantial and has been seized upon by the Indigenous "Etolan Amis community of Taiwan to pursue their vision of creating Taiwan's first Indigenous-led MPA. Traditionally, MPAs in Taiwan have included considerable local input (Chung and Jao 2022). Unlike the governance structures of other established MPAs in Taiwan, the proposed 'Etolan (Dulan) MPA stands out as a unique case where the Indigenous community proposes to act as the primary governance body for the MPA and seeks to use both Indigenous traditional knowledge and academic science to inform traditional leaders in their management of these marine resources.

Like any other community about to undertake marine management, the 'Etolan community could benefit from having a good understanding of local marine conditions and human pressures and uses that may affect local marine ecosystems. Scientific tools and approaches could complement any local knowledge. Further, the regional government requires evidence of the need for marine protection in the area.

**Table 1.** The steps in co-designing the planning and implementation of the workshop (shading indicates how each activity influenced collaboration)

Stages in co-design		Understanding intentions	Building trust	Knowledge Exchange	Parallels in Cook Islands Māori
Planning the Workshop		X	X		Teateamamao‘anga
Pre-meeting Dinner and MPA Talk			X	X	
Welcoming Ceremony		X	X		‘Āriki‘anga
a.	Request for Permission to enter Pacifaran	X	X		‘Iri‘iri
b.	Permission granted; walk to longhouse.		X		Tūrou
c.	Community Dance		X		Tikitiki tangata, ‘ura piāni
d.	Drinking and gift-giving		X		Aro‘a
Getting to know the land and sea		X		X	
Meeting in Circle			X	X	‘Uri‘uri manako
Closing Feast			X	X	Umukai

There are, however, no resident Indigenous marine scientists within the ‘Etolan community. The ‘Etolan community has begun establishing cultural exchanges with other Indigenous communities throughout Polynesia. This openness provided an opportunity to offer to connect the ‘Etolan community with Indigenous academics in the Ocean Knowledge Action Network and Moonjelly Network to begin the process of Indigenous peer-to-peer sharing of knowledge and academic science for marine management.

Taiwan’s Indigenous people are part of a larger community of Indigenous peoples that live throughout Southeast Asia and Oceania and who share cultural and linguistic traditions that are collectively known as “Austronesian.” The Austronesian people originated in Taiwan and voyaged as far west as Madagascar and as far east as Rapa Nui (Matisoo-Smith 2015). Polynesians are members of this Austronesian family (Diamond 2000). The opportunities for peer-to-peer knowledge sharing within this Austronesian diaspora are great, but there is little in the literature to guide how to conduct peer-to-peer knowledge sharing between Indigenous peoples and communities, especially when they come from different cultures, with different practices and languages.

Seizing on this opportunity and need for Indigenous knowledge sharing, we secured funding to hold a meeting aimed at exploring better ways to foster knowledge exchange between Indigenous communities and Indigenous academics. The intention was to listen to the “Etolan community’s concerns and questions and to begin to build relationships that would ultimately allow for the sharing of practical insights, knowledge and potential academic approaches that the hosting community could use to integrate academic science in its efforts to better manage coastal ecosystems. Five Indigenous academics (all authors of this paper) and one Indigenous traditional leader came together to meet with the Indigenous Amis community of ‘Etolan.

In this paper, peer-to-peer Indigenous knowledge sharing about marine academic science is described as it unfolded between these Indigenous people, including Indigenous academics, and the lessons learnt in the process. We document and reflect upon the processes of planning and implementing the workshop (Table 1), what worked and what did not, and what knowledge was ultimately shared. The planners were all Indigenous, including representatives of the ‘Etolan community. Even though all of the planners were trained in academic

scholarship, they chose very non-academic ways of working in an Indigenous setting.

By examining how these Indigenous academics chose to share knowledge among themselves and with the broader Indigenous community of ‘Etolan, we hope to offer guidance for others who wish to undertake cross-cultural, Indigenous knowledge sharing around the globe. We also wish to use this opportunity as a way of offering fresh insight into better ways that marine scientists across the board can share knowledge.

### Re-orienting academic goals

We set out to bring together Indigenous natural and social scientists (biology, anthropology, linguistics, geography, oceanography, humanities, policy) from around the Austronesian region (and even as far as South America) to share experiences and best practices on how best to integrate science and Indigenous knowledge into the design and management of Indigenous-led MPAs.

Upon commencement of planning, however, it was clear that before we could tackle lofty academic goals, we needed to figure out how to bring together and establish foundational levels of trust among such a diverse group of scientists and knowledge holders with local Amis community members and leaders. This group included four different Indigenous languages (Amis, Cook Islands Māori, Wayuu, and Tahitian) and five non-Indigenous languages (Mandarin, Hokkien/Taiwanese, English, French, and Spanish). No single language was shared by all.

It was also evident that the community hosting the workshop was unlikely to be able to commit more than a day or two to a collaborative workshop.

For these reasons, the planners began to reassess the goals for our first meeting and what could realistically be accomplished during this one workshop. Through the course of the meeting planning, the new expectations for the meeting were refined. The meeting would primarily become an opportunity to experiment with new, more culturally appropriate ways of meeting and collaborating, to explore ways of building trust, to identify future opportunities for collaboration, and to focus on three scientific questions that pertain directly to Indigenous-led MPAs: (i) How do the Indigenous visiting scientists and community leaders protect their ocean areas? (ii) How do they communicate with settlers? (iii) How do they

combine modern science and Indigenous knowledge to inform management and monitor the ocean?

## Planning the workshop

The purpose of the workshop was to bring together Indigenous community members and external Indigenous academics to share knowledge about using science to inform Indigenous marine protection and management. The extra challenge was that our Indigenous academics came from at least four distinct Indigenous cultures outside of the 'Etolan Indigenous community—the community that invited everyone together to share knowledge with them. The gathering was marked by an initial lack of both personal and cultural familiarity.

The planning team decided to co-design an Indigenous meeting style in which social protocols specific to each community were respected at every stage of the process, particularly at the outset when the foundation of trust was being established.

Except for travel logistics, planning was left to Indigenous members of the consortium that proposed the workshop—from the 'Etolan Amis community (Taiwan) and the Polynesian participants from Rarotonga, Miti'āro, and Mo'orea. This planning involved a series of remote meetings to discuss traditional meeting styles for both the Amis hosts and the Polynesian guests. These meeting styles are all grounded in traditional social systems and built infrastructure that differ substantially between the "Etolan Amis and the Polynesian participants involved.

The planning process, in which leads from the Amis Indigenous community and the Polynesian scientists all participated, provided an online opportunity to discuss these differences and for the core team to build understanding and trust. This trust was carried forward to the meeting held in 'Etolan, between members of various ethnicities, cultures, ages, societal statuses and professional backgrounds. As our meeting was hosted by the Amis people of 'Etolan, it was natural to have Amis community members lead and facilitate our events with a strong emphasis on their traditions. The workshop was also co-designed to weave in some of the customs of our various group members, creating an atmosphere of comfort and safety for everyone and allowing for a respectful exchange.

Amis and Māori planners worked together to find a common approach that would bridge these cultural differences that resulted in a blending of Indigenous and academic ways of working. This type of planning approach generated a two-day agenda that involved the Amis community at every step, blended a traditional slide deck presentation of scientific data, customary welcoming ceremonies (*Palafang*) with dancing and singing (*Radiw ato kero*), a day-long meeting in an open circle (*mikayki*) in a traditional house (*s"fi no riyar*), and a closing night feast and extended dancing and singing. The planners viewed the 2-day meeting as the entry point for future meetings and did not conclude with report outs, action items, or any of the standard academic concluding exercises. The write-up that is this article was undertaken as a group effort led by the most senior scholar (non-Indigenous) and the youngest scholar (Indigenous), based on follow-up interviews and a review of transcripts taken from recordings of the outdoor community meeting.

## Tradition, ceremony, and trust-building

### Gender and age roles across cultures

While the Amis community of 'Etolan historically has had a matrilineal kinship system, the political aspects of the community are now more patriarchally organized. Only men who were underwater hunters and the traditional leaders were in the main discussion component of the meeting. While both men and women participated in cultural aspects of meetings, key group ceremonies, like traditional hand-in-hand singing and dancing (*malikoda*), were led by men.

One of the most significant aspects of working in 'Etolan was that men in the community are organized into age sets, tight-knit teams of similar ages whose responsibilities change and grow over time as the members of the age sets become older.

In an almost opposite situation, Cook Islands Māori (herein referred to as Māori) culture has evolved into no longer being strictly patriarchal, and there are no rigid rules that define responsibility or stature in terms of age or gender. In fact, many traditional leaders in the Cook Islands are now women, and one of the visitors in the group from the Cook Islands was Ngamaru Ariki—a 28-year-old female traditional leader (and science teacher) from Ātiu Island.

Because the planning group was cross-cultural and included both Amis and Polynesian members, the different cultural approaches to gender were addressed early. Ngamaru Ariki was welcomed and honored at the meeting, and she was able to share her substantial experience. There was also considerable time outside of the "circle" for Ngamaru Ariki to engage with women and girls from the community.

### The role of ceremony

Rituals and ceremonies play a variety of roles in catalysing collaboration. Rituals and ceremonies help to establish relationships and to facilitate transitioning from one group (stage) to another, which is usually referred to as a rite of passage (Van Gennep 2019). Ceremonial practices vary from one community to another, but they all serve the same purpose, and practising them reflects the same sentiment: an acknowledgment of traditions and identities and respect for the people and their culture, which is the foundation of any relationship. Once the community had agreed, on its own terms, to work with outsiders, they were ready to engage in conversation. Relationships take precedence over work.

### The role of food and meals

On the evening prior to the workshop, our Amis hosts organized a shared meal prior to the following day's main events; this meal featured local ocean foods. Similarly, in Māori culture, like many other Indigenous cultures, formal, and other traditional events are almost always complemented with feasting. Without the time and space to share a meal, there may be a feeling of being unfulfilled or incomplete. Furthermore, it is also a time to become more familiar with each other by having conversations that are beyond matters of business and simply sharing space informally. During the meals the guests were able to develop deeper understandings of Amis culture, politics, and societal structures, including the role of gender and age-set systems in their community. In essence, sharing a meal with their Amis hosts (and the group of visitors) was symbolic of peace and safety, which acted as a catalyst for

building trust and familiarity, which is essential for effective knowledge sharing.

### Trust, respect, collaboration, and sharing

The day-long workshop began early the second day. The morning consisted of a series of activities and ceremonies that helped build toward hours of knowledge sharing. Each activity and ceremony contributed differently to building the trust, cohesion, and understanding that would be needed to allow for the free exchange of ideas. Hours of knowledge sharing, with breaks for food and informal side chats, were capped by a community-wide closing ceremony that helped bring closure to the workshop. The most important ceremonies and activities of the day and how they ultimately contributed to peer-to-peer knowledge sharing among the Indigenous participants of the workshop are described here (see [Table 1](#) for a summary).

### Request for permission to enter Pacifaran

In the lead-up to our knowledge exchange, on the traditional grounds of Pacifaran, traditional ceremonial practices unique to the 'Etolan Amis ethnic group were performed. A group of nine visitors, including five Indigenous academics, one female Indigenous leader (Ngamaru Ariki) from the Māori group, and a translator, were received on the path to the gathering place by a delegation of young Amis wearing their traditional attire ([Fig. 1](#)). These were local men of an age and strength that is expected to protect the community from outsiders, who were adorned with traditional attire representative of their age set. In this instance, two men within the *Lalinay* age set (19–23), accompanied by a member from the *Laciensi* age set (38–42), stood at the border of Pacifaran and challenged the right of the visitors to enter. With the assistance of an interpreter, the visiting Indigenous academics were questioned about their intentions and desire to enter Pacifaran.

The visiting cohort was led by Ngamaru Ariki. Serving as Ngamaru Ariki's spokesperson, Dr Teina Rongo identified the group and explained that its intention was to meet with the Amis tribal community to discuss challenges and potential solutions to Indigenous-led marine environmental stewardship, as well as to rekindle lost relationships with those who shared their ancestral origins. The message was relayed to the Amis elders.

Collaboration among strangers does not happen all at once. After permission from the elders was granted to enter the sacred Pacifaran lands, the Amis welcome party and the Indigenous visitors walked silently from the edge of Pacifaran to the traditional-style thatched longhouse in the center of the lands. Non-Indigenous collaborators followed. The only sounds heard were the bells attached to the legs of the young Amis men who led the procession. By walking together without speaking, there was time to contemplate the day ahead and to set the intention for collaboration.

### Dancing, drinking, and gift-giving

The first steps towards collaboration began with dancing and singing—an exercise in coordinated group contact. Members of the community, along with the guests, were ushered together in a huge circle, joining arms in a crisscrossed, interlinked pattern. Once arms were connected, Amis elders began their traditional chanting, and the younger Amis age set guided the visitors in the dance steps that were carried out in unison across the entire circle (*malikoda*). Dancing and chanting continued for 30 minutes or so until the group were rea-

sonably well-coordinated and warmed up physically and emotionally. Starting the collaboration process through physical coordination and support set the scene for a day of more intellectual and emotional collaboration. After the first session came to an end, the Amis participants and visitors danced together again. On this occasion, Amis men and women were actively engaged in teaching the visitors the various dance movements and joining together as one.

Recognition of those responsible for making the workshop possible, from the original organizers to the Amis community hosts, was achieved through the exchange of gifts, including the invitation given to one visitor to join an Amis age group ([Fig. 2](#)). Rice wine was used to consecrate the ground and land upon which we were to meet and then shared first with the Amis elders, then the visiting traditional leader from Ātiu (Cook Islands), then the director of the Ocean Knowledge Action Network (who spearheaded the initiative), and then the visiting scholars.

### Getting to know the land and sea

Before the start of the sit-down meeting, the entire group walked the coastline with the Amis spearfishers ([Fig. 3](#)), listening to them talk about the named fishing areas and species. Spending time with traditional knowledge holders on the land and sea was essential for understanding what the group would work on as Indigenous peers. This “walking the land and sea” or even getting in the water should be considered a necessary component of any Indigenous peer-to-peer knowledge-sharing; a point that was raised during the virtual planning meetings as crucial. Snorkelling or diving in the Pacifaran reef area was also raised as important; however, it was not possible due to choppy seas and the visitors' short timeframes in 'Etolan.

### Meeting in a circle

For the main Indigenous peer-to-peer knowledge-sharing session, the planners agreed to eschew a more academic and formal approach to the meeting. Instead, the main meeting would take place in the traditional longhouse, and we would meet in a “circle.”

Differences in the socio-cultural structure were evident, but these are not exclusive to this meeting. Every society, including Indigenous communities, has its own set of rules, traditions and beliefs. No one-size approach to engaging with Indigenous communities will fit all. Unique strategies should be designed for the specific community partner, and this is something that should be done with the advice of community members. Visiting scientists (Indigenous or not) and Indigenous community members should co-create a unique baseline plan to approach their specific communities in the different activities within a project, workshop or other activity.

When the proper atmosphere was set, the conversation started ([Fig. 4](#)). In this case, the Amis people of 'Etolan began the process of seeking guidance from their guests in regard to the marine resources in their sacred territory. The Amis people were the first to voice their concerns and raise questions that generally followed the questions agreed by the organizers including (i) How do the Indigenous visiting scientists and community leaders protect their ocean areas? (ii) How do they communicate with settlers? (iii) How do they combine modern science and Indigenous knowledge to inform management and monitor the ocean?. The visiting Indigenous academics focused on listening and answering specific questions based on



**Figure 1.** Greeting the visitors before the walk into the heart of Pacifaran.

their expertise and experiences. Listening to the host community first ensures that the information provided by the visiting Indigenous academics and leaders aligns with the issues and concerns the community has identified from its own perspective. When it was their turn, the invited Indigenous academics and traditional leader shared about their tools and practices (e.g. the use of *rahui* and the collection and monitoring of crown of thorns) and their experiences in their own territories. Communities should have the capacity to identify their own problems and be heard before any major peer-to-peer discussion takes place.

Although the conversation was initiated by individuals with higher social status, it was not restricted to people with scientific or academic roles; men of different ages and roles in the community were welcomed to participate. The space was open to all the attendees, and the discussion unfolded in a relaxed and intimate atmosphere free of strict etiquette. The inclusion of all attendees is not tradition in many Indigenous cultures but is something that has become acceptable in more and more communities due to the recognition that in the 21st century, all people of different backgrounds (including age, gender, cultural competency, and career) now often have expertise that can be vital to the success of contemporary Indigenous communities (Maestro 2019).

### Closing feast

When night fell, the group were invited to dine together outside at the community centre, where they were offered traditional dishes and given explanations of their cultural significance, sharing their culture and traditions in an enthusiastic way. Many of these dishes included marine creatures, which emphasised the purpose of the gathering, namely, for the 'Etolan Amis to ensure access and preservation of their marine ecosystems. After the feast, one of the younger Amis age sets guided the gathering in the unifying circular dance of the *malikoda*, similar to the dance the visitors had been

exposed to earlier that morning at Pacifaran. It is a way to express interest in learning about the cultures and traditions of the partner Indigenous groups. It is not only a way to bring people together but also a way of gaining a deeper understanding about their ways of living.

### Making room for outsider ceremonies

Special effort was taken to ensure that *peu Māori* (traditional Cook Islands Māori cultural practices and ceremonies) were included throughout the meeting. The first *peu Māori* was the recognition of Ngamaru Ariki as a paramount chief on her island and de facto leader of the visiting contingent. This included Ngamaru leading the group to the traditional welcome ceremony (*Palafang*), with the most senior Māori scientist acting as a *va'a tuatua* (speaker) for her, and general recognition that she was of the highest social rank amongst the visiting group. At the closing night feast, *'ura* (traditional dancing) was provided by the Māori guests as entertainment to show gratitude to the Amis hosts. Even though the Māori team were lacking proper instruments and attire, this was an obligation they felt needed to be met. *Pe'e* (traditional chants) were recited at both the welcome ceremony and at a farewell dinner with 'Etolan Amis leadership. These chants used metaphor to speak to the distant yet significant shared history between Amis and Polynesian people; for example, in one *pe'e*, the Māori visitors were likened to birds returning to their roost (in this case, Taiwan) after a long absence.

### Sharing marine knowledge

#### Indigenous approaches to ecological protection and community engagement

The Pacific Islands face significant environmental challenges, including climate change, overfishing, and unsustainable development practices (Nunn et al. 2024). These issues threaten the delicate balance of marine ecosystems and the livelihoods



**Figure 2.** Gift giving to build bonds and show respect.

of local communities. Indigenous knowledge systems, which have evolved over generations, offer valuable insights into sustainable resource management.

Participants in the meeting highlighted several common challenges faced by Pacific Island communities. A disconnect between communities and their marine environments has led to overexploitation of resources and a decline in traditional fishing practices. Climate change exacerbates these issues, impacting fish populations and altering marine habitats. The impact of climate change on reef ecosystems has already been felt in both Taiwan and Rarotonga through natural “shocks” to the system. In 2009, a major typhoon, Morakot, caused widespread damage to coral reefs in eastern Taiwan (Keshavmurthy et al. 2019). In the Cook Islands, a series of cyclones in the 1970s followed by a category 5 cyclone in 1987 have been linked to reef disturbance and *taramea* (crown-of-thorns starfish, *Acanthaster planci*) outbreaks, which created the ideal conditions for ciguatera-causing algae to thrive. This resulted in fish poisoning, which has led to a 30-year cessation of fishing in some areas. One of the Māori scientists, Dr Teina Rongo, has argued that when cyclones disturb the coral reef ecosystem, it creates ecological space for the proliferation of *taramea* and subsequently the ciguatera algae that produce the

toxins (Rongo et al. 2015). Community groups in the Cook Islands now target the *taramea* for removal from the reef as a way to reduce disturbances to coral reef ecosystems and, therefore, reduce the risk of ciguatera bioaccumulation in reef fishes. Both instances underscore the need for effective management strategies that prioritise community health and environmental sustainability. Nevertheless, moving forward with effective Indigenous-led marine protection has been slow in both places.

### The role of Indigenous marine protection and management

While the exact nature of marine protection proposed by the Amis community is not yet well specified, Indigenous academics from the Cook Islands and Tahiti shared about the pros and cons of the Indigenous practice known as *rāʻui* or *rāhui*. *Rāʻui* refers to a temporary prohibition on harvesting specific marine species or areas, allowing ecosystems to recover and replenish (Bambridge 2016). This practice has been observed across various Pacific Islands, with examples demonstrating its effectiveness in managing resources sustainably. For instance, alternating *rāʻui* periods for coconut crabs in the districts of Mangaia Island in the Cook Islands ensures that populations remain stable and accessible for future harvests.

The Marae Moana Marine Park in the Cook Islands was discussed as an example of a more traditional, large-scale approach to marine protection and management (Marae Moana Marine Park 2019). The Marae Moana was intended to serve as an integration of Indigenous values into modern conservation efforts. This initiative, which encompasses the entire Exclusive Economic Zone (EEZ) of the Cook Islands, aims to protect marine biodiversity while incorporating traditional knowledge. However, in practice, the Marae Moana was said to have failed to live up to its original goals. A tension between economic development and conservation goals has resulted in a scaling back of the portion of the Marae Moana that is protected, from the entire EEZ (200 nautical miles) to just 50 nautical miles around the islands of the Cook Islands. This scaling back permits deep-sea mining and purse-seine fishing for large pelagic species like tuna to occur within the larger limit of the Marae Moana’s current spatial mandate. Nevertheless, traditional leaders like Ngamaru Ariki have been given constitutional authority for certain management decisions within these 50 nautical mile zones.

The spatial scale of the proposed ‘Etolan Amis marine park is significantly smaller—one small bay in Taitung County. Nevertheless, the economic interests of commercial fishers are pitted against more traditional uses by the Indigenous community—including subsistence spearfishing, which serves both as a source of food (“the ocean is our refrigerator,” one elder said) and as the primary source of Indigenous knowledge for reef ecosystem health.

### Linking indigenous knowledge with academic science

#### The duality of knowledge systems

Despite the growing recognition of the value of Indigenous knowledge, linking academic science and Indigenous knowledge is often difficult (Bohensky and Maru 2011). Each system has its strengths: academic science often employs quantitative methodologies, while Indigenous knowledge provides qualitative insights rooted in cultural practices and local context. Be-



**Figure 3.** Exchanging traditional knowledge about ocean hunting.



**Figure 4.** Meeting in a traditional circle at the community longhouse in Pacifaran.

cause Indigenous knowledge has developed to serve the needs of Indigenous peoples and communities, it can provide an important guide for what types of academic science may be useful for managers and decision-makers, whether Indigenous or not.

In Rarotonga, the Indigenous community organisation Kōrero O Te “Ōrau (KO) has spearheaded the collection of crown-of-thorns starfish (known locally as *taramea*, and mentioned earlier). Crown of thorns are naturally occurring, but when they exceed normal background levels, they can de-

**Table 2.** Fish names from the reef check form 'Etolan Amis Local Marine Areas

Amis name	English name
Co'in	Surgeonfish
Kolifay	Yellow surgeonfish
Matopa'ay a lihok	Two-stripe sweetlips, Lemonfish and Harry hotlips
Lokedaw	Grouper
Lokedaw	Spotted knifejaw
Lihok	Blubberlip snapper
Mi tilidan ni diwa	Lesson's thicklip
Kahongto'ay	Unicorn fish (Bluespine unicornfish)
Pihokokay	Parrotfish
Fice'ki	Southern drummer; Brown chub; Grey rudderfish; Grey chub; Grey drummer; Insular rudderfish; Grey Sea chub/Nibbler; Girella; Small scale black fish
Towak	Shape-toothed eel; Conger pike; Daggertooth pike conger; Dagger tooth pikeconger; Arabian pike eel
	Yellow-mouth eel; Yellowmouth moray; Starry moray; Yellow-mouth moray; Yellow-mouthed moray eel
Afal	Lobster
Solita	Octopus
Solomi	Cuttlefish
	Squid
Ao'wang	Purple sea urchin
Faday	Collector urchin
Talipana	Setose urchin, Diadema urchin, Black Longspine Urchin, Long-spine sea urchin, Needle-spined urchin

stroy entire reefs. Once collected, though, the starfish have been used by KO and others as useful fertiliser for taro gardens. Taro is a staple of Māori food systems. KO has combined this Indigenous-driven collection of the starfish with a more academic approach to counting and measuring individual starfish, noting their size and when and where they were collected, and thus has used academic approaches to provide a more quantitative understanding of the factors that drive the presence of these destructive starfish (as yet unpublished).

A similar example was shared for the Amis reef area. Throughout Taiwan, Reefcheck conducts fish and coral reef surveys, but many of these surveys have traditionally failed to focus on the fish most nutritionally and culturally important to Amis fishers and their communities. In 'Etolan, the Amis community, led by the underwater hunters, has been able to modify the scientific protocols of Reefcheck to focus on the fish species and fish habitats that are most important to the community (Table 2).

All participants agreed on the need for scientific studies to prioritise species that hold cultural significance for Indigenous communities. By integrating these preferences into research designs, scientists can foster community buy-in and ensure that scientific data collection is meaningful to local populations.

Participants emphasised the urgency of adapting conservation strategies and data collection in response to rapid environmental changes, such as those observed in marine ecosystems. This adaptability is facilitated by a dual knowledge approach, where Indigenous ecological knowledge can inform scientific enquiries and vice versa (Almack *et al.* 2023). For example, community observations regarding ecological shifts can provide immediate data for scientists, thus enhancing the speed and accuracy of response strategies.

### Working with settlers

Many Indigenous communities worldwide face the challenge of preserving their cultural heritage while engaging with set-

tlar populations in the protection of their ecological systems. Yet, the experience of the workshop participants differed considerably based upon history, current balances of power, and the relative autonomy and sovereignty enjoyed by the different communities that were present.

In understanding how Indigenous communities can work with settlers, especially settler scientists, it is important to understand who is a settler and who is Indigenous.

In Māori culture, ancestry and cultural identity are important in defining who is considered Indigenous. This perspective fosters inclusivity, allowing individuals with mixed heritage to integrate into the community, thereby enriching the cultural fabric and ecological knowledge of the land.

In Taiwan, Indigenous groups face challenges in asserting their identity amidst a dominant settler culture. This is due to a number of factors, but it includes the fact that the Indigenous population of Taiwan accounts for less than 3% of the total population and is further divided into 16 ethnic groups and numerous smaller communities (Lo *et al.* 2021). Many Indigenous people and communities in Taiwan have yet to find ways to connect and collaborate with settler communities, especially fishers. Meaningful and fruitful collaboration also requires interest and effort from the settlers' side to reach mutual understanding and collaboration. There appears to be increasing recognition of Indigenous rights in Taiwan, such as the right to languages, names, consultation, and consent regarding traditional territories (Wang 2019). However, it remains to be seen whether this recognition will be tokenistic or will lead to real equality for Indigenous peoples in the country. The Spatial Planning Act, expected to come into effect in 2031, may include Indigenous knowledge in the national spatial planning agenda, which could also benefit Indigenous rights and resource management.

### Power imbalances

In the Cook Islands, Māori people account for the majority (86%) of the population (Cook Islands Census Report

**Table 3.** Contributors and contributions to the peer-to-peer knowledge sharing workshop

Community	Name	Planning	Hosting	Participant	Writing	Editing	Filming/ recording/ notetaking	Funding and logistics
Amis	Akila Lin		X	X				X
	Siki Tien		X	X				
	Fotol Chen		X	X				
	Kinam			X				
	Lekal Lin		X	X				X
	Liao Muya						X (art)	
'Etolan Amis Community			X	X				X
	Teina Rongo			X	X			
Kōrero O Te 'Ōrau	Ngamaru Ariki			X				
	Antony Vavia	X		X		X		
Moonjelly Fdn	Liam Koka'ua	X		X	X	X		
	Teriitutea Quesnot			X	X	X		
	Claudia Barón Aguilar			X	X	X	X	
	Bryce Groark						X	X
Ocean KAN	Linwood Pendleton	X		X (listener)	X	X		X
	Stella Alexandroff			X (listener)		X	X	
Future Earth—Taipei	Futuru Tsai	X	X	X		X		
	Hsiao-chun Tseng			X (listener)	X	X		
	Sophie Su	X		X (listener)	X			X
	Tung-Yuan Ho			X (listener)	X			X

2016). There are still many remnants of the nation's colonial past—passports and school curriculum are still based in New Zealand's administrative state, many top government officials and staff are of non-Māori ancestry, and Māori language use has decreased dramatically on the main island of Rarotonga. Nevertheless, every member of parliament in the Cook Islands is of Indigenous descent, as are most ministry leaders.

In Taiwan, Indigenous people have faced repeated immigration from abroad and settlement, starting with the Fukien and Kwangtung from what is now mainland China, then Dutch, Spanish, Japanese, and later over 2 million troops and families as part of the translocation of Chang Kai Shek's army to the island in 1949. Today, Indigenous people no longer hold sovereign rights to coastal areas. As a result, Indigenous voices often account for just a small fraction of those voices that have a say in coastal management and planning, although the new Marine Conservation Act highlights the importance of, but does not require, incorporating Indigenous people in coastal management decisions.

#### *Community engagement and education*

A key theme emerging from the discussions was the role of education in creating important bridges between Indigenous and settler communities. Participants from the Cook Islands talked about new programmes they have designed for young people and outsiders that aim to teach traditional ecological knowledge and practices to settlers and to build respect for the importance of traditional leadership and knowledge in managing coastal ecosystems. In Rarotonga, the Takuvaine Valley traditional agroforestry project and the "Ātui'anga ki te Tango cultural project were cited as initiatives that connect the mountain to the ocean through farming and fishing practices. These initiatives not only educate participants about sustainable methods and traditional practices; they also foster a sense of shared responsibility for the environment that will be critical for better scientific and management collaboration between Indigenous and settler communities. It was suggested that a similar youth programme in schools or for school-aged

youth in 'Etolan may be able to involve non-Indigenous students in an attempt to bridge cultural understandings and enhance respect for Indigenous guardianship.

In addition to sharing cultural experiences, the discussions revealed a need for tailored, two-way communication strategies between Indigenous communities and settler scientists that consider the diverse motivations and values of different stakeholders from Indigenous and settler communities. Identifying common ground, such as shared economic interests in tourism or environmental conservation, can facilitate collaboration and foster mutual respect and provide a starting point for collaboration.

## Discussion

It is rare for researchers to have the opportunity to step back and witness how knowledge is shared peer-to-peer among Indigenous colleagues. This "stories from the frontline" piece reflects our learnings from one such opportunity to do so. By watching Indigenous academics and knowledge holders share among themselves and connect with community members from other Indigenous communities, all scholars can learn something about how we share knowledge in our own work.

We close with a focus on four key learnings (Fig. 5) that are all built around the concept of co-design. While these learnings are not meant to be a "how-to guide" they do reflect specific topical areas where academics should think carefully about how they work with Indigenous colleagues and communities. These are also areas where co-designing these engagements with Indigenous colleagues and community members proved particularly important in our work.

### Relationship-building

As individuals and as groups, many short- and long-term relationships were built, and with them knowledge and perspectives were exchanged (two of the visitors have since returned for follow-up meetings with the 'Etolan community). The many social spaces and opportunities that were built into



**Figure 5.** Four key learnings for peer-to-peer knowledge sharing (illustration by Liao Muya from the 'Etolan Indigenous Amis community).

the workshop allowed individuals to get to know each other better and to informally engage in conversations that allowed them to explore each other's similarities and differences. Even though non-Indigenous people played a listening role during the circle, interactions during these social and transitional spaces allowed for knowledge sharing regarding expertise and skills, allowing every participant to connect and look for possible future collaborations and support.

The most evident relationship-building among workshop participants was between the Amis and Polynesian people who had the opportunity to reconnect to their ancestral homeland ('*enua tupuna* in Māori). A shared culture (similar food, language, and even a very similar climate and geography) provided a solid cultural foundation for this meeting that encouraged conversation and sharing of experiences between Amis and Polynesian participants. This opened the doors to keep building this relationship, with continued asking and offering of insights into the MPA but not limited to it. Finally, this workshop brought together a set of Indigenous academics who continued to meet after the workshop in Taitung. While some participants had the opportunity to start these relationships online before the trip (such as through meeting planning), the experience of traveling to a new place, traveling within the country, and even experiencing a major earthquake [magnitude 7.4, ([Asian Disaster Reduction Center \(ADRC\)](#))] solidified a sense of trust among the group of visitors. To date, the participants have kept in touch, finding synergies and working together, but most of all, they have created a deeper bond of friendship that will facilitate future collaborations.

Finally, the motivation that brought this group together goes beyond particular interests; it revolves around the sense of community and their relationship with the ocean. Even though the ocean plays different roles in each of the communities, it plays a major role in all of their heritage and survival. All of the participants depend closely on the resources harvested from the ocean and its health.

### Raising awareness about the role of academic science in Indigenous ocean management

During the circle meeting, Indigenous academics were able to explain their areas of academic study and expertise and how it is incorporated into their work with communities, including how they weave their academic training and Indigenous identities. Due to past negative experiences and questionable practices by some non-Indigenous academic scientists, Indigenous communities often perceive academic researchers with scepticism and hesitation. Academic scientists and Indigenous knowledge holders sometimes struggle to find common ground (Johnson *et al.* 2016). Having the space to express the value and relevance of their work as scientists to their fellow Indigenous people allowed Indigenous academics to achieve a sense of balance between their use of Indigenous and academic knowledge. It was important to hear from fellow Indigenous academics that reconciling both roles was a shared struggle, regardless of them belonging to different communities. This sense of identification and solidarity reaffirmed the importance of weaving Indigenous and academic science. As for the 'Etolan Amis community members, many of them were exposed to areas of science that were not familiar to them, providing a different perspective on how scientists look at the ocean and bringing up possible tools that could be potentially used to achieve their goals. In the circle, there was discussion of sending young Amis students to the cities to study marine science. A step towards closing the historical gap between academic science and Indigenous knowledge was achieved.

### Making sense through active listening

Participating in a discussion circle, especially one that lasts all day, requires a great deal of attention. All participants need to be present and prepared to speak without notice. As a result, it is often difficult for those within the circle to remember all

that was said or to even have a broad overview of the many topics covered in the discussion.

In our meeting, we identified key actors to serve as listeners. Handwritten notes, videos, and audio recordings (converted to transcripts) created a massive accounting of the day's topics.

Such a large amount of information can also be unwieldy and difficult to make sense of. We chose to designate the most senior and most junior participants (one Indigenous and the other not) to summarize the findings of the meeting and to lead the writing of this paper. While it is often the case that the most senior person at a meeting gives the keynote address or figures prominently in all of the discussion, such seniority and the experience it reflects often are needed to make sense of all that happens during a meeting. Far from being a passive role, listening, with follow-up and dialogue, was essential to understand all that transpired from a meeting. It is important to choose someone early for the role of making sense of the discussion.

### Allow for enough time

Trust and relationship-building take time and face-to-face meetings that often require monetary resources. This relationship-building is essential for building trust and also for developing a deeper understanding of the traditions and practices of all of those participating, especially the needs of the host community. Scientific and research actions and goals often cannot be achieved until this trust and understanding are built.

When the budget or other factors do not allow for the participants to be together physically for extended periods of time, other mechanisms and techniques need to be used to bring these communities closer together. It is, however, impossible to specify which techniques will be appropriate since these approaches must also be co-developed with the community, taking into account the resources they have available and their limitations.

### Conclusion

Indigenous communities around the world are dealing with the effects of climate change, biodiversity loss, land degradation, and pollution. These challenges affect local ecological and human health and can impact the traditional ways of life that Indigenous coastal communities have relied on for centuries. Nowhere is this seen more clearly than in Indigenous coastal communities that face warming and rising seas, habitat loss, overfishing, and the many environmental pressures that come from non-Indigenous forms of land use, development, and transportation.

To address these problems, Indigenous communities will need a mix of local Indigenous and non-Indigenous academic science and knowledge. There is both a necessity and urgency for strengthening connections between Indigenous communities and trusted scientists, Indigenous and non-Indigenous, as well as fostering links among coastal Indigenous communities and Indigenous academics across different nations and regions.

Bringing together Indigenous academics with Indigenous communities allows for professional engagement that can help address Indigenous concerns regarding the causes of ecological resource degradation. The cross-regional scope of our meeting also provided an opportunity to discuss a variety of

methods for preserving traditional knowledge and transferring Indigenous knowledge systems to younger generations. As Indigenous communities build trust with Indigenous academics, they also learn more about academic ways of knowing and can begin to make better-informed decisions about what science and knowledge they can use and with whom to work. Since Indigenous communities may not always have direct access to Indigenous scientific expertise and resources, hybrid engagements like the one we have discussed in this article provide a form of proactive engagement and outreach that can also build bonds between the non-Indigenous academic practitioners and Indigenous communities.

Above all else, this paper highlights the need for relationship building between academic marine researchers and those Indigenous communities and leaders who wish to better employ academic approaches to complement non-academic Indigenous ways of knowing.

### Contributors (ECR = Early Career Researcher)

#### I. Indigenous Academics and Traditional Leaders

##### A. Amis Community of Dulan (‘Etolan)

1. Akila Lin, Chief (2020–2024)
2. Siki Tien, leader of the age organization (2020–2024)
3. Fotol Chen, General Secretary (2020–2024)
4. Kinam, Indigenous knowledge holder
5. Lekal Lin (Museum of Prehistory)
6. ‘Etolan Amis Community (Taitung County, Taiwan)

##### B. Kōrero O Te `Ōrau

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## Acknowledgments

Many people contributed to the design and execution of this meeting as well as the post-meeting stocktaking, write-up, and ultimately the production of this manuscript. Only those involved in the writing or reviewing of this paper are included in the authors list, since the journal requires all authors to have given permission. To reflect the panoply of contributions, we developed a Contributions Matrix (Table 3). Additional thanks to those from the original Moonjelly Advisory Committee who helped lay the groundwork for the Taiwan meeting through their thought partnership and initial weaving of relationships including Julia Jung, Anna Zivian, and Katherine Short who also provided useful comments on this manuscript. We also thank our editor at the ICES JMS and two reviewers who provided detailed and constructive comments that have certainly improved the paper. A longer, more narrative version of this paper, was posted online as a white paper with the reference *Pacifaran. 2025. Co-Designing Peer-to-Peer Sharing of Indigenous Knowledge and Science*. Artificial Intelligence was used to check grammar and spelling.

## Author contributions

Linwood Pendleton (Conceptualization [lead], Funding acquisition [lead], Writing – original draft [lead], Writing – review & editing [equal]), Claudia Baron-Aguilar (Writing – original draft [equal], Writing – review & editing [equal]), Futuru C.L. Tsai (Conceptualization [equal], Writing – original draft [supporting], Writing – review & editing [equal]), Liam Kokaua (Conceptualization [equal], Writing – original draft [equal], Writing – review & editing [equal]), Teriitutea Quesnot (Writing – original draft [supporting], Writing – review & editing [equal]), Antony Vavia (Conceptualization [equal], Writing – review & editing [equal]), Teina Rongo (Conceptualization [equal], Writing – original draft [supporting], Writing – review & editing [equal]), Hsiao-Chun Tseng (Writing – original draft [supporting], Writing – review & editing [equal]), Stella J. Alexandroff (Writing – review & editing [equal]), Sophie Hsin-lin Su (Funding acquisition [equal], Writing – original draft [supporting], Writing – review & editing [equal]), and Tung-Yuan Ho (Funding acquisition [equal], Writing – original draft [supporting])

## Funding

The work was funded by a Future Earth Cross-cutting Initiative grant and logistical support was provided by Future Earth Taipei and the 'Etolan Community. Writing support was provided by the University of Western Brittany.

## Data availability

No new data were generated or analysed in support of this research.

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Handling editor: Barbara Neis