



MIXING WATERS: A CROSS CULTURAL APPROACH TO DEVELOPING GUIDELINES FOR FISHERS AND BOATERS IN THE DHIMURRU INDIGENOUS PROTECTED AREA, AUSTRALIA

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ABSTRACT

This article demonstrates the importance of indigenous ontologies in cross-cultural or ‘both ways’ coastal conservation management of the Dhimurru Indigenous Protected Area in north east Arnhem Land, Australia. In this action research, selected Yolŋu individuals identified concerns regarding recreational fishing and boating practices of non-Yolŋu. Yolŋu engaged in a discussion of the issues and the subsequent formulation of indigenous management responses. This led to the development of locally relevant guidelines for fishers and boaters with potentially broader applications in other Indigenous Protected Areas and beyond. We explore the ‘both ways’ approach adopted by the Dhimurru Aboriginal Corporation that guides collaboration between Yolŋu and non-Yolŋu. We illustrate how the approach facilitates indigenous ontologies to co-create conservation approaches together with contemporary conservation efforts informed by Western science. We further explore the disjunctures and synergies between the two and argue that these mix and can be compatible as part of the ‘both ways’ approach. In learning from this action research, we reflect on the process of cross-cultural learning and the role of researchers in the cross-cultural co-production of knowledge and the formulation of guidelines for fishers and boaters.

Key words: Cultural values, traditional knowledge, coastal zone policy, fisheries, Yolŋu Aboriginal, cross-cultural learning, indigenous protected area.

INTRODUCTION

Indigenous people have long managed and governed the landscapes they inhabit in order to sustain their livelihoods and cultures. Conservationists¹ are often drawn to the variety of ecosystems and high levels of biodiversity maintained within these landscapes. Increasingly, and in response to a greater appreciation of interdisciplinary approaches, conservationists seek to take the interests and knowledge systems of local people into account by attempting to integrate successful aspects of traditional knowledge into their contemporary conservation management (Redford, 2011; Waltner-Toews et al., 2003). However, they often overlook the socio-cultural and political context within which they are embedded and practised (Wilshusen & Brechin, 2011). Indigenous knowledge is not the same as a ‘separate’ scientific discipline but rather a body of knowledge that reflects a particular worldview based on its own

ontological premises (Muller, 2012). The failure to put indigenous ontologies on a par with ‘Western’² knowledge is increasingly viewed as an underlying cause for political, economic, religious and educational inequities and the disempowerment of indigenous peoples (Hunt, 2013; Verran, 1998). These inequities can also be seen as a schism between different and, at times, competing and conflicting worldviews. In the realm of conservation, the failure to recognize this disconnect is likely to jeopardize conservation outcomes such as the protection of biodiversity and ecosystems (Blaser, 2009; Reyers et al., 2010).

Historically, contemporary conservation approaches were less concerned with and informed about indigenous management and governance practices. In particular, the intangible cultural, spiritual and sacred values that are an integral part of indigenous ontologies were poorly

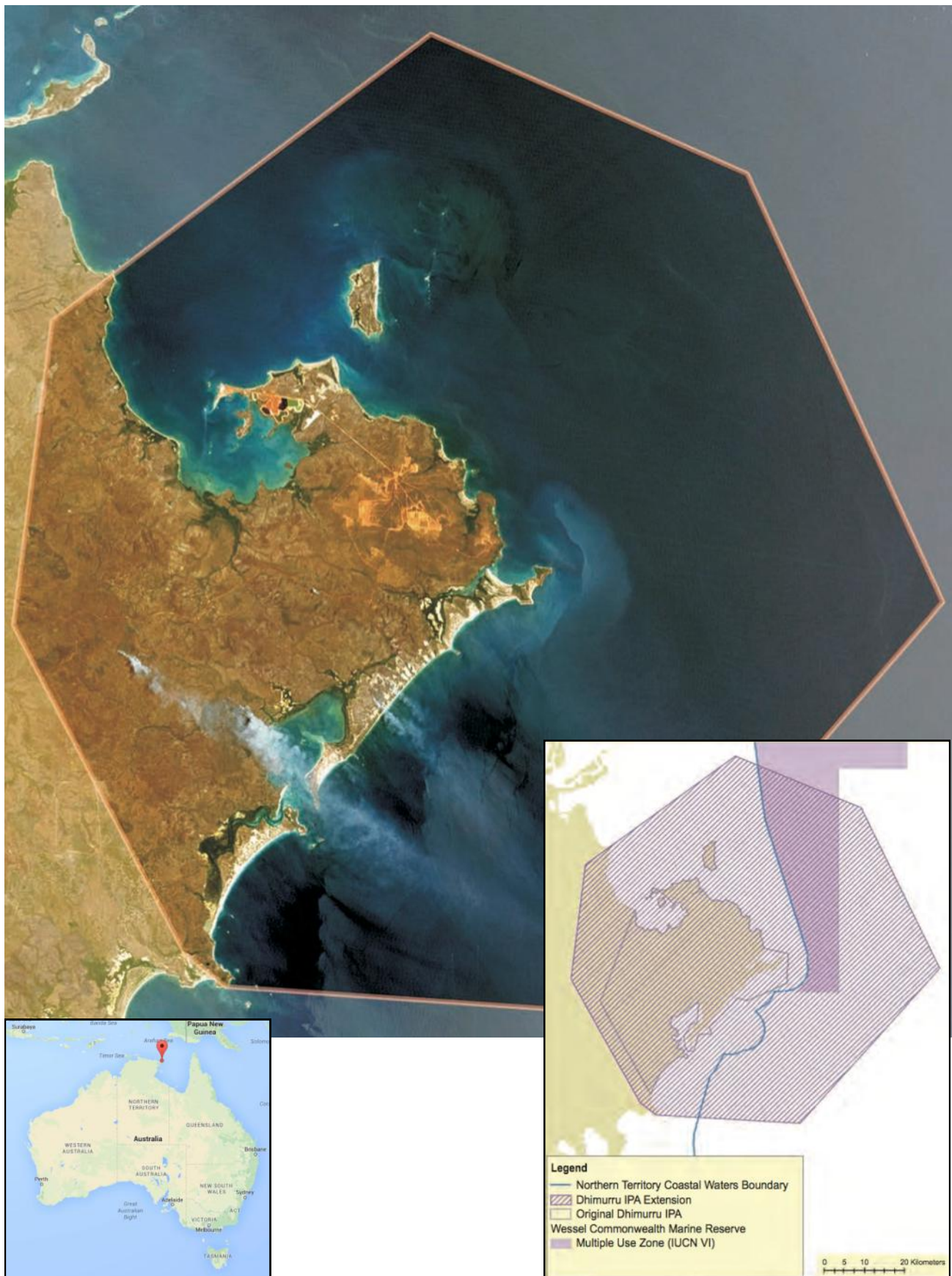


Figure 1: Satellite view of the expanded Dhimurru Indigenous Protected Area. Source: Dhimurru IPA Sea Country Management Plan 2013-2015, based on: Landsat 5: US Geological Survey 2011, Tablelands Regional Council 2013. Inset left: Map situating Dhimurru IPA in north east Arnhem Land. Source: Map data © GBRMPA, Google. Inset right: Dhimurru IPA with the 2013 MPA extension shared with the Commonwealth Wessels Marine Reserve. Source: Dhimurru IPA Sea Country Management Plan 2013-2015.

understood and often dismissed on the basis of being irrelevant to conservation (which mostly took its merit from Western science). As a result, many Western-trained conservationists and policy-makers remain unable or even unwilling to acknowledge the indigenous ontologies that shape the areas they are required to manage (Atran et al., 2004; Berkes & Turner, 2006; Blaser, 2009). This is lamentable given that a growing body of research shows that indigenous ontologies can be legitimized within Western scientific approaches; examples of this are the 'Two-Eyed Seeing' in Canada (Bartlett et al., 2012) and the 'Two-Ways' management in Australia (Hoffmann et al., 2012; Muller, 2012). However, the legitimization of indigenous knowledge by Western science should not be considered a precondition for its utility to conservation or as a prerequisite for engaging with indigenous groups.

In this paper, we identify some of the ontological differences between contemporary Western conservation and the worldviews harboured by the Yolŋu Aboriginal people of northeast Arnhem Land, Australia and explore how these may be reconciled. We first explore the history and meaning of the 'both ways' approach (also called two-ways management) and provide examples of its application within the Dhimurru Indigenous Protected Area (IPA). Using the 'both ways' process we identify potential synergies between Yolŋu and non-Yolŋu 'ways of doing' as a basis for finding desired solutions to fisheries problems identified by Yolŋu. We outline how we conducted this action research in order to formulate practical guidelines for recreational fishers and boaters. The results describe the outcomes of the action research such as the cultural relevance of species, the problems and management issues that Yolŋu identified and the responses they formulated in an effort to create and manage a common ground for Yolŋu and non-Yolŋu fishers and boaters. The results also include ethnographic data on the disjunctures and synergies between Yolŋu and non-Yolŋu that were encountered during the research process. The conclusion reflects on lessons learned in working within the 'both ways' approach as part of the process of developing the guidelines for recreational fishers and boaters.

ORIGINS OF THE 'BOTH WAYS' APPROACH

The term 'both ways' originally emerged as a concept known as 'two-way schooling' which referred to drawing from two separate domains of knowledge derived from both Yolŋu and Western culture (Harris, 1990). Harris maintained that 'Aboriginal people today are increasingly interested both in being empowered in terms of the Western world and in retaining or rebuilding Aboriginal identity as a primary identity' (Harris, 1990: p. 84).

Later, the 'both ways' approach came to signify the acceptance of a mixing of Western and indigenous knowledge (Marika et al., 2009). The 'both ways' approach has been applied across many areas of Yolŋu knowledge as well as non-Yolŋu domains. Examples are scientific disciplines or professions such as education and teaching (Harris, 1990) nursing, medicine and healthcare (Kendall et al., 2011) as well as land and sea management (Ens & McDonald, 2012; Hoffmann et al., 2012; Marika et al., 2009; Yunupingu & Muller, 2009). The cultural meaning of the 'both ways' approach stems from the word Ganma: 'Ganma has many meanings, one of which is a place where fresh and salt water meet and mix. The fresh water and the salt water refer to parallel systems of knowledge' (Muller, 2012, p. 61). The 'both ways' approach therefore allows for taking an ontological approach to management issues.

THE 'BOTH WAYS' APPROACH IN THE DHIMURRU INDIGENOUS PROTECTED AREA

We applied the 'both ways' approach in formulating the *Guidelines for Fishers and Boaters*. This was carried out in response to Yolŋu expressing a need to mitigate impacts arising from fisheries activities occurring on their traditional land and sea estates, presently situated within the Dhimurru IPA. The Dhimurru IPA is legally owned by Yolŋu people under the Northern Territory Aboriginal Land Rights Act of 1976. Established in 1992, the Dhimurru IPA, is based on a voluntary management agreement with the Australian Government (Dhimurru, 2008). A Yolŋu community-owned land and sea management organization called the Dhimurru Aboriginal Corporation (referred to hereafter as Dhimurru) manages the IPA. This is done in accordance with IUCN Protected Area Category V where the focus of management is on the interaction between people and nature, including all relevant cultural and recreational activities.

The total area of the Dhimurru IPA is approximately 920 km² of which almost 90 km² consists of coastal waters (Dhimurru, 2008) that were extended into a much larger marine IPA in 2013 (Dhimurru, 2013). Given the extent of coastal areas under management by Dhimurru, it is not surprising that fishing and boating activities may affect culturally significant coastal biodiversity and ecosystems in accordance with Yolŋu law and belief systems. In order to aid management, Yolŋu believe that culturally appropriate responses are required in order to mitigate these impacts and curb the behaviours that drive them. Importantly, management responses also need to be embedded within a strategy geared to sensitizing non-Yolŋu to Yolŋu culture: 'When n̄apaki [non-Yolŋu people] come here ...fish and stay on country



Fishers enjoying the evening in one of the Dhimurru's recreational areas © Bas Verschuuren

we want them to understand our rom [law] and dhäwu [creation story] so they see it and respect that djalkiri there [sacred site, also foundation].’ (Yolŋu interviewee, pers. comm.).

Dhimurru encourages a ‘both ways’ approach to land and sea management by utilizing both Western and indigenous knowledge systems and mixing them into a new and fluid domain. However, the sole management responsibility remains in the hands of the Traditional Owners – in line with the vision expressed by the Yolŋu elders (Dhimurru, 2008; Yunupingu & Muller, 2009). Yolŋu elders state in Dhimurru’s constitution that: ‘We envisage working together with the Parks and Wildlife Commission [Northern Territory]³; we need their help in making our vision a reality, but the only people who make decisions about the land are those who own the law, the people who own the creation stories, the people whose lives are governed by Yolŋu law and belief.’ (Dhimurru, 2008: p. 4).

In staying true to its foundations, Dhimurru has been pursuing the ‘both ways’ approach in order to develop constructive cross-cultural working relationships with conservation, government agencies, universities and other organizations.

Partnerships in the spirit of the ‘both ways’ approach extend to collaborations with scientists from different disciplines. For example, anthropologists have mapped the stories (dhäwu), songs (manikay) and art (miny’tji) related to the sacred sites (djalkiri) in the Yolŋu coastal zone (Leo, 2010) and ecologists have investigated and mitigated the presence of invasive species such as the Cane Toad (*Rhinella marina*, formerly *Bufo marinus*) (Boll, 2006) and the Yellow Crazy Ant (*Anoplolepis gracilipes*) (Hoffmann et al., 2012). Scientists who have collaborated within the ‘both ways’ framework recognize its potential in allowing Dhimurru and other indigenous land management organizations across northern Australia to effectively combine Yolŋu knowledge and practices with conservation management and planning (Christie, 1991; Ens & McDonald, 2012; Hoffmann et al., 2012). However, experiences of scientists and Yolŋu struggling with the deeper ontological implications of working with the ‘both ways’ approach have also been cited (Muller, 2012).

THE YOLŊU, SALTWATER PEOPLE LIVING ON SEA COUNTRY

The Yolŋu, like many Aboriginal people living in the coastal areas of northern Australia, refer to themselves as Saltwater People (Drill Hall Gallery & Buku-Larrngay

Mulka Centre, 1999; Williams, 1986). In the Yolŋu worldview, the land and sea are inextricably linked and Yolŋu attachment to the sea is just as great as that to the land (Yunupingu & Muller, 2009). Because of the absence of a distinct divide between land and sea environments, sea can be referred to by Yolŋu interchangeably as sea country, saltwater country or simply country (McNiven, 2004; Williams, 1986). This holistic view has its origins in the creation stories and the Yolŋu law Rom as is illustrated by the following: 'This water is saltwater.... And in that water lays our sacred Law. Not just near the foreshore. We sing from the shore to where the clouds rise on the horizon.... Everything that exists in the sea has a place in the sacred songs... seaweed, floating anemones, turtle, fish etc. The songs follow them out from the deep water into the beach.' (Drill Hall Gallery & Buku-Larrngay Mulka Centre, 1999).

Like on land, the seabed and the intertidal zone contain similar Dreaming tracks related to sites of special cultural significance known as djalkiri sacred sites, all of which are protected under the Northern Territory Sacred Sites Act (Northern Territory of Australia, 2013). Dreaming Tracks are routes walked by Wangarr, ancestral 'mythological' beings such as the Rainbow Serpent, the Dugong, the Groper and the Shark during the Dreamtime period. These 'mythological' beings created the land, sea and everything in it and they laid down the Rom for Yolŋu people. The records of their actions have been passed on over generations through cultural concepts such as story dhäwu, song manikay, art miny'tji, and ceremony bunngul, and are intrinsically linked to the Yolŋu spiritscape (McNiven, 2004). The Yolŋu also link social groups through an intricate kinship system named gurruŋu, which are in turn linked to geographical areas of land and sea country termed Wäŋa (Williams, 1986).

In Yolŋu ontology, these cultural and spiritual concepts also link terrestrial and marine environments and have therefore been incorporated in Dhimurru's Plan of Management (Dhimurru, 2008) as well as the sea country management plan (Dhimurru, 2006, 2013). They are reflected in Yolŋu perspectives on policy affecting the intertidal zone as well as the *Guidelines for Fishers and Boaters* (Dhimurru, 2010), as the culmination and output of this research. Indigenous perspectives of law or policy are often distinguished from those of most contemporary policy makers whose notions of law are typically based on state law which in turn is rooted firmly in colonial law (Marika et al., 2009; Verran, 1998). An example of this is the public right to navigate versus the traditional Yolŋu system of asking permission to access or harvest from sea country in a manner that is cognizant

of its cultural significance, e.g. being mindful of sacred sites and creation stories. This differentiation is also expressed in the *Dhimurru Sea Country Plan* (Dhimurru, 2006, p. 4): 'There are inconsistencies between our rights and responsibilities under our customary law and those recognised under contemporary Australian law. We are struggling to have our sea rights recognised in the same way as our rights on the land are recognised. While that struggle is continuing, we take this opportunity to present our plan regarding the use, conservation and management of the sea.'

However, in a relatively recent ruling, the Yolŋu won legal recognition over the intertidal zone based on their intergenerational cultural occupation and spiritual affiliation with this zone (Federal Court of Australia, 2007). The evidence of Yolŋu ownership and occupation of the coastal zone was based on dhäwu, manikay and miny'tji as established and brokered by anthropologists and recognized by the Federal Court (Barber, 2005; Morphy & Morphy, 2006).

METHODS

Research was carried out over two to three month periods in 2007, 2008, 2009 and a shorter period in 2011. We applied an action research approach using ethnographic methods, including a review of the scientific literature and relevant management and policy documents from sources such as government agency websites, files made available by Dhimurru and the Buku-Larrngay Multimedia Art Centre. According to McNiff and Whitehead (2006), action research is about doing research through active participation in a dynamic and evolving reality, whilst being part of an existing organization. In conducting action research as part of the 'both ways' approach, the process was greatly enhanced by being able to engage in participatory observation and in-situ learning opportunities when assisting Dhimurru rangers with land and sea management activities (e.g. coastal patrols and monitoring, marine debris clean-ups, ethno-ecological surveys, stakeholder liaison) or accompanying other Yolŋu on traditional fishing outings.

Interviewees were identified using snowball sampling and selected according to their role in IPA management or planning as well as their culturally defined responsibilities such as the ability to be able to 'speak for' sea country (Bernard, 2006). We used free listing exercises in order to elicit the cultural significance of species and habitats and semi-structured interviews for gaining insight into the boating and fisheries-related issues that Yolŋu perceived to be of concern to sea country (Bernard, 2006). Semi-structured interviews were held with 29 informants with an initial interview



Sea Country Rangers Balupalu Yunupingu (left) and Partick White are on patrol to ensure that fishers have a safe time on the water and that rocky outcrops, often known sacred sites, are left undisturbed © Bas Verschuuren

guide of 18 questions being used. Three senior Yolŋu acted as key informants and allowed extensive interviews in order to facilitate in-depth understanding of the cultural context, knowledge and the management implications. This approach assisted with the triangulation of information in order to understand the extent to which identified issues were shared across geographic areas and clan groups (Bernard, 2006). Validated information was subsequently listed in an 'issues and management implications matrix' (see table 1) to allow grouping of the perceived issues and management implications suggested by the participants. Guidelines were then developed based on these groupings, with additional feedback from Yolŋu and non-Yolŋu staff within the Dhimurru Aboriginal Corporation.

This action research approach allowed Yolŋu to participate throughout the full research process (from design to implementation and analysis) in a way that guaranteed that their original concerns were addressed. This approach is also supported by others such as Denscombe (2010, p. 6) who states that; 'action research aims to solve a particular problem in a practical context and to produce guidelines for best practice'. In our case, the particular problem is the social-ecological impact on the coastal zone as perceived by Yolŋu and the best practice relates to the *Guidelines for Fishers and Boaters* that were collaboratively developed for the Dhimurru IPA.

RESULTS

Initial results identified the species and areas in the coastal zone that are important for Yolŋu day-to-day life and sea country management (see next section). Subsequent findings were based on Yolŋu perceptions of fisheries issues and their cultural relevance, such as impacts on sacred sites, totem animals and creation stories (see table 1; two left-hand columns). These concerns were then linked to the management implications and management responses that Yolŋu and Dhimurru IPA staff identified (see table 1; two right-hand columns).

These results subsequently formed the basis of the applied research output which was the *Guidelines for Fishers and Boaters* (Dhimurru, 2010). A further outcome of this action research is evaluative in terms of reflecting on our roles as researchers in the cross-cultural process that is part of working within the 'both ways' approach underlying the development of the *Guidelines for Fishers and Boaters* (see table 2).

The results are presented in the following paragraphs and should be interpreted with an understanding that all 'country' (sea, sky, estuaries, beach etc.), living and non-living, is important to Yolŋu, and that all aspects come with a deep sense of cultural and spiritual custodianship, sacredness and bestow identity upon Yolŋu.

SPECIES AND AREAS OF IMPORTANCE TO YOLŲU AND IPA MANAGEMENT

Associations with plant and animal species are key to YolŲu worldviews and cosmologies. Therefore, the initial phase of the research primarily focused on YolŲu traditional knowledge. YolŲu identified species and habitats of importance, and seasonal (phenological) indicators that assist sea country management processes and practices. During the course of this research, YolŲu individuals identified 50 marine species of importance; however, we believe that this list is not exhaustive. Species included eight turtles (Miyapunu), one reptile (crocodile, Baru), two mammals (Djunungaynu), eight shellfish (Djiny), one sea urchin (Dharnpa), twenty-two fish (Guya), four stingray (Gurrtpi) and four sharks (Mäna). YolŲu names have been verified using Barber (2005).

When inviting YolŲu to identify which species are of importance and why, they mentioned the species' role in creation stories (dhäwu) or as a totem animal and, to a lesser degree, their function as a flagship species in conservation management. Flagship species are often species at risk of extinction; they play a key ecological role and have charismatic appeal in the public domain (Bowen-Jones & Entwistle, 2002). YolŲu usually did not assign flagship status to a species, with the exception of sea turtle and dugong (*Dugong dugong*) which YolŲu know enjoy (inter)national interest and also have prominence in Dhimurru's nature conservation projects:

'We know all the fish and this country, we sing them. That Miyapunu [sea turtle]... ..we also hunt. So Ųäpaki [non-aboriginal person] like that Miyapunu too, he worries! We go [satellite] track that Miyapunu with Rod [a sea turtle researcher], it goes all the way to Queensland!' (YolŲu interviewee, pers. comm.).

Many recreational fishers also view sea turtles and dugong as important and express willingness to assist with their conservation. These species become an ideal vehicle for educating both YolŲu and non-YolŲu recreational fishers about the underlying threats to their populations and the role that Dhimurru plays in their conservation. For this reason, turtles and dugong have been given appropriate attention in the *Dhimurru Sea Country Plan* (Dhimurru, 2006, 2013) and also in the *Guidelines for Fishers and Boaters* (Dhimurru, 2010). The importance of a given species is very tightly bound to YolŲu culture and examples of cultural values and appropriate cultural behaviour were also provided: 'If someone passes away, [one] cannot catch that fish or cannot eat octopus as it has a certain relation to them. [It is also] dependent on your relationship to that species.' (YolŲu interviewee, pers. comm.).

Other factors about individual animals that were culturally significant are the size of the animal and whether a female is carrying progeny or not. Specific species were mentioned for their cultural significance or particular management concern. The challenge for

Table 1. Perceived environmental issues, impacts, cultural importance and management implications.

Perceived Issues	Impacts	Cultural Relevance	Management Implications
Speed, Noise and Boat Strikes			
Propeller damage to sea grass in shallow waters.	Dugong feeding grounds, sea grass (indicator species) damaged.	Affects wild food source (dugong); Induces a concern or 'worry' about the dugong's well-being.	Habitat mapping, surveying and long-term monitoring, Speed of boats urged to slow down in indicated areas;
Boat strike of dugong and sea turtle; Wash-up of dead or injured dugong from boat strike.	(Fatal) injuries to and decreasing dugong and sea turtle populations.	Affects availability of wild food source (dugong, turtle) and harms species considered to be of sacred or totemic importance.	Regulate boat access and speeding in indicated areas; YolŲu to survey for injured animals.
Noise from outboard motors.	General noise pollution; Disturbance of marine species populations and sacred sites or ceremonies.	Desecration of sacred sites and ceremonial areas; Disruption of tranquil areas	Zoning; 'no go' or sacred zones; Engage in education and signage.
Boat speed.	Damage to sea grass and marine species; Increased chance of boat strike or propeller damage.	Affects availability of wild food source (dugong, turtle); Harms or kills species considered to be of sacred or totemic importance.	Zoning; 'go slow' zones; Impose speed limits; Engage in education and signage.
Commercial trawling over sea grass areas.	Damage to sea grass areas; Dugong feeding grounds affected; Damage to sacred sites, crocodile and shark dreaming.	Affects wild food source (dugong). Induces concern about the dugongs and desecration of sacred sites.	Work with fishers to identify areas of concern and possible options; Enforce Sacred Sites Act over Crocodile Dreaming or other sacred sites.

Continued overleaf →

→ Table 1. continued

Perceived Issues	Impacts	Cultural Relevance	Management Implications
Littering and Discards			
Plastic bags.	Sea turtle mortality through becoming trapped or consuming plastic bags.	Affects availability of wild food source (turtle); Potential mortality of totemic /sacred species; A feeling of sadness and worry.	Retail outlets in township shift from plastic to paper bags; Beach clean-ups; Rubbish bins made available.
Discarding fish remains at boat ramps (after filleting).	Discarded fish attract crocodiles.	Discards or waste of any fish are culturally inappropriate; Boat ramps are popular swimming spots for Yolŋu.	Visitor information and education; Fishing guidelines.
Rubbish at beaches including ghost nets / marine debris.	Pollution of the coastal environment; Incidental catch of turtle, shark and dolphins in ghost nets.	Unhealthy Sea Country induces worry and concern; Affects key totemic species.	(Community) clean-up activities, monitoring ghost nets; Media and public awareness; Lobbying regional & (inter)national governments.
Commercial fishers discard sharks after cutting fins.	Declining shark population and damage to breeding populations.	Affects especially the four clans with 'Shark Dreaming' totemic links; Agitation over 'waste' of species. Induces worry and concern.	Lobby to improve shark fishing protocols within fishing industry (at various scales); Enforce Sacred Site Act over Shark Dreaming/sacred sites.
Access and Recreation			
Swimming at specific sites (at certain times of the year).	Disturbance of species behaviour (e.g. believed that Trevally with roe are disturbed and leave the area).	Affects (presence and populations of) sacred species and availability of wild food source.	Visitor information; Education and signage; Enforcement in recreational zones.
Visitor access to beaches.	Trespassing on sacred sites; Driving over turtle nests or disrupting turtle nesting; Leaving garbage and other waste; Noise pollution.	Desecration of sacred sites; Culturally inappropriate behaviour; Frustration and 'worry' within the Yolŋu community; Possible impacts on key species.	Education and signage; Monitoring and enforcement; Restrict access to certain areas.
Anchoring over sacred sites, coral reefs and sea grass.	Damage to sacred sites, coral reefs and sea grass.	Desecration of sacred sites; Decreasing quality of coral reef habitat.	Register more sacred sites; Map sacred sites at sea; Indicate 'no go zone' on maps; Education and signage.
By-catch: Sea turtles and crocodile become caught in commercial and sometimes recreational fishers' nets.	Decreasing sea turtle and crocodile populations (as well as other less visible species); Decapitated crocodiles have been found floating on the water.	Affects sacred/totemic species; Affects wild food source; Causes agitation amongst clans with Turtle or Crocodile Dreaming.	Urge fishers to use Turtle Exclusion Devices (TED) and to check nets regularly to prevent species (e.g. crocodile) from drowning.
Turtles become caught on (discarded) recreational fishing lines.	(Fatal) injuries to sea turtle	Sacred-totemic species; Affects wild food source and the two clans with Turtle Dreaming.	Educate fishers on safe release procedures; Investigate (and promote) the use of steel hooks.
Increasing number of vessels on waterways.	Increased recreational fishing pressure and illegal catch.	Affects availability of wild food source – reducing hunting 'success'; Increase of impacts on sacred sites.	Encourage adherence to protocols; Limit access and permits; Enforce boat registration and tracking; Increase enforcement patrols.
Difficult to check bag or 'catch' limits.	Potential overfishing or illegal fishing; Pressure on fish stocks.	Feeling of not being in control of activities taking place on Yolŋu estates.	Train indigenous enforcement officers; Increase monitoring capacity.
Indigenous Yolŋu Harvest			
Increasing and uncontrolled traditional (Yolŋu) sea turtle and dugong hunting.	Contributes to pressure on species populations; Yolŋu may (over) hunt species (previously) considered taboo according to cultural protocols.	Traditional law is not in place – or enforced (particularly for younger Yolŋu); Reduced respect for Yolŋu hunting culture, identity and Dreaming by non-Yolŋu; Current policies often inconsistent with traditional species use.	Monitor and record numbers hunted within community; Participatory education of youth by Yolŋu elders; Reinforce traditional law; Further develop <i>Both Ways</i> management approach; Resolve inconsistencies in policies.

modern-day conservation is to be able to effectively transpose such intimate cultural and spiritual relations into ecosystem management (Verschuuren, 2012) – in our case the *Guidelines for Fishers and Boaters*. Coombes et al. (2014) surpass this notion of ‘transposing’ by reconceptualizing notions of participation, action and representation by doing research with indigenous people.

PERCEPTION OF FISHERIES RELATED ISSUES AND THEIR CULTURAL SIGNIFICANCE

In the second phase of the research, the analysis of issues of importance to Yolŋu focused on the fishing interests and activities of predominantly non-Yolŋu recreational fishers and, to some extent, concerns about commercial fishers (whose vessels usually – but not always – operate

further from the coast). Fishing activities were reviewed and grouped based on the issues identified and observed by Yolŋu (e.g. such as vessels trawling or anchoring over sacred sites). Much concern was given to areas where spiritual values are connected to specific places in the coastal zone or seabed such as, for example, Shark Dreaming that covers many square kilometres. Despite many sacred sites having been registered in an atlas that commercial fishers are required to consult, prawn trawlers have in cases been observed operating over them, thus causing worry and giving rise to concern among the Yolŋu (Yolŋu interviewee, pers. comm.).

Other issues raised by Yolŋu concern: fishers accessing sacred outcrops and islands; excessive vessel speed over sea grass areas and sacred sites; improper discard of fish

Table 2: *Guidelines for Fishers and Boaters* (adapted from Dhimurru, 2010)

Sea Grass

Slow down: Reduce speed over sea grass areas or preferably avoid them altogether

Reduce noise: Be aware of the effect that motor noise has on marine life

Avoid boat strikes: Keep an eye out for grazing dugong or surfacing turtles

Discards

Be thoughtful: Yolŋu are proud of their tradition of harvesting only what they need and using their catch to the fullest.

Remain sensitive to the cultural environment in which marine life is caught and how it is utilized.

Be mindful: When discarding fish carcasses, please do so well away from the boat ramps.

Possession Limits

Comply: Stick to the bag limits recommended by your local fishing club and beware not to exceed personal possession limits as stipulated by the Northern Territory (NT) Fisheries Act.

Anchoring

Be aware: Do not drop anchor over sea grass or sacred site areas and avoid damage to fragile coral beds. If you are not sure where these are contact Dhimurru Aboriginal Corporation for more information.

Seasonality

Be informed: Seasonal cultural or natural resource management closures may apply to certain areas at times.

Access

Stick to the law: Whether or not you intend to fish, a fishing permit is essential to legalize your access to the intertidal zone and permits you to fish outside designated Dhimurru Recreation Areas.

Be sure: When you want access beyond the intertidal zone, outside designated recreational Areas. Accessing Aboriginal Land including offshore islands without an appropriate permit is an offence under the Aboriginal Land Rights Act and may be an offence under the NT Aboriginal Sacred Sites Act.

Be prepared: All permits can be obtained from either the Northern Land Council or Dhimurru Aboriginal Corporation Offices.

Reporting

Use your eyes: Dhimurru Sea Rangers are out patrolling to check access permit compliance and looking after Sea Country. Feel free to record and report any damage to the environment or suspicious and/or unlawful behaviour to them, the Dhimurru Office, Police or the Northern Land Council.

Give a hand: Recording your catch, e.g. species and size, to your local fishing club helps all of us with ‘both ways’ management in monitoring our resources.

Turtles: If you accidentally hook a marine turtle, take a picture and report the catch. Remove the hook or remove the line as close to the hook as possible and release the turtle back into the sea.

Enforcement

Be responsible: These Guidelines for Fishers and Boaters are in principle voluntary. However, some of the guidance provided can be enforced under Commonwealth and NT Laws.

GUIDELINES FOR FISHERS & BOATERS

The Yolŋu land-owners welcome recreational fishers and boaters to northeast Arnhem Land. We hope your time on our Sea Country is safe and enjoyable. We ask you to be respectful of our cultural traditions, our resources, and of the natural beauty which makes the region so attractive for those who come here.



Cover of the *Dhimurru Guidelines for Fishers and Boaters*.
Source: *Dhimurru Guidelines for Fishers and Boaters*
available online: www.dhimurru.com.au/recreational-fishing.html

and by-catch; the catching of too many or (from a Yolŋu perspective) undersized fish; and access to the water for fishers' vessels (Table 2). Other issues pertained to increased pressure on sacred animals like the Giant Trevally or *ŋuykal* (*Caranx ignobilis*), Dugong and various species of sea turtle including the endangered Hawksbill Turtle (*Eretmochelys imbricata*): 'You don't go there, [to] Gayŋada, ŋuykal [Giant Trevally Dreaming, known as Twin Eagles in English] when they got the roe... you know when they have eggs in them, no swimming, no hunting... we do not disturb them, no one goes on the water then.' (Yolŋu interviewee, pers. comm.)

The issues raised in this phase of the research helped with the identification of the main body of the guidelines.

MANAGEMENT IMPLICATIONS AND RESPONSES

The third phase of the research focused on Yolŋu responses to the previously identified management and policy issues through a 'both ways' approach (Table 1, far right column). The issues were identified on the basis of what Yolŋu perceived as important, including the extent to which the issue is understood to affect current, future or intergenerational well-being. For example, the aforementioned concern about the Giant Trevally led to consideration of announcing seasonal closures and banning fishing activities at nearby situated campsites and recreational areas from September to November when Giant Trevally carry roe.

Both Yolŋu and non-Yolŋu interviewees made suggestions for management (Table 1). These were primarily related to: the issuing of fishing permits; imposing speed limits over sea grass and sacred sites; the development of guidelines for recreational fishers; and the education of youth through school programmes and by liaising with amateur fishing clubs and associations. This latter initiative was well received by management: 'We [as Dhimurru staff] are interested in the offer of the [local] Fishing Club to distribute a fishing kit and information package to school kids. We can then provide school talks on how to fish in manner that is respectful of Yolŋu culture and safe. We can distribute the guidance we are developing and improve collaboration with the Fishing Club and the schools directly; the problem is capacity...' (Non-Yolŋu interviewee, pers. comm.)

The most relevant management implications were either translated into the *Guidelines for Fishers and Boaters* or contributed to making better-informed decisions in day-to-day management by Dhimurru's Sea Country Rangers.

GUIDELINES FOR FISHERS AND BOATERS: A 'BOTH WAYS' APPROACH

The primary purpose of the *Guidelines for Fishers and Boaters* is to help alleviate Yolŋu concerns and support their cultural responsibilities surrounding sea country, as it relates to activities carried out by non-Yolŋu fishers and the broader range of stakeholders active within the coastal zone on Yolŋu land. The main concerns and issues identified by Yolŋu as being necessary to be countered through implementing the guidelines have similarly been translated into concepts easily understood by recreational fishers (table 2). Each of these issues were elaborated in clear, polite 'plain-speak' language offering guidance and preventive measures in line with the rules and regulations governing the Dhimurru IPA.

Since their publication in 2010, the *Guidelines for Fishers and Boaters* have been made available through

the IPA permit office, the Dhimurru website⁴ and local, specialized shops for fishers. This in itself has resulted in a reasonable distribution of the guidelines. Several informants indicated that more could be done to disseminate and enforce the guidelines more efficiently. They suggested providing the guidelines as a supplement with fishing permits and making them available on related websites and printed materials which fishers regularly access such as fishing magazines, tide and fish charts, or other brochures distributed by recreational fishing and indigenous organizations. Such efforts are part 'both ways' collaboration and provide an avenue for sensitizing non-Aboriginal people about Yolŋu ways of life. Making the *Guidelines for Fishers and Boaters* available was seen as an important step towards changing the fisher and boater behaviour and is consistent with the approach set out in the Dhimurru *Sea Country Plan* (Dhimurru, 2006, p. 4): 'It is still our wish to engage in a positive way and in a spirit of good will with those who share the sea with us. We wish to work toward reconciliation of two management systems to ensure the best possible outcomes for our sea country.'

Guidelines for Fishers and Boaters (Dhimurru, 2010) is deliberately intended to strike a chord of mutual collaboration and appreciation for sea country as a way to engender open-mindedness. They urge fishers to observe, respect and adhere to guidance, tradition and restrictions, which are enforceable by law. This is important as earlier research suggests that fishing in the Northern Territory is generally experienced as 'a lifestyle' where much value is placed on open public access and free use of resources whereby any restrictions are viewed as an impingement on the perceived rights and freedoms of non-Aboriginal fishers (Palmer, 2004). Non-Yolŋu fishers interviewed as part of this research repeatedly used phrases such as 'a matter of principle' when explaining their unwillingness to conform to the implications of the Blue Mud Bay case⁵ which legally requires visitors to obtain a fishing permit when active within the Yolŋu-owned intertidal zone. Due to such prevalent perceptions, the Yolŋu (through Dhimurru) decided that illegal fishing activity and land access would not be legally pursued if the offender subsequently obtained a fishing permit, which would then be backdated. Yolŋu hope that this conciliatory approach will help in sensitizing non-indigenous fishers to Yolŋu cultural values, which are central to resolving the problematic issues they identified. In general Dhimurru staff reason that: 'when fishers take an interest in why sea country is healthy, it is hoped that they will also want to know how they can help maintain sea country when they are on the water.' (non-Yolŋu interviewee, pers. comm.).

There also exists a general consensus that the *Guidelines for Fishers and Boaters* will only achieve their purpose when adequate communication and dissemination pathways are followed up by appropriate enforcement. Nevertheless, most Yolŋu were unclear about what type of enforcement efforts would be required. This could in part be explained by Yolŋu's unfamiliarity concerning the potential legal implications of the Blue Mud Bay case.

Several Yolŋu suggested increased compliance checks in the face of rising concerns and feelings of not being in control over activities taking place on their land and sea estates. Currently, indigenous rangers have little or no legal enforcement capacity. However, they are permitted to check fishers' catch, record and report marine wildlife casualties as well as report illegal access and inappropriate behaviour to the Australian Customs and Border Protection Service, local police and/or the Parks and Wildlife Commission (PWCNT). Other interviewees suggested that it would be more effective to increase indigenous enforcement capacity and investigate less labour-intensive methods of checking compliance such as obligatory GPS tracking of fishers and vessels on Aboriginal land and waters as well as improved registration of the catch. Many interviewees expected that enforcement by Dhimurru's sea rangers would help to decrease incidences of inappropriate behaviour and, importantly, also act as an effective vehicle for facilitating cross-cultural understanding between Commonwealth law and Yolŋu law (Rom).

CONCLUSIONS

This research elicited Yolŋu perceptions of sea country activities and management as a basis for formulating practical outcomes that are cognizant of Yolŋu and non-Yolŋu cultural values. The action research process, which led to the development of the *Guidelines for Fishers and Boaters*, also contributed to 'both ways' management by placing emphasis on the importance of improving mutual understanding and cross-cultural learning among researchers, IPA staff and other stakeholders. The 'both ways' approach – the framework for our research – has been valuable in this particular conservation context. Similarly, the *Guidelines for Fishers and Boaters* may serve as an example of a process and product to other indigenous groups both along the Northern Territory coastline and in other parts of the world.

• Improving cross-cultural learning within the 'both ways' approach

We highlight the importance of solution-oriented action research in addressing conservation concerns in a cross-cultural context. Cultural values are largely intangible



Fishing vessels may damage sea grass, a primary habitat for the endangered dugong. Its quality is of constant concern to Yolŋu who carry out monitoring activities that feed into a larger database on sea grass research across northern Australia. The activity itself is an example of Dhimurru staff and external researchers working together whilst also sharing the experience and expertise with rangers from neighbouring Indigenous Protected Areas © Bas Verschuuren

and render themselves invisible to most non-indigenous people. Therefore, challenges persist in guiding and sensitizing non-indigenous use of the Australian coastal zone in a cross-cultural context. Our research process enabled us to appreciate the synergies that can be found when doing research and developing guidelines through the 'both ways' approach. That is, making a shift from learning about the natural world to learning from and within the natural world based on a Yolŋu worldview. Berkes has described this 'synergizing' as a process of bringing into dialogue different ontological knowledge systems (Berkes, 2009) whilst others have termed it 'weaving' (Bartlett et al., 2012) or 'co-motion' (Muller, 2014).

In remaining true to the Yolŋu analogy of Ganma (i.e. a place where fresh and salt water meet and mix), we believe that the metaphor of 'brackish water' could be invoked as a new way of understanding the 'both ways' process as being fluid rather than static. In this mixed domain, it is possible to encounter both aspects of indigenous ontologies (e.g. certain spirit-beings that appear as animated currents, rocks and animals) as well as of scientific conceptualizations such as keystone or flagship species. This mixing can enrich the social learning process such that outcomes engage with new audiences, disciplines and sectors with the ultimate aim of being recognized or, further, legitimized by becoming embedded in institutional mindsets and contemporary

policy. In achieving conservation outcomes, social learning is as important as conceptual learning (Lauber, Stedman, Decker, & Knuth, 2011). Mixing indigenous knowledge and land management practices with Western views on conservation management can lead to new understandings of conservation management and a broader recognition of the contribution of Yolŋu ontologies in achieving and maintaining regional and national conservation targets.

However, publication of the *Guidelines for Fishers and Boaters* on its own has so far been unable to bring about a significant change in non-Yolŋu fishers' behaviour, or at least to the extent that it alleviated the Yolŋu's original concerns. Social learning is therefore only effective to the extent to which social actors demonstrate an openness and willingness to learn. In the contemporary northern Australian context, effective broad-scale social learning (and intercultural appreciation) will require more intensively tailored approaches that engage specific stakeholders and target specific behaviours as part of the application of a well-formulated community-based social marketing strategy (McKenzie-Mohr, 2011). However, this may require more resources and capacity than most small research teams have at their immediate disposal.

• The role of researchers in a 'both ways' approach

We conclude that applied research in a local and social context must strive for participation and shared problem-solving aimed at guiding well-informed action. This process rests on a shared willingness among researchers, practitioners and stakeholders to be open to the validity of each other's perceptions in order to stimulate mutual learning for developing sustainable options for management problems (Hoffmann et al., 2012; Waltner-Toews et al., 2003; Yunupingu & Muller, 2009). It also places a responsibility on researchers to ensure that results and newfound knowledge are ready to be translated into materials that support implementation (Lauber et al., 2011; McNiff & Whitehead, 2006; Pohl et al., 2010).

The scientific researchers working through the 'both ways' approach on this project experienced that their aim as researchers did not simply restrict itself to the production of knowledge but rather involved knowledge co-production through social learning. This required the researchers to take on different roles also described by Pohl and colleagues (2010) as 'the reflective scientist', 'the intermediary' and 'the facilitator' of a joint learning process (Pohl et al., 2010). Like Coombes and colleagues (2014) suggest, those in the roles of researchers were also invited and challenged to engage across boundaries of difference in new ways.

Whilst conceptualizing and understanding ontological differences may not be easy, it is nevertheless integral to the co-production of knowledge and the social learning process which underpins successful participatory conservation strategies. When subsequently providing a framework for mixing such different cultural views and logics, a key determinant is whether the resultant behaviours of the value system applied are likely to sustain the ecological context upon which they depend. We believe that a 'both-ways' approach helped ensure that the *Guidelines for Fishers and Boaters* adhered to this logic.

ENDNOTES

¹ Although conservationists as a broad term can include activists and laypersons we use the word 'conservationist' more specifically to refer to scientific researchers and practitioners such as conservation biologists and ecologists.

² We use inverted commas here because we are aware that this generalization does not do justice to existing epistemological and ontological differences within scientific fields.

³ The 'both ways' approach was the basis for Dhimurru's working agreement with the Parks and Wildlife Commission of the Northern Territory (PWCNT). Rangers and staff from both Dhimurru and the PWCNT share and practise aspects of traditional and contemporary land management on a daily basis.

⁴ See: www.dhimurru.com.au/recreational-fishing.html

⁵ The Blue Mud Bay case was decided by the Federal Court of Australia on 23 July 2008 and resulted in the recognition of Aboriginal peoples' legal rights over approximately 80 per cent of the Northern Territory's coastal intertidal zone to the mean lowest watermark. Indigenous people now negotiate access and use of this zone in relation to recreational and commercial fisheries. This offers opportunities to extend Yolŋu values into conservation planning processes as well as economic development of the coastal zone.

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The Nuykal or *Giant Trevally* dreaming where fishing is not allowed at certain times of the year because of the Trevally having the roe. The site and surrounding waters are registered in the AAPA sacred sites atlas that commercial fishers use to avoid sacred places during operations © Bas Verschuuren

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RESUMEN

Este artículo muestra la importancia de las ontologías indígenas en la gestión intercultural o "bidireccional" de la conservación costera del Área Protegida Indígena de Dhimurru en el noreste de Arnhem Land, Australia. En este proyecto de investigación, algunos miembros de la comunidad Yolŋu externaron su preocupación con respecto a las prácticas de pesca y navegación recreativa utilizadas por personas ajenas a la comunidad. Participaron en una discusión sobre temas de interés y la posterior formulación de soluciones para la gestión autóctona. Ello condujo a la elaboración de directrices pertinentes a nivel local para pescadores y navegantes con aplicaciones potencialmente más amplias en otras áreas protegidas indígenas y más allá. Exploramos el enfoque "bidireccional", aprobado por la Asociación Aborigen de Dhimurru, que guía la colaboración entre la comunidad Yolŋu y no Yolŋu. Ilustramos cómo el enfoque facilita ontologías indígenas para crear enfoques de conservación junto con esfuerzos de conservación fundados en la ciencia occidental. También exploramos las disyuntivas y sinergias entre ambos y sostenemos que estas se mezclan y pueden ser compatibles en el marco del enfoque "bidireccional". En base a las enseñanzas extraídas, reflexionamos sobre el proceso de aprendizaje intercultural y el papel de los investigadores en la coproducción intercultural de conocimientos y la formulación de directrices para pescadores y navegantes.

RÉSUMÉ

Cet article démontre l'importance de prendre en compte les ontologies autochtones dans la gestion interculturelle ou bilatérale du littoral dans l'Aire Protégée Autochtone Dhimurru, au nord-est d'Arnhem en Australie. Au cours d'une étude sur le terrain, des individus Yolŋu ont exprimé de l'inquiétude face aux activités de pêche et de navigation en mer des personnes non-Yolŋu. Après avoir engagé des discussions sur ces questions, ils ont proposé des solutions de gestion autochtone. Ceci a mené à la mise en place de directives locales pour les pêcheurs et les plaisanciers qui peuvent potentiellement s'appliquer à d'autres aires protégées autochtones et au-delà. Nous explorons l'approche «bilatérale» adoptée par la Société Autochtone Dhimurru qui définit la collaboration entre Yolŋu et non-Yolŋu. Nous illustrons comment cette approche permet de combiner les ontologies autochtones et les techniques de conservation contemporaines. Nous allons plus loin dans l'analyse des contradictions et des synergies entre ces deux approches pour montrer leur compatibilité dans le cadre d'une solution 'bilatérale'. Les enseignements de cette étude nous permettent de réfléchir sur l'apprentissage inter-culturel et sur le rôle des chercheurs dans la formulation de directives pour les pêcheurs et plaisanciers.