
http://researchrepository.murdoch.edu.au/4759/
The Ningaloo Reef is Australia’s largest fringing Coral Reef, extending across 300 kilometres of coastline between Exmouth and Carnarvon. In 2001 the State Government recommended the nomination of the Ningaloo Marine Park for World Heritage listing. The area is now widely marketed as a one of Western Australia’s premier tourism destinations (Western Australian Tourism Commission, 2003) and, given the area’s unique attractions, visitor numbers are ever increasing (Wood & Dowling, 2002). However, tourism development to date has been somewhat ‘ad hoc’ (Wood, 2003) and the social, ecological and economic sustainability of tourism in the area is being challenged on numerous fronts by over-burdened infrastructure, waste generation, high impact developments, effects on visitor experience, site erosion, fishing pressure, accommodation shortages and crime (Western Australian Planning Commission, 2004; Northcote & McBeth, 2008).
In response to these challenges, the Ningaloo Collaboration Cluster (NCC) has brought together scientists and expertise from a range of disciplines with the goal of describing, understanding and modelling the processes of human interaction with Ningaloo Reef. The aim of this research is to develop research-backed management options that sustain the ecological integrity of the area.

However, the uptake of sustainable management options - moving from tourism research to tourism practice – depends on the adaptive capacity of the institutions responsible for governing tourism activities in the Ningaloo area. Adaptive capacity in this case can be framed as the collective ability and willingness of institutions to respond to NCC’s data and modelling results, and can be assessed by the quality of decisions made and implemented by institutions in terms of their impact on the region’s social and ecological sustainability. Increasing institutional adaptiveness means moving away from narrow resource-use issues and focusing instead on building system-wide resilience across numerous social and ecosystem scales (Gunderson & Holling, 2002). This requires eliciting multiple perspectives and sources of knowledge from diverse stakeholders as a way of dealing with the subjectiveness and uncertainty of complex science-related issues (Holling, 1978). Adaptive institutions must also be flexible, capable of self-organization and willing to embrace change and experiment (Gunderson, 2003).

However, the literature indicates that, despite careful research, modelling and planning, resource management, recommendations in complex social and ecological systems, such as those being proposed for tourism in Ningaloo, often fail to deliver on the ground (Medema et al., 2008). Since the 1970s, many writers have challenged the notion that managerial decision-making is rational or logical (Westley, 2002). Rather, decisions are based on complex political pressures (Allison, 1971) and contextual dynamics (March & Heath 1994), often using incomplete information (Westley 2002). Often there is a lack of political will to implement necessary change (Gallopin, 2002). For these reasons, command-and-control oriented centralized governments with political links to legislatures and industry are prone to problems
and to making large mistakes (Holling & Meffe, 1996). In addition, continued belief in the value neutrality of science, and failure to accept the inherent social and ecological uncertainty pervading resource management issues, creates a sharp division between science and values. This increases miscommunication and prevents true learning as the flow of information between scientists, managers and other stakeholders is blocked (Norton, 2005).

The creation of adaptive institutions is also challenged by institutional inertia caused by uncertainty, self interest of individuals and organizations, greed and career concerns among scientists, and powerful vested interests that exploit and exaggerate uncertainty and gaps in scientific knowledge to maintain the status quo (Gunderson et al., 2002). Inertia is further engendered by resistance from researchers and managers who fear failure, increased transparency, and political risks (Walters, 1997). As such, these individuals and organizations create ‘type II failures’ (failing to effect a desired event) by guarding against ‘type I failures’ (failing to stop an undesired event) (Bendor, 1985). In addition, institutional inertia can be caused by the high cost of information gathering and monitoring (Lee, 1993), insufficient financial resources, unskilled human resources, poor leadership and weak infrastructure (Gallopin, 2002). Focusing on perfecting or forcing all information into modelling tools rather than field testing them can also lead to inertia in decision-making (Norton, 2005).

Insensitivity to environmental feedback also impedes the adaptive capacity of institutions. Larger, centralized institutions are often more insensitive to negative environmental feedback than are local institutions (Alcorn et al., 2003), particularly where their dogma does not ‘fit’ with the feedback they are receiving (Colding et al., 2003). Global tightening of interdependencies between local resource users and regional, national and international communities is further weakening feedback loops to the ecosystem (Folke et al., 2003). This is aggravated by support from socio-economic infrastructure (e.g. loans, subsidies, insurance, aid) at different scales,
which impedes socio-ecological learning by making it possible to maintain business as usual during crises (Colding et al., 2003).

Problems with communication and participatory processes can also reduce adaptive capacity. It is difficult to reconcile the technical specialized understanding of researchers and management agencies with the place-based knowledge of local communities (Pritchard & Sanderson, 2002). Scientists, managers and local people often believe their respective knowledges are superior, and have disdain for each other’s perspectives (Gadgil et al., 2003). When managers and scientists act in a superior manner, local people get angry at what they perceive to be arbitrary scientific judgements and major communication breakdown and loss of trust occurs (Westley, 2002). Loss of trust can lead to erosion of social resilience (Tengo & Hammer, 2003), and the polarization that arises between stakeholders may itself inhibit ability to respond to ecosystem feedback (Trosper, 2003) as competing interests, each with virtual veto power, stifles innovation (Pritchard & Sanderson, 2002). Local horizontal power structures almost always work to reinforce existing inequalities and the status quo within communities (Kapoor, 2002), and face-to-face interactions in participatory processes often create preference falsification through intimidation or coercion (Pritchard & Sanderson, 2002).

In addition, when a people have not inhabited an ecosystem for long periods of time, their understanding of underlying processes and functions is slow to develop (Muchgata & Brown, 2000). As such, even the simplest multi-equilibrium models used in decision-making processes can “confuse rather than inform the public” (Pritchard & Sanderson, 2002, p154).

Clearly, strategic processes are required to overcome the many potential barriers associated with moving from tourism research to sustainable tourism practice. As such, a new project is underway in the Ningaloo area, aiming to engage researchers, policy makers, resource managers, and other stakeholders in a deliberative bid to overcome these barriers, and to establish adaptive institutional arrangements for
Tourism research to tourism practice

synthesizing and acting on data generated by research/modelling efforts in the region (thereby encouraging socially and ecologically sustainable tourism in the long term). An action research approach will be applied, using social ecology systems theory and a collective learning and collaborative planning framework.

REFERENCES


Tourism research to tourism practice


Wood, D.S. (2003). *Tourism on the Carnarvon-Ningaloo Coast between Quobba Station and Exmouth and its Implications for Sustainability of the Coast*. Perth: Curtin University of Technology, Department of Urban and Regional Planning.