



## A generic method of engagement to elicit regional coastal management options



Catherine M. Dichmont<sup>a,\*</sup>, Leo X.C. Dutra<sup>b,c</sup>, Randall Owens<sup>d</sup>, Eddie Jebreen<sup>e</sup>, Carolyn Thompson<sup>f</sup>, Roy A. Deng<sup>b</sup>, Elizabeth I. van Putten<sup>g</sup>, Ricardo Pascual<sup>b</sup>, Jeffrey M. Dambacher<sup>g</sup>, Michael St J. Warne<sup>h,i</sup>, Ross H. Quinn<sup>e</sup>, Olivier Thébaud<sup>a,j</sup>, John Bennett<sup>k</sup>, Mark Read<sup>d</sup>, David Wachenfeld<sup>d</sup>, Julia Davies<sup>e</sup>, Anna Garland<sup>e</sup>, Malcolm Dunning<sup>e</sup>, Catherine Collier<sup>l</sup>, Michelle Waycott<sup>m</sup>, Julia Playford<sup>h</sup>

<sup>a</sup> CSIRO Oceans and Atmosphere, Ecosciences Precinct, 41 Boggo Rd, Dutton Park, QLD, 4102, Australia

<sup>b</sup> CSIRO Oceans and Atmosphere, Queensland Bioscience Precinct, 306 Carmody Road, St Lucia, QLD, 4067, Australia

<sup>c</sup> School of Marine Studies, Faculty of Science, Technology & Environment, The University of the South Pacific, Laucala Bay Road, Suva, Fiji

<sup>d</sup> Great Barrier Reef Marine Park Authority, 2-68 Flinders Street, PO Box 1379, Townsville, QLD, 4810, Australia

<sup>e</sup> Queensland Department of Agriculture and Fisheries, Primary Industries Building, 80 Ann St, Brisbane, QLD, 4001, Australia

<sup>f</sup> Great Barrier Reef Marine Park Authority, 43 River Street, Mackay, QLD, 4740, Australia

<sup>g</sup> CSIRO Oceans and Atmosphere, GPO Box 1538, Hobart, TAS, 7001, Australia

<sup>h</sup> Queensland Department of Science, Information Technology and Innovation, Ecosciences Precinct, 41 Boggo Rd, Dutton Park, QLD, 4102, Australia

<sup>i</sup> Centre for Agroecology, Water and Resilience (CAWR), Coventry University, Coventry, CV1 5FB, United Kingdom

<sup>j</sup> Ifremer, UMR M101, AMURE, Unité d'Economie Maritime, BP 70, F-29280, Plouzané Cedex, France

<sup>k</sup> Queensland Department of Environment and Heritage Protection, Ecosciences Precinct, 41 Boggo Rd, Dutton Park, QLD, 4102, Australia

<sup>l</sup> Centre for Tropical Water & Aquatic Ecosystem Research (TropWATER), James Cook University, Cairns, QLD, 4870, Australia

<sup>m</sup> University of Adelaide, School of Biological Sciences, Environment Institute, University of Adelaide, Adelaide, SA, 5005, Australia

### ARTICLE INFO

#### Article history:

Received 24 July 2015

Received in revised form

1 February 2016

Accepted 5 February 2016

Available online 22 February 2016

#### Keywords:

Regional management

Community engagement

Generic framework

Management strategies

Objective weights

### ABSTRACT

Stakeholder engagement is important for successful management of natural resources, both to make effective decisions and to obtain support. However, in the context of coastal management, questions remain unanswered on how to effectively link decisions made at the catchment level with objectives for marine biodiversity and fisheries productivity. Moreover, there is much uncertainty on how to best elicit community input in a rigorous manner that supports management decisions. A decision support process is described that uses the adaptive management loop as its basis to elicit management objectives, priorities and management options using two case studies in the Great Barrier Reef, Australia. The approach described is then generalised for international interest. A hierarchical engagement model of local stakeholders, regional and senior managers is used. The result is a semi-quantitative generic elicitation framework that ultimately provides a prioritised list of management options in the context of clearly articulated management objectives that has widespread application for coastal communities worldwide.

The case studies show that demand for local input and regional management is high, but local influences affect the relative success of both engagement processes and uptake by managers. Differences between case study outcomes highlight the importance of discussing objectives prior to suggesting management actions, and avoiding or minimising conflicts at the early stages of the process. Strong contributors to success are a) the provision of local information to the community group, and b) the early inclusion of senior managers and influencers in the group to ensure the intellectual and time investment is not compromised at the final stages of the process.

The project has uncovered a conundrum in the significant gap between the way managers perceive their management actions and outcomes, and community's perception of the effectiveness (and wisdom) of these same management actions.

Crown Copyright © 2016 Published by Elsevier Ltd. All rights reserved.

\* Corresponding author.

E-mail address: [cathy.dichmont@csiro.au](mailto:cathy.dichmont@csiro.au) (C.M. Dichmont).

## 1. Introduction

Pressure on ecosystems in the coastal zone has increased with time due to population growth and the social and economic importance of these areas (Halpern et al., 2009). Effective management of this zone is important as they contain many iconic and threatened species (such as dugongs, water birds, turtles) and also key habitats (wetlands, seagrasses, mangroves).

The coastal zone of the Great Barrier Reef in Australia experiences the impacts of cumulative effects, most notably inputs of sediment, nutrient and contaminants from rural and urban land sources (Kroon et al., 2013). However, managing cumulative impacts can be seen as a “wicked” problem because interactions within and among the social, economic and ecological systems are highly complex, non-linear and mostly unknown, which has often led to management failure (Ludwig, 2001; Rittel and Webber, 1973). Science is categorised as only being able to solve “tame” problems (Rittel and Webber, 1973).

Two solutions have been put forward to address this dilemma: a) Adaptive management, which involves iterative decision making, via evaluating the outcomes from previous decisions and adjusting subsequent actions on the basis of this evaluation (Sainsbury et al., 2000; Walters and Hilborn, 1976), and b) effective stakeholder engagement to facilitate social learning improving outcomes (Muro and Jeffrey, 2008). If these two processes are combined, they form essential foundational steps to achieve effective environmental management, through good information, development of identity, and institutions and incentives (Van Vugt, 2009).

In the coastal zone, governance is complex with many organisations and associated institutions designated to manage the system (local, regional, national and international) and many forms of “ownership” models (government, semi-government, public open access, private). To some, the solution to the complex governance situation is to create boundary organisations either through a non-government organisation (NGO) or develop collaborative efforts between scientists and government organisations. Boundary organisations cross the boundary between science and government as a network which draws on both sides to facilitate evidence-based decisions (Guston, 2001). These organisations attempt to solve problems by meeting three criteria, which are: a) creating opportunities and incentives for boundary products, b) facilitating participation of actors from different sides of the boundary and c) establishing or strengthening links between politics and science (amongst others). Boundary organisations are effective, for instance, in the health sector (Drimie and Quinlan, 2011) and in waterway management (Abal et al., 2005).

Whether attempting management with or without these boundary organisations, stakeholder or community engagement is seen as crucial to management success (Dietz et al., 2003; Ostrom, 2009; Van Vugt, 2009). Similarly, the scale of management should include local input into regional management rather than only distant high level and scale management (Ostrom, 2009). Stakeholder engagement has been successfully applied in many single use applications such as fisheries. Often engagement has been established through technical and management boundary organisation (Smith et al., 1999) or various forms of devolved management such as through Territorial User Rights (Chandra, 2011), community based special marine protected areas (Ma et al., 2013) or self management in fisheries (Townsend et al., 2008). However, moving from stakeholder engagement to community engagement has generally not been undertaken as many scholars have presumed that these resource users could not self organise nor be representative (Cox et al., 2011). In the review by Cox et al. (2011) of “self-organised regimes”, their findings supported Ostrom’s (2009) eight design principles of local stable common pool resource

management, which includes well defined boundaries, institutions that are adapted to local conditions, participatory decision-making processes, effective monitoring, scaled sanctions for those who violate rules, mechanisms for conflict resolution, recognition of community self-determination by higher-level authorities, and nested enterprises for large common pool resources.

### 1.1. Study area

The Great Barrier Reef World Heritage Area (GBRWHA) includes the world’s largest coral reef system, the Great Barrier Reef (GBR), stretching over 2300 km of the coastline of Queensland, Australia (Fig. 1). The Australian Commonwealth’s Great Barrier Reef Marine Park Authority (GBRMPA) manages much of the reef. Although GBRMPA manages the biodiversity assets and most activities therein, fisheries and much of the coastal zone inshore of 3 nm are managed by various other agencies such as the Queensland State Department of Agriculture and Fisheries (DAF), and local councils. There is growing interest and success in engaging local coastal communities to achieve reef management goals. NGOs have played a key role through engaging especially with the farming community to minimise the effects of agricultural runoff (sediments, nutrients and pesticides) (<http://reefcatchments.com.au/>). Although these NGOs are in many aspects boundary organisations, they have until recently only concentrated on a few impacts areas.

The communities who live in the coastal zone of the GBR value the GBR highly (Marshall et al., 2013) and as such there is a significant desire to be involved in local management. It is generally understood by managers that a) it is difficult to regulate all impacts that affect the GBR coast and reef so stakeholder support is essential, and b) given the size of the area and its complexity, it is not possible to have both regional and local knowledge without local input.

In a perfect world, high values attributed by a community to an area would generate voluntary compliance and regulation. However, the challenge remains on how to include community input in determining objectives for marine biodiversity and fisheries productivity and effectively link these objectives to decisions made by multiple management authorities, and to do this in a safe and cooperative manner. In an increasingly connected community in Queensland, social media has become a progressively useful medium to focus public opinion (for example the 2014 GetUp campaign against a port development – <https://www.getup.org.au/campaigns/great-barrier-reef-3/protect-our-reef/protect-our-reef>). However, these forums are seen as not engaging science, management and community in a non-adversarial long-term framework as described in Cox et al. (2011). There are several case studies and suggestions of what constitutes successful engagement. For example, a successful case study (reviewed by Vural-Arslan and Cahantimur (2011)) in Turkey showed that community intelligence could be influential to the decision making process. However, there are practical considerations when engaging the community over a longer timeframe, including scheduling and other time commitments. Many emphasise the importance of gaining trust and respect (Vural-Arslan and Cahantimur, 2011), and provide models of engagement (Rowbottom and Bueno, 2009) and move beyond simple models of socio-ecological systems and the perception that most resource users are the same (the “panacea”) (Ostrom et al., 2007).

## 2. Method

### 2.1. Case studies

Two coastal regions within the GBRWHA area were chosen as

Download English Version:

<https://daneshyari.com/en/article/1723367>

Download Persian Version:

<https://daneshyari.com/article/1723367>

[Daneshyari.com](https://daneshyari.com)