

# Key steps towards adaptive management of a whalewatching industry: developing sustainability objectives and indicators for the swimming-with-dwarf minke whales activity in the Great Barrier Reef

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## Background

An Australian Government sanctioned swimming-with-whales tourism industry has developed in the northern Great Barrier Reef (GBR; see Fig. 1) based on the austral winter migration of dwarf minke whales (*Balaenoptera acutorostrata* subsp.). The cumulative impacts of this growing tourism activity are uncertain and there are widespread concerns about the sustainability of swim-with-cetaceans programs (Birtles, et al. 2002). The geographic remoteness of these interactions in the GBR poses additional challenges for monitoring the activity.

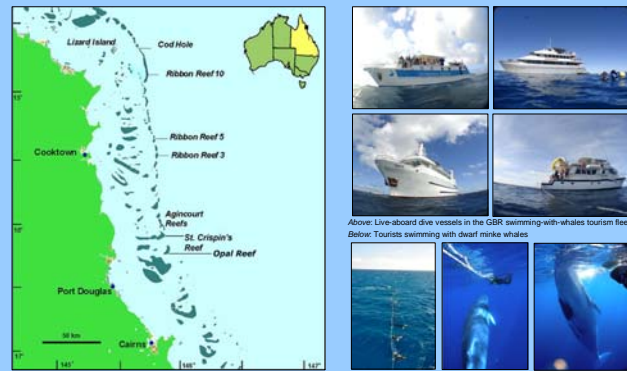


Fig. 1: Main location of SWW tourism activity in the GBR (Opal Reef to Cod Hole)



Above: Live-board dive vessels in the GBR swimming-with-whales tourism fleet  
Below: Tourists swimming with dwarf minke whales

## Methodology

Adopting a 'sustainability science' approach, this study utilised a mixed methodology to develop a framework for monitoring this activity in the GBR. Principles of Participatory Action Research were employed to engage key stakeholders (including tourism operators, government management agency staff, cetacean scientists and representatives of wildlife conservation NGOs) in an iterative process to develop species, location and industry-specific sustainability objectives and indicators.

### Developing Sustainability Objectives (SOs):

1. Draft QBL objectives developed from literature & with input from researchers
2. Stakeholder key informants interviewed (n=16) to refine draft objectives
3. Objectives fine-tuned & put to vote in four facilitated stakeholder workshops

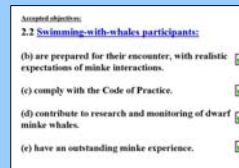
### Field evaluation of Sustainability Indicators (SIs; Social and Managerial):

1. Industry Whale Sighting Sheets & vessel effort logs
2. Vessel crew interviews (n=20)
3. Passenger feedback via questionnaires

NB. Ecological and economic indicators are being evaluated by colleagues in complementary studies

### Developing a management model:

1. Stakeholder key informant interviews (n=16)
2. Stakeholder workshop processes & outcomes evaluated
3. Synthesis of SOs, SIs and sustainability monitoring literature



Images L-R: (1) Facilitated stakeholder workshop, (2) Fine-tuning objectives, (3) Example objectives (social).

## Contributing factors to successful development of SOs

- Relatively small industry (n=9 permitted operators).
- Operators required to collect monitoring data (*permit condition*).
- Recognition of shared values among stakeholder groups.
- Management Authority (*Great Barrier Reef Marine Park Authority*) 6-year funding commitment to monitoring and workshops.
- Annual reviews of research results at stakeholder workshops.
- Continuity of research (14 years) by Minke Whale Project – trust and confidence of industry is critically important.
- Collaborative, transparent approach to developing SOs.



## Implementation challenges

- Pressure for expansion of industry in 2010 (*more permits?*)
- Sustainable revenue source needed for ongoing monitoring
- Sustainable process (e.g. Fig. 3) needed for monitoring, stakeholder feedback & management decisions
- Climate change impacts, adaptation and mitigation by GBR tourism industry – *reducing industry CO<sub>2</sub> footprint*.

## Aims

1. Develop, collaboratively with key stakeholders, a suite of Quadruple-Bottom-Line (see Fig. 2) *Sustainability Objectives*
2. Identify and evaluate a range of *Sustainability Indicators* for monitoring the swimming-with-whales (SWW) activity
3. Develop a Swimming-with-Whales Adaptive Management Model (SWAMM) to assist management and monitoring.

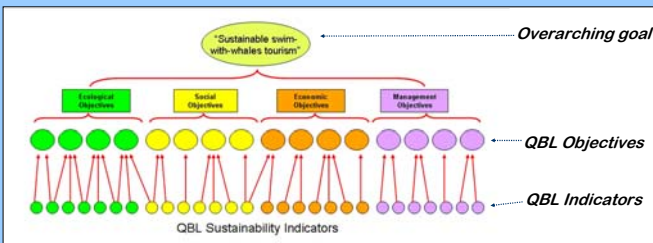


Fig. 2: Sustainability Objectives and Indicators based on a Quadruple-Bottom-Line (QBL) assessment framework

## Key outcomes so far

- 37 out of 39 sustainability objectives formally adopted by stakeholders at workshops
- Strong support and sense of ownership among all stakeholder groups for SOs and process of development
- Increasing contribution to monitoring data collection by tourism operators over three seasons (2006-2008)
- Industry & researcher-generated monitoring data are contributing to the refinement of proposed SIs

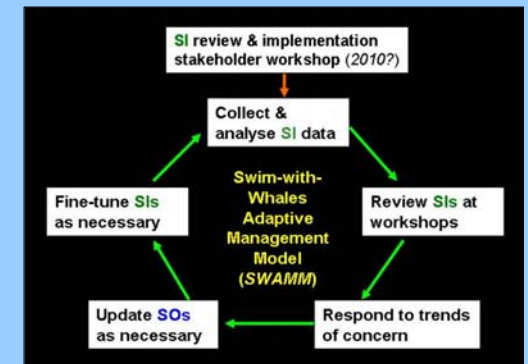
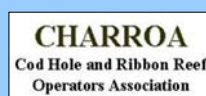


Fig. 3: Recommended implementation process for SIs (part of proposed adaptive management model; SWAMM)



### References:

Birtles, A., Arnold, P., Valentine, P., Barnett, B. & Dunstan, A. (2002). Sustainability indicators and other information needed to assess ecological sustainability of dwarf minke whale-swimmer interactions. Report to the International Whaling Commission Scientific Committee, SC/55/WW11; 22pp.  
Images by A. Birtles, A.Mangott & M. Curnock