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Indigenous Protected Areas – managing country to promote biodiversity and cultural resource conservation

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Keynote Speakers

John Woinarski
Graeme Wood
Andrew Burbidge
Ray Nias
Bob Pressey
Aboriginal and Torres Strait Islander Australians have managed their country for tens of thousands of years. Country is central to their lives and wellbeing and provides an economic base, underpins history, innovation and culture, and is fundamental to spiritual beliefs.

The Indigenous Protected Areas (IPA) element of the Caring for our Country initiative is one way Aboriginal and Torres Strait Islander Australians are being supported to meet their cultural responsibility to care for their country and to pass on knowledge to future generations.

IPAs have only been formally declared on Indigenous land and small areas of sea country under exclusive Indigenous control. The IPA element is currently supporting a small number of communities to explore the potential for IPA declarations over sea-country where they do not have exclusive rights through extensive consultations with the other stakeholders with rights and interest in the sea. An IPA declaration over sea country where there are non exclusive Indigenous rights would take place with the voluntary agreement of all of the stakeholders.

The Traditional Owners of the Wellesley Islands (Cape of Carpentaria) are working towards declaring an IPA that includes sea-country. They have undertaken extensive consultations across the islands and developed a draft plan of management for the proposed IPA. Consultations with other key stakeholders are currently under way. Representatives from the Wellesley Islands IPA consultation project will talk about Traditional Owners aspirations for their country and the process and challenges faced in engaging sea-country stakeholders.

The Anindilyakwa IPA (Groote Island, Eastern Arnhem Land) strikes a balance between protecting the land for conservation purposes and allowing for sustainable economic development and traditional resource use. Representatives from the Anindilyakwa IPA will talk about the conservation and other work being undertaken on their island, focusing on the threatened species recovery programs.
Paper 2 Dirk Loogatha, Jack Juhel
Wellesley Islands Indigenous Protected Area

Paper 3 Gavin Enever, Vince Lalara, Elma Yantarrnga, Petrina Busbridge
Anindilyakwa Indigenous Protected Area
Session 2 Community Engagement and Visitor Management

Paper 4 Jason Harvey

Forming a single allied body to solve the problem of many stakeholders on Fraser Island

Jason Harvey¹, Dr. Alison Shapcott¹ and Sue Sargent²
¹University of the Sunshine Coast (USC) Sippy Downs, Australia.
²Burnett Mary Regional Group (BMRG) Bundaberg, Australia.

Fraser Island is a World Heritage Area of outstanding natural value.

Inherent in the difficulties of its management is the fact that the land is not under the jurisdiction of one single body. The Environmental Protection Agency, the Department of Natural Resources and Water and Regional Government all have responsibilities in the management of the island. In addition to the government bodies there are also the Traditional Owners groups, private business ventures, residents and a variety of community groups that all require representation.

As each of these bodies represent different responsibilities and interests it is natural that there are areas in which management priorities are not shared.

The Fraser Island Natural Integrity Alliance or FINIA was formed to develop a collaborative approach to the management of threats to the future sustainability of Fraser Island’s natural resources. It was felt that a single cooperative body may be able to objectively represent the interests of all parties and assist in development of a shared management plan.

The Weeds Management project was the first implemented under this system. This project aims to include all stakeholders and interest groups in identifying workable solutions to the problems caused by multi-jurisdictional land management.

To date the project has met with a great deal of success mainly due to the ability of FINIA to be seen as an independent entity not directly influenced by the priorities of any single stakeholder. This system could serve as a model for other areas affected by the problems of multiple stakeholders.

Paper 5 Michael Sherriff

Natural Resource Management on the Furneaux Group

NRM Facilitator, Flinders Island, Tasmania.

The Furneaux Group is a group of 42 Islands in Bass Strait, off the North East Coast of Tasmania. These Islands and the coastal and marine environments surrounding them are rich in natural values. The largest of the Islands, Flinders Island, maintains a population of about 700 people and has an economy based upon agriculture, fishing and tourism.
We are blessed that the waters of Bass Strait have protected us from many of the threats to natural values that have ravaged similar mainland sites. For example foxes and rabbits are not present on the Islands. The isolation, while providing some benefits also brings with it some difficulty in addressing the problems that exist, mainly through limited human resources and access to advice and services that are taken for granted elsewhere. Many high priority weeds exist on the Islands along with other feral animals (particularly cats and pigs) which require management.

This presentation will show case studies that show how the Island community has dealt with some of these issues and produced creative solutions.

The first case study shows how the local Landcare group were struggling to finish boxthorn control activities on a remote Island off Flinders Island, due mainly to the limiting number of locally available volunteers. The solution was to fly in volunteers from mainland Tasmania. The landcare group subsidised the cost of flying in the ‘overseas’ volunteers by undertaking revegetation activities for Flinders Island based landholders in return for a donation.

The second case study shows how the local tourism industry is working with government, community groups and regional NRM groups to provide visitor facilities for the growing number of tourists that direct traffic to selected hardened sites and provide for a unique ecofriendly experience.

**Paper 6 Damian Head**

*Planning for island visitor use and expectations in the Great Barrier Reef World Heritage Area*


The Queensland Parks and Wildlife Service (QPWS) manage an extensive suite of island national parks in the Great Barrier Reef World Heritage Area (GBRWHA). These parks and their surrounding waters are a mecca for boating, fishing, sailing, diving, snorkelling and nature-based activity – attracting nearly 2 million tourists and 5 million recreational visitors each year.

This visitation to the GBRWHA is concentrated to small geographic regions and at some islands visitor use is having an impact on the environment and affecting the quality of visitor experiences.

Often, planning and managing visitor use in the GBRWHA focuses on the marine sections of the high profile Great Barrier Reef Marine Park, with much of the previous island national park planning proving to be ineffective in managing visitor impacts resulting from the ever increasing numbers of visitors and vessel size.
How we manage island national parks within the existing management framework, policies and areas of cross-jurisdiction to ensure a balance of protection and providing quality visitor experiences has since been reviewed.

This shift in Protected Area Planning in Queensland has seen consideration to both State Marine Park and adjacent national parks given throughout the process – working to remove barriers and ensuring a consistent approach and vision for our future.

The first in such processes, the Whitsunday and Mackay Islands Visitor Management Strategy (VMS), focuses on integrated planning and policies across islands, beaches and surrounding waters. It extends a management setting framework developed for marine areas to island national parks. The VMS also seeks to ensure that some island visitor sites are maintained or upgraded to cater for high levels of use, while other islands and sites cater for low or negligible visitation.

This presentation explores the challenges in planning for visitor use on national park islands, reviews the Whitsundays project and offers suggestions for future planning.

**Paper 7 Michael Phelan**

*The future of visitor management on Queensland’s protected area islands*

Department of Environment and Resource Management, Queensland.

Queensland Parks and Wildlife Service (QPWS) is the custodian of an extensive network of island protected areas. These islands protect and conserve unique species, ecosystems and landscapes of immense value. Our islands also host an increasingly significant range of visitor opportunities, the importance of which cannot be overstated.

Delivering the correct balance between conservation needs and visitor expectations is a major challenge for QPWS and all other protected area management agencies. Where the right balance is not achieved, both the values intrinsic to our protected areas, and the experiences of our visitors, may be seriously degraded with considerable consequences.

Articulated within this presentation is our answer to this management challenge; two concurrent frameworks that have the capacity to facilitate the implementation of a highly effective and equitable system of sustainable visitor management. These frameworks have the power to enlighten and enrich the management of our island protected areas.

The first of these frameworks aims to deliver benefits for both industry and management such as enhanced involvement in decision-making and greater recognition of best practices. At the same time, this initiative seeks to mitigate sensitive issues such gross latent capacity and business uncertainty.

The second framework is designed to establish the type and amount of use suited to individual sites. It also identifies and prioritises management and monitoring actions. The methodology has been refined so that it is highly repeatable and resource-effective, and has been trialled at locations such as Fraser Island and the Whitsunday Islands.
The genesis for this new approach stems from a desire to overcome long-standing barriers identified by our tourism industry. The development of these frameworks has drawn on a combination of science, managerial expertise and public deliberation, and has involved a series of comprehensive, independent reviews.

**Paper 8 Sue Olsson**

*Queensland’s world heritage islands – a diverse array of interpretive opportunities and challenges*

Team Leader, Communication and Community Engagement, Tourism and Visitor Services, Queensland Parks and Wildlife Service, Department of Environment and Resource Management, Rockhampton, Qld, Australia.

From sand islands to coral cays and continental islands, Queensland's islands provide a rich diversity for tourism and interpretation. In combination with their surrounding marine areas, their scenic and aesthetic opportunities are extraordinary, they provide an outstanding array of natural values and many also have highly significant, though often subtle, cultural values.

This paper will overview a range of stories, messages, challenges, communication issues, tools and techniques in presenting some world heritage islands of the Great Barrier Reef and Great Sandy.

From pisonia to seabirds and dingoes, we will look at some of the stories and management issues unique to our island ecosystems and how we have approached those challenges.

From world heritage, to national parks and marine parks, each provides its own requirements for communication. Communicating world heritage values and an understanding of the importance of national parks and marine parks is a challenge. How we are meeting this challenge and our obligations to present the world heritage values of many Queensland islands will be outlined.

From independent boaties and island campers to tour groups and resort stayers, each come with their expectations and differing needs. Solutions can be many and varied, though reality is often more limited. Some techniques to meet these differing needs, and future challenges, will be provided.

Traditional Owners and Custodians of the island-marine systems have interpretive needs and requirements, and some examples for park presentation programs will be provided.

This paper will draw primarily, though not exclusively, from the interpretation undertaken on Fraser Island, Great Sandy National Park, Lady Musgrave Island, Capricornia Cays National Park and the iconic sites of the Whitsunday Islands National Park.

Future challenges for island-based interpretation include the opportunities presented through climate change and biosecurity.
Session 3 The Kangaroo Island Experience

Paper 9 Jeanette Gellard

*Kangaroo Island – Island refuge*

Kangaroo Island Natural Resources Management Board.

Natural resources management deals with a complex mix of social, economic and environmental issues, many of which are not always well understood. Good natural resources management is often more about people than it is about natural resources. Community attitudes will determine the success or failure of any natural resource management plan and/or strategy. The values and views of people need to be considered and debated.

Over the past two years Kangaroo Island has been developing a regional natural resource management plan to bring together the concerns and aspirations of the Kangaroo Island community and stakeholders. The development and clarification of this common vision will underpin economic development and a collaborative ethos for a sustainable Kangaroo Island.

Many of the projects and management actions being implemented on Kangaroo Island have their success tied very closely with community involvement and support of the desired outcomes.

Paper 10 Pip Masters, Nick Markopoulos, Brenton Florance

*Kangaroo Island pest eradication program with a focus on feral goats*

Pip Masters, Nick Markopoulos and Brenton Florance
Kangaroo Island Natural Resources Management Board.

When it comes to feral animal control and eradication, islands have an advantage because immigration of many species is zero. To date Kangaroo Island has managed to remain protected from foxes and rabbits however feral deer, goats, pigs and cats are now residents. The KI Natural Resources Management Board is implementing biosecurity and management programs in association with the Invasive Animals Cooperative Research Centre, South Australian Government, and landholders.

Biosecurity measures are in place for species not currently here and eradication of goats and deer is underway . We are also working on ways of implementing effective long-term management strategies for cats and pigs. This presentation will discuss the feral animal control program but focus on goat eradication which is likely to be complete by 2012. If successful this will be the largest island which has successfully eradicated goats world wide.
Paper 11 Philip Pisanu, David Taylor, Robert Ellis

Fire ecology and planning on Kangaroo Island - challenges in rapidly changing biophysical and institutional environments

Department for Environment and Heritage South Australia, Conservation Programs Unit, Kangaroo Island.

Wildfire is a recurring feature of Kangaroo Island mallee ecosystems with ignition from lightning strikes on some part of the island during most fire seasons. Fires also result from accidental ignitions, often linked to farming activities, or deliberate applications to reduce the risk of bushfire fuel build-up or to achieve specific conservation management objectives. Mallee woodlands are clearly adapted to fire but many ecological questions remain unresolved. Recent large-scale events like the December 2007 wildfires, which burnt over 90,000 ha mostly on reserves, have inspired new planning approaches. Strengthened partnerships between agencies and the community are emerging and a landscape-scale, cross-tenure planning paradigm is becoming more widely accepted. However, the main focus is on bushfire risk management as opposed to conservation, and the response to the 2008 fires in Victoria has seen increased pressure on land managers to burn more bushland area on the island. NRM investment on KI over the last 5 years has seen the development of comprehensive fire ecology projects such as the Eastern Plains Fire Trial. This work will provide an opportunity to better integrate science, planning and fire management operations. Underpinning the challenges posed by community pressure and institutional responses are relatively dire predictions of climate change. Kangaroo Island is within the southern Australian zone of mid-range predictions of average 3°C warming compared to the 1990 baseline, more frequent severe drought and greater variation in the seasonality of rainfall. This indicates a future with longer fire danger seasons, more frequent high intensity wildfire events, and narrower windows for prescribed burning. The risks climate change poses for KI biodiversity remain poorly understood.

Paper 12 Martine Kincloch

Kangaroo Island’s ocean catchment - holding back the tide

Kangaroo Island Natural Resources Management Board.

Islands are defined as pieces of land surrounded by water (Concise Oxford Dict.). This presentation discusses the management challenges that the surrounding water – or ‘ocean catchment’ - presents to Kangaroo Island (KI).

Beach rubbish surveys demonstrate that KI is a significant collection point for marine debris originating from fishing fleets that operate in waters around the Island and trading vessels passing through shipping lanes to the north and south. Entanglement rates for New Zealand Fur Seals and the rare Australian Sea Lion on KI are the third and fourth highest in the world, respectively, for any seal species, and on the rise.

Frequent and varied sea traffic connects Kangaroo Island to ports in Adelaide and elsewhere that are known to be infected with species of marine pests. These voyages
provide ideal ocean pathways for translocating exotic marine species to KI that would otherwise not reach our shores because of natural geographic or oceanographic barriers. Kangaroo Island has significant Little Penguin breeding colonies at Kingscote and Penneshaw. These birds find refuge along our coast for nesting but make frequent foraging trips northwards into Gulf St Vincent and eastward into Encounter Bay, entering adjacent NRM regions and presenting a need to manage impacts to our biodiversity emanating from beyond our borders.

In this presentation I will discuss how the KI NRM Board’s Coast and Marine Program responds to these external threats through an interaction between science, community engagement and on-ground works. This pathway for long-term conservation of our island ecosystem runs as a common thread though all the Board’s programs.

**Paper 13 Peggy Rismiller**

*Long term research and Island populations*

Some people refer to Kangaroo Island as “a biological window into the past”. Due to low numbers of feral plants and animals, many native species and ecosystems are much as they were over 200 years ago, before European settlement. These conditions provide optimum opportunities for researchers to carry out long term studies on both plants and animals, documenting life histories and natural changes.

This paper presents four case history studies from research on Kangaroo Island. Work with Rosenberg’s goanna (*Varanus rosenbergii*) began in 1966, the little blue penguin (*Eudyptula minor*) in 1980, island plant ecology in 1984 and the short-beaked echidna (*Tachyglossus aculeatus*) in 1988. All of these studies continue today.

**Paper 14 T. Duka**

*Kangaroo Island Tourism Optimisation Management Model – making better decisions*

TOMM Project Manager, Kangaroo Island Council, Kingscote, South Australia, Australia.

Like many islands Kangaroo Island has been branded as a tourist destination based on its natural assets. The local community see prosperity in tourism, but know that what they have is a unique resource that must be managed carefully if it is not to be destroyed. While there are just over 4,200 people living on the Island, visitation is over 185,000 people annually - nearly 40 times the resident population.

In the early 1990’s the Island was an emerging destination. Concern for visitor impacts both on the environment and community, coupled with an economic downturn brought together community, industry and government agencies to develop a tool that worked to improve the management of tourism on Kangaroo Island.

Developed on and for Kangaroo Island as a model for sustainable tourism management, the Tourism Optimisation Management Model (TOMM) is an exciting example of destination management in action. Now internationally renowned (with the concept taught
in many tourism degrees across the world) TOMM showcases the opportunities and benefits of collaboration in long-term tourism management.

TOMM is not only a well-known case study highlighting community-driven tourism management in action and the challenges this process poses for local communities worldwide, but is also a model that can be applied and tailored to manage tourism in any destination. TOMM has worked particularly well in this Island destination and has great relevance for other islands across the world.

The vision of TOMM is to achieve best practice in the sustainable management of Kangaroo Island as a tourism destination for the benefit of both residents and visitors. TOMM in its simplest form works on attitudinal and cultural change within the tourism industry and its stakeholder base, as well as generating tangible evidence that the viability of the industry is dependent upon the quality of the visitor experience it generates, and the condition of the natural, cultural and social resources upon which it relies.

TOMM has been in place for over ten years, and has evolved greatly in this time. The key success is the partnership and commitment between the tourism industry, government agencies and the community.
Session 4 Management Challenges

Paper 15 Andrew Congram

*Management of significant ecosystems and threatened species in conservation reserves on Curtis Island by controlling pest animals*

Central Queensland Region, Marine Parks, Queensland Parks and Wildlife Service, Department of Environment and Resource Management, Gladstone, Qld, Australia.

Curtis Island is a 54 000 ha island on the Queensland coast, extending from Gladstone in the south to the mouth of the Fitzroy River in the north. It is a continental island separated from the mainland by a tidal estuary and has a range of landforms including dunes, lowlands, hills and mountain country contiguous with the coastline. The island has a range of tenures.

Curtis Island supports a breeding population of the threatened flatback turtle (*Natator depressus*). The turtles nest annually. Foxes and pigs significantly threaten nesting success and population growth by disturbing the nests and feeding on the eggs.

The 4000 ha marine plain in the north of the island is the southern-most occurrence of a tropical marine plain community that provides a major habitat for the endangered yellow chat (*Ephthianura crocea*) and migratory wader birds listed under JAMBA and CAMBA. The main threat to the marine plain and the species that rely on it is the disturbance caused by large numbers of feral pigs.

This paper describes an ambitious project whose aim is to restore the habitat of significant species, and hence help to secure their populations, through the implementation of a long-term integrated pest animal control program. The project is characterised by detailed planning, dedicated implementation and innovative, cooperative approaches to pest management. To date Queensland Parks and Wildlife Service has achieved a number of milestones on the island including:
- goat eradication
- implementation of a large scale pig control program resulting in significant ecosystem recovery.
- trials of a variety of fox control techniques to reduce the impacts on nesting turtles.

The keys to implementing a successful, large scale project are highlighted.

Paper 16 John Olds and Andrew McDougall

*‘Island Hitchhikers’ in the Capricornia Cays: Biosecurity, baseline assessment of vegetation communities and invasive species*

Great Barrier Reef islands are precious recreational playgrounds for people and key habitat for many threatened species. These islands are valuable ecotourism destinations and often global strongholds for seabirds, turtles and other wildlife, yet their fragile ecosystems are threatened by invasive weed and pest species. The catastrophic effects of relatively innocuous scale insects or invasive ants on coral cays send a clear message of how island ecosystems, robust enough to withstand tropical cyclones, are frequently unable to cope with introduced species.

Intrinsic to island visitation is the potential risk of inadvertent transfer of invasive species. Examples include cane toads, mice, rats, invasive ants and weeds such as devil’s ivy and Mossman River grass. These pests compete with and often eventually displace native species, thereby threatening island biodiversity and significant natural values. The role of the tourism and support industries in preserving and promoting both island biodiversity and biosecurity is also significant.

This presentation reports on baseline studies in the Capricornia Cays and the exemplary approach taken to understanding coral cay vegetation community structures and invasive species. The development of a strategic approach to biosecurity must be well informed and therefore relies heavily on such work. Current avenues for addressing island biosecurity in the Great Barrier Reef World Heritage Area are also discussed.

**Paper 17 Dan Schaper**

*Protecting high conservation value Islands in Far North Queensland from Weeds of National Significance*

North Queensland Region, Marine Parks, Queensland Parks and Wildlife Service, Department of Environment and Resource Management, Cairns, Qld, Australia.

Lantana is one of 20 weeds listed as a Weed of National Significance (WONS) under the National Weed Strategy. A Lantana camara Strategic Plan has been developed which identifies a northern containment line at Princess Charlotte Bay in Far North Queensland. Forbes Island National Park lies approximately 100 nautical miles north of this containment line making it a high priority for control actions. Flora surveys conducted in the 1980’s did not identify Lantana as being present on Forbes Island.

This indicates an expanding infestation which is of great concern as currently all other Far Northern Islands have no Lantana present. Islands in the Far North have significant conservation values supporting large numbers of seabirds nesting on the Great Barrier Reef (including threatened species) and internationally significant turtle rookeries (Raine Island – green turtles and Millman Island – hawksbills).

Lantana forms dense thickets that smother and kill native vegetation and can be impenetrable to large animals. It can also produce high intensity fires and greater flame heights increasing the chance of canopy scorch or crown fire. The threat of climate change has also predicted an increase in abundance of woody weeds making it important we contain and eradicate infestations in priority areas. This control project was assessed
through the statewide pest system and identified as a priority project resulting in additional funding and resourcing.

The long term goal of this project is eradication, eliminating the threat to other high conservation value islands in the Far North. Projects on Far Northern Islands bring many challenges, particularly with regard to logistics and resourcing. As time on-ground is restricted it is essential that the most efficient methods are utilised and priority areas are targeted in a systematic approach.

Since implementation of this control project in November 2005 the density of over half the fifty hectare infestation and distribution has been reduced during bi-annual work programs. Future work to further improve efficiencies will look into biological control (which may be limited due to harsh environment) and increased control efforts involving Traditional Owners.

**Paper 18 Rhonda Melzer**

*Is killing goats and burning bush the answer? – Achieving conservation outcomes on St Bees Island*


St Bees Island is part of the South Cumberland Islands National Park aggregation. The aggregation is ranked within QPWS Park Categories as having very significant nature conservation values, and high cultural and presentation values. St Bees is recognised internationally as a valuable natural ‘laboratory’ providing answers to research questions and in turn guidance for the management of ‘island’ populations and ecosystems elsewhere.

A history of intensive land use, grazing by feral goats, and long absence of fire, appears to have resulted in significant vegetation change on the Island in terms of community structure, composition and distribution. A lack of recruitment of the dominant species in the woodlands – Eucalyptus tereticornis, is likely to be due to preferential grazing by goats and introduced wallabies, and the absence of fire. A decline in this eucalypt species is of consequence to the long-term survival of the koala population which, although introduced to the island, is the subject of a long-term research project. Goat browsing, on the other hand, keeps lantana suppressed over much of the island. So – what do we want to achieve on St Bees Island National Park? How are we going about it? Is killing goats and burning bush the answer?

This paper describes a project that commenced in 2007. The project has clearly defined conservation objectives and performance indicators, and involves inter-related pest control and fire management strategies to achieve its goals. The project and results from one of these strategies – goat culling – are discussed together with the implications for island pest and conservation management elsewhere.
Session 5 Integrated Solutions

Paper 19 John Olds

Scale insect and invasive ant management in the Capricornia Cays, including impacted pisonia forest restoration


Almost 94% of the pisonia forest (Pisonia grandis) in Australia occurs on the islands of the Great Barrier Reef and the vast majority grows on the Capricornia Cays National Park near Gladstone.

The Capricornia Cays are internationally recognised breeding sites for several threatened species including turtles and seabirds. P. grandis is the predominant vegetation on the cays and provides an important link in maintaining their biological and physical stability.

Since 1993, outbreaks of the scale insect Pulvinaria urbicola have been significantly impacting pisonia forests on Australian and other islands throughout the plant’s global range. Although outbreaks may be due to natural fluctuations in scale numbers and their natural enemies, in most cases introduced ants exacerbated all outbreaks.

From 1993 to 2000, over 90% of the pisonia forest at Tryon Island, Capricornia Cays National Park was destroyed by such an outbreak. It wasn’t until 2006 that another area of the national park was affected, with an outbreak occurring at Wilson Island. There was no permanent impact to the island’s pisonia forest from the 2006 outbreak, as control strategies developed from lessons learnt at Tryon and other islands were employed.

This presentation explores the latest information surrounding outbreaks, control strategies and restoration of Tryon Island’s pisonia forest.

Paper 20 Peter Collins

Warraber Island Waste Management Demonstration Project

Manager, Partnerships, Environment and Natural Resource Regulation, Department of Environment and Resource Management

Warraber Island is a small coral cay in the Torres Strait, north east of Thursday Island. It has a small population of approximately 300 and, like many low lying coral cay islands, waste management presents a challenge to maintaining its pristine environment. In low lying islands wastes often migrate into water tables or are washed into the ocean by king tides.

In an attempt to provide a possible solution as to how waste could be managed on a small, remote, indigenous island, the Department of Environment and Resource Management
with support from the Commonwealth Department of Environment, Water, Heritage and the Arts, the Torres Strait Regional Authority, the National Packaging Covenant and the Packaging Stewardship Forum have joined forces and provided approximately $600,000 to establish a waste demonstration project.

The project, commissioned in August 2009, involves the separation of green and food organics at each residence prior to being processed in two in-vessel composters. These have been provided by Biobin of South Australia. Paper and cardboard are also collected and composted. The waste for composting equates to 63%. The collection of used packaging amounts to another 11% resulting in only 26% of all wastes having to be disposed to landfill. The used packaging will be sorted, bailed and transported to Cairns.

Following a few months operation a “how to” guide will be developed to provide other island communities with an opportunity to replicate the infrastructure, practices and systems that have been employed at Warraber Island.

The presentation will cover an outline of the project, including the social changes that have been asked of the community.

Paper 21 Martin Russell, Ashley Frisch, Jeanette Kirby

GBRMPA - Management of recreational fishing knowledge through supporting community monitoring programs

Great Barrier Reef Marine Park Authority, Townsville, Australia.

The GBRMPA has statutory responsibility for the conservation and wise use of the Great Barrier Reef (Great Barrier Reef Act 1975). To do this, the GBRMPA requires a thorough understanding of recreational fishing, including estimates of catch and effort.

Significant changes to the management of the Great Barrier Reef ecosystem occurred in 2004. These changes included rezoning of the Great Barrier Reef Marine Park; rezoning of the State Coastal Marine Park; and the introduction of the Coral Reef Finfish Management Plan. These changes directly affected commercial and recreational fisheries throughout the Great Barrier Reef, and highlighted the need to improve community involvement and knowledge in management of the Great Barrier Reef ecosystem.

CapReef, a community based monitoring program was established in 2005 after rezoning of the Great Barrier Reef Marine Park. MackReef was established in 2008. CapReef and MackReef are attempting to provide a better understanding of recreational fishing and associated impacts on fish stocks in the central and southern parts of the Great Barrier Reef Marine Park. Core activities of these groups include collection of social, economic and fisheries data through boat-ramp surveys, and maintenance of a data repository (e.g. online database).

CapReef and MackReef have steering committees which include researchers, managers and stakeholders. CapReef is supported by Sunfish, the Queensland Department of
Primary Industries and Fisheries, the Great Barrier Reef Marine Park Authority, the Department of Environment and Resource Management, the Department of Agriculture, Fisheries and Forestry, the Fitzroy Basin Association, James Cook University, and numerous recreational fishing clubs. MackReef is supported by the Great Barrier Reef Marine Park Authority and Reef Catchments.

Outputs to date include boat ramp surveys to document size and number of fish, the number of fishers and boats, the time spent fishing, the location of fishing activities, and the type of gear used; an assessment of the social and economic importance of recreational fishing to the region; fish tagging study to determine growth and movement of targeted fish species; collection of fish otoliths and gonads (recreational fishers to supply fish frames to researchers) to determine age and sex structure of target fish stocks, and changes over time as a result of fishing impacts; and analysis of fishing club catch and effort data to determine historic changes in catch rates or fishing effort.

Paper 22 Colin Lawton

Balancing human risk with sustainable wildlife conservation; managing Fraser Island dingoes

Great Sandy Region, Queensland Parks and Wildlife Service, Department of Environment and Resource Management, Queensland, Australia.

Managing populations of any wild species is both an art and a science in that it often relies upon the application of incomplete knowledge to achieve objectives while at the same time acquiring further systematic knowledge. Wildlife managers must recognise that the knowledge at hand has shortcomings and seek to improve it.

At about 165,000ha Fraser Island is the largest sand island in the world. In December 1992 Fraser Island was inscribed on the World Heritage list. Australia, through the Commonwealth Government has an international obligation under World Heritage Convention to ensure the protection, conservation, presentation and transmission to future generations of the natural and cultural heritage of Australia’s World Heritage properties.

Most of Fraser Island is also part of the Great Sandy National Park and also the Fraser Island Recreation Area. Authority for management derives from the Nature Conservation Act 1992 and the Recreation Areas Management Act 1988. The Commonwealth Environment Protection and Biodiversity Act 1999 also has implications for management of the World Heritage Area, including any wildlife within it. The dingo Canis lupis dingo is the Australian wild dog and a protected native species within the National Park estate. Queensland Parks and Wildlife Service (QPWS) has a legal responsibility to conserve the dingo on Park, even though it is a declared pest in the State.

Wildlife authorities recognise that because the Fraser Island dingoes have not crossbred with domestic or feral dogs to the same extent as most mainland populations, in time they may become the purest strain of dingo on the eastern Australian seaboard and perhaps Australia wide (Woodall et al 1996). The dingo was recently placed on the World Conservation Union’s Red List (IUCN 2004) as a species vulnerable to extinction due to
the threat of hybridisation with domestic dogs, therefore their conservation on Fraser Island is of National significance.

The number of visitors to Fraser Island has increased markedly over the last 15 – 20 years from fewer than 100,000 in 1980 to 395,000 in 2004 and visitation is year round. This has contributed to an environment where dingoes have changed their normal habits. While most island visitors recognise the dingo as a wild animal, the potential for inappropriate interaction between dingoes and people is a major concern to QPWS.

Dingoes have also become an important tourism attraction and marketing drawcard for local, national and international visitors to Fraser Island. However, at times the high number of visitors interacting with the Island’s dingoes has created problems. In high visitor-use areas dingoes can lose their shyness and fear of people and in these circumstances some have developed aggressive tendencies and/or destructive behaviour. Local economies are almost entirely dependent on the tourism dollars generated by visitors to Fraser Island so a large amount of public interest, media coverage and self proclaimed expertise is evident.

This paper outlines the approach taken by QPWS to manage dingoes on Fraser Island in an increasingly complex environment with a species that elicits strong emotional responses across a very broad spectrum of opinion from ‘the only good dingo is a dead dingo’ to ‘feed them and treat them as companion animals and they won’t cause any problems’. QPWS has adopted a three Es approach of Education, Enforcement and Engineering in an attempt to resolve ongoing management issues associated with dingo/human interaction and attain the major goals of reducing the risk posed to the public by dingoes to an acceptable low level and to ensure the conservation of a sustainable wild dingo population on Fraser Island.
Session 6 Island Koalas

Paper 23 Alistair Melzer et al.

Predicting resilience to climate change impacts on island habitat of the koala
(Phascolarctos cinereus)

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Koala populations and potential habitat have been reduced and fragmented under historical and contemporary, non-indigenous development of Australia’s landscapes. Isolated populations or fragments of potential habitat are vulnerable to gradual or dramatic ecological change. The predicted anthropogenic climate change effects on the Australian environment are expected to significantly impact on the survival of both koala population and habitat isolates.

Understanding the nature and direction of likely change in the plant communities provides (1) a basis for prioritising resource allocation, (2) insight into the likely consequences of traditional management tools, and (3) impetus for the development of new management strategies. Long term studies of koala populations in central Queensland (1989 onwards) and on St Bees Island, near Mackay, Qld (1998 onwards) provide insight into the mechanisms of change in koala populations and habitats.

More extreme wet/dry seasons as well as the increased frequency and duration of severe weather events – especially fire and drought are altering eucalypt community structure and composition in central Queensland. In this paper we apply these insights to koala populations and associated habitat on Queensland’s St Bees, Brampton, Rabbit and Newry islands. We assess the likely resilience of these populations in the face of predicted climate change and, in the light of this, consider the risk that traditional landscape management may exacerbate climate change impacts.

The implications for island archipelagos, generally, and mainland “ecological islands” are discussed and a revision of the landscape scale monitoring of koala habitat is proposed.

Paper 24 Bill Ellis et al.

The ghost ships Phascolarctos

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Effective conservation of isolated groups of animals relies on knowledge of their retained phenotypic and genetic information, because a) these elements may contribute to the value of fragments to the global population and b) such data can be used to identify separate management units for conservation. This is particularly true for island populations of koalas. Severely bottlenecked populations can retain little genetic diversity or harbour deleterious genotypes, so the value of these groups to the conservation of a species can be compromised.

When the founders of island populations no longer exist or are unknown, the conservation significance of the island inhabitants is confounded, because the proportion of retained information is unknown. However, where mainland founders are under threat of extinction, the value of the island populations as refuges can be significant. We studied several island populations of koalas for which the founder populations are uncertain, comparing the ecology and genetic diversity of introduced (St Bees Island, Brampton Island and Newry Island) and naturally occurring (North Stradbroke Island) populations of koalas in Queensland. St Bees Island is reported as the source of other island populations in the Mackay area, but we found conflicting evidence.

The largest local island population of introduced koalas occurs at St Bees Island, which also retains high genetic diversity and low levels of disease. While these traits suggest that St Bees Island should be central to conservation efforts for koalas in this region, our unfolding knowledge of the other island populations is leading us to question this approach.

**Paper 25 Frank Carrick et al.**

*Minjerribah Koalas: a unique population*

Frank Carrick, Romane Cristescu, William Ellis, Catherine Herbert, Des Cooper and Paul Smith

Koala Study Program, The University of Queensland.

The Koala is an iconic, flagship species; it is a specialist folivore of relatively large size. Minjerribah (North Stradbroke Island) supports the only known naturally occurring island Koala population. In some areas of Southeast Queensland, habitat clearance has been implicated in a decline of 51% of the Koala population between 2005 and 2008.

Urbanisation is the principal threatening process, but other sources of habitat loss can also be important. In contrast to the permanency of urbanisation, mining related disturbances are temporary and the rehabilitation of the landscape required for mine closure makes the land again available to wildlife. Assessing the quality of rehabilitated areas and how plant and species recolonise and use rehabilitated areas has been undertaken.

Ongoing monitoring on Minjerribah indicates that Koalas indeed recolonise the rehabilitated areas and do so as soon as 7 years after rehabilitation. In rehabilitated and
natural habitat, the quantity and quality of food and roost trees available to koalas, diet
selected and the time spent in each habitat has been assessed. Molecular genetics
studies of this population (that has probably been isolated since the last sea level rise
~8,000 years BP) are informative in assessing the dynamics of artificially established
island populations in Southern Australia and Queensland.

Paper 26 Romane Cristescu et al.

*Koala populations on Southern Australian islands*

Romane Cristescu, Valma Cahil, William B. Sherwin, Kathrine Handasyde, Kris Carlyon, Desley Whisson, Catherine A. Herbert, Britt Louise J. Carlsson, Alan N. Wilton, Des W. Cooper and Frank N. Carrick

School of Biological, Earth and Environmental Sciences, The University of New South Wales.

An introduction of Koalas to French Island occurred in the late 19th Century and various
primary and secondary introductions to other Western Port islands subsequently took
place. A derivative population was established on Kangaroo Island, South Australia from
French Island animals in the mid-1920s as an “insurance population” in anticipation of the
perceived likely extinction of mainland Koala populations. In terms of population size,
these conservation programs were successful.

However, the genetic story is rather different: an investigation of French and Kangaroo
Island Koalas was conducted using 15 microsatellite markers. The results confirmed the
presence of very low genetic diversity, with French Island Koalas being found to have 3.8
alleles per locus and Kangaroo Island Koalas 2.4. A 19% prevalence of testicular
abnormality in Kangaroo Island animals was found. Internal relatedness was not
significantly different in Koalas with testicular abnormalities from asymptomatic males,
suggesting the condition is not related to recent inbreeding.

Given the low diversity and possible high prevalence of deleterious alleles, the genetic
viability of the population remains uncertain, despite its exponential growth so far. These
Southern Australian island populations do not appear to exhibit resource limitation on
population growth, in stark contrast to the natural and introduced populations on
Queensland islands. This stands as a warning as to the efficacy of translocations of
Koalas for conservation reasons.
Session 7 Conservation Planning

Paper 27 John Olds and John Hicks

Island Management Priorities: Conservation Values, Threats and Risk Management

John Olds 1 and John Hicks 2
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Island ecosystems face threats through changes in climate (temperature, rainfall quantity and destructive cyclones), sea level rise (including removal and creation of islands), disruption of marine food sources and invasive species. It is vital that island natural resource management and monitoring activities are well-prioritised and well-coordinated.

There are two systems currently available for island management priority setting in the Great Barrier Reef World Heritage Area – Park Categories and an Island Risk Assessment System (IRAS). The Queensland Parks and Wildlife’s Park Categories are a comparative rating of park values, threats and management opportunities for all parks and forests, including islands. Park Categories are set at the park aggregation level under the themes of nature conservation, cultural heritage and presentation. The Island Risk Assessment System developed by the Field Management Program for the GBRWHA outlines pest related risks based on island values at the individual island level. Park Categories supersede it but draws valuable information from IRAS.

This presentation examines island aggregation values versus threats and their respective categories in the GBRWHA. It builds on this information by developing a risk management framework for prioritising aggregations for island management actions.

Paper 28 Silva Larson and Debora De Freitas

Does your “sense of place” determine how you value the environment? Implications for conservation planning in the Whitsunday region

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The conservation and sustainable management of biodiversity resources and vulnerable ecosystems requires a comprehensive understanding of the linkages between environmental and social aspects. However, most planning and conservation strategies are based on quantification of management goals and development of spatially explicit targets of species. Integrating people’s values and perceptions in planning is an essential,
but a complex task, for the successful implementation of conservation decisions on the ground. Investigation of wellbeing and livelihoods factors might help in explaining what people value the most and what makes them satisfied or dissatisfied about the place they live. A better understanding of people’s intrinsic values, shared beliefs and their sense of place (e.g. proximity to environmental features) can support a better understanding of an individual’s perceptions towards environmental and biodiversity issues.

Consequently, it may be reflected in people’s commitment, involvement and implementation of conservation efforts. This paper is based on findings of the survey of 194 residents of Whitsunday region, a region that contains a diverse range of natural resources, conservation values and management pressures which we hypothesised might be reflected on people’s attachment to place. We therefore explored a role several “sense of place” factors play as determinants of levels of importance of ecological factors to the respondents. “Sense of place” questions included country of birth, perceived respect by the community, and involvement in the community activities, feeling as a “local”, place of residence within region and years lived in the area.

The analysis of the data found that although place of residence within the region, involvement in community activities and the length of time person lived in the region did indeed appear as important determinants of the importance assigned to some of the nine ecological factors investigated, no clear “typology” of the respondents that we could readily harness emerged. Furthermore, weights assigned to overall importance of “natural environment” to the respondents were not influenced by any of the “sense of place” parameters tested. This finding is discussed in the light of a current debate in the literature about the role sense of place plays in determining environmental values held by people. Further it is proposed that the insights gained by this study could benefit decision making and regional planning and future conservation policy in the Whitsunday coast and surrounding islands system.

Paper 29 Chris Mitchell and Ross Patterson

Evaluating the integrity of Moreton Island National Park: Making sense of what we know

Chris Mitchell 1 and Ross Patterson 2

Moreton Island is one of three islands forming the eastern boundary of Moreton Bay, a large biologically diverse bay adjacent to Brisbane, Queensland. As such the maintenance of the ecological integrity of the island is required not just for its own intrinsic values, but for the ongoing ecological functioning of Moreton Bay. This is challenged by threats posed by being in close proximity to the largest population centre in Queensland. A Management Plan was released in April 2007 to assist protected area managers to safeguard the integrity of the island.
The Management Plan provides a strong mandate for reporting about the extent to which management actions are achieving the vision of conserving the natural and cultural heritage values while allowing continuing nature-based recreational activities.

The challenge for evaluating and reporting on management is the gathering and analysis of information in a timely and cost effective manner. Outcome based reporting requires the development of intensive monitoring programs that are expensive and time consuming with results often not available for managers for a considerable time.

This paper outlines the results of an approach being used to evaluate and report on management effectiveness using all elements of management (context, planning, inputs, processes, outputs and outcomes) across dimensions of management (natural, cultural, socioeconomic and management capacity). We examine the combination of scientific monitoring, expert opinion and ‘local’ knowledge in regards to formulating evaluation and reporting. We discuss some aspects of applying the methodology across broader areas of marine and terrestrial protected areas.

**Paper 30 Simon Bryars**

*Protecting the unique marine biodiversity of South Australia’s offshore islands*

Department for Environment and Heritage.

South Australia has around 150 offshore islands that span an enormous range of sizes, marine bioregions and distances offshore. Many of these islands have also been exposed to far lower levels of human impact than on the mainland. Consequently there is much variability in the marine biodiversity amongst islands and many of the islands are unique in comparison to the mainland. For example, some islands have increased diversity and abundance of reef fishes and invertebrates, and many of the islands have genetically distinct sub-populations of the endangered Australian sea lion.

Some islands are also home to breeding pairs of the rare white-bellied sea eagle and osprey. Thus South Australia’s offshore islands provide great potential for “ark-like” protection of marine biodiversity. While the unique terrestrial biodiversity of many of the islands is already included within conservation parks, there is little protection for the adjacent marine biodiversity. Fortunately, the marine environment around many of these islands will soon have a series of no-take sanctuary zones assigned to them as part of South Australia’s newly-proclaimed network of 19 marine parks.

However, due to the wide range of marine biota and their varied life histories, the future positioning of sanctuary zones at these islands will be unable to provide full protection for all biota. Thus difficult decisions will need to be made as to what and how different organisms are considered in the zoning process. In this presentation I will outline some of the key species that might be considered in the zoning process, and discuss the difficulties in providing protection for them all. I will also discuss linkages between the islands (and the mainland) and the implications for ongoing management and protection of the unique marine biodiversity of South Australia’s offshore islands.
Great Barrier Reef Marine Park Authority, Townsville, Australia.

Island eco-systems are an essential but fragile part of the entire eco-system of the Great Barrier Reef World Heritage Area and the flora, fauna and people who depend on it. A vulnerability assessment of the flora and fauna of approximately 900 islands of the Great Barrier Reef to climate change was undertaken as part of a broader assessment of the Great Barrier Reef ecosystem. It showed risks to all types of islands including: vegetated and bare coral cays, coral rubble cays with mangroves, large sand islands, rocky islands and large continental islands such as Hinchinbrook Island.

The risks to island flora, fauna and habitats arise mainly from changing rainfall patterns, increased storm intensity, altered atmospheric carbon dioxide levels, elevated sea levels, increased air temperatures and alterations to the interaction with the marine components of the eco-system. The most likely changes to ecosystems include reduced foreshore, freshwater, montane, rainforest and grasslands eco-systems, altered species composition and distributions, altered nutrition levels in flora, reduced biodiversity, increased weed and pest impacts, altered fire risks, and enhanced risk of disease.

Dependent fauna including terrestrial species, nesting and roosting seabird and nesting turtles would be adversely affected. Some species will benefit. The vulnerability assessment of island flora and fauna led to changes in island management priorities for the field management of the World Heritage Area, and the incorporation of actions into a field management climate response action plan. Key components include identifying island values and resilience in the face of climate change. Decisions will need to be made about which islands and what values on those islands should be protected, and which can be let go. These decisions must be based on clear but realistic assessments.

Paper 32 Derek Ball

Shifting baselines – Are we really aiming at the right conservation targets

Reef Catchments, Mackay, Queensland, Australia.

The concept of shifting ecological baselines is not a new one, nor is interventional action designed to restore ecological systems to previous states. Indeed, significant investments have been made in an effort to reverse some changes that have resulted from anthropological disturbance. These interventions notably include vegetation restoration, reconstruction of fish migration routes, and reconnection of fragmented landscapes. Implicit in these investments is that targeted landscapes have suffered undesirable change from a previous state.
Conversely, most long-standing protected areas in Queensland including most of the Great Barrier Reef islands are generally taken to be in a more or less ‘natural’ condition. Pests are present in most areas and these will cause various magnitudes of ecological impact, as will visitors and associated placement of infrastructure. However from the broader perspective this accepted ‘naturalness’ refers to the distribution and geographical extent of ecological communities, and component native species.

There is evidence to suggest that this assumption of current ‘naturalness’ is at least partly erroneous. In 1881 Captain and crew of the HMS Alert surveyed Port Molle. In doing so they described South Molle Island as being “covered in long grass with only a solitary tree here and there”. That island today, whilst still supporting grassland, is also heavily forested in places including large areas of microphyll vine forest.

There is evidence also, of a shift in other key assemblages within the Great Barrier Reef province that would suggest that the current state is actually a more recent manifestation. These assemblages include inshore fringing reefs, seabirds and some fish.

This presentation does not advocate for any particular course of management intervention. It does suggest that it is appropriate to consider, insofar as is possible, the range of ecological states that may be achieved, including previous ones, before engaging upon a course of management.

**Paper 33 Jason van Weenen**

*Conservation on South Australia’s Islands*

Department for Environment and Heritage, Adelaide, South Australia.

South Australia has more than 150 offshore islands distributed along its coastline. Many of these islands have proven themselves as “Arks” for conservation; supporting a diversity of species in relatively small areas for thousands of years. Unfortunately, significant population losses from these sites have also occurred since European settlement, highlighting a level of vulnerability of some island inhabitants that is comparable to that of mainland populations.

Historic and recent conservation programs alike have looked to offshore islands for providing relatively low cost safe-havens for species under threat on the mainland. However, the limited number of suitable offshore islands and a diversification in threat management strategies has resulted in the creation of a diversity of mainland “islands”. Although often requiring more intensive management, these mainland safe-havens are providing valuable opportunities for species conservation.

South Australian conservation programs on offshore and mainland safe-havens have progressed with varying degrees of success. All have included some degree of risk and more recently there is becoming greater awareness of the costs of failure and success, both financially and to other biodiversity values.
Session 9 Fauna

Paper 34 Sarah Bell

_Ecophysiology of the marsupial squirrel glider; the costs and benefits of island life_

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The squirrel glider, _Petaurus norfolcensis_, is a small-sized nocturnal, arboreal, marsupial. As a result of habitat clearing and fragmentation there has been a dramatic decline in the distribution of the squirrel glider throughout mainland Australia. Surveys were conducted on seven islands in south-east Queensland and a five of them were found to contain abundant populations of squirrel gliders. Islands containing squirrel glider populations included South Stradbroke Island, Woogoompah Island, Moreton Island, North Stradbroke Island and Fraser Island. As a consequence of their isolation, islands offer excellent short-term and relatively inexpensive protection from threatening processes such as introduced predators and competitors.

This has resulted in many islands becoming important refuges for the continent’s unique mammal fauna. However, there are also negative consequences of this isolation, which include reduced genetic diversity, increased levels of inbreeding and the numerous adaptations displayed in response to the changes in regulatory pressures termed the “island syndrome”. A mark and recapture study was carried out on five island sites containing populations of squirrel gliders and three mainland sites. Density, body size, social tolerance and reproductive biology were compared between island and mainland populations of the squirrel glider.

To determine whether these changes are having a negative impact on glider populations body condition, stress hormone levels and genetic diversity were also investigated. If islands are to be relied upon for conserving the biodiversity of wildlife in Australia, it is important to understand how populations of particular species have adapted to living on islands and whether these populations are viable for the long term. This study will provide the first information on changes found in the biology, ecology and physiology of island populations of a petaurid species.

Paper 35 Malcolm Turner

_Bye-bye birdies - are seabirds failing to breed on the Great Barrier Reef?_

Great Barrier Reef Marine Park Authority, Townsville, Australia.
2 Queensland Parks and Wildlife Service, Rockhampton, Australia.

Seabirds of the Great Barrier Reef appear to be in decline. Analysis of data at several sites shows declines in total numbers, breeding effort and success. Seabirds have been observed and counted for over 200 years on islands of the Great Barrier Reef with detailed
surveys and data collection since the 1970s. Systematic collection of data uses a standardised technique developed by the Queensland Parks and Wildlife Service (QPWS). Selection of sites and species for data collection is guided by a Coastal Bird Monitoring Strategy.

Data is collated into a Coastal Bird Atlas within Queensland Department of Environment and Resource Management and includes over 50,000 records of birds in the Great Barrier Reef World Heritage Area. The most significant data is the breeding effort of seabirds and resident shorebirds and numbers of adult seabirds on the islands. Assessment of the data and atlas by QPWS and researchers has revealed years of poor breeding effort and success and decreases in adult seabird numbers, as summarised for the State of the Great Barrier Reef reporting.

A vulnerability assessment of the Great Barrier Reef ecosystem to climate change has reinforced the risk facing seabirds on the Great Barrier Reef. Under the Field Management Program the Coastal Bird Atlas has now been analysed to reveal reef-wide trends in distribution, adult population and breeding effort. This will now be compared to other environmental and human use data bases, particularly climate indicators, to find causal links and guide future management of the birds, the Islands and the marine parks of the Great Barrier Reef World Heritage Area.

**Paper 36 Barry Nolan**

*Proserpine rock-wallaby introduction to Hayman Island – an exemplary partnership in endangered species and ecosystem management*

Capricornia Region, Terrestrial Parks, Queensland Parks and Wildlife Service, Department Environment and Resource Management, Airlie Beach, Queensland, Australia.

Between 1999 and 2005, 29 captive bred Proserpine rock-wallabies (Petrogale persephone) were introduced onto Hayman Island. The Proserpine rock-wallaby is an endangered Australian macropod that is restricted to isolated populations of between 15–30 animals on the ranges surrounding Proserpine and Airlie Beach and on Gloucester Island. The main threats are habitat loss and fragmentation, introduced predators and their diseases, introduced toxic plants, road mortalities and inappropriate fire regimes.

Establishment of a secure population on an additional offshore island was identified as a strategy to reduce the risk to the species and to provide a possible population for reintroductions. Proserpine rock-wallabies were sourced from each of the isolated populations and a captive breeding program was established in 1991. The introduction site was Hayman Island, a 292 hectare leased island, which met all requirements and was within the species known range. Conditional approval was obtained from the lessees for the introduction program with conditions including assistance with the removal of feral goats and technical assistance to develop a fire management program.

Feral goats were successfully removed in 1998 and the introduction program commenced in 1999. In 2005 a partial survey of Hayman Island resulted in the trapping of 57 Proserpine rock-wallabies of which 29 were females with 25 having pouch young. Another
six animals were photographed with remote cameras in two of the areas too hazardous to trap.

The introduction program was judged to be successful seven years post release with breeding groups having established in the majority of available habitat. Additional monitoring is required to determine the fate of the colony in the long term. Hayman Island resort, which supported the introduction program from the beginning, has demonstrated an exemplary model for partnerships between private enterprise and Government in both endangered species conservation and ecosystem management.
Keynote Speakers

John Woinarski

*Journeying out of Terra Nullius - the need for joint management of our island*

Department of Natural Resources, Environment, the Arts and Sport.
At risk of solipsism, this is a personal account of an odyssey from scientist beguiled by the patterns of species distributions on islands to a conservation manager working in collaboration with Indigenous owners of islands in the Northern Territory. I use two case studies – (i) the (mostly uninhabited) Wessel and English Company island groups off north-eastern Arnhem Land, and (ii) the Tiwi Islands off Darwin.

In the 1980s, with a few colleagues and intensive fieldwork, we inventoried plants, ants, and terrestrial vertebrates in about 60 remote islands of the Wessel and English Company group. We duly identified many conservation values, published many scientific papers, and a very bulky report. The exercise was of fine academic value, but otherworldly - mostly inaccessible to the islands’ traditional landowners, and of limited practical conservation use. Our work was as alien to them as the long-dead English nobility whose names now encumber these islands.

Largely through needs to conserve two threatened mammals – the northern quoll and golden bandicoot – we have since forged deep and enduring collaborative management programs with the islands’ landowners. This work has spawned an Indigenous ranger program and a proposed Indigenous Protected Area covering all of the islands.

In the 1980s, with a few colleagues and intensive fieldwork, we inventoried biodiversity on the Tiwi Islands (Melville and Bathurst – Australia’s second and fifth largest islands). In demonstrating substantial biodiversity values, we found ourselves in a largely antagonistic relationship with an Aboriginal Land Council seeking intensive development as the route out of serious economic disadvantage. By most measures, the outcomes have been poor. Currently, we are engaged in a major program surveying biodiversity across the set of the most poorly-known Northern Territory islands. In contrast to the precursors above, this program has been highly collaborative from the outset. The academic products may be less good, but there is more chance of lasting conservation outcomes.

Graeme Wood

*Aspirations for Island Management*

Andrew Burbidge

*Australia’s islands: conservation values and management challenges*

Consultant Conservation Biologist and Honorary Research Associate, Department of Environment and Conservation, Wanneroo, WA, Australia.

An ark can be defined as a place of refuge. Many of Australia’s 8000+ islands are indeed important refuges for a range of plants and animals, including some threatened on the
mainland. Many provide breeding sites for marine species such as seabirds and turtles. Many harbour unique assemblages. But are these arks secure from threats? Are the arks sinking?

Analyses of species loss on islands point towards invasive species as the major driver of environmental change. Australia’s iconic oceanic islands have been invaded by numerous exotic animals and plants and the losses of indigenous species have been significant and are ongoing. Some continental islands have high levels of invasives or are at increasing risk of the same fate.

Advances in eradication of island invasives have been significant and some successes have resulted; however, there are no available technologies to eradicate many invasives without also irreversibly damaging local biodiversity. Prevention (quarantine) is much better than the cure. Even basic quarantine systems for Australian islands are, in almost all cases, absent. Inevitably, the consequence will be more invasions by non-indigenous species and more extinctions of indigenous species. Quarantine should be an automatic requirement for commercial users of islands, and education, including advice on simple methods of eliminating infection of boats and gear, should be provided to non-commercial users, such as boat owners.

Other management challenges include the increasing numbers of visitors leading to vegetation trampling and wildlife disturbance, and, in the longer term, planning for the impacts of climate change, including rising sea levels.

Ray Nias
Towards a National Strategy for Management of Australia’s Islands

Bob Pressey
Conservation Management Planning