Queensland

James Cook University

DP0877226 Miss TD Ainsworth

Approved Project Title **Coral Reefs Sensing Our Changing Climate**

2008 : $ 78,648
2009 : $ 78,648
2010 : $ 78,648

Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

APD Miss TD Ainsworth

Administering Organisation James Cook University

Project Summary

Australia's Great Barrier Reef is a valuable national and community resource, supporting commercial and recreation fishing and extensive national and international tourism along the length of Queenslands coastline. However it is an environment that is under threat from changing climate. The impact of a degraded reef environment is broad reaching, with effects on the Australian and Queensland economy and way of life. A better understanding of how this valuable environment will respond to its changing environment is imperative and will provide us with a more informed basis on which to predict its future sustainability.

DP0877905 Dr JE Cinner; Dr TR McClanahan

Approved Project Title **How can communities sustainably manage coral reefs?**

2008 : $ 78,648
2009 : $ 78,648
2010 : $ 78,648

Primary RFCD 3704 HUMAN GEOGRAPHY

APD Dr JE Cinner

Administering Organisation James Cook University

Project Summary

This project is relevant to the National Research Priority: An Environmentally Sustainable Australia. Key outcomes will include:

- a better understanding the most effective co-management arrangements for coral reefs;

- an evaluation of whether Australia's co-management models have the design principles associated with long-term success; and

- new insights into the socioeconomic environments under which co-management may be an effective management option.

These outcomes will promote the sustainable use of Australia's biodiversity by strengthening the capacity of co-management institutions. This project will also promote Australia's research capacity by providing research funds for one PhD student and one Honours student.

DP0877792 Prof CR Cocklin; Prof DC Gibbs

Approved Project Title **Regulation and Governance of Agricultural Biotechnology: GMOs in Australia and the United Kingdom**

2008 : $ 70,000
2009 : $ 50,000
2010 : $ 70,000

Primary RFCD 3704 HUMAN GEOGRAPHY

Administering Organisation James Cook University

Project Summary

Agricultural biotechnology has won Australian government support for its economic development potential but has associated ethical, consumer and environmental risks. The proposed research will contribute to the important task of successfully negotiating agricultural biotechnology futures through a comprehensive analysis of policy and regulatory structures, and stakeholder perceptions of impacts on environmental and economic sustainability. A comparison with the UK provides a valuable point of reference in evaluating policy and regulatory responses. Since the UK is a significant market for Australian produce, the outlook of UK consumers and the regulatory response of the government are highly relevant to Australian policy decisions.

DP0880544 A/Prof SR Connolly

Approved Project Title **Understanding coral reef biodiversity: a modelling approach**

2008 : $ 67,984
2009 : $ 67,984
2010 : $ 112,706
2011 : $ 147,869
2012 : $ 143,909

Primary RFCD 2707 ECOLOGY AND EVOLUTION

APF A/Prof SR Connolly

Administering Organisation James Cook University

Project Summary

Australia's coral reefs are international icons, providing enormous economic, ecological, and aesthetic benefits to Australians. Connolly is a key provider of scientific knowledge that underpins the management of these reefs. This fellowship will enhance that contribution, using novel mathematical and statistical modelling to substantially increase our understanding of the factors that generate and maintain coral reef biodiversity, and to enhance our ability to anticipate and manage reefs' responses to environmental change.

DP0880358 Prof Y He

Approved Project Title **Production of structured designer particles with high encapsulation capacities and efficiencies**

2008 : $ 120,000
2009 : $ 95,000
2010 : $ 90,000

Primary RFCD 2906 CHEMICAL ENGINEERING

Administering Organisation James Cook University

Project Summary

This project aims to develop a superior encapsulation technology that is capable of producing particles with precisely controlled physical and chemical properties. The technology has application in a wide range of industries requiring packaging active ingredients into particle form to achieve desirable end-use performances. It has an economic impact of multibillion dollars per annum. In particular, it will facilitate the release of new drugs to the market for the pharmaceutical industry, and increase the range and improve the availability of quality foods for the food industry. This will bring about a healthier life style to the Australian population.

DP0877398 Prof CN Johnson

Approved Project Title **New thinking on the relationship of dingo ecology to biodiversity conservation and sustainable cattle production**

2008 : $ 237,352
2009 : $ 174,229
2010 : $ 164,229

Primary RFCD 2707 ECOLOGY AND EVOLUTION

Administering Organisation James Cook University

Project Summary

This project will provide new understanding of the role of Australia's only native large mammal predator in sustaining biodiversity and ecological function. This will result in improved management of dingoes as a key part of Australian ecosystems. The project will also test the possibility that relaxation of current controls on dingoes could provide net benefits to beef cattle producers, and thereby improve the viability and sustainability of Australia's cattle-grazing industry.

DP0877182 A/Prof BG Lottermoser

Approved Project Title **Phosphate stabilisation of metalliferous mine wastes: The key to solving a major environmental issue?**

2008 : $ 75,000
2009 : $ 64,000
2010 : $ 59,000

Primary RFCD 2601 GEOLOGY

Administering Organisation James Cook University

Project Summary

Mine wastes represent the greatest proportion of solid waste produced by mankind. Unconstrained drainage from sulfide-rich mine wastes impacts on water, soil and sediment quality. This project will establish the scientific principles of phosphate stabilisation, which involves the addition of phosphate compounds to mine wastes and soils to permanently contain metals and acid. A solid understanding of this emerging technology is a prerequisite for any sustainable management of mine sites. The study will provide the foundation of future management tools needed by landholders, industry and regulators to remediate mined land and waste repositories.

DP0877742 Dr PL Munday

Approved Project Title **Global climate change and the future for coral reef fishes**

2008 : $ 58,653
2009 : $ 58,653
2010 : $ 92,224
2011 : $ 125,976
2012 : $ 125,976

Primary RFCD 2799 OTHER BIOLOGICAL SCIENCES

QEII Dr PL Munday

Administering Organisation James Cook University

Project Summary

Australia's coral reefs are icons of immense biological, economic and cultural importance. They are also threatened by climate change. This research will address the serious lack of knowledge about the impact of climate change on coral reef fishes and integrate with other research at the ARC Centre of Excellence for Coral Reef Studies to help find innovative solutions to the problem of climate change and promote the sustainable management of Australia's extensive coral reef ecosystems.

DP0880756 Prof JC Patterson; Prof SW Armfield; Dr C Lei; Dr W Lin; Dr MP Kirkpatrick

Approved Project Title **Transport by Natural Convection in Reservoir Sidearms**

2008 : $ 150,000
2009 : $ 150,000
2010 : $ 150,000

Primary RFCD 2918 INTERDISCIPLINARY ENGINEERING

Administering Organisation James Cook University

Project Summary

This project is a first step in developing models of the distribution of water quality parameters in reservoirs by a range of small scale dynamical processes not included in commercial water quality models. Specifically, the project will investigate the transport of suspended materials from the shore to the deeper parts resulting from the interaction of the meteorological forcing and the topography. This will contribute to the development of improved water quality models, and therefore to better management of water quality of Australia's water resources.

DP0877414 A/Prof TD Pham; Dr X Zhou; Prof H Yan; A/Prof DI Crane

Approved Project Title **Intelligent Image Processing Techniques for Novel Biomarker Discovery**

2008 : $ 85,000
2009 : $ 85,000
2010 : $ 80,000

Primary RFCD 2802 ARTIFICIAL INTELLIGENCE AND SIGNAL AND IMAGE PROCESSING

Administering Organisation James Cook University

Project Summary

This project will make an impact on Australia's international research profile by seeking a solution to a worldwide challenging problem in biomarker discovery for the detection of diseases at an early stage which requires the incorporation of the skills and knowledge from biology, medicine, engineering, computer science, and information technology. The successful outcomes of this research will make an impact on Australia's engagement in using advanced image analysis and intelligent methods for the emerging research and development of targeted drug discovery.

DP0877774 Dr M Wood; A/Prof AR Clough; Prof WJ McBride

Approved Project Title **Local responses to the threat of HIV/AIDS in the logging concessions in the Western Province, PNG**

2008 : $ 39,641
2009 : $ 33,899
2010 : $ 26,952

Primary RFCD 3703 ANTHROPOLOGY

Administering Organisation James Cook University

Project Summary

This research takes place in the logging concessions of the Western Province of PNG - a province that borders Australia. Our project will investigate some factors influencing people's sexual behaviour in the logging concessions. Because of their capacity to attract migrant labour these logging concessions are potential 'hot-spots' for the transmission of HIV/AIDS throughout PNG and towards Australia. From our findings we will develop a community based risk-reduction intervention strategy that will help slow the spread of infections into the Western Province and Australia.