WET TROPICS MANAGEMENT AUTHORITY

ANNUAL REPORT & STATE OF THE WET TROPICS REPORT

2010–2011

WET TROPICS MANAGEMENT AUTHORITY

Annual Report 2010–2011

Purpose of the report

This annual report details the financial and non-financial performance of the Wet Tropics Management Authority from 1 July 2010 to 30 June 2011. It highlights the work, achievements, activities and strategic initiatives of the Authority, and satisfies the requirements of Queensland's *Wet Tropics World Heritage Protection and Management Act 1993* and *Financial Accountability Act 2009;* and the *Commonwealth's Wet Tropics of Queensland World Heritage Conservation Act 1994.* It also includes a report on the state of the Wet Tropics World Heritage Area as required under section 63(1) of the Queensland Act and Section 10 of the Commonwealth Act.

Your feedback

The annual report is an important document representing communication and accountability. The Authority values comments and welcomes feedback from readers.

Photos and Images

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This publication can be accessed and downloaded from our website at www.wettropics.gov.au

Published by

Wet Tropics Management Authority
PO Box 2050
Cairns QLD 4870

ISBN 978-1-921591-63-1

Phone: (07) 4052 0555
Email: wtma.records@derm.qld.gov.au

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WET TROPICS
MANAGEMENT AUTHORITY

24 September 2011

The Hon Vicky Darling MP
Chair, Wet Tropics Ministerial Council
Minister for Environment
Level 13
400 George Street
BRISBANE QLD 4000

Dear Minister

I am pleased to present the Annual Report and State of the Wet Tropics Report 2010-2011 for the Wet Tropics Management Authority.

I certify this Annual Report and State of the Wet Tropics Report complies with:

- the prescribed requirements of the *Financial Accountability Act 2009* and the *Financial and Performance Management Standard 2009*
- the *Wet Tropics World Heritage Protection and Management Act 1993*, and
- the detailed requirements set out in the Annual Report requirements for Queensland Government agencies.

A checklist outlining the annual reporting requirements can be accessed at http://www.wettropics.gov.au/index.html

Yours sincerely

Associate Professor Peter Valentine
Chair, Wet Tropics Management Authority

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Highlights from The Chair

WTMA Chair Associate Professor Peter Valentine

The Wet Tropics of Queensland is one of the world's outstanding natural landscapes. Its extraordinary diversity, beauty and scientific significance was recognised in 1988 through inscription of the Area on the World Heritage Register.

As a consequence of the listing of the Wet Tropics of Queensland as a World Heritage Area, Australia accepted an international duty for the protection, conservation, presentation and transmission to future generations of the Area. The Wet Tropics Management Authority (WTMA) has the great privilege of assisting the Queensland and Australian Governments in meeting that obligation.

The Authority's role is diverse. As well as protecting the Area through administration of the Wet Tropics Management Plan, the Authority promotes scientific research and sharing of knowledge; works to improve the well being of Rainforest Aboriginal people; seeks to give the Area a role in the life of the community and works to support sustainable tourism in the World Heritage Area.

Partnerships are essential to the success of the Authority. Almost all of our work depends in some way on the support and cooperation of other government agencies, industry and community organisations. It is important that I acknowledge and thank all of these partners for their support and cooperation. In particular, I must recognise and acknowledge the 18 Rainforest Aboriginal tribal groups as the original custodians of the World Heritage Area.

2010-11 represents another successful year for the Authority and its partners in World Heritage management. Some of the highlights of the year are summarised below.

Building landscape resilience

The Authority, with regional partners Conservation Volunteers Australia and the Tablelands Regional Council, were delighted to secure a $600,000 investment from the Commonwealth Government's Caring for Our Country program. The funds will be used to assist landholders to undertake rainforest revegetation and protection works in high elevation landscapes on the southern Atherton tablelands.

This landscape is identified in research undertaken by James Cook University as particularly important as a cool climate refuge against the risk of global warming. The project represents a step in the implementation of the Authority's call for action to build resilience in and around the World Heritage Area as a defence against the impacts of climate change.

Renewing the framework for protection

The *Wet Tropics Management Plan 1998* is the framework for the Authority's work in protecting the World Heritage Area from the adverse impacts of

Babinda Creek

use and development. After an extensive program of detailed consultation with communities, stakeholders and government agency partners, the Authority was pleased to be able to approve a revised management plan and to recommend it to the Wet Tropics Ministerial Council. Subject to the endorsement of the Ministerial Council and the Queensland Governor in Council, the plan will update many aspects of the original 1998 plan. In drafting the amended plan, the Authority has taken care to ensure regulatory controls are well-targeted, justified and complementary to other regulatory regimes.

Presenting the World Heritage Area to the world

The Wet Tropics World Heritage Area plays a vital role in the tourism economy of the region. However, the Authority has been concerned for many years that there is no central focus for orientation of visitors to the features of the region. The need for such a facility was recognised by Tourism Queensland in its Tourism Opportunities Plan for the region. The Authority has now secured a grant from the Queensland Department of Employment, Economic Development and Industry that will assist in the preparation of a pre-feasibility study for a World Heritage Gateway for Cairns. The Authority's vision is for a centre that orients domestic and international visitors to the Wet Tropics and Great Barrier Reef but which also highlights the features and opportunities of the other 18 World Heritage properties in Australia.

Building quality in the guiding industry

Visitors utilising the service of tour guides need to be sure that the information they receive is accurate, appropriate and well-presented. These standards help to meet the Authority's own World Heritage presentation goals and contribute to the reputation of the region as a quality tourism destination. The Authority consulted widely in the tourism industry and among our government agency partners in the

Thornton Beach

Barron Falls

development of a system of training and accreditation for tour guides operating in the Wet Tropics World Heritage Area. We were very pleased to find wide-spread support for design and implementation of a system of accreditation specifically based on the Wet Tropics and World Heritage themes. The Authority is working in partnership with the Queensland Tourism Industry Council to further advance this work.

Leadership in the National Landscapes Program

The Authority provided regional leadership in the development of proposals for inclusion of the Wet Tropics in Australia's National Landscapes program. The program is a partnership between tourism and conservation to identify Australia's iconic landscapes, which capture and promote areas of outstanding natural beauty and cultural significance.

A regional steering committee, chaired by the Authority, has brought together diverse stakeholders in Wet Tropics tourism in support of a very strong proposal for inclusion in the program. The Authority was very pleased to learn that the National Landscapes Reference Committee accepted the region's proposal as the basis for further development. The Authority's work in support of the proposal demonstrated its very strong capacity for building linkages and forming partnerships.

The Wet Tropics as a Learning Landscape

Research into the environmental, cultural and social value of the Wet Tropics has been fundamental to its management since before it was inscribed on the World Heritage List. The Authority has a well-established role in supporting, advising, guiding and partnering research and in interpreting and communicating research outcomes.

During 2010, the Authority completed a substantial review of its Research and Information Needs Report to produce a new Research Strategy. As well as

identifying key research needs, the strategy builds a foundation for the Authority's goal of establishing the Wet Tropics World Heritage Area as an internationally-recognised learning landscape. Through this, the Authority seeks to support continued research, to build on the legacy of past research investment and to ensure knowledge generated in the Wet Tropics is accessible to rainforest and protected area managers elsewhere. An early application of the strategy has been in the Authority's work in support of the National Environment Research Program investment into rainforest research.

Assisting Eastern Kuku Yalanji people to return to country

Recognising and respecting the Traditional Owners of the Wet Tropics World Heritage Area is a core value of the Authority. Accordingly, the Authority was pleased to work closely with the Jabalbina Yalanji Aboriginal Corporation and agency partners in substantially advancing the development of community development plans for the Eastern Kuku Yalanji people. These plans flow from the 2007 Native Title settlement that formally recognised the Eastern Kuku Yalanji people as the Traditional Owners of extensive areas of land between Mossman and Cooktown. The community development plans facilitate traditional use of country within the Wet Tropics World Heritage Area and balances community aspirations with the protection of World Heritage values.

Renewal of Advisory Committees

The term of appointment of members of the Community Consultative Committee and the Scientific Advisory Committee came to an end during the year. These committees play a vital role so the Authority always pays very close attention to the task of selecting and appointing members. Appointments were made in the context of the Queensland Cabinet guidelines on the size and functioning of advisory committees, requiring a reduction in the overall size of both committees.

The Authority was very pleased to have the challenging task of selecting from a very strong field of candidates for both

Eastern Kuku Yalanji Community Leaders meeting

committees. I take this opportunity to welcome the new committees and to thank outgoing members. In particular, I thank the outgoing chairs - Ms Bryony Barnett from the Community Consultative Committee and Professor Paul Gadek from the Scientific Advisory Committee.

Aboriginal community engagement

The Authority took the bold step during the year of disbanding its Rainforest Aboriginal Advisory Committee. It is very important to stress here that this in no way represents any reduction in commitment to the effective engagement of Rainforest Aboriginal people in the management of the Wet Tropics World Heritage Area. On the contrary, it is a response of the Authority to calls from Rainforest Aboriginal community leaders to find new forms of equitable engagement with an autonomous regional Aboriginal organisation. Under these arrangements, Rainforest Aboriginal people will themselves determine the nature and terms of their engagement with the Authority and other Wet Tropics land managers.

Thanks

The term of appointment of four Authority Directors came to an end during the year. I take this opportunity to thank outgoing directors, Ms Allison Halliday, Mr Russell Butler and Dr Elaine Harding for their leadership and their contribution to the work of the Authority. I was very pleased to welcome the re-appointment of Dr Alastair Birtles for another term. However the Authority currently carries three vacancies and looks forward to early appointment of replacement directors to ensure it can continue to deliver the full spectrum of its statutory functions.

Thanks are due to the Executive Director and Authority staff for another year of dedicated service to the Authority and the Wet Tropics World Heritage Area community. I also thank the Authority's partners for their vital contributions, noting in particular the Queensland Parks and Wildlife Service and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

2010 Wet Tropics Management Authority Cassowary Award recipients

Introduction

World Heritage and National Heritage listing

The World Heritage Convention has been ratified by 187 states around the world and the World Heritage List includes 936 properties. Australia became a signatory in 1974 and at 30 June 2011 there were 19 Australian properties on the World Heritage list. World Heritage listing is recognition by the international community that a place is such an outstanding example of the world's natural or cultural heritage that its conservation is of value to all people. The Wet Tropics of Queensland World Heritage Area (WTQWHA, the Area) has outstanding natural values, meeting all four natural criteria for World Heritage listing and fulfilling the necessary conditions of integrity. The Wet Tropics of Queensland is considered to:

- contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance - *Criteria (vii)*
- be an outstanding example representing the major stages of Earth's history, including the record of life, and significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features - *Criteria (viii)*
- be an outstanding example representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals - *Criteria (ix)*
- contain the most important significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation - *Criteria (x).*

In May 2007 the Area was also listed on Australia's National Heritage List. The Area was listed for the five National Heritage criteria which correspond to its World Heritage criteria. It is intended that, over time and subject to resources available, the Wet Tropics of Queensland will be reassessed for its full range of National Heritage values. The criteria are:

- the place's importance in the course, or pattern, of Australia's natural or cultural history - *Criteria (a)*
- the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history - *Criteria (b)*
- the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history - *Criteria (c)*
- the place's importance in demonstrating the principal characteristics of (i) a class of Australia's natural or cultural places; or (ii) a class of Australia's natural or cultural environments - *Criteria (d)*
- the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group - *Criteria (e).*

Lake Tinaroo at dawn

Administration of the Act

Enabling legislation

The Wet Tropics of Queensland World Heritage Area is managed under the *Wet Tropics World Heritage Protection and Management Act 1993* (Queensland Act) and the *Wet Tropics of Queensland World Heritage Area Conservation Act 1994* (Commonwealth Act). These Acts implement Australia's international duty for the protection, conservation, presentation, rehabilitation and transmission to future generations of the World Heritage Area.

The Queensland Act establishes the Wet Tropics Management Authority and provides the legal basis for the *Wet Tropics Management Plan 1998* (the Plan) that regulates land use activities in the Area through a zoning and permit system. The Wet Tropics World Heritage Area Management Scheme is an intergovernmental agreement signed by the Prime Minister of Australia and the Premier of Queensland in 1990. It sets out broad structural and funding arrangements for the management of the Area. The agreement is scheduled in the Queensland Act and given effect by section 3 of the Commonwealth Act.

The Wet Tropics Management Authority

The Wet Tropics Management Authority (WTMA, the Authority) was set up to ensure Australia's obligation under the World Heritage Convention is met in relation to the Area. It is funded by the Australian Government and the Queensland Government, reporting to both on its performance against agreed outcomes. The Authority is a body corporate, with statutory powers defined under the Queensland Act.

The Authority's functions, as defined under section 10 of the Queensland Act, are to:

- develop and implement policies and programs for management of the Area
- formulate performance indicators for the implementation of approved policies and programs
- advise and make recommendations to the Minister and the Ministerial Council
- prepare and implement management plans for the Area
- administer funding arrangements
- facilitate and enter into Cooperative Management Agreements
- rehabilitate and restore the Area
- gather, research, analyse and disseminate information on the Area
- develop public and community education programs
- promote the Area locally, nationally and internationally
- liaise with the Queensland and Australian Governments, agencies and international organisations
- monitor the state of the Area
- advise and report to the Minister and the Ministerial Council on the state of the Area.

In performing its functions the Authority must, as far as practicable, consider Aboriginal tradition and liaise and cooperate with Aboriginal people particularly concerned with the Area.

Statutory reporting obligations

Each year the Wet Tropics Management Authority prepares a report on the administration of the Act during the year, financial statements for the year, and a report on the state of the Area, as required under section 63(1) of the Queensland Act and section 10 of the Commonwealth Act.

Management structure

The intergovernmental agreement provides for a Wet Tropics Ministerial Council, comprising two Australian Government and two Queensland Government Ministers. Its function is to coordinate policy and funding for the Area. The Queensland Minister for Environment chairs the Council.

A Board of Directors is set up under the Queensland Act and consists of seven

directors, six of whom serve in a part time capacity. Two directors are nominated by the Australian Government and two by the Queensland Government. The Chair and a designated Aboriginal director are nominated by the Wet Tropics Ministerial Council. The Executive Director of the Authority is a non-voting Board director. The Board's key function is to implement programs to meet Australia's international obligations for the Area under the World Heritage Convention.

The Authority operates as an administrative unit within the Queensland Government Department of Environment and Resource Management (DERM). As part of the Queensland public sector, the Authority is subject to established public sector legislation, regulations, standards and guidelines governing administrative functions and arrangements. The Director-General of DERM is the accountable officer for the Authority under the *Financial and Performance Management Standard 2009*. The Authority is responsible to the Director-General regarding compliance with State Government administrative and financial standards.

The Authority has two statutory advisory committees appointed by the Board under the Queensland Act. They are the Community Consultative Committee (CCC) and the Scientific Advisory Committee (SAC). The Board also established, under section 40 of the Queensland Act, the Rainforest Aboriginal Advisory Committee (RAAC). These committees meet quarterly prior to Board meetings and advise the Authority on programs and research for the management of the Area.

The Authority is a small organisation and works in partnership with other agencies, stakeholders and the wider community. The Authority has produced a range of strategic policy and planning documents which guide management of the Area, consistent with its legislative responsibilities. **Figure 1** provides an overview of the Authority's legislative and strategic planning framework.

While the Authority is the lead agency responsible for policy, planning and the coordination of management in the Area, it is not directly responsible for on-ground management. Day-to-day management activities such as infrastructure maintenance and pest

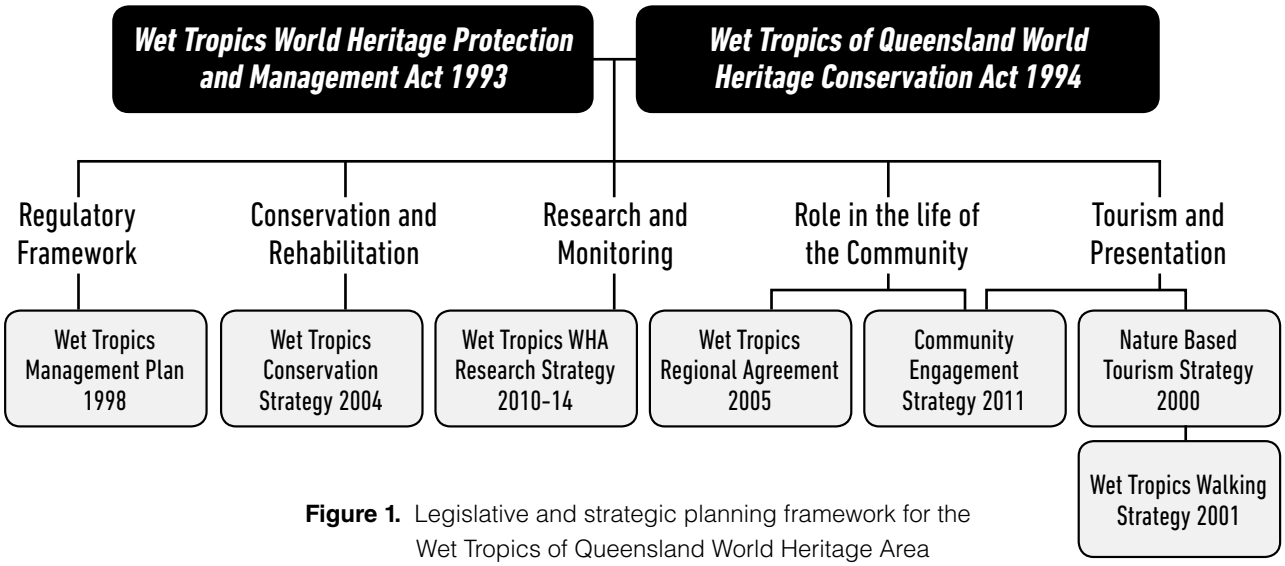
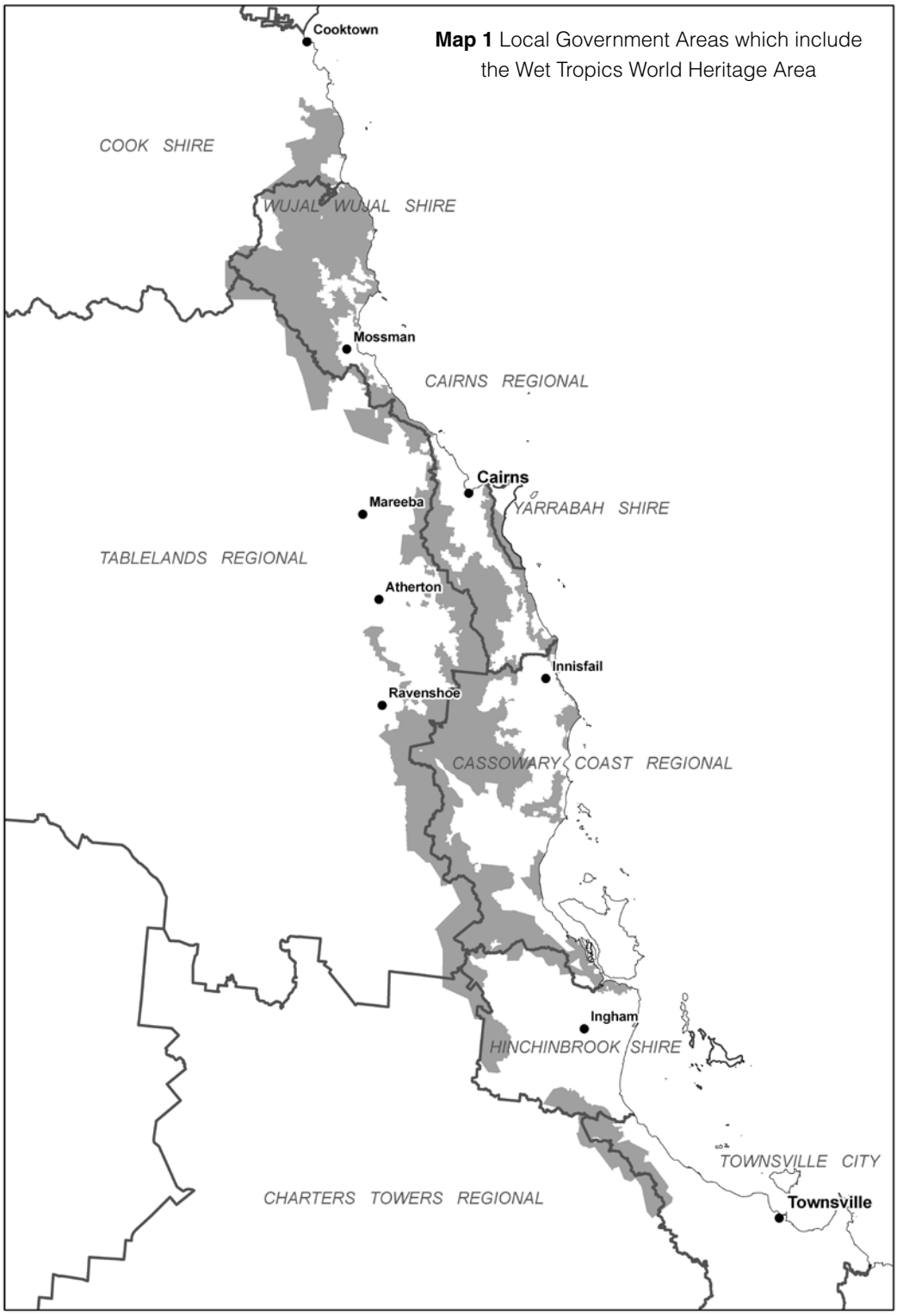


Figure 1. Legislative and strategic planning framework for the Wet Tropics of Queensland World Heritage Area

control are the responsibility of the relevant land managers which include the Department of Environment and Resource Management (DERM), infrastructure service providers for power, water and roads and nine local governments. The local governments areas that include parts of the Area are:

- Cook Shire Council
- Wujal Wujal Aboriginal Community Council
- Cairns Regional Council
- Tablelands Regional Council
- Yarrabah Aboriginal Community Council
- Cassowary Coast Regional Council
- Hinchinbrook Shire Council



Map 1 Local Government Areas which include the Wet Tropics World Heritage Area

- Townsville City Council
- Charters Towers Regional Council.

A partnership agreement is developed each year between the Authority and DERM to prioritise and coordinate management activities in the protected area estate within the Area. The partnership agreement outlines products and services to be delivered by DERM under funding provided by the Queensland Government for World Heritage management.

Wet Tropics Ministerial Council

At 30 June 2011 the Ministerial Council comprised:

- The Hon Vicky Darling MP, Queensland Minister for Environment (Chair)
- The Hon Tony Burke MP, Australian Minister for Sustainability, Environment, Water, Population and Communities
- The Hon Martin Ferguson AM MP, Australian Minister for Tourism
- The Hon Jan Jarratt MP, Queensland Minister for Tourism, Manufacturing and Small Business.

Matters requiring Ministerial Council decision during the year were dealt with out of session.

Wet Tropics Management Authority Board of Directors

As at June 2011 the Board of Directors comprised:

- Associate Professor Peter Valentine *(Chair)*
- Mr Andrew Maclean *(WTMA Executive Director)*
- Dr Alastair Birtles
- Cr Julia Leu

The terms of appointment of Mr Russell Butler (Snr) and Ms Allison Halliday expired on 13 November 2010. Dr Elaine Harding's term expired 12 March 2011. These three Director positions were vacant as at 30 June 2011.

Four Board meetings were held during the year: on 9-10 August 2010 in Townsville; on 7-9 November 2010 including a field trip to the Daintree lowlands and Mossman; 7-8 March 2011 and 9 May 2011 in Cairns.

The overall cost of the Board in 2010-2011 was $46,105. This included meeting fees, special assignment fees, all necessary and reasonable travel expenses, venue hire, catering and other general operating costs.

Committees and Liaison Groups

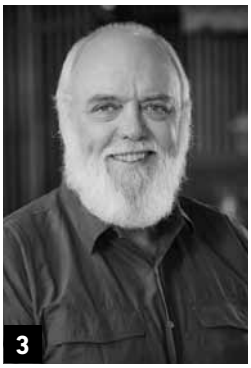
Community Consultative Committee

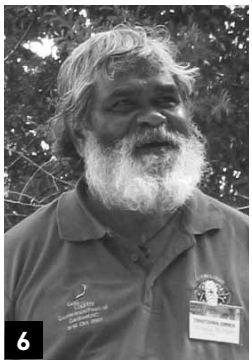
The members of the Community Consultative Committee (CCC) are selected as individuals to represent a broad range of community views and expertise from throughout the Wet Tropics region.

A new CCC was appointed by the Board in March 2011 for a three year term. A significant number of the CCC are landholders within the Area or live on neighbouring properties. Their interests and skills include conservation, education, tourism, recreation, local government, Aboriginal culture, science and primary industries. At 30 June 2011 the CCC members were:

WTMA field trip November 2010, Daintree

Wet Tropics Management Authority Board of Directors





1. Associate Professor Peter Valentine
2. Cr Julia Leu
3. Dr Alastair Birtles
4. Ms Allison Halliday
5. Dr Elaine Harding
6. Mr Russell Butler Snr
7. Mr Andrew Maclean

- Ms Moni Carlisle (Chair)
- Ms Bryony Barnett (Deputy Chair)
- Mrs Pam Birkett
- Mr Greg Bruce
- Mr Dean Nulty
- Mr John Hardaker
- Ms Darlene Irvine
- Cr Kirsten Lesina
- Ms Penny Scott
- Cr Pino Giandomenico
- Mr Eden Gray-Spence

The CCC met on 9 July 2010, 22 October 2010, 18 February 2011 and 29 April 2011. The CCC cost $7,387 to operate, mostly for catering, venue hire and reimbursement for out-of-pocket expenses and travel expenses. Members do not receive sitting fees.

Scientific Advisory Committee

Members of the Scientific Advisory Committee (SAC) come from a broad range of disciplines including the natural, ecological, socio-cultural and economic sciences. Most are actively involved in tropical research programs. A new SAC was appointed by the WTMA Board in March 2011 for a three year term. At 30 June 2011 the members of the SAC were:

- Professor Steve Williams, (Director, Centre for Tropical Biology and Climate Change, JCU) *(Chair)*
- Dr Sue Laurance (Tropical Leader in Rainforest Ecology, JCU) *(Deputy Chair)*
- Dr Damien Burrows, (Australian Centre for Tropical Freshwater Research (ACTFR))
- Professor Carla Catterall (Griffith University)
- Professor Darren Crayn (Australian Tropical Herbarium)
- Dr Miriam Goosem (JCU)
- Dr Alex Kutt (CSIRO, Ecosystems Services Tropical and Arid Systems Program)
- Dr Dan Metcalfe (CSIRO Ecosystem Services)

- Dr Lea Scherl (Vice-Chair, Oceania, IUCN Commission on Environmental, Economic and Social Policy)
- Professor Jeff Sayer (Professor of Conservation and Development Practice, JCU)
- Dr Christine Williams (Assistant Director General Environment and Resource Science, DERM)
- Dr David Westcott (CSIRO Sustainable Ecosystems)
- Ms Henrietta Marrie (The Christensen Fund)
- Mr Jerry Turpin (Queensland Herbarium, DERM)

Members of the 2007-10 SAC met 13 September 2010 and 7 February 2011. Executive members of the 2011-2014 met on the 29 April 2011. The SAC cost $7,850 to operate, mostly for catering, venue hire and reimbursements for out of pocket and travel expenses. Members do not receive sitting fees.

Rainforest Aboriginal Advisory Committee

The Rainforest Aboriginal Advisory Committee (RAAC) was established by the WTMA Board under section 40(1)(b) of the *Wet Tropics World Heritage Protection and Management Act 1993*. Each of the 18 Rainforest Aboriginal tribal groups with a connection to lands within the Area nominates a member for appointment by the Board.

In March 2011, on advice from Rainforest Aboriginal Community leaders, the WTMA Board dissolved the RAAC. Under new arrangements, currently being negotiated, Rainforest Aboriginal people will themselves determine the nature and terms of their engagement with the Authority and other Wet Tropics land managers. As at March 2011 the outgoing members of the RAAC were:

- Mr Troy WylesWhelan (Girringun) *(Chair)*
- Ms Rhonda Brim (Djabugay)
- Mr Ernie Raymont (Ngadjon-Jii)
- Ms Lillian Clubb (Yidinji)
- Mr John Andy (Girringun)
- Mr Claude Beeron (Girringun)
- Ms Maureen Green (Kuku Muluridji)
- Mr Arthur Johnson (Wulgurukaba)
- Ms Joann Schmider (MaMu)
- Ms Jeanette Singleton (Yirrganydji)
- Mr Peter Wallace (Kuku Yalanji)

The RAAC met two times in 2010- 2011: on 22-23 September 2010 and 1 March 2011. The RAAC cost $17,009 to operate, mostly for catering, venue hire and reimbursement for all reasonable out-of-pocket expenses and travel expenses. Members do not receive sitting fees.

Conservation Sector Liaison Group

The Authority provides secretariat support for the CSLG which is a regular forum involving key conservation groups to liaise regarding conservation issues relating to the Area. The CSLG met on 26 July 2010, 25 October 2010 and 28 April 2011.

Appointment of membership to the Conservation Sector Liaison Group (CSLG) is for a three year term. The most recent term came to an end on 28 April 2011. As at June 30 2011 a process to recruit members to a newly appointed CSLG was underway. The outgoing CSLG members (as of 28 April 2011) were:

- Dr Elaine Harding (WTMA Board Director) *(Chair)*
- Mr Steve Canendo (Yarrabah Council)
- Ms Alice Crabtree (Conservation Volunteers Australia)
- Ms Nina Dawson (Girringun Aboriginal Corporation)
- Ms Liz Gallie (Save the Cassowary)
- Ms Claire Garner (Frog Decline Reversal Project)
- Ms Rowena Grace (Terrain NRM)
- Mr John Grant (Tree Kangaroo and Mammal Group)

Members of the 2007-2010 CSLG

- Ms Sarah Hoyal (Cairns and Far North Environment Centre, CAFNEC)
- Mr David Hudson (Conservation Volunteers Australia)
- Mr Luke Jackson (Quoll Seekers Network)
- Mr Tony Jurgensen (Johnstone Ecological Society)
- Mr Glenn Kvassay (Quoll Seekers Network)
- Ms Margaret Moorhouse (Alliance to Save Hinchinbrook)
- Mr Patrick Pearlman (Environmental Defender's Office)
- Ms Cathy Retter (EnviroCare)
- Mr Peter Rowles (Community for Coastal and Cassowary Conservation, C4)
- Mr Steve Ryan (CAFNEC)
- Mr Peter Smith (Wildlife Preservation Society Qld, WPSQ)

The cost of running the group was a total of $2,210 mostly for catering and reimbursement for reasonable out-of-pocket expenses and travel expenses. Members of the CSLG do not receive sitting fees.

Tourism Industry Liaison Group

Tourism Industry Liaison Group (TILG) members represent members of the tourism industry with interests in the Wet Tropics World Heritage Area. The current TILG was appointed on 3 November 2007 for a three year term. The term has been extended while The Authority's community engagement strategy was developed. At 30 June 2011 TILG members were:

- Dr Alastair Birtles (WTMA Board)
- Ms Leanne Bayne (Tableland Promotion Bureau)
- Mr Ron Birkett (Daintree Discovery Centre)
- Mr Richard Blanchette (Port Hinchinbrook)
- Mr Terry Carmichael (Wildlife Habitat)
- Mr John Courtenay (Pacific Asia Travel Association)
- Mr Gordon Dixon (Far North Queensland Tourism Operators Association)
- Ms Angela Freeman (Australian Tourism Export Council)
- Mr Rob Giason (Tourism Tropical North Queensland)
- Mr Daniel Gschwind (Queensland Tourism Industry Corporation)
- Mr Lawrence Mason (Mason's Tours)
- Mr Doug Ryan (Port Douglas and Daintree Tourism Association)
- Mr Joe Sproats (Townsville Enterprise Limited)
- Mr Rob West (BTS Tours)
- Mr Jeff Gillies (Tourism Queensland)
- Mr Steve McDermott (Terrain NRM)
- Mr Phil Rist (Girringun Aboriginal Corporation)
- Mr Damien Britnell (Bamanga Bubu Ngadimunku Inc)
- Ms Sonya Jeffery (Echo Creek)

The TILG met on the 8 December 2010, 28 February 2011 and 28 April 2011. The cost of running the group was a total of $1,656 mostly for catering and reimbursement for out-of-pocket expenses and travel expenses. Members of the TILG do not receive sitting fees.

Program Reports

The Authority comprises three programs which work cooperatively to manage the World Heritage Area (**Figure 2**).

Reports on the achievements, activities and strategic initiatives of the three programs and be found below.

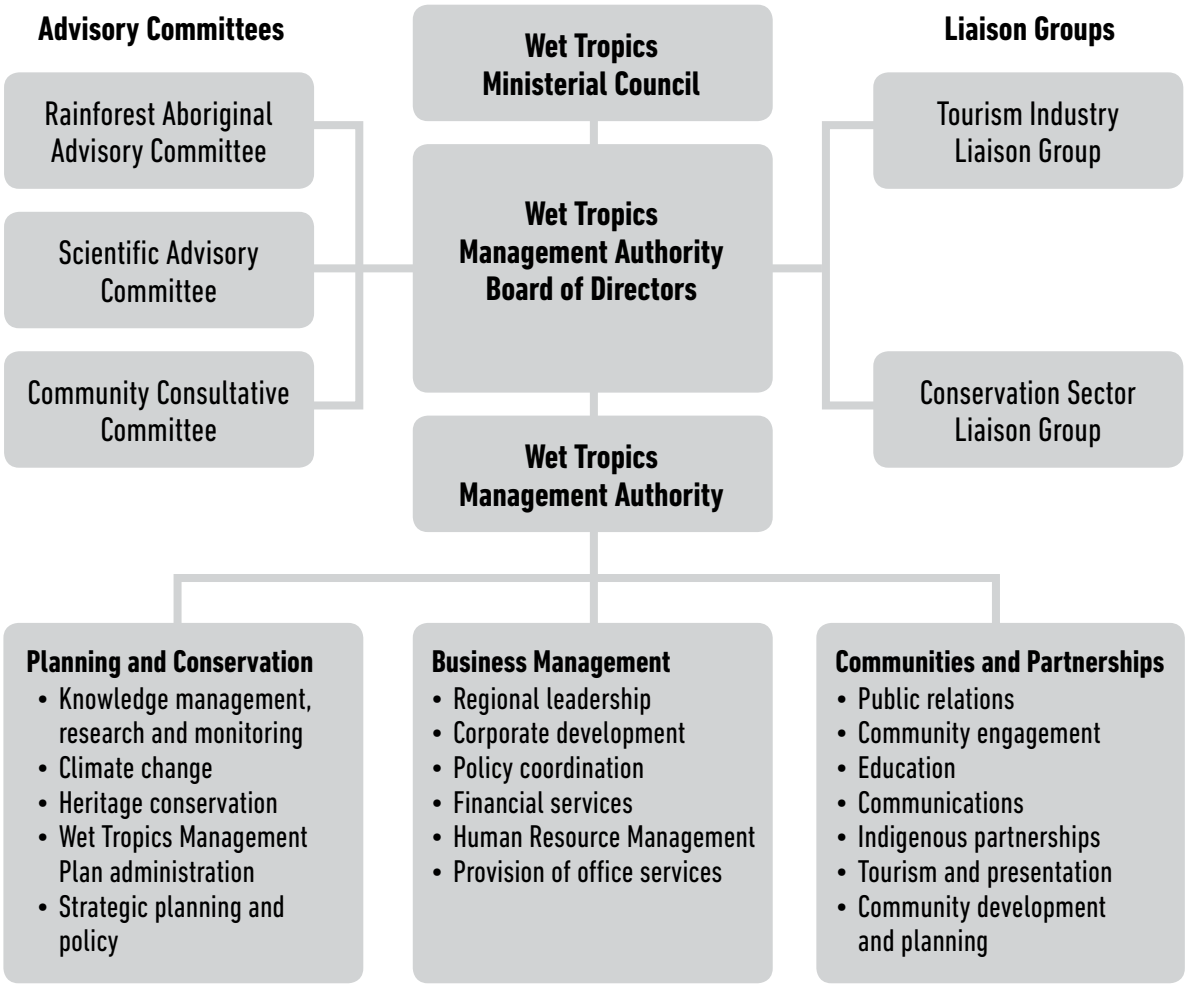
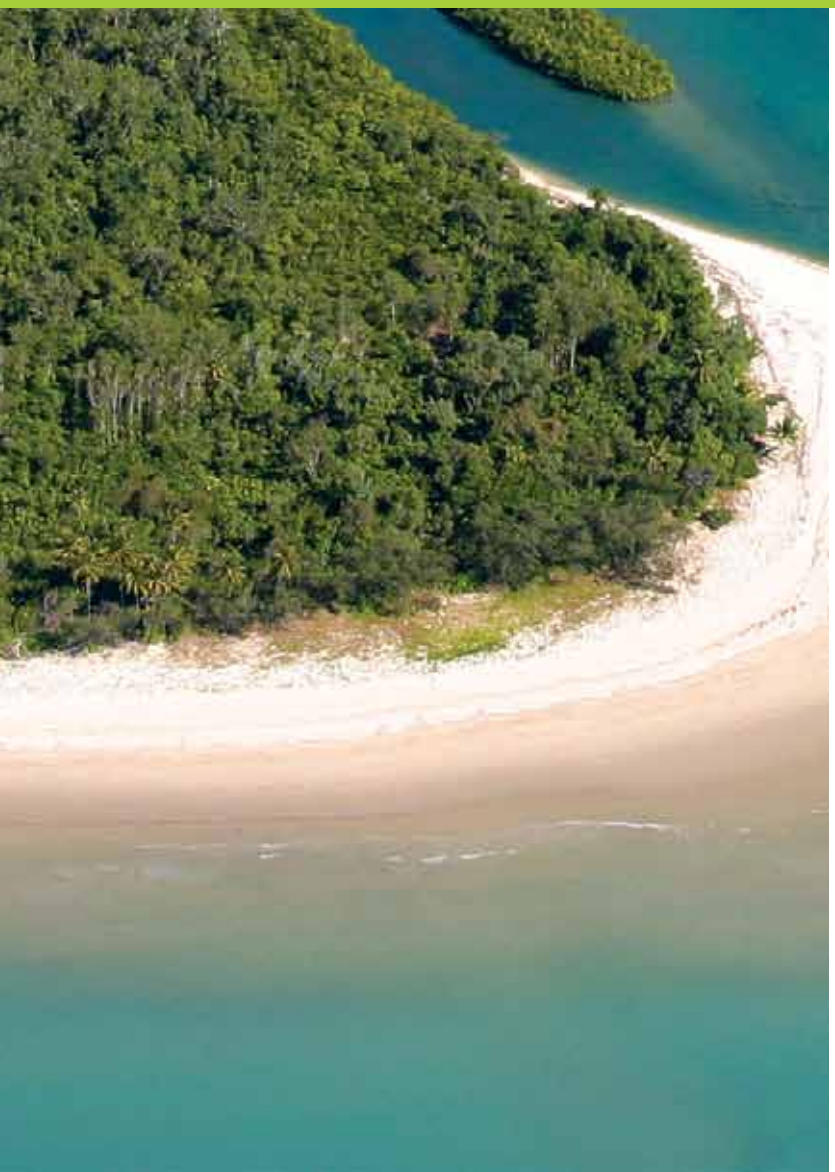


Figure 2. Wet Tropics organisation and management structure

WTMA Board meeting 2011

Planning and Conservation Program



The Planning and Conservation Program comprises staff with skills in environmental planning and assessment, permits and regulations, environmental monitoring and reporting and knowledge brokering and communication. The Planning and Conservation Program is responsible for the delivery of the following projects:

- Heritage Conservation
- Climate Change
- Knowledge Management and
- Wet Tropics Plan Review.

Heritage Conservation Project

The Heritage Conservation Project is responsible for the administration of the *Wet Tropics Management Plan 1998* (the Plan) which regulates land use activities and access within the Area. This includes the assessment of permit applications for construction and maintenance of roads, powerlines, water supplies and communication facilities, and motorised vehicle access within the Area. The project also develops policies and guidelines about how best to manage the use of the Area. Environmental codes of practice and environmental management plans are often included as part of permit conditions.

The Heritage Conservation Project also provides advice on development proposals, including those outside the Area that may affect the Area's natural and cultural values. WTMA staff also work closely with landholders, local governments and other service providers to manage infrastructure and development issues and to improve weed and feral animal control.
Key project objectives include:

- implementation of strategies that protect the Area from adverse impacts of development and use
- developing strategies that support the conservation and rehabilitation of the Area
- engaging key partners in management roles that support the protection of World Heritage values consistent with the World Heritage Convention and associated Australian and Queensland Wet Tropics legislation.

Assessment of permit applications under the Wet Tropics Management Plan 1998

During 2010-11 the Authority assessed and issued permits to the following agencies:

- Cairns Regional Council (CRC) authorising road stabilisation works on the Alexander Range section of Cape Tribulation road
- Cassowary Coast Regional Council (CCRC) for the upgrade of the Bulgun Creek Main Weir
- Ergon Energy authorising the construction of two new communication towers, one at Longlands Gap and another at Lyons Lookout
- Cook Shire Council (CSC) for the upgrade of sections of the Rossville to Bloomfield Road near Gap Creek
- Queensland Department of Transport and Main Roads (DTMR) for soil stabilisation and vegetation management on batters, the installation of catch drains and rock fall netting at several locations on the Gillies Range and one on the Rex Range.

Authority staff continue to provide pre-lodgement advice in regard to a number of pending development proposals including:

- a proposal by DTMR for the widening of the Captain Cook Highway near Tin Creek at Wangetti
- Powerlink Queensland regarding the replacement of the electricity transmission line between Ingham and Cardwell
- the issue of new permits to agencies undertaking maintenance on infrastructure within the Area.

Early in 2011, Authority staff provided training to Cassowary Coast Regional Council staff on their obligations under the *Wet Tropic Management Plan 1998*, and in particular, how to deal with vegetation management following cyclones.

Immediately after Tropical Cyclone Yasi in February 2011, Authority staff provided advice to affected Councils on post cyclone vegetation management. In addition the Authority advised relevant government agencies and landholders on vegetation clean up. This work is ongoing, reviewing maintenance permits and monitoring post cyclone recovery works within the World Heritage Area.

Minor and inconsequential activities

Activities deemed to be of minor and inconsequential impact under the Plan do not require a Wet Tropics permit to be issued. A number of pre-lodgement discussions resulted in advice to proponents that their respective applications would be deemed minor and inconsequential in terms of the likely impact that the proposed activity would have on the Area's integrity. Other permit applications were formally assessed by staff during 2010-11 where likely impacts of the activities were deemed to be minor and inconsequential. These included proposals from:

- Cairns Regional Council for Lake Morris Road stabilisation works
- Cook Shire Council for the upgrade of some sections of the Bloomfield to Rossville Road
- Ergon Energy for underground cabling within the road corridor of the Mission Beach to El Arish Road.

Wet Tropics permits issued by the Department of Environment and Resource Management

A large number of Wet Tropics permits are issued by the Department of Environment and Resource Management (DERM) which is a permit entity (or delegate) under Part 6 of the Plan. DERM issues these permits under a memorandum of understanding with the Authority. The 87 permits issued by DERM during the year were for the use of motor vehicles on presentation restricted roads and management roads. The number of permits was considerably lower than previous years probably because of Tropical Cyclone Yasi and a prolonged wet season.

Compliance

Authority staff, together with Cairns Regional Council officers, visited a property to inspect possible incursions into the Area and onto a Council managed reserve.

Authority staff also undertook a review of compliance conditions associated with a permit regarding road maintenance on Southedge road.

The Authority, in conjunction with Ergon, produced regulatory signs for Ergon's management roads in the Area. The Authority also produced new boundary identification signage.

Land dealings

The Authority provides advice on issues related to land dealings including responding to a number of queries regarding the identification of the boundary of the Area in relation to properties throughout the Wet Tropics region. The Authority provided advice to State Land Asset Management officers of DERM regarding:

- proposed permanent road closures on properties in the Cassowary Coast Regional Council (CCRC) region and the renewal of several leases
- the renewal of an agricultural lease in Hinchinbrook Shire
- the renewal of several leases in the Cairns Regional Council region and one lease in the Cook Shire Council (CSC)
- an application for a temporary road closure in the Tableland Regional Council (TRC) area

- a proposed permanent road closure on a property adjacent to the Area in the Townsville City Council area
- proposed road closures on a property adjacent a recreation reserve in the Cairns Regional Council area
- the purchase of part of a reserve that adjoined the Area within the Cairns Regional Council area
- an application for a Permit to Occupy for a structure on the esplanade at Shipwreck Bay.

The Authority provided advice to officers of the Aboriginal and Torres Strait Islander Land Services (ATSILS) in DERM regarding Native Title Application for:

- the Combined Gunngandji, a claim that includes part of the Trinity Forest Reserve identified as being part of the Area
- the Wanyurr Majay Peoples, a claim that includes part of Wooroonooran National Park identified as being part of the Area
- the Djiru Peoples, a claim that includes Djiru National Park, Clump Mountain National Park, Mount Mackay National Park, Tully Gorge National Park, Hull River National Park and Japoon National Park, which identified the claim as being part of the Area
- the Mulridji Peoples, which identified the area being claimed as outside the WHA.

The Authority also provided advice regarding several applications for land dealings outside the Area.

Referrals under the Environment Protection and Biodiversity Conservation Act 1999

Advice was provided to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) about a range of referrals under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) associated with urban and rural residential development particularly in the Mission Beach and Kuranda areas.

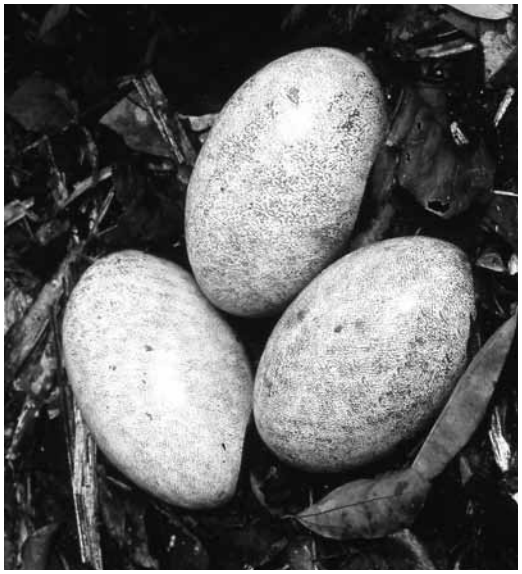
Mission Beach coastline

Policy Advice

Authority staff provided policy advice on the following matters to:

- a number of concerned citizens regarding the installation of traffic calming measures on roads in the vicinity of Cape Kimberly. The Authority also advised Cairns Regional Council on the installation of traffic calming measures on roads north of the Daintree River
- DERM Property and Conservation Tenure Services suggesting possible amendments to tenures in the vicinity of Paluma Dam
- FNQ Regional Organisation of Councils (FNQROC) regarding the future development and ongoing maintenance of the Bloomfield Road
- Powerlink Queensland in regard to concept plans for the proposed Cardwell Range Lookout
- Department of Transport and Main Roads regarding the refurbishment of the fauna underpasses at East Evelyn
- a landowner regarding the development of access to a property
- Department of Defence regarding management issues at Tully and Cowley Training Areas.

Cassowary and chick



Cassowary Eggs

Management plans under the Nature Conservation Act 1993

The Authority made a submission on the draft Wooroonooran National Park Management Plan. Wooroonooran National Park is a major park within the Area. It is therefore important its standard of management is commensurate with its World Heritage status.

Tropical Cyclone Yasi

Following the immediate aftermath of severe Tropical Cyclone Yasi in February 2011, the Cassowary Coast Regional Council formed a Natural Environment Recovery Group to provide regional input into Queensland's reconstruction effort following the 2011 flood and cyclone disasters. The Authority was an active member of this Cassowary Coast Natural Environment Recovery Group which developed an action plan to prioritise activities and funding applications targeted to assist in rehabilitating the region's natural assets. It was recognised that priority recovery and reconstruction effort and support was required to:

- respond to the extensive and severe impact on the home range and critical habitat for the endangered mahogany glider and the southern cassowary. For example, by providing supplementary feeding stations and seeking community support to minimise any additional impacts on these already stressed species
- provide additional crews to tackle the high potential for the establishment of environmental weed species in highly disturbed areas which provide favourable conditions for such weeds
- active rehabilitation measures to restore highly impacted coastal littoral rainforests.

The Authority also provided advice at whole-of-agency regional meetings convened by the Queensland Reconstruction Authority to consider opportunities to enhance local environmental recovery through a coordinated regional approach.

The Authority also played a collaborative role in providing information about the cassowary feeding program and the mahogany glider recovery effort, part of an extensive public information campaign. Officers of the Authority also undertook extensive consultation with staff from the Cassowary Coast Regional Council, Hinchinbrook Shire Council, Tableland Regional Council, DTMR, Powerlink, Ergon and Defence involved in vegetation clean up operations.

Tropical Cyclone Yasi impact, Mission Beach

Environmental pests and fire

Dealing with control and management of environmental pests and fire is ongoing. For example, requirements for environmental weed management are taken into account when reviewing infrastructure maintenance permit conditions and monitoring post cyclone recovery activities within the Area.

Staff contributed to meetings of the FNQ Pest Advisory Forum and District and Regional Fire Management Coordination Committees. Staff also provided advice as part of the Pond Apple National Strategic Plan Progress Review.

The 2010-11 State of Wet Tropics Report, comprising part of the annual report, provides more information about biosecurity issues related to the Area.

Working with the community

Cassowary Recovery Team

The Authority provides secretariat support for the Cassowary Recovery Team (CRT) which oversees implementation of the Cassowary Recovery Plan made under the EPBC Act. WTMA's Executive Director, Andrew Maclean, chairs the CRT.

The CRT met on 3 September 2010 and 20 May 2011. Some members met with the Queensland Minister for Environment, the Hon Ms Vicky Darling MP, to discuss cassowary recovery issues on 28 June 2011.

WTMA and the CRT also played a role in assisting DERM with community engagement in the months that followed Cyclone Yasi and supporting the establishment of their supplementary feeding programme. At 30 June 2011, membership of the CRT included:

- Mr Andrew Maclean (WTMA, Chair)
- Pastor John Andy (Girringun Aboriginal Corporation)
- Ms Jax Bergerson (Kuranda Conservation)
- Mr Dominic Chaplin (Birds Australia)
- Mr Kelvin Davies (Rainforest Rescue)
- Mr Paul Devine (Cassowary Coast Regional Council (CCRC))
- Ms Liz Gallie (Save The Cassowary)
- Mr Graham Harrington (Birds Australia)
- Cllr Jenny Jensen (Tablelands Regional Council)
- Mr Peter Latch (SEWPaC)
- Dr Graham Lauridsen (Tully Veterinary Surgery)
- Ms Kirsten Lee (DTMR)
- Mr Andrew Millerd (DERM)
- Mr Clay Mitchell (Australasian Regional Association of Zoological Parks and Aquaria, Queensland (ARAZPAQ))

- Mr Tony O'Malley (Terrain NRM)
- Mr Roger Phillips (Australian Rainforest Foundation)
- Mr Allen Sheather (Daintree Cassowary Care Group)
- Mr Damon Sydes (CCRC)
- Dr David Westcott (CSIRO)
- Mr Russell Wild (Cairns Regional Council (CRC))

Climate Change Project

The purpose of the Climate Change Project is to improve climate change information capture from other organisations and to deliver reports and advice of strategic relevance to the conservation management of the Area. One of the longer-term aims of this project is to achieve a more integrated and connected natural landscape in the Wet Tropics bioregion. This will enhance the resilience of the Area's internationally outstanding biodiversity to cope with the emerging impacts of climate change. It is hoped to achieve the goal of minimising the negative impacts of climate change on the region's biodiversity by maximising the capacity of its species and ecosystems to adapt to future climate change.

Climate change modelling and impact prediction

The Climate Change Project is supporting research into more reliable regional climate change impact predictions on biodiversity in the Area through collaboration with James Cook University (JCU) and CSIRO.

These partnership arrangements involved climate change projects undertaken by the Centre for Tropical Biodiversity and Climate Change (CTBCC) based at JCU, and by CSIRO researchers based at Atherton.

Climate change impact monitoring

The Authority is keen to establish the Area as a benchmark for the early detection of the impacts of climate change on tropical forests generally. This is being achieved through partnership arrangements with CSIRO and JCU in monitoring climate change impacts in the Area, through the establishment and regular measurement of a comprehensive network of biodiversity and climate monitoring plots.

The Authority entered into an agreement with James Cook University's CTBCC to instigate a monitoring program on Mt Lewis during the 2010 calendar year, targeting, in particular, the lemuroid ringtail possum. In the 1980s, lemuroid ringtail possums were commonly seen above 1000 metres on the Mt Lewis section of the Carbine Tableland. Within the space of a few kilometres, it was not uncommon to see over 40 individual animals, with mean numbers observed varying between 5-15 individuals per kilometre.

Prior to the intensive Authority-funded 2010 monitoring program, no lemuroid ringtail possums had been sighted at Mt Lewis since an extreme summer heatwave in 2005. The 2010 monitoring program has revealed that a very small population of the possums still live in refuge areas on Mt Lewis. It is important that the knowledge gained from this program is used to help inform future management options.

Terrestrial Ecosystem Research Network

The Terrestrial Ecosystem Research Network (TERN) is supported by the Australian Government through the National Collaborative Research Infrastructure Strategy and the Super Science Initiative. TERN provides infrastructure and procedures through which a wide array of ecosystem research data and knowledge can be stored, accessed and analysed. It provides a set of dedicated observation sites, standardised measurement methodologies, equipment and data.

TERN is establishing two Rainforest Super Sites in the Wet Tropics; one on the Atherton Tableland centred on a 25 hectare instrumented monitoring plot at Robson Creek; and one in the Daintree lowlands centred on the Daintree Rainforest Observatory and canopy crane site. The Rainforest Super Sites, which also incorporate 56 of the long-term CTBCC monitoring transects and 20 CSIRO permanent plots will provide information on changes in biodiversity focusing on the influence of climate change and climate drivers such as carbon dioxide.

The Authority and QPWS (DERM) are entering into a Memorandum of Understanding with the TERN Rainforest Super Site research consortium to jointly support their various projects and to facilitate, enable and encourage collaboration of effort between the parties for mutual benefit.

Building landscape resilience to climate change in the Wet Tropics landscape

The cool, high areas of the Southern Atherton Tablelands could provide an important refuge for temperature-sensitive plants and animals threatened by rising temperatures. Unfortunately, land clearing for agriculture and grazing has left the landscape highly fragmented, with many native species confined to national parks and small clumps of remnant forest on private lands. Restoring connectivity could help to build resilience to climate change by reducing habitat fragmentation and improving migration opportunities for species into cooler areas.

The Authority was successful in securing $600,000 from the Australian Government's *Caring for our Country* initiative for a project aimed at restoring landscape connectivity. The project is targeted at mobilising land holders to restore connectivity in two critical upland areas around Herberton Range National Park on private land. The project target is for six hectares of previously cleared rainforest to be replanted with a further 35 hectares restored and protected through weed control, fencing and management agreements with landholders. Trials will also be carried out at demonstration sites to trial low-cost methods of encouraging natural revegetation and to trial promotion of colonisation by temperature-sensitive ground-dwelling species like rainforest skinks. The project will run until June 2013. Key partners include Tablelands Regional Council, Conservation Volunteers Australia (CVA), QPWS, Dr Luke Shoo (University of Queensland), Dr Carla Catterall (Griffith University), Traditional Owners, Trees for Evelyn and Atherton Tablelands, the Tree Kangaroo and Mammals Group and Malanda Landcare.

Caring for our Country project partners, East Evelyn

Greenhouse 2011 conference

Over 450 international and national climate change experts met in Cairns in early April 2011 for the 'Greenhouse 2011 - The Science of Climate Change' conference. The conference provided a timely opportunity for the Authority to showcase its partnerships and collaborations with leading edge climate science researchers by setting up a joint display and information booth at the conference with the Tropical Landscapes Joint Venture (JCU and CSIRO) and the Centre

Greenhouse conference 2011

for Tropical Biodiversity and Climate Change (JCU). The display showcased our Caring for our Country tablelands project and highlighted the importance of mobilising participation of many community organisations and landholders and the science underpinning the identification and rehabilitation of cool, climatically stable upland refugia.

Knowledge Management Project

The Knowledge Management Project brings together data and information needed to develop knowledge, communication products and information for decision making that will improve the standard of management of the Wet Tropics World Heritage Area. The data or information is also used for fulfilling the Authority's statutory and other World Heritage reporting obligations at the State, Commonwealth and international level. Key project objectives include:

- effective partnerships with the scientific community and other information providers to assist in information gathering and sharing
- preparation and effective delivery of reports, maps and other products relating to management of the Area and the conservation and rehabilitation of World Heritage values and integrity
- development and delivery of State of the Wet Tropics reporting frame works that enable the objective reporting on the condition of the Area and management effectiveness
- development and delivery of the Authority's Wet Tropics World Heritage Area Research Strategy 2010 - 2014 and promotion of the concept of the Wet Tropics as a learning landscape.

Scientific Advisory Committee

Staff continued to support the Authority's Scientific Advisory Committee (SAC). During the year, major issues where SAC advice was sought included:

- the development of the Wet Tropics World Heritage Research Strategy 2010 - 2014
- the future of rainforest research in the region
- the review of the *Wet Tropics Management Plan 1998*
- the development of a World Heritage offsets policy for the Area
- endangered ecological communities

- Caring for Our Country funding submissions
- UNESCO periodic reporting.

The three year term of the SAC came to an end in December 2010. Expressions of interest in serving on the SAC were invited by the Board and a new SAC was appointed by the WTMA Board in March 2011.

United Nations Educational Scientific and Cultural Organisation Periodic Report

United Nations Educational Scientific and Cultural Organisation (UNESCO) periodic reporting is conducted every six years. It is the primary reporting and evaluation mechanism for all World Heritage properties. The Periodic Report is completed at three levels: regional (e.g. Asia-Pacific), State Party (e.g. Australia), and World Heritage property level (e.g. Wet Tropics of Queensland World Heritage Area).

During the year, several Periodic Reporting workshops were held with the Authority's advisory groups to elicit their views on the various topics and questions that formed the basis of the reporting process. The 2011 Periodic Report was conducted using an electronic questionnaire. Based on an analysis of all the responses provided, the online program determined that the five most serious negative factors affecting the Area were:

- temperature change
- invasive/alien terrestrial species
- invasive/alien freshwater species
- ground transport infrastructure
- effects arising from use of transportation infrastructure.

As the Area was inscribed on the World Heritage List prior to the amendments to the World Heritage Operational Guidelines in 2005, the Area does not currently have a World Heritage Committee approved statement of Outstanding Universal Value (OUV).

A key part of this Periodic Reporting process was the requirement for each World Heritage property to prepare a Statement of OUV which summarises the justification for its inscription as a World Heritage property.

Wet Tropics World Heritage Area Research Strategy 2010 - 2014

The Authority completed its *Research Strategy 2010 - 2014* in November 2010. The Research Strategy was prepared following a considerable amount of targeted consultation and input from research and research user interests. The research and information needs identified in the Research Strategy span a wide range of topics and disciplines, but can be broadly broken down into the following information or knowledge categories:

- baseline information against which to measure environmental changes, trends and impacts
- information required for the evaluation, conservation, enhancement and enjoyment of our natural and cultural heritage
- advance warning of environmental change, improving the ability to model and predict future events
- an understanding of the pressures on, state of, and likely responses of the region's natural heritage
- information to underpin policy development
- information to promote sustainable management (e.g. nature-based tourism, community infrastructure) and understanding of the region's natural and cultural heritage.

The major objectives of the Research Strategy are to identify priority research topics and questions which will benefit management of the Area, as well as:

- promote appropriate research into World Heritage, conservation land management, environmental, cultural, social and economic issues, across the Wet Tropics

bioregion with a primary focus on the Area, policy development and operational decision making
- identify, and seek opportunities for, a variety of collaboration and partnership approaches to enable and encourage Wet Tropics natural area land management agencies (including the Authority), and researchers to work together on world heritage related projects
- promote increased financial and in-kind support through advocacy, collaboration and other means to undertake research relevant and important to the Area
- build on the outcomes of previous research partnerships with the Rainforest CRC and MTSRF
- identify ways in which the Authority can help facilitate research
- disseminate research findings to communities of interest in an effective and timely way.

Learning Landscape

A key outcome and initiative developed under the Authority's Research Strategy is the promotion of the Area as a World Heritage 'learning landscape'. The Wet Tropics is an ideal model system for undertaking research into a wide range of disciplines with regional, national and international (particularly the broader Asia-Pacific region) relevance.

The Research Strategy recognises that for a region of its size, the Wet Tropics has a huge diversity of climates, geologies, altitudinal gradients, landforms, landscapes, habitats and species. In addition, the region's rocks, fossils (pollen), landforms and soils reflect a rich and varied geological history that is internationally important for interpreting past geological processes of global significance, such as volcanism, plate tectonics, ice ages, the evolution of life, and for understanding current global change.

There are also Rainforest Aboriginal communities and groups that have a continuing cultural affiliation with the Area. These natural and cultural assets of the Wet Tropics region provide an important resource for regional tourism, which is the major contributor to the regional economy.

The Research Strategy recognises that there are comparative advantages of undertaking research which focuses on and benefits the management of World Heritage properties, in that actions taken at these iconic properties attract considerable attention and can influence the adoption of good management practices elsewhere. The 'Learning Landscape' concept is also aligned with UNESCO policy which encourages World Heritage properties to serve as living laboratories where monitoring, mitigation and adaptation processes can be applied, tested and improved. They also encourage partnerships between relevant organisations in field activities on mitigation and adaptation strategies, methodologies, tools and/or pilot projects.

Queensland Biodiversity Strategy

In April 2011, the Authority provided comment on *Building Nature's Resilience: A Draft Biodiversity Strategy for Queensland.* The submission identified six Wet Tropics specific areas for particular comment as follows:

- the need to highlight and recognise the international significance and importance of Queensland's World Heritage Areas
- recognition of Queensland's biodiversity 'hotspots' and in particular, the Wet Tropics World Heritage Area
- vulnerability of the Wet Tropics' World Heritage biodiversity to climate change
- recognition of the cassowary as an iconic species
- recognition of the Wet Tropics bioregion as the interface between Queensland's terrestrial and marine centres of biodiversity.

Geographic information services

The Authority provided geographic information services and products to a varied client base during the year. Clients included local government, Queensland and Australian Government departments, research organisations, community groups and individuals.

Wet Tropics Management Plan Review

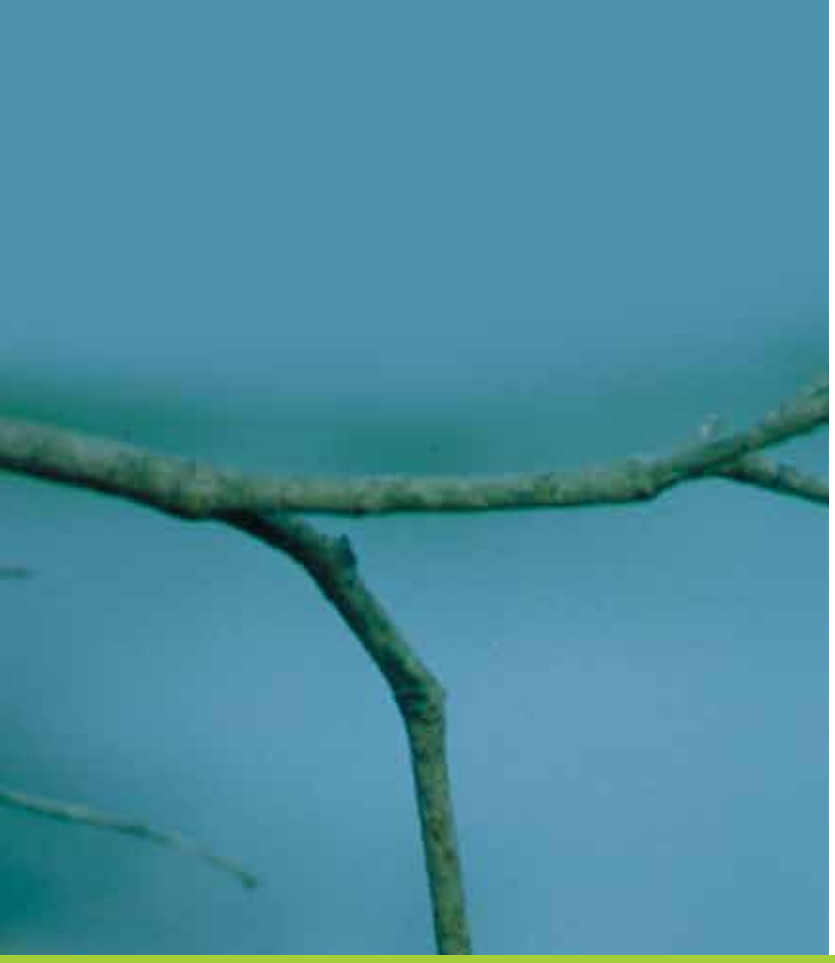
The Wet Tropics Management Plan 1998 (Wet Tropics Plan) regulates activities with the potential to impact on the integrity of the World Heritage Area. Under the *Wet Tropics World Heritage Protection and Management Act 1993* (Queensland Act), the Wet Tropics Plan must be reviewed every ten years through a process that involves two phases of formal public notification and stakeholder consultation. The public notification and consultation process focussed on potential amendments being considered by the Authority to the Wet Tropics Plan. The Authority completed these formal consultation phases during 2009-2010.

During 2010-11, after considering all submissions made in response to the proposed amendments, the Authority commenced preparing a management plan which would have the effect of amending the Wet Tropics Plan. A final *Wet Tropics Amendment Management Plan 2011* (Wet Tropics Amendment Plan) has now been prepared.
An amended set of zoning maps has also been prepared to reflect amendments included in the Wet Tropics Amendment Plan. The amendments under the Wet Tropics Amendment Plan will result in an overall improvement in the operation of the Wet Tropics Management Plan through refinement of provisions that regulate activities with the potential to impact on the World Heritage Area. The amendments will also result in improvements to regulatory efficiencies and/or regulatory impact minimisation.

The next stage is for the Authority to give the final Wet Tropics Amendment Plan to the Wet Tropics Ministerial Council for its consideration. Under the Wet Tropics Act, approval of the final Amendment Plan by Governor in Council may be made only on the recommendation of the Ministerial Council.

Black Mountain National Park

Rocky Peak



Communities and Partnerships Program

The Communities and partnerships program comprises staff with professional skills in community engagement, Indigenous partnerships, communications, tourism and visitor services. The program includes four main projects:

- Community Engagement
- Indigenous Partnerships
- Eastern Kuku Yalanji Indigenous Land Use Agreement Implementation
- Tourism and Visitor Services.

Through the Communities and Partnerships program, the Wet Tropics Management Authority works to ensure that the Area is relevant in the life of the community and that, in turn, the community has a say in the management of the Area and has opportunities to contribute towards its protection and management.

Community Engagement Project

The Community Engagement Project aims to inspire the community to actively engage and participate in conservation and presentation of the Wet Tropics World Heritage Area and to educate the community to appreciate the diverse environmental and socioeconomic benefits of the Area. The project also aims to promote the role of the Authority and its partners in managing the World Heritage Area.

The project generates and supports a broad range of products and activities to engage and educate the community, including advisory and liaison groups, educational materials, the Wet Tropics Management Authority website, brochures, books and DVDs, local media stories, regional displays, art exhibitions, and the annual Cassowary Awards.

Working with the Wet Tropics community

Cassowary Awards and Young Cassowary Awards

The twelfth annual Cassowary Awards were held at Wildlife Habitat at Port Douglas on 6 November 2010. The Awards were presented by Senator for Queensland Jan McLucas, representing the Australian Government, and Mr Steve Wettenhall MP, Member for Barron River, representing the Queensland Government. Also held on the evening were the Young Cassowary Awards, now in their fifth year. These awards recognise the work of students and school classes in helping to conserve the Wet Tropics. Nine Cassowary Award winners were honoured, including one Young Cassowary Award.

Art exhibitions

The Authority launched its Keep it Wild poster competition as part of the Festival of Cairns event. The competition was held in conjunction with the Great Barrier Reef Marine Park Authority (GBRMPA) and the Cairns Regional Art Gallery. Many excellent entries were received highlighting the perceptions of young artists of the rainforest and reef around the Wet Tropics. Winning posters were exhibited at the Cairns Regional Gallery. The winners artwork was also made into a calendar for 2011.

Promotion of the Wet Tropics World Heritage Area

National Heritage Week

The nation celebrated its first Australian Heritage Week from 14 - 20 April. The Department of Sustainability, Environment, Water, Population and Communities and the National Heritage List Sites Promotion Program provided $10,000 for WTMA, GBRMPA and the tourism industry to promote World Heritage reef and rainforest at regional airports during the week. Tourism volunteers distributed flyers featuring scenic photos and World Heritage information and an advertorial on the Wet Tropics was produced for the July issue of the Qantas inflight magazine, *The Australian Way*.

Wet Tropics website

The Authority continued to maintain and

expand its extensive website of over 500 pages. Website statistics showed between 48,000 and 59,000 visits to the website each month. The most popular features were Wet Tropics walks, the Rainforest Explorer primary school educational activities and images, the news and issues section and plants and animals pages.

Media relations
The Authority continued to promote World Heritage issues in the media and the wider community. Articles in the media publicised the impacts of Tropical Cyclone Yasi on cassowaries, partnerships with other World Heritage Areas, the Cassowary Awards and the Authority's poster and art exhibitions.

E–newsletter
Publication of the Authority's quarterly e–newsletter continued during the year, with the objective of ensuring the Wet Tropics community is well informed about the World Heritage Area and the work of the Authority and its partners.

Education

Newspapers in Education
The Authority sponsored the Newspapers in Education (NiE) section of The Cairns Post newspaper for the seventh year. As part of its sponsorship the Authority provided four pages of stories and small activities every two weeks highlighting the 'International Year of Forests' throughout the year. This year's NiE articles promoted the Young Cassowary Awards and the Keep It Wild art competitions.

Indigenous Partnerships Project

Successful engagement of Rainforest Aboriginal people in management of the Area yields social and economic dividends for the community, as well as environmental and cultural benefits. This is consistent with key deliverables of the Australian and Queensland Governments to sustain cultures and improve socio-economic well-being by engaging with, and supporting the capacity of, Indigenous communities, organisations and individuals. Appropriate recognition and support provides a platform for improved leadership, governance and operational competencies through capacity growth, education, and equitable participation in decision-making, enterprise development and employment.

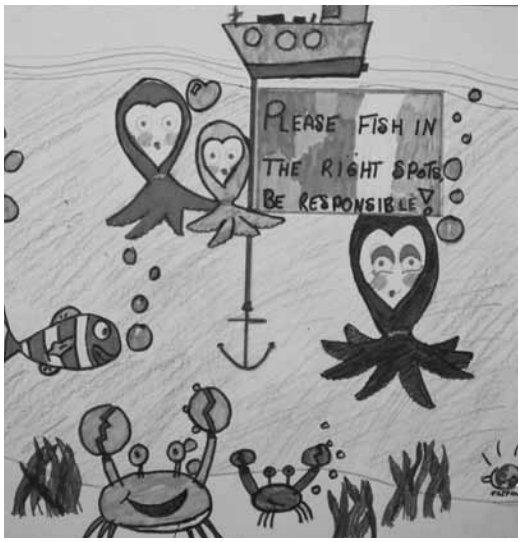
WTMA also acknowledges the significant contribution Rainforest Aboriginal people make to the management of the Area as the original managers and custodians who shaped the landscape to it current natural significance.

National Heritage Assessment for Indigenous Heritage Values
Support for the National Heritage Listing for Indigenous heritage values is ongoing with WTMA providing assistance to the Australia Government for their public consultation to ensure Rainforest Aboriginal people are aware and involved in the listing decision and its implications for the Area. It is expected the final decision on listing will be made by the Minister for Sustainability, Environment, Water, Populations and Communities in 2011-12.

Partnerships with Rainforest Aboriginal people

Rainforest Aboriginal Advisory Committee
Since February 2005, WTMA has operated a Rainforest Aboriginal Advisory Committee (RAAC) specifically to provide advice on Rainforest Aboriginal cultural issues to the WTMA Board. During 2010-11 the Authority reviewed the committee to ensure it was still appropriate to meet the needs of the Board and the Rainforest Aboriginal community. The review was completed in March 2011 with the request from the RAAC itself to dissolve RAAC in favour of the proposed Rainforest Aboriginal Peoples Alliance.

Young Cassowary Award Winners, Nov 2010



Keep it Wild Art Competition Entry

Rainforest Aboriginal Peoples Alliance meeting

Rainforest Aboriginal Peoples Alliance

WTMA provided support to Rainforest Aboriginal people in their aspirations to establish the Rainforest Aboriginal Peoples Alliance (RAPA), a regional Indigenous body for land and sea management for the Wet Tropics region. RAPA will comprise a skills-based Board and membership including sub-regional and local level Aboriginal cultural and natural resources management organisations. The RAPA will seek to provide greater efficiencies in service delivery and more effective streamlined governance to matters that require a strategic regional voice in the Wet Tropics including advising the WTMA Board on Rainforest Aboriginal cultural issues.

WTMA provided financial and in-kind resources including executive support to the Rainforest Aboriginal community to establish the RAPA and to Girringun Aboriginal Corporation as the host organisation.

Australian World Heritage Indigenous Network

The Authority facilitated the involvement of Rainforest Aboriginal people in the Australian World Heritage Indigenous Network (AWHIN) enabling Wet Tropics Traditional Owners to meet with and develop strategies and ideas with Traditional Owners from other Australian World Heritage Areas. Two Traditional Owner delegates, Ms Allison Halliday and Mr Troy Wyles-Whelan participated in the annual conference held in Broken Hill in October 2010 and were successful in raising issues for the attention of the Australian World Heritage Advisory Committee (AWHAC). Former WTMA Board Director Ms Allison Halliday was also successful in being appointed to fill the female Aboriginal position on AWHAC early in the year.

Native Title and Indigenous Land Use Agreements in the World Heritage Area

Jirrbal people received their consent determination on 8 October 2010 for part of the Area, near Lake Koombooloomba up to Herberton. During negotiations the Jirrbal people also negotiated an Indigenous Land Use Agreement (ILUA) with WTMA and the State of Queensland over these areas that fall with the protected area estate. This ILUA is a formal contract to recognise Jirrbal people's native title rights and interests, but requiring access to, use and manage the ILUA area that is within the WTWHA in a manner consistent with the Wet Tropics Act and Management Plan.

The ILUAs aim to appropriately balance World Heritage values with the well-being of Rainforest Aboriginal people, their cultural obligations to protect and manage lands, and their aspirations for land use, community development and socioeconomic recovery. Djiru, Wanyurr Majay (Yidinji) and Gunngandji (Yarrabah) people also signed similar ILUAs with WTMA and the State of Queensland in the past year.

Indigenous Community Engagement

Community liaison

Members of the Communities and Partnerships team work closely with Rainforest Aboriginal people, native title representative bodies, regional Aboriginal organisations, government agencies, non-government organisations (NGOs) and reference groups to engage Rainforest Aboriginal people in the management of the Area. The Authority continued to implement its obligations under the Wet Tropics Regional Agreement, including applying consultation protocols with local Traditional Owners on all aspects of the Authority's business and working with QPWS to establish operational working groups and involve Traditional Owners in the development of National Park Management Plans.

Community consultations were effective in maintaining strong relationships with the Rainforest Aboriginal community focused around structured discrete projects and activities. These included the production and distribution of the 12th edition of the Rainforest Aboriginal News, assistance to the North Queensland Aboriginal and Torres Strait Tourism Alliance and the development of applications for funding grants. Consultation activities provided timely and informed advice and information exchange that benefited both Rainforest Aboriginal people and the Authority.

Community Events

WTMA promoted its work with Rainforest Aboriginal people through school, university and conference presentations including addressing attendees at the 3rd National Indigenous Land and Sea Management Conference on economic opportunities provided by protected areas. WTMA partnered with DERM to host a stall at the 2010 National Aboriginal and Islander Day Observance Committee (NAIDOC) celebrations in Cairns and promote the benefits of working with community to manage and protect the Area.

WTMA assisted the preparations, participated in proceedings and was a major sponsor of the Rainforest Aboriginal Peoples Wet Tropics Cultural and Natural Resource Management Summit on 5-6 July 2010. The Summit was conducted as a NAIDOC event and addressed the major themes of Traditional Owner participation, coordinated investments, culture and heritage, water, land and protected area management, planning and economic development. The Summit also investigated opportunities to take a whole of Government approach to achieving the desired outcomes endorsed at the proceedings including the development of the RAPA.

Cultural NRM summit participants from WTMA, DERM and Girringun Aboriginal Corporation

Eastern Kuku Yalanji Indigenous Land Use Agreement Implementation

The 2007 Indigenous Land Use Agreements (ILUAs) and the Eastern Kuku Yalanji people settled a range of land use issues and ensured the protection of environmentally and culturally sensitive areas over 230,000 hectares in the northern sector of the Area. The suite of 15 ILUAs established a cooperative approach to land ownership, use and management and community development.

Approximately 16,500 hectares will be transferred under the *Aboriginal Land Act 1991* for Eastern Kuku Yalanji Traditional Owners to live on their country, manage it to conserve the land values and to develop sustainable economic opportunities to improve their well-being.

Most of the land is subject to ILUAs within the World Heritage Area. A Cooperative Management Agreement under the *Wet Tropics Management Plan 1998* provides for the agreement of Community Development Plans and associated Activity Guidelines which will facilitate development while ensuring the protection of World Heritage values in these areas. Native Title holders have agreed to exercise their Native Title rights and interests only in accordance with the Cooperative Management Agreement. All activities must comply with the laws of the State and Commonwealth.

Activities also have to comply with Local Government planning requirements under the *Sustainable Planning Act 2009*. WTMA and Jabalbina Yalanji Aboriginal Corporation have facilitated the formation of a cross-government working forum, led by the Department of Local Government and Planning and including the Cook and Cairns Regional Councils, to consider practical ways of integrating the rights and interests of Indigenous landowners with development and environmental conservation regulation.

WTMA has engaged local government planning scheme experts to assist in developing master plans to inform the development of a 'Bush Living Code' or other mechanism to incorporate the Community Development Plans into the Local Government planning schemes. It is envisaged that these outcomes may also assist in framing a broader 'Bush Living Code' for Aboriginal Land to be

put forward as a State Planning Policy or other planning instrument to allow uses such as building homes to be self-assessable in these circumstances.

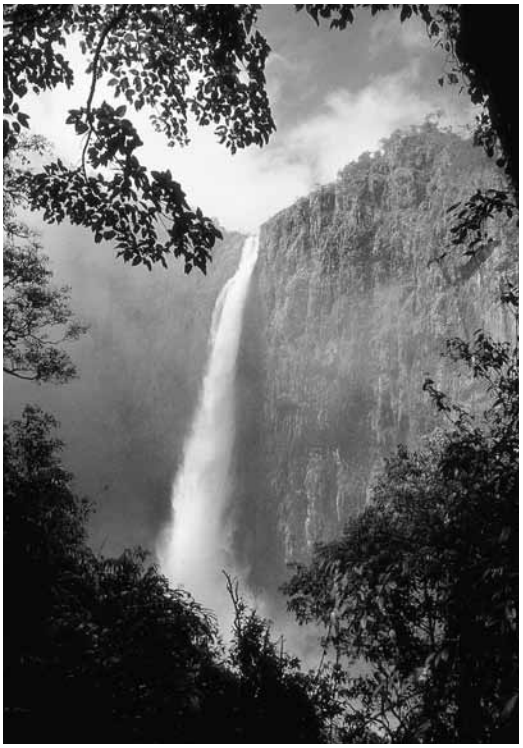
The core objective is the protection of World Heritage values and Yalanji peoples' improved well being and sustainable livelihoods through the establishment of environmentally, culturally, socially and economically sustainable Community Development Plans and Activity Guidelines. These will assist Yalanji people to move back on to and care for country in a sustainable fashion in accordance with their Native Title rights and interests.

Tourism and Visitors Service Project

Tourism and the presentation of the Wet Tropics World Heritage Area and associated values are critical areas of activity for WTMA. Tourism is also of vital importance for the Far North Queensland economy. A Commonwealth Government study in 2008 estimated that the Wet Tropics World Heritage Area generates just over $3 billion in annual direct and indirect national output or business turnover within Queensland and supports around 18,000 jobs in Queensland. The Wet Tropics is clearly one of the premier tourism attractions in Australia. WTMA is very conscious of the economic importance of the World Heritage Area and is actively interested in ensuring it is sustainably managed in ways that maintain its relevance and value in the tourism marketplace. WTMA also regards a strong partnership with the tourism industry as a vital means of achieving the objectives of the World Heritage Convention for presenting the World Heritage area and for ensuring it has a role in the life of the community.

National World Heritage Gateway

A World Heritage gateway in Cairns was identified by the Queensland Government as a regional tourism development priority in its Tourism Opportunity Plan for tropical North Queensland. A World Heritage gateway has the potential to be a major new attraction for Cairns and would add substantially to visitor appreciation of the area and other World Heritage Areas.



Wallaman Falls

Mamu Canopy Walkway

Cooper Creek to Cow Bay, Daintree Lowlands

WTMA was successful in obtaining matching funding from the Queensland Government to engage a consultant and support the process of undertaking a prefeasibility study for the proposed gateway. The study will further develop the objectives, scope and purpose of the gateway and identify a business model to ensure the gateway will be viable. Through this process, WTMA has also engaged with project partners to seek cooperation and scope support and investment opportunities for the establishment of the gateway.

Wet Tropics Tour Guide World Heritage Tour Guide Certification

WTMA consultation with the regional tourism industry has revealed strong industry support for the concept of a World Heritage based guide certification program, operating in the context of a national accreditation system. Ensuring rainforest tour guides maintain international best standards in environmental and cultural interpretation will make an important contribution to the region's reputation as a quality destination offering authentic experiences.

WTMA has worked closely with the Queensland Tourism Industry Council (QTIC) to support its bid to secure $126,000 in funding to develop and deliver of guide certification course for the Wet Tropics. Industry and agency consultation have given support to WTMA's program to support appropriately trained environmental specialist guides for the Area.

Blue Tiger Butterfly

Cape Tribulation coastline

Herbert River

The development of courses on interpreting local Australian Indigenous culture and specialised interpretive content on flora, fauna and landscape has commenced. The courses will be delivered in an online training scheme contextualised to the Wet Tropics from 2012. They will enhance the participants' knowledge and understanding of the Wet Tropics, visitor management and community involvement to extend the benefits of tourism. The program will also provide places for 50 existing tour guides who will be trained in the program.

Securing a place for the Wet Tropics in the National Landscapes Program

WTMA has recognised that the National Landscapes Program administered by Tourism Australia and Parks Australia is playing an important part in Australia's international tourism marketing program. The program provides a platform for developing new tourism experiences and products and for building regional support for the tourism industry. Maintaining the reputation of the Wet Tropics as a quality destination that offers authentic experiences is vital in attracting the international experience seeker market; the focus of Australia's tourism marketing.

WTMA has played a lead role in developing and promoting the case for inclusion of the Wet Tropics in the National Landscapes program. WTMA has convened meetings, initiated the establishment of a regional steering group, written the application documents, and guided the committee through the selection process.

WTMA also participated in a Commonwealth funded experience development survey that will audit key tourism activities in the region as a basis for further industry development planning.

Current indications are that the Wet Tropics will be formally included in the National Landscapes Program by the end of 2011.

Building authentic Indigenous cultural tourism experiences

WTMA supports the development of Indigenous tourism enterprises in the region within the broader context of high quality Wet Tropics World Heritage presentation and tourism. This reflects the aspirations of many Rainforest Aboriginal people to develop tourism enterprises as an important economic pathway for sustaining the cultural heritage values associated with the Wet Tropics cultural landscape. WTMA is also committed to promote socio-economic opportunities for Indigenous people in the region and so helps address the barriers to successful Indigenous involvement in tourism.

As a preliminary contribution, WTMA has been facilitating the establishment of a North Queensland Aboriginal and Torres Strait Tourism Alliance as a means of supporting self help and development within the emerging Indigenous tourism industry.

WTMA provided executive support, advice on governance and business planning and assistance in seeking support from Australian Government tourism and employment opportunities and other funding programs until the Alliance can be independently operational.

Malanbarra dancer

Black Mountain lookout

Business Management Program

This Program principally supports the Authority's strategic plan goal that the Wet Tropics Management Authority demonstrates excellence in corporate governance and management. This is delivered by improvement of the Authority's contribution to investors, stakeholders and the community by continued development of the Authority's capability, effectiveness and accountability. There are two projects within this program, Corporate Development and Business Administration.

Corporate Development

The Corporate Development project aims to ensure the Authority maintains and develops it own capacity and continues to adapt to the changing needs of the Australian and Queensland Governments and the Wet Tropics community.

Business planning systems

The Authority has given a high priority to developing a business plan in to ensure it creates the highest possible value for the Wet Tropics community and stakeholders. The Authority is committed to developing and adapting its own capabilities to ensure it maintains capacity to meet the needs of the Australian and Queensland Governments and the Wet Tropics community. The Authority's project management approach encourages clear identification of outcomes, objectives and milestones. It requires purposeful allocation of staff and other resources to organisational priorities and establishes a clear basis for organisational performance management.

Partnerships

The Authority regards partnerships with other agencies with roles in environmental management as central to its success in managing the Wet Tropics World Heritage Area.
Of particular importance is the Authority's relationship with DERM primarily through the QPWS.
The Authority manages its formal relationship with QPWS through an annual agreement. During the year, a new format for the agreement was introduced that emphasises the mutually supportive partnership of the two organisations.

Other important partnerships for the Authority include those with:

- Terrain NRM which has worked with the Authority in Indigenous partnerships projects, joint development of funding applications and in community engagement
- The Reef and Rainforest Research Centre (RRRC) which administers the Marine and Tropical Sciences Research Facility (MTSRF) funding much of the rainforest research in the region
- The Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), in addition to its heritage policy roles in support of the Authority, coordinates the assessment and issue of permits under the *Environment Protection and Biodiversity Conservation Act 1999* with the work of the Authority
- Tourism Queensland which, along with Tropical Tourism North Queensland (TTNQ), the Queensland Tourism Industry Council (QTIC), the Commonwealth Department of Resources Energy and Tourism (DRET) and many regional tourism businesses, assists the Authority in ensuring the World Heritage Area is appropriately presented to visitors.

The Authority understands the importance of coordinating its work with other State and Commonwealth agencies to facilitate efficient and effective service delivery to the Wet Tropics community. The Authority's active participation in the Far North Queensland Regional Managers Coordination Network is an important means of achieving this.

New Investments

Through its corporate development project, the Authority has been able to secure new investments into projects that contribute to the Authority's strategic goals. These include:

- $600,000 investment from the Commonwealth Government's Caring for Our Country program to assist landholders to undertake rainforest revegetation and protection works in high elevation landscapes on the southern Atherton tablelands
- In partnership with QTIC $126,000 in funding to develop and deliver of guide certification course for the Wet Tropics Heritage Tour Guide to help enhance industry presentation standards
- in partnership with the Australian Tropical Herbarium, $22,000 through MTSRF, to support the delivery of rainforest plant identification training to the community
- in partnership with the University of Tasmania, $20,000 though MTRSF to research the impact of fire on the rainforest/sclerophyll boundary
- $10,000 from the Heritage Division Program (SEWPaC) to support National Heritage Week promotions.

International Links

The Authority remains interested in developing its role in support of heritage managers in the Asia Pacific region and internationally. This objective is consistent with intentions of the World Heritage Convention and aligns well with the Authority's Knowledge Brokering and Communication agenda.

The Authority, in collaboration with SEWPaC, conducted an intensive three day training workshop to assist four Pacific Island countries to complete their Periodic Reporting questionnaires prior to forwarding to the UNESCO World Heritage Centre. The four Pacific Island countries that participated were Kiribati (Phoenix Island Protected Area WHA), Papua New Guinea (Kuk Early Agricultural Site WHA) , Vanuatu (Chief Roi Mata's Domain WHA) and Solomon Islands (East Rennell WHA).

The Authority participated at the 60th Fulbright Symposium which was held in Cairns in September 2011. The Authority supported a session on Twenty Years of Wet Tropics World Heritage: Lessons learned in Sustainable Environmental Management.

World Heritage Managers Messrs Chen Zhongping and Jiwei Xu, involved in management of the Huangshan Scenic Area in China, a World Heritage site, visited WTMA in October 2010 to exchange experiences in the management of the two World Heritage properties and have indicated an interest in formalising a partnership arrangement.

The Foreign Minister, the Hon Kevin Rudd MP, arranged for the Canberra Diplomatic Corp to visit Queensland in early April 2011 to demonstrate that Queensland is open for business following the floods and cyclone. Authority staff were pleased to have the opportunity to highlight the outstanding values of the Area to the visitors.

A delegation of Indian officials from the State of Orissa visited the Authority in June 2011 as part of an Australian study tour examining tropical forestry management and policy and public-private sector partnerships.

The Authority has continued to engage in national and international conservation management networks, in particular through membership of the International Union for Conservation of Nature (IUCN) and Parks Forum. The Authority was pleased to be among the first member agencies to contribute to the revitalisation of the Australian Council for IUCN and looks forward to a productive partnership.

Business Administration

Funding

As the Authority is a Statutory Authority, its general-purpose financial statements details for 2010-2011 are incorporated in the overall Department of Environment and Resource Management financial statements. Total funding of $5 million for 2010-2011 was provided to the Authority, principally by the Australian and Queensland Governments, and supplemented by other forms of income. The Authority realised an operating surplus of $202,000. A summary of the Authority's operating statement for 2010-2011 is provided in **Table 1**.

Table 1. Wet Tropics Management Authority Operating Statement

Controlled Revenue and Expenses	Notes	2010-2011	2009-2010
REVENUE		$'000	$'000
Revenue from Government			
Payment for Outputs		2,141	1,983
Assets Assumed/Liabilities transferred		0	0
Sub-total Government Revenue		**2,141**	**1,983**
Own Source Revenue			
User Charges		16	19
Grants and Other Contributions		2,831	2,760
Taxes, Fees and Fines			(61)
Gain on disposal of fixed assets			0
Other Revenue		7	2
Interest			0
Sub-total Government Revenue		**2,854**	**2,720**
TOTAL REVENUE		**4,995**	**4,703**
EXPENSES		$'000	$'000
Operating Expenses	1		
Program			
Business Management		1,049	1,059
Communities & Partnerships		1,195	984
Planning & Conservation		877	870
QPWS - WTMA Partnership Agreement		1,666	1,825
Sub-total Operating Expenses		**4,787**	**4,739**
Non-Operating Expenses			
Depreciation		6	7
Asset Writedowns/Loss on disposal		0	2
Sub-total Non-Operating Expenses		**6**	**9**
TOTAL EXPENSES		**4,793**	**4,748**
OPERATING RESULT		202	-45

Notes 1. The 2009-2010 Operating Expenses has been recast on the same basis at the 2010-2011 figures. The Operating Expenses reflects actual expenditure against all four programs. Previously QPWS had been combined with Business Management.

The Australian Government's base allocation to the Authority for 2010-2011 was $2.8 million. These funds were allocated among the Authority's programs. The Queensland Government contributed $1.7 million to the Authority. Under the annual Partnership Agreement QPWS, these funds were then transferred to Queensland Parks and Wildlife Service for on-ground World Heritage management services.

Audits

One operational audit was conducted by PGL Financial Services Pty Ltd in 2010-2011 for Commonwealth Funds received.

Staffing and Contractors

At 30 June 2011 the approved staff establishment of the Authority totalled 28 permanent positions, six of which were vacant.

Contract staff supplemented staff resources during the year to provide a range of services. These services included consultation and liaison with Rainforest Aboriginal people; graphic designers, financial and workforce management; conservation and tourism activities and administrative support. **Table 2** shows expenditure on consultancies and contracts for 2010-2011 compared to the previous financial year.

Table 2. Expenditure on Contracts

	2010-2011	2009-2010
EXPENDITURE	**$**	**$**
Consultancies by Category*		
Management	0	0
TOTAL	**0**	**0**
Contract Staff by Program*		
Business Management	2,745	28,948
Communities & Partnerships	26,745	46,355
Planning & Conservation	23,484	16,007
TOTAL	**52,974**	**91,310**

* Excludes QPWS expenses incurred against the Service Agreement.

Workplace health and safety
WTMA adheres to DERM's health and safety management systems and procedures. WTMA recorded no accidents for 2010-11. Regular workplace health and safety inspections are conducted with no significant issues arising. WTMA staff attend regular education, awareness and training sessions to ensure current accreditations are maintained.

Equal Employment Opportunity
All Recruitment and Selection recommendations are monitored and reviewed to ensure compliance with DERM's policies and procedures including current Human Resources directives. All appointments during 2010-11 complied with directives and no Equal Employment Opportunity (EEO) complaints were received. At 30 June 2011 the Authority had thirteen females and nine males on staff and six positions vacant. **Table 3** gives a profile of the Authority's staff.

Overseas travel
There were no overseas trips by Authority staff during 2010-11.

Table 3. Employment by gender, occupational stream and salary

Employment by gender and occupational stream as at 30 June 2011 (based on actual occupants)

Stream	Female (%)	Male (%)
Administration and Senior Executive Service	11 (55)	5 (25)
Professional	2 (10)	3 (15)
Technical	0	1 (5)
Operational	0	0
Total	**13 (65)**	**9 (45)**

Employment by gender and salary level as at 30 June 2011 (based on substantive positions)

Salary Range	Female (%)	Male (%)
$107,468 +		1 (5)
$98,342 - $107,467		2 (10)
$87,692 - $98,341		2 (10)
$77,645 - $87,691	1 (5)	3 (15)
$68,992 - $77,644	5 (25)	1 (5)
$59,294 - $68,991	5 (25)	
$49,907 - $59,293	2 (10)	
$33,444 - $49,906		
Total	**13 (65)**	**9 (45)**

Terms and Abbreviations

ARAZPAQ	Australasian Regional Association of Zoological Parks and Aquaria, Queensland
AWHAC	Australian World Heritage Advisory Committee
AWHIN	Australian World Heritage Indigenous Network
Bioregion	Wet Tropics of Queensland biogeographic region
C4	Community for Coastal and Cassowary Conservation
CAFNEC	Cairns and Far North Environment Centre
CRT	Cassowary Recovery Team
CCC	Community Consultative Committee
CCRC	Cassowary Coast Regional Council
CFOC	Caring for our Country
CVA	Conservation Volunteers Australia
CDP	Community Development Plan
Commonwealth Act	*Wet Tropics of Queensland World Heritage Area Conservation Act 1994*
CRC	Cairns Regional Council
CSIRO	Commonwealth Scientific, Industry and Research Organisation
CSLG	Conservation Sector Liaison Group
CTBCC	Centre for Topical Biology and Climate Change
DEEDI	Queensland Department of Employment, Economic Development and Industry
DERM	Department of Environment and Resource Management
DRET	Department of Resources Energy and Tourism
DTMR	Queensland Department of Transport and Main Roads
EEO	Equal Opportunity Employment
EPBC Act	*Environment Protection and Biodiversity Conservation Act1999*
FNQROC	Far North Queensland Regional Organisation of Councils
ILUA	Indigenous Land Use Agreement
IUCN	International Union for Conservation of Nature
JCU	James Cook University
MoU	Memorandum of Understanding
MTSRF	Marine and Tropical Science Research Facility
NAIDOC	National Aboriginal and Islander Day of Commemoration
NGO	Non-government organisation
OUV	Outstanding Universal Value
PQA	Pest Quarantine Area
QPWS	Queensland Parks and Wildlife Service
Queensland Act	*Wet Tropics World Heritage Protection and Management Act 1993*
QTIC	Queensland Tourism Industry Council
RAAC	Rainforest Aboriginal Advisory Committee
RRRC	Reef and Rainforest Research Centre
SAC	Scientific Advisory Committee
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities

Terrain NRM	Terrain Natural Resource Management
The Area	Wet Tropics of Queensland World Heritage Area
The Authority	Wet Tropics Management Authority
The Plan	*Wet Tropics Management Plan 1998*
TERN	Terrestrial Ecosystem Research Network
TILG	Tourism Industry Liaison Group
UNESCO	United Nations Educational Scientific and Cultural Organisation
WHA	World Heritage Area
WPSQ	Wildlife Preservation Society Queensland
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area

Emmagen Beach

Millstream Falls

Frilled Neck Lizard

STATE OF THE WET TROPICS 2010–2011

Biosecurity Theme Report

It is a requirement of the QLD Act for the Authority to include in its annual report a report on the state of the Wet Tropics Area. The following report based on a biosecurity theme comprises that report for 2010-11.

Executive Summary

The biodiversity of the Wet Tropics is of global significance

The Wet Tropics of Queensland World Heritage Area (WTWHA), the Area, supports an extraordinary assemblage of plants and animals. Despite comprising only a very small proportion of the Australian continent, it supports a very high proportion of Australia's flora and fauna. The distinctive and diverse assemblage of plants and animals that exist in the Area occur because of finely balanced ecological and climatic conditions. Invasive species and climate change threaten to disrupt these finely balanced conditions and may result in rapid and catastrophic changes that increasingly threaten the region's fauna and flora and ecological systems.

Exotic pests, weeds and disease are major threats to the Wet Tropics

Biosecurity risks to the Area are increasing as the mobility of people, plants, animals and trade increases. Although increased prominence has been given to human health and agriculture sector biosecurity events and risks in the media in recent times due to several disease and pest outbreaks, most notably zoonoses such as avian influenza, equine influenza and Hendra virus; community knowledge and awareness of environmental weeds, pests and wildlife diseases is very low.

Invasive species are an escalating threat to the Area:

- *Phytophthora cinnamomi* threatens hundreds of the region's rainforest endemic plant species
- Myrtle rust threatens many more species within the very large Myrtaceae plant family
- several species of Wet Tropics endemic rainforest stream-dwelling frogs have vanished from altitudes above 300 metres as a result of the exotic chytrid fungus
- the incidences of tramp ants are increasing, which present an enormous threat to rainforest ground dwelling reptiles, mammals and birds
- the exotic fish, tilapia is rapidly invading many of the major rivers, streams, and water bodies
- the introduction and establishment of very invasive weed species has escalated over the last decade.

Phytophthora cinnamomi

Myrtle Rust

Chytrid Fungus

These new and emerging biosecurity threats are in addition to those Wet Tropics' pest species that are already well established, such as feral pigs, cane toads, wild dogs and over 500 naturalised weed species. The full impacts of many of these invasive species that are already well established in the Wet Tropics are yet to be seen. It will take varying lengths of time for many to reach their full potential distributional range. Meanwhile, new invaders are continually arriving and taking hold.

Biosecurity risks interact with other pressures

These biosecurity threats are interacting with other drivers of environmental change in the Wet Tropics, including climate change. Rainfall is predicted to become more seasonal with a wetter wet season and a longer, dryer dry season. Cyclone intensity is predicted to be greater creating risks of more frequent major ecosystem disruption as witnessed after Cyclone Larry in 2006 and Cyclone Yasi in 2011. The El Niño phenomenon is predicted to occur more frequently causing more frequent and severe droughts.

In order to improve regional biosecurity it is necessary to enhance the capacity of regional bodies and agencies to recognise, act upon, and plan for animal and plant pests and wildlife diseases.

Priority must be given to prevention of new incursions

The best way to deal with this threat is through a combination of preventive measures - early detection and rapid response to new incursions, with permanent management only as the last option. The best point at which to control a potentially invasive species is prior to its introduction. Once introduced, quick action is essential to eradicating an invasive species before it becomes established. Priority must be given to prevention, as management is a far more costly alternative.

More must be done to protect the Wet Tropics

In the last decade, the Wet Tropics has had a deplorable record of incursions of high risk environmental pests.
Being the most populous part of northern Australia, the Wet Tropics needs to be given a higher profile as an important frontline of biosecurity for Australia. It is important for all levels of government to invest substantial funding to Wet Tropics environmental biosecurity to:

- reduce any further escalation in the many biosecurity incidents occurring
- reduce the negative environmental impacts should they eventuate in this World renowned biodiversity hotspot
- meet Australia's international obligations to protect the biodiversity of the WTWHA.

Cyclone Larry impacts at Mission Beach

It is also important that regional capacity, expertise and knowledge is increased so that we can:

- better understand and address emerging risks that may arise from climate change, changes in land use and increasing global travel and trade
- ensure we are well positioned to meet future biosecurity challenges
- ensure that into the future, we have the best possible chance of rapidly detecting and managing the next threat, whatever it might be.

This report has identified a number of specific issues that require addressing when it comes to maintaining biosecurity for the WTWHA including:

- a need for comprehensive early warning surveillance
- a need for contingency plans for environmental weeds, pests and diseases
- a need to build regional capability and skill sets
- a need to improve the approach to the detection of invertebrate pests
- a need to increase community awareness of the threat that invasive pest species pose to Australia's iconic biodiversity hotspots.

A determined, well-resourced effort can succeed

While the outlook for the WTWHA is a cause for great concern, much can be done at a regional level to respond to the escalating biosecurity threats facing the Wet Tropics. As is evident from the successful papaya fruit fly eradication program; it is feasible to eradicate a serious exotic pest outbreak if detected at an early stage, if a rapid and effective emergency response is made; if sufficient resources are provided; and if appropriate expertise and eradication techniques are available. The report has identified that the most important management interventions will be those that:

- ensure regional capacity is in place for the early detection of new pest and disease incursions
- ensure systems are in place to engender rapid responses to pest and disease incursions as soon as detection has been confirmed
- ensure systems are in place to allow resources to be drawn upon quickly for an effective initial eradication response
- ensure that there are appropriately skilled personnel available in the region to enable rapid and effective emergency responses during serious incursions.

A management framework

The report concludes that there are four broad areas of activity that could be undertaken to improve the situation in the Wet Tropics:

- regional planning, coordination and leadership
- improving and communicating our knowledge of biosecurity risks to our natural environment
- on-ground works
- increasing community awareness and mobilising behavioural change.

Papaya fruit fly

Papaya fruit fly trap. Photos courtesy DPI

Definitions and Terms

This report has adopted the terminology as described in the Australian Quarantine and Biosecurity Review Issues Paper [13]. **Biosecurity** is a relatively new term and refers to the protection of the economy, environment and human health from the negative impacts associated with entry, establishment or spread of exotic pests, diseases and weeds [13]. **Quarantine**, on the other hand, is the system of measures which are used to manage risks of the entry and establishment of pests or diseases which threaten animal, plant or human health [13]. In this report the term biosecurity encompasses both terms. There are five key principles involved in biosecurity: surveillance; detection; diagnostics; preparedness; and rapid response.

'Exotic' pests and diseases are those pests and diseases which are not yet present in Australia, or which have yet to become established [13].

'Naturalised' plants are non-native species that have been introduced into an area and can maintain themselves without human intervention and have invaded and spread into natural and semi-natural systems.

In epidemiology, **'endemic'** pests and diseases are those pests and diseases which are established in an area and are maintained in the population without the need for reintroductions [13]. A pest or disease is considered to be **'established'** if it has survived and continued to spread for a sufficiently long enough period of time after its entry into an area for it to be considered unlikely to be eradicated [13].

The ecological meaning of **'endemic'** is vey different to that used in a biosecurity context. In ecology, endemic species are those species of native plants and animals which are found exclusively in a particular area and which are naturally not found anywhere else. This difference in the use of the term has caused confusion. One example of such misunderstanding has been in relation to the 'endemic' status of the forest dieback disease *Phytophthora cinnamomi* with some interpreting this to mean that the disease is a natural part of our forests and therefore of no concern, rather than it being a devastating introduced disease that has become established in large parts of the WTWHA.

'Zoonoses' are animal diseases that are transmissible to humans.

An **environmentally invasive pest species** is one that has been introduced, by deliberate or accidental human action, into an area in which it did not previously occur and is capable of establishing self-sustaining populations by invading native communities or ecosystems and is capable of causing modifications to native species richness, abundance or ecosystem function. Environmentally invasive pest species include introduced weeds, feral animals, insects and other invertebrates, diseases, fungi and parasites. Consistent with this definition, environmentally invasive pest species can be distinguished by the following five criteria, they are:

- alien (non-native or exotic) species
- introduced intentionally or accidentally by humans to areas where they never previously occurred
- naturalised in this new area, whereby they are capable of creating self-sustaining populations
- expanding their distribution and/or increasing their abundance
- occurring in natural and semi-natural habitats [1].

Declared plants in Queensland are listed under three different categories and imposes a legal responsibility for control by all landowners on land under their management:

- A **Class 1** pest is one that has the *potential* to become a very serious pest in Queensland in the future. We need to prevent the introduction, possession and sale of these species so that they can not escape to become pests. All landholders are required by law to keep their land free of Class 1 pests It is a serious offence to introduce, keep, release or sell Class 1 pests without a permit.

- A **Class 2** pest is one that has *already spread* over substantial areas of Queensland, but its impact is so serious that we need to try and control it and avoid further spread onto properties that are still free of the pest. By law, all landholders must try to keep their land free of Class 2 pests and it is an offence to possess, sell or release these pests without a permit.

- A **Class 3** pest is one that is *commonly established* in parts of Queensland but its control by land owners is not deemed to be warranted unless the plant is impacting, or has the potential to impact, on a nearby 'environmentally significant area' (e.g. a National Park). It is an offence to sell, introduce, release or supply a Class 3 pest.

Chromolaena odorata

Limnocharis

Introduction

Environmentally invasive species are the cause of the widespread replacement of the unique by the commonplace. The homogenization of biodiversity through the intentional and unintentional introduction of invasive species is accelerating. Increased global trade, transport and tourism, has assisted and accelerated the movements of organisms from one part of the world to another through newly created pathways of introduction. This global mixing of species decreases the local distinctiveness of floras and faunas and breaks down the geographical isolation that promotes and maintains a region's biodiversity. It is the geographic isolation of the Wet Tropics that has resulted in it being so internationally significant from an evolutionary and ecological perspective.

The ubiquity and magnitude of these invasions has been termed biological pollution [2]. Like chemical pollutants, invasive species escape into the environment and do harm, often avoiding early and easy detection. But unlike other forms of pollution, bio-pollutants are capable of multiplying. If they are not identified at a very early stage and eradicated they can potentially 'pollute' the landscape permanently. Invasive species are proving so harmful, globally, that experts now rank them as one of the worst threats to biodiversity after habitat loss [4, 5].

Within the Wet Tropics there are a range of factors that are interacting and which promote the introduction, naturalisation, spread, establishment and impact of environmentally invasive species. These include:

- the range and seasonality of rapidly changing environmental factors such as temperature and precipitation
- the intensity and frequency of severe episodic events such as cyclones, storms, floods and drought
- the increasing demographic, economic and social pressures related to human activities influencing disturbance patterns and the deliberate and inadvertent movements of non-native species.

Changes in climate, trade, travel, patterns of land use and the encroachment into wildlife habitats by community infrastructure such as roads, electricity distribution networks and communications facilities and their interactions are altering the local profile of biosecurity risks and threats in the Wet Tropics. Biosecurity coverage in the past has focused largely on primary industries with much less attention having been directed to the natural environment. New and emerging biosecurity threats, and the broader focus of environmental responsibilities within biosecurity, require different strategies and capabilities from those previously used in the agricultural production and human health sectors.

As new pests and diseases can emerge at any time without warning, the earlier new threats and issues are detected, the greater the chance of successfully and cost effectively managing them. We need specialist skills in surveillance, risk assessment and policy. Specialised processes will need to be developed for responses to incursions in the environmental sector and freshwater environments. An effective biosecurity system, incorporating robust surveillance, accurate diagnostics, reliable and effective control and management regimes, including enhanced regional preparedness, is important for the Wet Tropics because the environmental consequences of introduced pests and diseases to one of World's biodiversity hotspots could be catastrophic.

Wet Tropics

The rate of spread of invasive pests throughout the Wet Tropics bioregion is increasing more rapidly than can be managed through existing programmes for their removal. This has significant adverse consequences for biodiversity. The Wet Tropics bioregion covers approximately two million hectares and includes the entire Wet Tropics of Queensland World Heritage Area (894,420 hectares).

Australia is recognised by the World Conservation Monitoring Centre as one of the world's 17 mega-diverse countries, which collectively harbour 75 percent of the earth's total biological diversity [6]. Queensland's Wet Tropics itself, is a megadiverse region, and is represented on *The Global 200* list [7] which is a collection of the Earth's 200 most outstanding, important and diverse terrestrial, freshwater and marine habitats. Although Queensland's Wet Tropics may only occupy 0.26 percent of the Australian continent's land surface [8] it contains a disproportionately large share of its biodiversity (**Table 1**).

The Wet Tropics of Queensland was inscribed on the World Heritage list in December 1988. At the time of its inscription, the Wet Tropics was one of only 13 natural World Heritage properties to fulfil all four natural World Heritage criteria and is recognised as an outstanding example of:

i) *Earth's evolutionary history*
ii) *On-going biological evolution*
iii) *Exceptional natural beauty*
iv) *Habitat for threatened species.*

Although the Wet Tropics is a very small biogeographic region, it is characterised by a wide range of climates (encompassing tropical, subtropical, warm-temperate and monsoon climatic zones), a wide range of geologies and soil types, a large number of different vegetation community types, and a long and favourable growing season, making the region susceptible to invasion by a very broad range of invasive species originating from a large range of climatic zones and environmental conditions. The highly restricted nature of many endemic species within the Wet Tropics renders the native flora and fauna of the WTWHA particularly vulnerable to the threat posed by environmentally invasive species [10, 11].

Mt Bellenden Ker canopy in flower

Plants	%	Animals	%
Ferns	65	Marsupials	30
Cycads	21	Bats	58
Conifers	37	Rodents	25
Orchids	30	Birds	40
Vascular plants	26	Frogs	29
		Reptiles	20
		Freshwater fish	42

Table 1. The proportion of Australia's native plant and animal species found in the Wet Tropics [9].

Overview of Environmental Biosecurity Issues in the Wet Tropics

The Wet Tropics bioregion already experiences more pest and disease incursions than most other parts of Australia and will continue to face greater risks and increased potential for incursions due to its geographic profile, population patterns, proximity to Asia, international airport and port, trade diversification, climate change, increased movements of product and people, and changing tourism/ visitor markets.

In the past, the management of invasive species has focused on established weeds, particularly agricultural weeds, with relatively little attention paid to environmental weeds. Similarly, the management of invasive animals has tended to focus on the protection of economic assets such as agriculture and control programs have generally been short-term.

Pest plants

Within the Wet Tropics bioregion 508 exotic plant escapees have become established (naturalised) [14] which represents almost 39 percent of Queensland's total weed flora. Of major concern is the number of recent introductions of weeds on the Northern Australian Quarantine Strategy's Weeds Target List [15] which is a compilation of those species considered to pose the greatest potential threat to Australian rural industries and natural environment.

There are a small number of newly emerging weed species of extreme management concern. These include Miconia *(Miconia calvescens, M. racemosa and M. nervosa)*, Mikania (*Mikania micrantha*), Limnocharis *(Limnocharis flava)*, Koster's curse *(Clidemia hirta)* and Siam weed *(Chromolaena odorata)*. Werren [14] compiled a comprehensive list of over 500 recorded naturalised plant species for the Wet Tropics and noted that their numbers had grown very rapidly in recent decades (**Figure 1**).

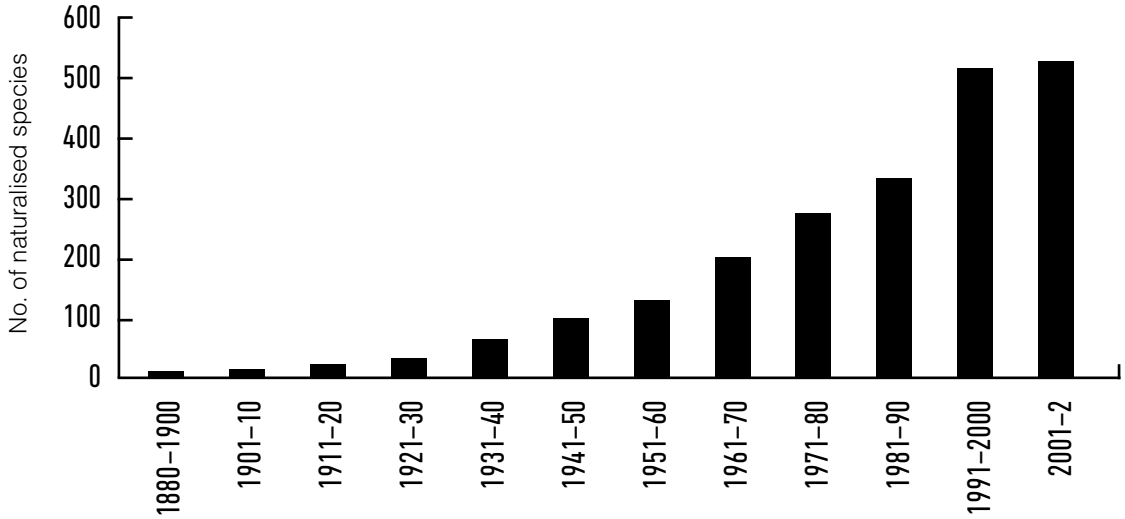


Figure 1. Cumulative total of recorded naturalised non-native plant species in the Wet Tropics per decade from 1880 to 2002 [1].

Pest animals

Although the number of vertebrate pest species (28) has remained stable for several years, their population numbers, distribution and ecological impacts are generally very poorly understood. The populations of some have apparently increased markedly in recent years. It has been estimated that there are about 27,000 feral pigs in the region [16]. Apart from the feral pig, no estimates of feral animal numbers or population trends have been undertaken within the region.

Tilapia, an introduced fish, are rapidly invading many of the region's major rivers, streams, lakes and water storages, possibly aided by illegal movement and release by people. Two tilapia species have established in the Wet Tropics - the Mozambique mouthbrooder *(Oreochromis mossambicus)* and the black mangrove cichlid *(Tilapia mariae)*.

Their rate of population increase is very rapid. For example, five *T. mariae* were released into a Port Douglas resort pond in 1989. Three years later over 1 million fish (18 tonnes) were destroyed [17]. Within the area Biosecurity Queensland and QPWS have ongoing programs to control *Tilapia mariae* in Lake Barrine and to contain *Oreochromis mossambicus* from the Herberton Weir on the Wild River. The Wild River is an upper catchment tributary of the Herbert River, which is the largest catchment within the Wet Tropics.

Tilapia mariae. Photo courtesy JCU

Very little is known about the status of invertebrate pest species apart from those of importance to agriculture or which pose a threat to human health. Invertebrate species such as the crazy ant, electric ant, Asian honey bee, papaya fruit fly, palm leaf beetle and spiralling white fly have all been recognised as potential threats to the integrity of the WTWHA.

Pathogens

A major loss of biodiversity may occur when a new disease is introduced, resulting in catastrophic depopulation. Two equivalents of these 'first-contact' depopulations appear to have occurred recently in the Wet Tropics (phytophthora dieback and frog chytrid fungus), but their true extent has probably been underestimated. It is anticipated that recent, initially catastrophic declines may be followed by chronic population depression and potential local extinction.

Widespread, small patches of rainforest dieback caused by outbreaks of *Phytophthora cinnamomi* were first recorded in the region during the 1970s. More recent outbreaks were found in the late 1990s and continue to the present day. The cause or trigger of these outbreaks is presently unknown [18]. Where virulent outbreaks occur the anticipated consequences include:

- major disruptions to ecological community structure
- local extinctions of populations of some plant species
- a massive reduction in primary productivity
- less productive, more open, less diverse habitat for wildlife.

Over 200 small patches of dead rainforest have been identified from the Mount Lewis, Lamb Range and Tully Falls sections of the Area. A report by JCU researchers suggests that approximately 14 percent or 126,000 hectares of the WTWHA may be

considered highly susceptible and at risk from rainforest dieback [18]. At least five species of phytophthora have been found at dieback sites: *P. cinnamomi, P. heveae, P. katsuurae, P. palmivora* and another unidentified species. Apart from the obvious death of mature trees in virulent outbreaks, it is not known what on-going impacts this disease may have on rainforest seedling dynamics.

Frog chytrid fungus has been identified as a primary cause of massive mortality of stream-dwelling frogs in the region [19]. Chytrid fungus *(Batrachochytrium dendrobatidis)* causes chytridiomycosis, a highly infectious amphibian disease first discovered in dead and dying frogs in the Wet Tropics in 1993. The fungus is now known to be widespread across Australia and has been present since at least 1978. It infects the skin of frogs, disrupting the epidermal layers and causing increased shedding and death. Worldwide, chytrid fungus is now credited with causing the extinction of up to 122 frog species, eight in Australia.

Eight species of frogs in the Wet Tropics experienced severe population declines during the 1980s and 1990s. These locally endemic rainforest stream-dwelling frog species, which were once distributed widely and in high numbers throughout the Wet Tropics, vanished from altitudes above 300 metres within a very short period of time. Four species, the sharp-snouted day frog *(Taudactylus acutirostris)*, the northern tinker frog *(Taudactylus rheophilus)*, the mountain mist frog *(Litoria nyakalensis)* and the armoured mist frog *(Litoria lorica)* only occurred at high altitudes. A population of one of the missing species *(Litoria lorica)* was rediscovered in 2008 outside its former known range in an open-forest habitat that provides environmental conditions less suitable for the development of disease. Another four species, the common mist frog *(Litoria rheocola)*, the waterfall frog *(Litoria nannotis)*, the Australian lace-lid *(Nyctimystes dayi)* and the green-eyed tree frog *(Litoria genimaculata)* have suffered extensive declines and are no longer able to be located at high altitude habitats. However, they still persist at lower elevations [20].

The emergence of this disease radically changes our view of wildlife diseases because it is the first such disease to emerge in 'pristine' sites to infect a wide range of hosts and to cause declines, and possibly extinctions, in disparate regions across the world. This may reflect a concerning global trend that suggest that infectious diseases in wildlife populations are emerging at unusually high rates [21, 22]. The diversity of emerging infectious diseases afflicting wildlife, coupled with the increased frequency of outbreaks has raised concern that infectious disease may play a strong and increasingly important role in species depletion and extinction [22, 23].

Taudactylus acutirostris

Litoria nannotis

Climate change

These biosecurity threats are interacting with other drivers of environmental change in the Wet Tropics, including climate change. Climate projections for the Wet Tropics indicate temperature may increase by 1.4°C by 2030 and 4.2°C by 2070 under high emission scenarios.

Rainfall is predicted to become more seasonal with a wetter wet season and a longer, dryer dry season. Cyclone intensity is predicted to be greater creating risks of more frequent major ecosystem disruption as witnessed after Tropical Cyclone Larry in March 2006 (category 4) and Tropical Cyclone Yasi in February 2011 (category 5). The El Niño phenomenon is predicted to occur more frequently causing more frequent and severe droughts.

Climate changes of this magnitude will have severe and interacting effects on the values of the Wet Tropics World Heritage Area. Changed interactions will not only occur between organisms, such as predator prey relationships and insect pollination but also parasite and disease relationships are likely to be disrupted creating consequent major changes in ecosystem composition, structure and function. Disruption of ecosystems and changed climatic conditions will make the Area more vulnerable to weed and pest invasion. Weed species that may not be able to invade native ecosystems at present may gain a competitive advantage under the warmer drier, CO_2 enriched conditions that are expected. The risk of new vertebrate and insect pests and plant and animal diseases is also likely to increase.

A major challenge of our time is to understand the influence of climate change on the complex interactions and impacts of invasive species on natural and human-altered ecosystems. Climate change poses a very high and immediate risk to the Area and the values for which it was listed [12].

Disruption of ecosystems and changed climatic conditions will make the WTWHA more vulnerable to weed, pest and disease invasion. Weed species that may not be able to invade native ecosystems at present may gain a competitive advantage under the warmer drier conditions that are expected. The risk of new vertebrate and insect pests and plant and animal diseases is also likely to increase [12].

Climate change may affect invasive pests through:

- increased disturbance due to extreme weather events (e.g. cyclones, droughts)
- potential range shifts (e.g. movement towards higher elevations)
- higher temperatures
- changes in rainfall timing, frequency and levels (including humidity and evapotranspiration)
- reduced stream and river flows (exposing well-watered riparian areas)
- changes in coastal and estuarine habitat due to rising sea levels
- increased carbon dioxide fertilisation (and resultant increases in weed growth)
- changes to species interactions (e.g. between plants and pollinators, weed vectors, etc).

Tropical Cyclone Yasi clean-up, Mission Beach

New and Emerging Biosecurity Threats

The focus and examples provided in this section is on new and emerging threats, rather than on widespread and/or long-established endemic pests or diseases. Emphasise has been placed on a number of pest eradication programs adjacent to and within the Area being managed by Biosecurity Queensland within the Department of Employment, Economic Development and Innovation (DEEDI).

Weeds

Some of the exotic weeds that are detected in Australia have the potential to seriously impact at the national level on the country's primary industries, trade, the economy and the environment. These weeds, if their total elimination from Australia is justified and feasible, are subject to national eradication programs. Most of these national weed eradication programs are being undertaken in the Wet Tropics as a result of an escalation in the arrival and establishment of particularly high risk weeds in the region in recent times.

The national eradication programs being undertaken in the region are cooperative efforts between the Australian and Queensland governments. Biosecurity Queensland is responsible for the management and operation of these programs with financial and technical assistance from the Australian Government Department of Agriculture, Fisheries and Forestry, while on-ground treatment is undertaken on a collaborative basis with the assistance of local government and land management organisations such as QPWS/DERM.

Seven of Queensland's worst tropical Class 1 weeds which have invaded the Wet Tropics are targeted under two separate national cost-share eradication programs:

- National Siam Weed Eradication Program
- National Four Tropical Weeds Eradication Program.

National Siam Weed Eradication Program [24, 25]

Siam weed *(Chromolaena odorata)* is considered to be one of the world's worst tropical weeds due to its quick invasion, easy establishment and ability to smother existing vegetation. Siam weed was first identified in Australia in 1994, as several large infestations along the Tully River and at Bingil Bay near Mission Beach in the Wet Tropics.

Siam weed is a Class 1 declared weed in Queensland and has been the target of a national cost-share eradication program since it was detected near Bingil Bay and along the Tully River in 1994. It is suspected that Siam weed was accidentally introduced to the Tully area sometime during the 1960s. It is found in five local government areas in North Queensland having been detected in the Townsville, Mossman and Upper Herbert River areas. There is potential for Siam weed to infest coastal and sub-coastal areas of Queensland, New South Wales, the Northern Territory and Western Australia.

Siam weed is predicted to have a $20 billion impact on agriculture and the environment in the next 30 years if it is not eradicated. It is a particular threat to the biodiversity values of tropical woodlands. The major part of its current distribution corresponds to an area very heavily impacted by Tropical Cyclone Yasi in February 2011. Disturbed forest edges are particularly susceptible to colonisation and domination by Siam weed, and it is likely that this pest will benefit from the recent cyclonic damage.

The most significant resource scale-up of the Siam weed eradication program since its commencement in 1994 occurred in the 2009-10 financial year. This scale-up of funding was a consequence of a Program Review

Report in 2008 [42] which recommended a three year period of higher funding levels to ascertain whether eradication is still an achievable objective. This funding increase resulted in a number of achievements [42]:

- A media campaign was implemented involving a TV infomercial, radio and newspapers to extensive sections of eastern Australia, with no reports of Siam weed outside known areas
- All high risk outlying areas (Mossman, Russell, Upper Herbert) surveyed twice
- About 70% of other management areas visited once (a significant increase from 40% in the previous year)
- Helicopter surveys for flowering Siam weed in all catchments
- Aerial spot spraying used near Townsville for the first time to treat inaccessible infestations
- Splatter gun application developed and used to minimise the quantity of water required in locations near Townsville that are difficult to access
- 166 Siam weed management plans were developed with landholders, covering two-thirds of the area affected by Siam weed
- Mail-outs to 622 high risk properties resulted in 52 reports from the public and seven new locations
- Research trials were expanded to answer questions such as time to maturity, seed longevity and leaf toxicity to livestock
- A one hectare GIS grid mapping system was developed to provide more meaningful representation of Siam weed infestations for planning and reporting purposes
- Total area of Siam weed treated was 292 hectares.

The program did not treat 30% of infestations which were predominantly in remote or rarely accessed portions of properties or National Park/World Heritage Area [42]. In addition to the National cost-share budget, over $435,000 of in-kind resources was provided by Biosecurity Queensland, Local Government and other stakeholders to allow the program to survey and treat a much larger area of Siam weed [42].

Siam weed

National Four Tropical Weeds Eradication Program [26]

The National Four Tropical Weeds Eradication Program targets four genera of Class 1 weeds. The program has been in operation since 2004 to eradicate incursions of Koster's curse *(Clidemia hirta)* [27], limnocharis *(Limnocharis flava)* [28], mikania vine *(Mikania micrantha)* [29] and miconia species *(Miconia calvescens, M. nervosa, M. racemosa)* [30] in the Wet Tropics from Australia. The nationally coordinated program is managed and operated by Biosecurity Queensland. The program involves extensive community engagement to identify infested areas, targeted weed surveys and weed control, and research components.

The six species which make up the National Four Tropical Weeds Eradication Program are mainly environmental weeds, but some such as mikania vine and limnocharis could potentially have a large impact on agriculture also. These are recently established weeds of major concern and have a scattered distribution from the Whyanbeel area near Mossman south to Townsville.

Miconia calvescens poses the greatest environmental threat, with over 25% of the distribution of this weed occurring within the Area. This species absorbs 65% of the program resources, and field teams are required to search over 1,000 hectares of rugged rainforest each year to search out and destroy each plant before it produces seed. It is of concern that Cyclone Yasi severely impacted the epicentre of many of these infestations, and this major disturbance is likely to favour the growth and spread of these aggressive competitors.

Miconia has become established in over half of the subregions of the Wet Tropics. Miconia species are aggressive trees and shrubs that have the ability to invade rainforest areas, displace native plant species and affect the habitat of

Clidemia sp.

Limnocharis flower

Mikania

Miconia calvescens

native fauna. Birds are attracted to the fruit, which can be spread large distances from the parent tree. Seeds can persist in the soil for more than eight years.

Miconia calvescens has become a major weed in the Society Islands (which includes Tahiti), the Hawaiian Islands and other Pacific islands. In the Hawaiian Islands, this plant is known as the 'purple plague' and it is considered the greatest plant threat to the remaining wet forest ecosystems on the islands. In Tahiti, by 1996, *Miconia calvescens* had become established over 65% of the island (70,000 hectares) in dense stands, with up to 880 trees per hectare [31]. The main species of Miconia in the region is *Miconia calvescens*. The only known infestation of *Miconia racemosa* was discovered near Kuranda, in 2002. The only known infestation of *Miconia nervosa* was discovered in the Whyanbeel area near Mossman, in 2004.

An independent review of the eradication program occurred in 2010 with the review team recognising that significant progress to eradication had been made for all species. The program is a nationally cost-shared program and is funded until 30 June 2012. The Four Tropical Weeds Eradication Program is managed by Biosecurity Queensland with in-kind assistance from QPWS and Local Government for surveillance and control. The program also includes a research component conducted by Biosecurity Queensland and CSIRO to provide scientific rigour, to improve on-ground activities and to measure progress towards eradication.

A summary of progress against each species is detailed below [43]:

- ***Miconia calvescens*** has been recorded from 57 locations. Of these, Miconia has been successfully eradicated from 20 of these locations, eleven have recorded nil recruitment for 1-5 years, and twenty-six are in a control phase. This year only 11 locations recorded one or more mature plants (down from 14 in the previous year). No reproductive plants were detected in the large infestations at El Arish and Kuranda. The area searched this year by Biosecurity Queensland and collaborators in the Wet Tropics totalled 984 hectares. The in-kind support from QPWS and Local Government is vital to the success of the program, as it currently funds 30% of field survey resources.

- ***Miconia nervosa*** is restricted to a single location. Collaborative operations saw 162 hectares searched this year with no mature plants being detected. Data trends indicate this species is on track for eradication.

- ***Miconia racemosa*** is still restricted to a single location. An extended survey was undertaken during the year with no new plants detected beyond the known core regeneration areas. Data trends indicate this species is also on track for eradication.

- ***Clidemia hirta*** (Koster's curse) is restricted to a single location at Julatten. The area searched during the past year was 471 hectares, an increase of 220 hectares from the previous year. The surveys detected a total of 51 mature plants (up from 23 mature plants in the previous year). This has increased the area that now requires searching to 647 hectares. An increase in field staff resources needs to be committed to survey work to reduce the number of reproductive escapes, and to survey the expanded infestation extent.

- ***Limnocharis flava*** - although four new infestations were detected this

year in the Cairns Regional Council area, this species is making progress towards eradication. Of the 28 infestations recorded in Far North Queensland, thirteen have been eradicated (46%) and four are in a monitoring phase. The eleven sites in control phase (including four new infestations added this year) are reducing in area and density.

- ***Mikania micrantha*** (Mikania vine) is also making good progress towards eradication with no new infestations detected this year. Of the fifteen recorded Mikania infestations, one has been eradicated, nine (60%) are in monitoring phase (nil germination for 1- 5 years) and five are in control phase. The control area (footprint of plants) is now 191 m2, a reduction of 82% since 2008-09.

Given the level of investment, the progress made in these eradication programs is very impressive. The results also highlight the need for greater investment as it is apparent that a determined effort can make marked improvements in progress. It is also evident from these programs that a sustained commitment to eradication funding is required to ensure exhaustion of both the pest plants and their latent soil seed banks as premature withdrawal of resources and commitment will waste all previous efforts and investment and result in much greater long-term environmental and economic costs.

Pests

Australia sometimes undertakes national programs to eradicate incursions of specific exotic plant pests and diseases from the country. These programs are only undertaken when the elimination of a pest or disease is justified and feasible.

The Australian Government, the state and territory governments, and affected plant industries work cooperatively to implement national eradication programs across the country. The Office of the Chief Plant Protection Officer nationally coordinates the programs. The state or territory government of where the pest occurs is responsible for the management and operation of the program. Technical assistance for programs is provided by the Australian Government Department of Agriculture, Fisheries and Forestry [32].

Tramp ants

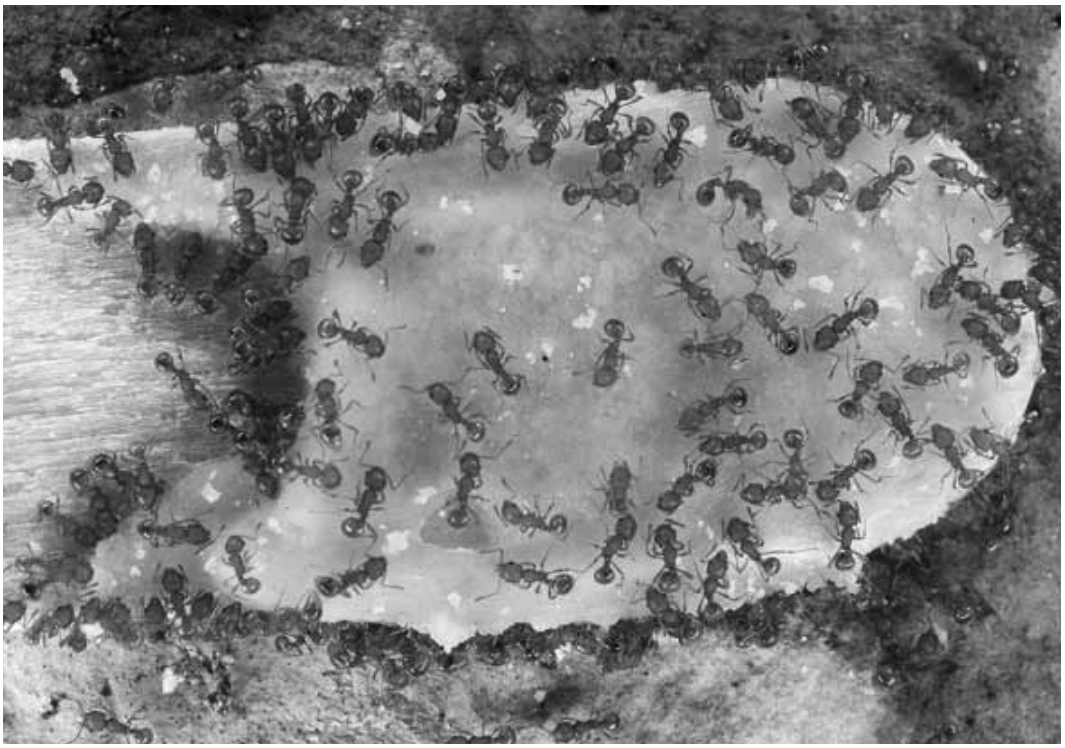
Ants are among the worst invasive species in the world - and the worst invasive ants are tramp ants. Two tramp ant species are the subject of eradication efforts in the Wet Tropics by Biosecurity Queensland.

National Electric Ant Eradication Program [33]

Electric ants *(Wasmannia auropunctata)* were first detected in the Cairns suburb of Smithfield in May 2006, and later detected in other northern suburbs of Cairns including Kewarra Beach, Trinity Beach and Caravonica. Recently, new outbreaks have been detected in Bingil Bay (Mission Beach district), Kamerunga (Cairns) and Kuranda.

The electric ant is considered by the IUCN/SSC Invasive Species Specialist Group to be one of the world's worst invasive species and is one of the six priority tramp ant species identified in the *'Threat Abatement Plan for Reduction in Impacts of Tramp Ants on Biodiversity in Australia and its Territories'* [34].

The electric ant is native to Central and South America. These ants have a significant invasive history, having been introduced to Africa, North America and six Pacific Island groups (including the Galapagos, Hawaii, New Caledonia and the Solomon Islands). As a tramp ant, this species is closely associated with people and is spread by people. Most international spread is associated with plants, plant materials and products



Electric Ants

or edible commodities. The electric ant does not spread by flight, rather the species spreads by budding, which means new colonies radiate out from existing colonies.

If the current incursions of electric ants is left unchecked, these ants could be expected to cause significant ecological change to over 20% of Australia (based on Climex modelling), eventually spreading along the east and northern coast, from Broome to Sydney. It could establish in coastal parts of south-western West Australia and parts of coastal South Australia [35].

The electric ant is a particularly aggressive environmental pest, severely impacting on other animal species, attacking (including blinding) and/or killing both invertebrate and vertebrate animals. The results of a baseline ecological impact assessment conducted in Cairns (2007) found a 95% displacement of local native ants by electric ants.

Electric ants make up 90% of ant populations in invaded catchments in New Caledonia. They are believed to have caused a decrease in reptile populations in New Caledonia and in the Galapagos Archipelago where they eat tortoise hatchlings and attack the eyes and cloacae of adult tortoises [35]. Electric ant venom has been implicated in causing blindness in several species of mammal which appear particularly vulnerable. It is thought that the ground nesting habits of the cassowary could make it particularly vulnerable to electric ant impacts in the Wet Tropics.

The National Electric Ant Eradication Program is managed by Biosecurity Queensland. So far, treatment and containment measures delivered by the program have, on the basis of current surveillance and monitoring information, prevented the full impact of electric ant being realised on the natural environment of the Wet Tropics – apparently containing the problem to the urban environment.

Recent outbreaks in areas distant from the Cairns northern beaches containment area is an issue of major concern for the WTWHA, and it is not known

Hercules Caterpillar - invertebrates threatened by ants

whether new incursions may have also penetrated into the WTWHA.

Also of concern is the possibility of dispersal to new areas as a result of the movement of cyclone damaged plant debris as part of the clean-up efforts following Tropical Cyclone Yasi. The new disjunct outbreaks pose a serious risk to the biodiversity and visitor appeal of the Area.

Yellow Crazy Ant Eradication Program [36]
The yellow crazy ant *(Anoplolepis gracilipes)* is a Class 1 declared species in Queensland. Class 1 pests established in Queensland are subject to eradication from the State. They are also included as one of the world's 100 worst invasive species.

The yellow crazy ant was first detected and eradicated from the Portsmith area of Cairns in 2001. Detections within known infested areas have occurred in Bentley Park and Edmonton – Cairns, where control and eradication measures are being undertaken. The program is funded by the State government.

The quarantine area at Edmonton in Cairns has been reduced in size from 13.2 hectares to 8.7 hectares following the release of four properties from quarantine in 2010. This was achieved, in part, through the efforts of volunteers provided by Conservation Volunteers Australia (CVA) who have been working under the federally funded 'Green Jobs Corps' program.

Asian Honey Bee Containment Program [37]
The Asian honeybee *(Apis cerana javana)* is an invasive species which adversely impacts populations of European honeybees by competing for floral resources, robbing managed hives and transmitting disease. It is a natural host for varroa mite jacobsonii - a parasitic mite that attacks developing bee larvae or adult bees.

There have been specific instances of potential incursions of *A. cerana*, in 1995, 1998, 1999, 2002, 2004, 2005 and 2007 [41]. These arrivals came on ships from Papua New Guinea and were detected and destroyed at Australian seaports. However, there have only been two major incursions of *A. cerana* into

Giant Blue Earthworm - habitat under threat

Australia [41]. The first, in 1998, was at Darwin. Only a single colony was found and destroyed, and no colonies have been found and reported since. The second incursion was at Cairns in May 2007 where they were first detected in the mast of a fishing boat in Portsmith.

They have subsequently spread, and are now known to be as far south as Innisfail, as far north as Trinity Beach and as far west as Mareeba. Most Asian honey bee detections have been in the city and port areas of Cairns, and immediately to the south of Cairns in the Gordonvale and Aloomba districts. The pest has been detected on the edge of rainforest and has been seen attacking Honeypot ants, *Camponotus* sp., and Native bees, *Trigona* sp.

Following the first detection of Asian honeybees in 2007, a nationally cost-shared program aimed at eradication was implemented, led by Biosecurity Queensland and overseen by the Asian Honeybee National Management Group. Since 2007 more than 390 detected nests or swarms of the bee have been detected and destroyed in the Cairns region and all have been free of parasitic mites [41].

In early 2011 the National Management Group decided that eradication was not technically feasible (although consensus was not reached) and the national eradication program ceased at the end of March 2011. Their decision was based on a number of factors including:

- the tendency for the bees to swarm
- the bee breeds rapidly and can travel long distances, particularly with assisted movement on vehicles and trains
- limitations of current surveillance methods which makes it difficult to locate all nests and destroy them.

The potential impacts of feral Asian honeybees on the Wet Tropics unique ecosystems or to Australia's natural environment do not appear to have been a consideration in this decision. It is reasonable to assume that such impacts may include competition with native fauna for floral resources or nesting sites, inadequate pollination of native flora or undesirable pollination of exotic flora and vectoring parasitic organisms.

The Queensland Government is currently reviewing its operations to determine future actions (refer also

to Pilot programs section below). The potential impacts of this species on the WTWHA are unknown. WTMA is concerned that eradication effort came to an end before the full implications and potential impacts of this new pest on the natural environment were fully understood and that a more precautionary approach to such decisions needs to be considered.

Diseases

Myrtle Rust – a newly emerging biosecurity risk [38]

Myrtle rust is a serious, newly emerging fungal disease rapidly expanding its range in New South Wales, southern Queensland and recently in far north Queensland. There has been some taxonomic confusion with respect to the correct identification of the rust. Initially the rust was identified as the myrtle rust - *Uredo rangelii*. More recent advice suggests that the rust is in fact *Puccinia psidii*, part of the guava rust complex and is commonly called Eucalyptus rust. The name myrtle rust however, is more appropriate and descriptive as a broad range of myrtaceous species are susceptible [39].

Myrtle rust only affects plant species belonging to the family Myrtaceae, which includes many Australian native species and is one of the largest plant families in the Wet Tropics being represented by 211 species within 38 genera of which 7 are listed as endangered, 9 as vulnerable and 10 as near threatened.

The rust is spreading rapidly. Although the spores of the myrtle rust are very small and are spread mostly by wind, the disease can also be spread through the movement of infected or contaminated plant material. Bees, birds and bats that have been in contact with rust spores, contaminated posted packages as well as contamination of workers clothing or equipment used at infected sites can also disperse the disease.

Myrtle rust was first detected in Australia in April 2010 at a nursery on the central coast of New South Wales. In Queensland, the disease is now established and widespread in south-east Queensland. It has been reported at 559 sites, including retail and wholesale plant nurseries, council parks, reserves, road verges, national parks, schools and residential properties. In the seven months since myrtle rust was first detected in Queensland, the disease has been recorded on 80 host species from 27 genera in the Myrtaceae family, some of which are endangered, vulnerable or near-threatened species.

While previously detected in a Cairns retail nursery in February 2011, presumably due to movement of infected plants from an infected premise in southeast Queensland, the infected plants were destroyed and subsequent surveillance indicated myrtle rust had not spread beyond the retail nursery premise. In July 2011, approximately 20 *Melaleuca* plants suspected to be infected with myrtle rust were detected in a plant nursery at a Cairns retail store. Subsequent diagnostic analysis confirmed the disease was myrtle rust. Since then, surveillance and tracing investigations by Biosecurity Queensland have identified plants infected with myrtle rust at two stores belonging in the same retail chain in Townsville and Cairns, and a wholesale nursery near Townsville which supplied the plants to both the Townsville and Cairns retail stores. Biosecurity Queensland is further investigating the movement of plant material amongst the nurseries

Myrtle Rust. Photo courtesy NSW, DTIRIS

and the potential for spread outside the nursery sites. While the nurseries involved have destroyed any remaining infected plants, some plants in the infected lines had already been sold to members of the public prior to the disease's detection in Cairns.

A Myrtle Rust National Management Group was established to oversee national decision-making on the disease response. On 22 December 2010, the Myrtle Rust National Management Group agreed that it is not technically feasible to eradicate myrtle rust from Australia. This decision was based on the widespread distribution of the rust and the difficulty of eradicating the disease due to its ease of spread via plants, wind, people and vehicles. They agreed, however, that further management action was required due to the potential for the disease to impact the natural environment, including threatened and endangered species, and industries that rely on Myrtaceae plants.

Within Queensland, it is an offence for a person, in trade or commerce, to sell or possess for sale any plant they know is, or suspect could be, infected with myrtle rust. These requirements also apply to the introduction of myrtaceous nursery plants into Queensland from interstate. In relation to the current situation in north Queensland, the wholesale nursery owner, key representatives from the affected retail chain store, and the Nursery and Garden Industry Queensland have been notified. More generally, Biosecurity Queensland is providing information and advice to nursery owners and other people who propagate plants so that they are aware of myrtle rust; they know how to prevent its spread and how to manage the disease; and they understand their legislative obligations in relation to myrtle rust. Biosecurity Queensland conducts regular inspections of nursery premises trading Myrtaceae to help ensure they are not trading infected stock.

Pilot programs to manage Asian honeybees and Myrtle rust

On the 20 May 2011 it was announced that $3.5 million had been allocated to support national pilot programs aimed at creating an ongoing solution to the management of both the Asian honeybee and myrtle rust. As described previously, two separate National Management Groups, earlier this year, concluded that eradication of Asian honeybees and myrtle rust is no longer technically feasible. The funds, $2 million for Asian honeybees and $1.5 million for myrtle rust, were provided to support a pilot of the national transitional containment principles developed by the National Biosecurity Committee in 2010.

Biosecurity Queensland is leading a Myrtle Rust Program (2011-2012) and is working in partnership with the Department of Environment and Resource Management (DERM) and a wide range of industry and environmental stakeholders. The objectives of the Myrtle Rust Program are to ensure people are aware of myrtle rust and know what to do if they have plants infected with the disease; assist industry to operate and trade in clean stock; learn more about myrtle rust; and limit impacts on natural and built environmental assets as much as practical. The Myrtle Rust Program is predominantly a science and communications program. The current funding allocation has been prioritised towards monitoring the host and geographic range of the disease to gain a better understanding of potential impacts, and also providing information and advice to affected stakeholders on disease management. A number of research projects are currently planned or underway. The Myrtle Rust Program will be hosting a national workshop on myrtle rust research projects and priorities in September 2011 and has invited key researchers from throughout Australia.

Success Story

Papaya Fruit Fly Eradication Program [40]

Presenting the management of invasive species as a general failure is overly pessimistic. There are, on record, an increasing number of successful attempts to remove the most harmful invasive species, with over 1,000 eradications successfully completed worldwide. In many cases, these actions contributed more than any other conservation action to the recovery of threatened species, and to the protection of the livelihoods of many human communities [3].

Far north Queensland was the site of one of the most serious exotic pest outbreaks in this nation's history, when an outbreak of the Asian papaya fruit fly *(Bactrocera papayae)* (PFF), was detected in papaws near Cairns on October 17, 1995.

Ten days after the initial detection, an eradication program was funded under national cost-sharing arrangements under the management of the Queensland Department of Primary Industries (DPI).

The outbreak area was immediately quarantined. Further monitoring revealed the real extent of the outbreak and by November 1995, the PFF Pest Quarantine Area (PQA) had been extended to cover an area from Cape Melville in the north, to Rollingstone in the south, and west to Mt Surprise. At its maximum, the PQA covered around 78,000km^2, and included almost the entire Area.

In Asia, the PFF inhabits rainforests and when the PFF was first detected in Cairns, it was thought that it might similarly establish in rainforests. Apart from problems with access to rainforest areas for eradication treatments, there was a concern that the PFF might displace native species of fruit fly most of which play a vital role in the ecology of rainforests.

Extensive fruit collections were made in the rainforests of the WTWHA between

Rainforest fruit collection

January 1996 and June 1997 and traps were set along roads. Although a few isolated PFF were detected in rainforests at the beginning of the program, these proved to have been dispersing flies. This was confirmed when no additional PFF were detected in a further 12,500 rainforest fruit samples.

DPI staff visited 60,000 properties; inspected over 161,000 consignments of fruit and vegetables; inspected 3 million vehicles at roadblock sites; seized and destroyed 314,000 kg of fruit and vegetables at the roadblocks; and installed nearly 3 million caneite blocks used in the eradication program. Within 12 months, populations of PFF were reduced to 1% of their original levels. By June 1996, PFF had been effectively removed from areas south of Babinda. Low level infestations persisted for a further 12 months around Mareeba, and the northern Cairns beaches. The time from first to last detection of PFF was 20 months, while the time from first detection to declaration of full eradication was only 44 months.

Nothing of this magnitude had been achieved before in Australia, and it is also significant in international terms. This very successful program was formally closed in mid-1999, one year ahead of schedule, at an overall saving of almost $30 million nationally. Total expenditure on the program was approximately $34 million.

The success of the PFF eradication campaign has been attributed to the following factors:

- strong tradition of fruit fly research and control in DPI, extending over 40 years
- suitable well targeted eradication techniques, based on chemical blocks and spraying were available
- ability to rapidly mobilise resources for the initial response
- an effective quarantine strategy giving strict control over the movement of fruit out of the Pest Quarantine Area
- on-property treatment of all commercial fruit
- success in gaining national cost-sharing
- effective application of emergency response principles
- rapid establishment of trapping and fruit collection grids to define limit of PFF infestation and monitor for population 'hot spots'
- PFF detected at an early stage of establishment, and
- excellent industry, community and government cooperation.

Northern beach coastline

Recommendations

In being listed as World Heritage Area, the World Heritage Committee of UNESCO identified the Wet Tropics as having outstanding universal value and integrity. The WTWHA supports an extraordinary assemblage of plants and animals. Despite comprising only a very small proportion of the Australian continent, it supports a high proportion of the Australian flora and fauna, reflecting the diversity and biological productivity of its ecosystems.

The distinctive and diverse assemblage of plants and animals that exist in the Wet Tropics occur because of finely balanced ecological and climatic conditions. Invasive species and climate change threaten to disrupt these finely balanced conditions and may result in rapid and catastrophic changes that will increasingly threaten the region's fauna and flora.

Gaps

There are a number of specific issues that require addressing when it comes to maintaining biosecurity for the WTWHA:

No comprehensive early warning surveillance. The Wet Tropics is paying dearly for not having comprehensive early warning programs place in the natural environment. Because the discovery of a new pest may be overlooked for several years, particularly if it not a human health or agricultural issue, the pest when finally identified will be very costly or impossible to eradicate as is evident with respect to several recent Wet Tropics' eradication programs. Increased capacity and resources are required in surveillance and diagnostics. This is essential as our first line of defence against biosecurity risks. Increased efficiency of surveillance and improved prospects of early detection of an incursion within the WTWHA are essential.

Inadequate contingency plans for environmental weeds, pests and diseases. There are effective contingency plans and financial resources in place to quell incursions by human health and agricultural biosecurity risks, however the financial and personnel commitments deployed for environmental pests, weeds and diseases and the level of urgency in responding are far less effective.

Building capability. The capacity to manage risks across the biosecurity and quarantine continuum will increasingly be impacted upon by skill shortages and general labour availability. It is important to build regional capacity, as reduced capability can significantly disadvantage them during an emergency. There is also a need to increase regional skill sets particularly around environmental surveillance.

A deficient approach to invertebrates. There does not appear to be any comprehensive database of introduced insects, spiders, snails, earth worms, nematodes and other invertebrate pests, much less a proper understanding of their impacts, nor a coherent strategy for their detection and eradication, yet these groups of organisms have the potential to cause great and rapid harm to native species and major disruptions to ecosystems and ecosystem processes. Invertebrate pest arrival and establishment in the Wet Tropics appears to be increasing.

Lack of community awareness. Most of the community does not appreciate the scale of the threat that environmentally invasive pest species pose to Australia's iconic biodiversity hotspots such as the WTWHA. Community education campaigns and school curriculum materials on invasive species impacts on the natural environment need to be increased.

Phytophthora monitoring Mt Lewis

While the outlook for the WTWHA is a cause for great concern, much can be done at a regional level to respond to the escalating biosecurity threats facing the Wet Tropics. As is evident from the successful papaya fruit fly eradication program; it is feasible to eradicate a serious exotic pest outbreak if a rapid and effective emergency response is made; if sufficient resources are provided; and if appropriate expertise and eradication techniques are available. The most important management interventions will be those that ensure:

- regional capacity is in place for the early detection of new pest and disease incursions
- systems in place to engender rapid responses to pest and disease incursions as soon as detection has been confirmed
- systems in place to allow resources to be drawn upon quickly for an effective initial eradication response
- that there are appropriately skilled personnel available in the region to ensure rapid and effective emergency responses during serious incursions
- sufficient resources and skilled personnel are available so that endemic pest and disease management is not neglected during an emergency response.

Recommended approach

The following four broad areas of activity are proposed:

1. *Regional planning, coordination and leadership.* This work aims to coordinate and align the efforts of regional land and environment agencies and private land managers to ensure resources are well targeted and effort is appropriately aligned with agreed priorities. Regional institutions and communities already have the underlying capability to take action against environmentally invasive pests and diseases if supported with adequate resources.

2. *Improving and communicating our knowledge of biosecurity risks to our natural environment.* Regional research institutions such as CSIRO and James Cook University have made some progress in understanding the ecology and impact of weeds and pigs on the WTWHA. Much more work is needed to improve and communicate current knowledge and there is an urgent need to expand the current scope of research to include a greater number and range of invasive pests and wildlife diseases. Lessening the impacts of invasive species requires substantial investments into basic and applied science. “Invasion biology” can go a long way to understanding the processes of invasion and determining the best approaches to eradication, containment and control.

   There may be opportunities to capitalise on regional research infrastructure and capability through a greater focus on tropical biosecurity and biodiversity in the region that would deliver information to natural area managers and policy makers to improve effectiveness of responses. Biosecurity capability and capacity has traditionally been built around the management of biosecurity in the primary industries sector. However, this is not sufficient to deal with new and

emerging biosecurity threats to the natural environmental.

3. *On-ground works.* The principle means of reducing biosecurity incursions in the Wet Tropics is through programs of vigilant monitoring and surveillance of natural areas most vulnerable to biosecurity threats through sampling of known potential vectors and invasion 'hotspots'. This will require adequate resources of people with appropriate biosecurity skills and knowledge.

   In addition an increased commitment to the strategic control and containment of existing well established pest and disease outbreaks is important. The return on investment for different phases of weed control activity highlights that the greatest return on investment is achieved through investing in prevention and early intervention, compared to investing in weed management once weeds are widespread and established.

   It is also important to undertake on-ground works designed to increase overall ecosystem resilience. Measures such as wildlife corridors, limiting further clearing, and rehabilitation of previously cleared areas will all assist to strengthen Wet Tropics ecosystems against pest and disease invasion. Changes or disturbance in the environment can alter ecosystem processes and allow the intrusion of weeds, pests and wildlife diseases. Increasing ecosystem resilience increases the capacity of an ecosystem to recover from disturbance.

   For ecosystems to persist in the long term, successful recovery after disturbance is fundamental. A major benefit of undertaking on-ground activities to improve overall resilience is that it provides the best 'general insurance' against current and emerging biosecurity and climate change threats. It is inevitable that currently unrecognised threats will emerge within the region, so the best long-term management strategy is to aim for a system with the resilience to recover from as wide a range of possible challenges as possible.

4. *Increasing community awareness and mobilising behavioural change.* At present biosecurity tends to be the domain of governments and experts and, as such, the concept of biosecurity and the risks to the environment is not well recognised among the broader community unity. Biosecurity and enviroment agencies need to provide leadership by increasing community awareness of the risks of environmental invasive pests and wildlife diseases and helping communities to find regionally relevant ways of combating the threat and reducing the risk. We need to support improved land management practices through technical advice, incentives and appropriate land and resource management policies. We must also ensure communities are appropriately engaged in decision-making affecting their own land or public environmental values such as the WTWHA.

Repairing the rainforest, Atherton Tablelands

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WET TROPICS
MANAGEMENT AUTHORITY

PO Box 2050
Cairns, QLD 4870

Tel: 07 4052 0555
Fax: 07 4031 1364
Email: wtma.records@derm.qld.gov.au
Website: www.wettropics.gov.au

Front cover: Oak Beach, Queensland (Tourism Queensland)