

## **The Rainforest to Reef Conservation Research Initiative** **March 10, 2003 Strategy Planning Meeting**

### **Proceedings Summary**

The strategic planning workshop for the Earthwatch Institute's North Queensland Rainforest to Reef Conservation Research Initiative (CRI) was held at CSIRO's Tropical Forest Research Centre, Atherton, Queensland on March 10, 2003, attended by 33 representatives of community conservation groups, regional shire councils, aboriginal groups, management authorities, research organisations, tourism representatives, and non-government conservation organisations (see Appendix 1). A further 20 individuals with a range of other affiliations and backgrounds (including anthropologists and representatives of Canegrowers, and pesticide and fertilizer companies) were invited but unable to attend.

#### **Workshop Aim**

The aim of the workshop was to work with local community, research, industry, conservation and management representatives to determine how the Earthwatch Institute (EWI) can best use its model of support for scientific research and involvement in research by members of the local and global community, to realise the Rainforest to Reef CRI's aim to contribute towards the sustainability of the Northern Wet Tropics Bioregion and adjacent marine and coastal environment.

#### **Agenda**

The workshop began with a series of brief presentations by Earthwatch representatives Drs. Jane Gilmour, Mark Chandler, Denis Saunders and Suzanne Jenkins to provide workshop participants with an understanding of the goals, philosophy and model of Earthwatch supported research and community education. During this session the geographic focus of the CRI was identified as the northern part of the Wet Tropics bioregion, from the Johnstone River catchment to the Daintree catchment and the adjacent marine and coastal zones.

The Earthwatch Institute presentations were followed by talks from the Mayor of Johnstone Shire, Mr Barry Moyle and the leader of CSIRO's Tropical Landscapes Program, Dr Chris Margules. They explored from different perspectives the need to consider the economic, social, cultural and spiritual needs of a regional community when making environmental planning decisions and when implementing conservation management activities.

An open forum followed, in which participants were asked to identify environmental issues that required more research attention than was currently occurring. After a lively group discussion, a comprehensive list of issues was drawn up and subsequently grouped into 3 categories: "Terrestrial", "Marine and Coastal" and "Attitudinal" (see Appendix 2). To explore the issues in terms of possible Earthwatch involvement, participants formed 3 groups according to their personal and/or professional interest in a particular issue category. Each group was asked to reconsider the identified issues in terms of: broad research needs; specific projects; the potential institutions and/or individuals that were most appropriate to carry out the research; appropriate members of the community to involve in research projects for the purposes of local community education and motivation; the potential users of the research results; and how the success of research and community education could be evaluated. Unfortunately, because of a combination of limited time and the enthusiastic nature of group discussions not all these issues were able to be addressed.

## **Outcomes**

The group considering terrestrial issues identified two broad headings for research requirements: “Biodiversity in human affected landscapes” and “Landscape ecology, processes, design and catchment management”. Under the first heading, potential projects were considered to be those that monitored biodiversity responses to climate change and those that quantified and monitored the threats to forest health as a result of threatening processes and organisms. Under the second heading, research projects looking at the effectiveness and retention of restoration projects, and the fragmentation of natural habitats were identified.

The “Marine and Coastal” group identified three primary areas where support could best be targeted: a) monitoring of water quality, b), monitoring of ecosystem health (e.g. reefs, seagrasses, etc.), and c) commercial and recreational fisheries. Additional significant research needs included endangered marine species, seabird surveys, human and wildlife conflicts, and coastal development needs. Specific recommendations included the need to examine where EWI could effectively support on-going monitoring projects on water quality and how EWI could be included at the outset of new monitoring projects on ecosystem health. Projects identified as priorities included: an examination of the link between land use and water quality on the adjacent reefs; studies of particular endangered marine species; long term monitoring of ecosystem health indicators such as seagrasses and corals; the interactions between humans and sharks, crocodiles, and pigs; assessment of the impacts of fishers; and surveys of coastal vegetation remnants.

The “Attitudinal” group identified the need for research into: the impacts of tourism on the environment and the local community; the state of the “cultural environment” particularly in indigenous communities; community attitudes to the development of a new walking trail and the potential for its management to incorporate the indigenous and “western” systems; the best methods of transferring scientific information to managers; and the attitudes of landowners to natural ecosystem services. As well, the group felt that it would be useful for Earthwatch to consider working with local schools and teachers at readily accessible natural sites, and with local governments to identify their needs in terms of the environmental information they require for decision making. It was also considered that there may be a role for Earthwatch Institute in assisting to develop methods of assessing and defining “sustainable bio-industries”.

The results of the group discussions have been compiled into a table overleaf. (Where this is incomplete, it indicates that the group did not discuss a particular issue.)

The way forward:

The information obtained from the workshop will guide how Earthwatch Institute develops the Rainforest to Reef CRI, in terms of overall issues that we can help address through support of research and educational activities. To the information gathered from the workshop, EWI will add information available compiled from programs with similar initiatives (such as the Wet Tropics Research and Information Needs (WTMA, May 2000)). This compilation will form the guide as EWI moves forward to identify scientists and research projects seeking Earthwatch Institute support, and of community groups/members for placement into research projects in the region through fellowships.

Earthwatch Institute thanks all those present at the workshop for their valued input and contribution. The workshop has provided us with a solid base for moving forward and the knowledge that there is genuine interest within the community for collaboration and engagement. As we develop our program of activities for the Rainforest to Reef Conservation Research Initiative we look forward to continued involvement with the committed constituency of the Northern Wet Tropics, and with others who were not able to be present.

## Terrestrial Research

Research Needed	Users of Research Results	Potential Projects	Potential Principal Investigators and Institutions	Groups to be involved for educational purposes
<p><b>Biodiversity values in human affected landscapes:</b></p> <ul style="list-style-type: none"> <li>surveys of what is in the region, including distribution &amp; population genetics</li> <li>endangered species recovery plans</li> <li>threats e.g. introduced species, internal fragmentation, climate change</li> <li>forest health</li> <li>fire management</li> <li>diversified farming systems</li> </ul>	<p>Federal and state government Management agencies Conservation NGOs Local government</p>	<p>Monitoring of biodiversity responses to global climate change/stability (field ecology, physiology and spatial modeling of vertebrates, litter invertebrates and plants to understand the resilience of the systems.)</p> <p>Forest health: Threatened and threatening species and processes monitoring and management, particularly monitoring of management actions to reduce threat</p>	<p>Rainforest CRC – Steve Williams, Dave Hilbert</p> <p>QPWS –Peter Latch</p>	<p>Greencorps End-user groups Capacity building of Lorenz NP rangers Ecotourism operators</p>
<p><b>Landscape ecology/processes/design and catchments management</b></p> <ul style="list-style-type: none"> <li>water quality</li> <li>catchment recharge rate</li> <li>lowering water table on the Tablelands</li> <li>buffer zones &amp; riparian corridors (including analysis of value of costs invested in these)</li> <li>value of wetlands in sugar cane farms for biodiversity and nutrient/sediment retention</li> <li>fragments: internal habitat fragmentation and landscape scale fragmentation</li> </ul>	<p>Local conservation groups Local government Farming community Industries and industry advisory services Commercial and recreational fishers WTMA EPA DPI NRM GBRMPA The research community</p>	<p>Evaluation of effectiveness of restoration/rehabilitation projects and their retention</p> <p>Fragmentation: power lines/roads</p>	<p>Douglas Shire Program IV CRC CSIRO Land and Water</p> <p>Program IV CRC</p>	<p>Landowners Industry, tourism operators, care groups, etc.</p>

## Marine and Coastal

Research Needed	Users of Research Results	Potential Projects	Potential Principal Investigators and Institutions	Groups to be involved for educational purposes
<p><b>Water quality</b></p>		<p>Waterwatch – community based</p> <p>Examination of link between land use and water quality on the reef. Federally funded programs Douglas shire; Brian Roberts.</p> <p>Projects are now starting and there is the possibility of EWI involvement in programs that are initiated. Identify watercourses and catchment areas (2 programs – Reef Water quality protection program + CRC reef catchment to reef program); benchmarking needs to be done first (Richard Pearson)</p>		<p>LIPS- community group Schools – weekend program Indigenous groups (2+/team) Daintree Rainforest Foundation</p>
<p><b>Endangered Marine Species</b></p>		<p>Turtles:</p> <p>Sharks</p> <p>Cetaceans</p> <p>Maori Wrasse</p> <p>Collections for Aquarium trade</p>	<p>Ian Bell QPWS, IPSTC,</p> <p>Jamie Seymour, Richard Fitzpatrick, Andy Dunstan</p> <p>Alistair Birtles (JCU); Peter Arnold (Mus. of Trop. Qld)</p> <p>Bruce Hopstend (Jen?)</p>	

<p><b>Ecosystem Health</b></p>	<p>GBRMPA – Reef HQ Schools and universities AIMS CRC REEF</p>	<p>Seagrasses (in future) – indicators Mangroves (e.g. restoration) Reef and lagoon health Climate change effects</p> <p>Coral reef bleaching</p> <p>Long-term monitoring The following are existing programs that are being reappraised, or could be reappraised and the reappraisals could be looked at to include EWI</p> <ul style="list-style-type: none"> <li>• AIMS long term monitoring program ; on-site facilities Cleveland Bay (S. Townsville)</li> <li>• Reefcheck reef monitoring</li> <li>• Orpheus Island Station (JCU) on-site facilities– fringing reef &amp; mangroves</li> <li>• Low Isles (daily ; no-site; coordinate marine operators)</li> <li>• Lizard Island</li> <li>• Cross shelf transect</li> </ul>	<p>Anya Salih Uni. of Sydney Jos Hill, Reefcheck, JCU AIMs Hugh Sweatman JCU/Orpheus – Mike Kingsford Low Isles- LIPS Lizard Island – Aus. Museum</p>	
<p><b>Commercial and recreational fisheries</b> information (This is currently inadequate and the impacts are unknown.)</p>		<p>Boat ramp surveys/landings</p> <p>Why people fish in certain areas (May be some reluctance by fishers to participate)</p> <p>Douglas Shire tourism and fishing industry</p> <p>Fish aggregation sites (GBR)</p> <p>Monitoring fish populations – EWI/indigenous peoples collaboration – (Chris Roberts – Balkanu)</p>	<p>Jim Higgs- DPI (Brisbane)</p> <p>Steve Sutton – CRC Reef/JCU</p> <p>Low Isles Preservation Society</p> <p>Fisheries DPI</p>	
<p><b>Seabird Surveys</b></p>		<p>Surveys of specific species</p>	<p>Steve Garnett QPWS</p>	

<p><b>Human-wildlife conflicts</b></p>		<p>Sharks</p> <p>Crocs</p> <p>Feral pigs Feral cats – sensitive issues/indigenous issues</p> <p>Manta rays –</p> <p>Jellyfish</p>	<p>Jamie Seymour, JCU &amp; Richard Fitzpatrick, U.E.</p> <p>Mark Reid QPWS Cairns</p> <p>Steve Turton, JCU</p> <p>see John Rumney, Undersea Explorer</p> <p>Jamie Seymour</p>	
<p><b>Coastal Development</b></p>		<p>Surveys of coastal vegetation remnants Values for local peoples for areas slated for development Ground truthing of Environmental Impact Assessments</p>	<p>Andrew Dennis, CSIRO</p>	

## Attitudinal Research

Research Needed	Users of Research Results	Potential Projects	Potential Principal Investigators and Institutions	Groups to be involved for educational purposes
<p><b>Visitor surveys of Wet Tropics sites</b> (Currently only 10 sites monitored and more are needed both within and outside the Wet Tropics region)</p>	<p>WTMA EPA Rainforest CRC</p>	<p>Surveys of number of tourists, and local visitors.</p> <p>Visitor behavior</p> <p>Traffic</p> <p>Attitudes to World Heritage Sites and the natural environment generally</p> <p>Impacts of tourism</p> <p>Biophysical measurements</p>	<p>Rainforest CRC JCU – Joan Bentrupperbaumer Robyn Wilson (Volunteer monitoring using rangers and tour operators)</p>	
<p><b>Measuring of state of cultural environment and a continual review of the applicability of cultural indicators</b></p>	<p>WTMA</p>	<p>Trial at Jumbun community at upper Murray Falls and opportunity to engage several communities across the region.</p>	<p>Nigel Hedgecock , WTMA Dermot Smith, private consultant Sandra Pinnell, CRC aboriginal coordinator</p>	
<p><b>Assessment of attitudes to the Misty Mountains walking trail (a new trail opening)</b></p>	<p>WTMA</p>	<p>Integration of the indigenous and “western” management systems</p>	<p>Steve Turton, JCU and Joan Bentrupperbaumer as supervisors for Nigel Young, PhD candidate</p>	
<p><b>Education and Engagement</b></p>		<p>Work with school teachers and student on specific sites near schools</p> <p>Increase capacity of indigenous researchers through MSc and PhD opportunities and to improve indigenous relationships with research institutions</p>	<p>DPI QLD local government association</p>	

		Interface with local community by giving materials to the local councilors for support		
<b>Ecosystem services survey of landowners</b>		<p>Survey landowners on the role of pollinators in agricultural ecosystems</p> <p>Survey of the changing attitudes of farmers and other community members on the value of natural systems to the agricultural environment.</p> <p>Contribute to “triple bottom line” studies with information on the definition of best practice, publication of guidelines, methods and protocols, designing educational materials, and an awareness campaign.</p>	Rob Floyd and Saul Cunningham	
<b>Wet Tropics community survey</b>		Community attitudes survey could be coordinated with a visitor survey within and outside the wet tropics.	Joan Bentrupperbaumer	
<b>Sustainability of tourism</b>		Impact of tourism on local community, what we do for whom, are we doing things for local or tourists, and compensation for land use choices.		
<b>Sustainable bio-industries</b>		How to define and how to measure		
<b>Best methods of information transfer</b>		<p>How scientists deliver information.</p> <p>How managers receive information</p> <p>How to bridge the gap between land managers and scientists</p>	Joan Bentrupperbaumer Steve Turton Rosemary Hill	
<b>Needs of local governments for decision making</b>		Identification of local government needs in terms of influencing decision making		

## Appendix 1

### Workshop Participants

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## **Appendix 2**

### **Research issues identified on open discussion forum**

#### **Coastal and Marine**

- Terrestrial run-off (agriculture, deforestation, industrial discharge, storm water discharge)
- Fisheries management; recreational fishing
- Impacts of boating, dive industry, marine tourism
- Need to identify and choose appropriate indicators to monitor changes in marine health; what are the triggers for action
- Health of marine ecosystems: coral reefs, seagrasses, mangroves
- Coastal and marine water quality
- Coastal development
- Endangered marine species
- Human wildlife conflict (e.g. sharks, jellyfish, crocodiles)
- Long term ecological monitoring and monitoring of ecosystem health
- Global climate change
- Population genetics
- Integration of terrestrial, coastal and marine health and issues

#### **Terrestrial**

- Ecosystem services and disservices
- Fire management
- Catchment management
- Riverine health
- Buffer zone management
- Invasive and feral species (flora and fauna)
- Population genetics – gene flow (flora and fauna)
- Barriers / Corridors
- Introduced species and translocation efforts
- Fragmentation / edge effects
- Diversified farming systems
- Threatened species and habitats – better data
- Rain forest health monitoring
- Global climate change
- Agriculture (pesticide/herbicide use, fertilizers, grazing, deforestation, land-use management, zoning, diversified farming systems)
- Riparian restoration
- Water quality
- Freshwater management and regulation

## **Social / Attitudinal**

- What are the opportunities for engaging indigenous groups (important for EWI to approach local aboriginal groups)
- Indigenous attitudes and sensitivity/respect to their needs and traditions; co-management; informed consent; full knowledge and disclosure
- Research protocols with indigenous groups
- Understanding values – transferability of information and practices
- Sustainable bio-industries
- Community attitudes toward World Heritage Sites
- Eco-accreditation
- Education – information transfer (e.g. schools, communities, from scientists to managers – how can scientists best deliver information, how can managers best receive information)
- Environmental values
- Wilderness attitude
- Understanding environmental behavior modification from ecotourism and other tourism experiences
- Ecological and social benefits of rehabilitation and restoration projects (cost-benefit analysis)
- Economic and social trade-offs between different industries
- Interaction between human dominated landscapes and natural landscapes
- Economic and social rationale for conservation
- Where and how can science and monitoring inform management; process vs. patterns: how to translate ecosystem function into sensible policies and implementation; development of effective conservation management schemes
- Sustainability of tourism