



Australian Government

Department of the Environment, Water, Heritage and the Arts

Marine and Tropical Sciences Research Facility Milestone Report, November 2007

Program 9: Sustainable Use, Planning and Management of Tropical Rainforest Landscapes

Project 4.9.5: Restoring tropical forest landscapes

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Summary

Between June and October 2007, the core project team (Carla Catterall, John Kanowski, Debra Harrison and Kylie Freebody, together with colleagues and students) undertook activities consistent with the project plans, to progress all three project tasks:

- (a) Develop and apply toolkits and indicators for monitoring and evaluation of degradation and restoration;
- (b) Develop and communicate a functional understanding of reforestation and restoration processes; and
- (c) Improved facilitation and future optimisation of regional investments and management actions.

In Task (a), the revisions to the monitoring toolkit were finalised to make it more suitable for retrospective application to NHT1^a sites, and collection of monitoring data on these sites continued. Extensive liaison with community groups, local government practitioners and coordinators continued, including a workshop with members of Kuranda Envirocare in September. Work also progressed on developing Stage 2 of the monitoring toolkit, with an expert workshop on floristic data collection held in September.

In Task (b), a further manuscript on cyclone impacts was drafted and submitted for publication, and two presentations were delivered to the "Cyclone Science Seminar" in Cairns in September. A manuscript on the application of ecological concepts (especially successional and stability concepts) to rainforest restoration processes was submitted for publication.

In Task (c), workshop presentations were made and procedures progressed at an organisational level for coordinating and reporting information on revegetation projects undertaken by community groups and those within the Regional Investment Strategy of FNQ NRM Ltd.

^a Phase 1, Natural Heritage Trust program.

Across all tasks, a range of liaison and communication activities continued, including liaison with stakeholders and practitioners, and several presentations were made to conferences on Rainforest Recovery (Brisbane, June) and Conservation Biology (Sydney, July).

Progress was made on twelve different journal articles or book chapters at various stages of preparation, submission, and journal pre-publication process.

Project Results

Milestone 1: Report on outcomes of stakeholder workshop on monitoring biodiversity in revegetation (Objective a)

Two workshops were held to develop protocols for monitoring revegetation projects, and the application of those protocols by practitioners. Both technical and 'end-user' issues are critical to the implementation of monitoring protocols being developed by this project.

1. Technical workshop on monitoring floristic composition of revegetation projects:

A workshop was held at Malanda on 26 September 2007 in relation to the monitoring of the floristic composition of revegetation projects. The aims of the workshop were, (i) to discuss issues and approaches to monitoring rainforest vegetation / revegetation projects in North Queensland; and (ii) to discuss the potential for integrating currently-used / planned approaches, to the extent possible or desirable, for mutual benefit. The workshop was attended by a small number of active researchers from MTSRF projects and achieved intended goals.

- 2. Stakeholder workshop on implementation of monitoring protocols:** A field workshop was held with members of Kuranda Envirocare, a community group with revegetation projects funded by FNQ NRM, at Myola on 25 September 2007. The aims of the workshop were, (i) to discuss issues around the implementation of the monitoring protocols being developed by MTSRF Project 4.9.5; and (ii) to train members in the use of monitoring protocols at one of their revegetation project sites. The workshop achieved its goals, and entailed a useful exchange of views on the value of monitoring.

Milestone 2: Progress update on data collection at NHT sites, and trialling of survey methods (Objectives a and b)

The retrospective assessment of revegetation outcomes at NHT1 sites uses a modified version of the Establishment Statistics proforma from the monitoring toolkit. Retrospective assessments involve the verification of project location, recording establishment statistics and also a broad and very rapid assessment of the area and nature of their vegetation cover. The modified version includes several additional fields that relate to vegetation condition. An example is provided in Appendix 3.

A total of 207 vegetation-related project sites were sourced from the Regional Directory Database. This number was reduced to 123 by eliminating projects that were less than 1 ha in size and by eliminating projects that did not primarily focus on vegetation establishment (that is, tree planting). Each of the 123 projects were categorised according to geographical regions, project size and project cost. A subset of 42 of these projects was selected for the first stage of on-ground verification and assessment. This represented 34% of the total number of projects. To date, 24 of the 42 projects have been assessed through ground survey, and this work is continuing.

The reforestation regional data management system for the Wet Tropics has continued to develop (in collaboration with FNQ NRM). Data entry forms were constructed for easy data entry and demonstrations of database use given to community groups and Terrain NRM staff. Feedback indicated that the form views of the data tables are appropriate.

Completion of Establishment Statistics for all new Terrain vegetation projects is now a milestone within project contract documents (through processes currently being established in the Terrain project / contract business system). Where possible this policy will extend to all projects that Terrain staff manage (i.e. Envirofund Projects). Collection of Establishment Statistics for current Terrain projects and other regional vegetation projects was facilitated through several workshops. Currently the database documents eighteen projects and associated site information. A further ten projects with thirty project site proformas have been completed, with a further twenty projects whose documentation is outstanding. A workshop and meetings also progressed the development of regional GIS capability to improve record-keeping on the specific location of revegetation projects.

Milestone 3: Update on scientific paper on conceptual model of reforestation processes submitted for publication (Objective b)

The following article has been submitted for publication in a book, which is an edited volume incorporating contributions from researchers around the world. The book concerns the application of ecological concepts to ecological restoration, and this article reviews these issues from the perspective of northern Australian rainforests. The article is currently being revised following recently-received referees' feedback.

Kanowski, J., Kooyman, R. M. and Catterall, C. P. (Submitted manuscript) Australian tropical and subtropical rainforests: dynamics and restoration. In: Hobbs, R. J. and Suding, K. N. (eds.) *New Models for Ecosystem Dynamics and Restoration*. Island Press.

Milestone 4: Scientific paper on cyclone impacts prepared for publication (Objective b)

Four scientific papers on the impacts of Tropical Cyclone *Larry* have been submitted for publication in a special "cyclone" issue of the journal *Austral Ecology*. These papers are at various stages of the submission, review and acceptance process, as indicated below.

Kanowski, J., Winter, J. W. and Catterall, C. P. Impacts of cyclone *Larry* on arboreal folivorous marsupials endemic to upland rainforests of the Atherton Tableland, Australia. *Austral Ecology*. Accepted August 2007.

Grimbacher, P. S., Catterall, C. P. and Stork, N. E. Do edge effects increase the susceptibility of rainforest fragments to structural damage resulting from a severe tropical cyclone? *Austral Ecology*. Revised October 2007.

Catterall, C. P., McKenna, S., Kanowski, J. and Piper, S. D. Do cyclones and forest fragmentation have synergistic effects? a before-after study of rainforest structure at multiple sites. *Austral Ecology*. In Review; Submitted July 2007.

Kanowski, J., Catterall, C. P., McKenna, S. G. and Jensen, R. Impacts of cyclone *Larry* on monoculture and mixed-species timber plantations, restoration plantings and upland rainforests of the Australian Wet Tropics. *Austral Ecology*. In Review; Submitted May 2007.

Milestone 5: Plan of communication activities, products and events for Year 2

- Stakeholder workshop on monitoring biodiversity of revegetation September 2007;
- Condition report NHT1 sites, June 2008;
- Monitoring toolkit Version 2, June 2008;
- Scientific paper on conceptual model of reforestation processes, submitted September 2007;
- Scientific paper on cyclone impacts prepared for publication, November 2007;
- Fact sheet on reforestation processes, March 2008;
- Stakeholder workshop on strategic experimental priorities in reforestation, June 2008; and
- Other presentations to workshops, stakeholder meetings, and scientific conferences – in response to invitations or opportunities as these arise.

Milestone 6: Summary of any liaison activities undertaken to date, including minutes of meetings / workshops if applicable

Extensive and varied liaison occurred, including liaison with both practitioners and other researchers involved in related MTSRF projects. A non-comprehensive summary of meetings and liaison is presented in Appendix 1.

Plan for completion of out-year activities

Task	Targeted Activity	Date
(a)	End user workshop on monitoring biodiversity of revegetation*	September 2007**#
(a)	Data collection (vegetation condition and extent) at NHT sites*	July 2007-June 2008*
(a)	Trialling and development of plant and bird survey methods*	July-October 2007**#
(a)	Condition report NHT1 sites*	June 2008*
(a)	Monitoring toolkit Version 2*	June 2008**#
(b)	Data collection for study of reforestation processes**	July 2007-June 2008**#
(b)	Scientific paper on conceptual model of reforestation processes submitted**	September 2007**#
(b)	Scientific paper on cyclone impacts in press or published*	November 2007*
(b)	Fact sheet on reforestation processes**	March 2008**
(b)	Developed design for study of factors affecting restoration outcomes**	March 2008**#
(c)	Reporting system for restoration works and regional investments under development with FNQ NRM*	July 2007-June 2008**#
(c)	Stakeholder workshop on strategic experimental priorities in reforestation**	June 2008**#

** These activities are primarily supported by the MTSRF / GU.

* These activities are partially supported by the MTSRF / GU, but also require funds and in-kind contributions from FNQ NRM Ltd or other partners.

Project problems and opportunities

Recent developments arising from ongoing interaction with Terrain MRM have improved progress on tasks (a) and (c), as described above within the report on Milestone 2. Allocating staff time to community and stakeholder liaison has achieved this, with good outcomes, although at the expense of time spent in field data collection and analysis.

Communications, major activities or events

A range of other communications, activities or products, apart from those specified in the reporting milestones occurred, including:

- Publication of revised monitoring toolkit by the RRRRC:
Kanowski, J. and Catterall, C. P. (2007) *Monitoring Revegetation Projects for Biodiversity in Rainforest Landscapes. Toolkit. Version 1, Revision 1*. Marine and Tropical Sciences Research Facility Research Report Series. Reef and Rainforest Research Centre Limited, Cairns (52 pp.).
- Work on twelve different journal articles or book chapters at various stages of preparation, submission, and journal pre-publication process.
- Presentations and seminars with content related to MTSRF project:
Kanowski, J. *Managing camphor laurel regrowth to promote rainforest recovery*. Rainforest Recovery Conference, Brisbane, June.
Kanowski, J. *Monitoring the Biodiversity Outcomes of Community Reforestation Projects*. Pacific Conservation Biology Conference, Sydney, July.
Catterall, C.P. 2007. *Fragmentation processes and restoration solutions: are land managers making informed decisions and does it matter?* Society for Conservation Biology (Australasia), Sydney, July.
Moran, C., Catterall, C. 2007. *Consequences of rainforest fragmentation for frugivores and seed dispersal in subtropical Australia*. Society for Conservation Biology (Australasia), Sydney, July.
Piper, S. Catterall, C., Kanowski, J. 2007. *Cross-taxon surrogacy amongst plants, beetles, reptiles and birds in the context of reforestation in rainforest landscapes*. Ecological Society of America/ Society for Ecological Restoration Conference, San Francisco, USA, July.
Kanowski, J. *Impacts of cyclone 'Larry' on the abundance of possums and tree-kangaroos in upland rainforests of the Atherton Tableland, Australia*. Cyclone Larry Science Seminar, James Cook University, Cairns, September.
Catterall C., McKenna, S., Kanowski, J., Piper, S. 2007. *Do cyclones and forest fragmentation have interacting effects? A before-after study of rainforest structure at multiple sites*. Cyclone Larry Science Seminar, James Cook University, Cairns, September.
Kanowski, J. *Converting camphor laurel regrowth to rainforest*. Big Scrub Field Day, Lismore, September.
- Scientific presentations to the Ecological Society of Australia conference, to be held in Perth, 26-30 November 2007. The conference may present media opportunities, although Western Australia is a long way from Far North Queensland. ESA Local Organising Committee is responsible for media relating to the event (see www.ecolsoc.org.au/ESA2007Conference.htm).