

# Case study



## Catchment restoration assessment

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### Monitoring and evaluation of the Mary River and Tributaries Rehabilitation Plan

#### Background

This case study outlines catchment restoration assessment (monitoring and evaluation) undertaken by the Mary River Catchment Coordinating Committee (MRCCC) from 2002 to 2003. MRCCC is a community-based organisation, therefore monitoring was largely undertaken by community volunteers.

The Mary River catchment covers 9400 km<sup>2</sup> from Maleny to Fraser Island, encompassing 12 shires with a total population of over 75 000. Much of the 2947 km of waterways in the catchment contains communities of remnant riparian vegetation of conservation significance. These riparian communities provide habitat for a range of flora and fauna, including numerous rare and endangered species. The State of the Rivers report for the Mary River catchment found 40% of the riparian vegetation to be very poor, while a further 23% was rated as poor. High levels of exotic species were identified in poor riparian areas.

#### Project objectives

Based on these findings, the objectives of this project were to:

- assess Rivercare grant properties using the Index of Stream Condition in order to assess the physical parameters influencing vegetation health, stream bank stability and in-stream health of monitored sites
- assess riparian plant species diversity and condition using the Corridors of Green data sheet (Greening Australia Tiara) in order to assess riparian vegetation condition and assessment
- gauge landholder attitudes and commitment to the Rivercare grant scheme via an attitudinal survey
- establish baseline data to be used for comparisons over time
- establish a fixed methodology for the Rivercare project site-monitoring procedures
- offer practical advice and information on issues highlighted by monitoring, in order to correctly maintain the project.



#### Study design

Monitoring took place at 20 established Rivercare sites from December 2002 to February 2003 throughout the Mary River Catchment, with the purpose of gathering baseline data on the state of the various sites. Sites for monitoring were decided with the assistance of landholders. Before monitoring at each site, volunteers conducted an attitudinal survey, containing ten questions ranging from the landholder's major riparian issues to their satisfaction level with the Rivercare grant.

This survey acted as an ice-breaker and helped gain information needed to accurately complete the monitoring, such as appropriate positions for transects. Further comments were also given and taken into account. Landholders who did not complete the survey on the monitoring day were sent a copy and asked to post the completed form back to the MRCCC.

Monitoring sites were located centrally along the Rivercare project areas, with 200 metres (m) of riparian land upstream and downstream of the central transect (Transect 1). Transects 2 and 3 were positioned 200 m upstream and 200 m downstream of Transect 1 at each site. A photographic strategy was used to differentiate between sites, and between transects within sites. To ensure that future monitoring activities were carried out in the same location, a star picket was hammered into place at the toe of the bank, and another at the top of the streamside zone.

## Monitoring methods

The Corridors of Green (COG) assessment technique was undertaken along Transect 1 only. This technique involves assessing and combining four parameters relating to riparian condition (for example, foliage protective cover) and five parameters relating to plant diversity (for example, tree species diversity). Each parameter was given a score from 1 to 5, with a total score out of 45 given to each site.

The condition of a particular stream reach was calculated using the Victorian-designed Index of Stream Condition (ISC) assessment techniques. A full ISC score contains five elements, with a rating score of 1 to 10 given to each of the elements. The five elements are:

- hydrology
- aquatic life
- water quality
- streamside zone
- physical form.

Both hydrology and aquatic life were omitted from this report due to their time requirements and lack of availability in Queensland. This resulted in a score out of thirty rather than fifty, which was in turn converted to a percentage (for comparison purposes).

Water quality was monitored at Transect 1 only, using the parameters of water temperature, pH, conductivity, turbidity, phosphate and nitrate.

The streamside zone parameters used were bank stability, width of streamside zone, structural intactness, cover of exotic vegetation, regeneration of indigenous woody vegetation and livestock access.

Physical form parameters included bed stability, in-stream physical habitat, longitudinal continuity and other observations.

A comprehensive outline of methodologies, including a description of both the COG and ISC assessment techniques, appears in the *Implementing the Mary River and Tributaries Rehabilitation Plan: monitoring and evaluation report 2003*.



## Data interpretation

Data interpretation was carried out with the aid of:

- histograms
  - physical form, streamside zone and water quality of the Mary catchment in comparison to selected Victorian catchments

- comparisons of mean ISC and COG scores of the upper and lower Mary catchment
- total ISC scores at each monitoring site
- comparisons of COG condition and diversity scores at each site
- a comparison of ISC and COG scores at each site
- the relationship between vegetation and bank position at each site
- comparisons of revegetation and regeneration sites using ISC and COG scores
- priority ratings for major riparian issues for each land-use category
- pie charts
  - ISC bank erosion scores for Rivercare project sites
  - levels of catchment bank stability
  - land use of Rivercare project properties
  - major landholders' riparian zone issues
- an aerial photograph illustrating ISC assessment techniques at a particular site
- tables
  - priority reach of each of the sites
  - combined ISC and COG scores
  - degree of variance in the streamside zone widths
  - leaf litter cover and soil condition at each siteweeds species abundance
  - biophysical parameters affected by livestock access
  - chemical parameters of sites
  - attitudes of landholders toward the Rivercare grant scheme.

Comparisons were made between the Mary catchment and three selected Victorian catchments using ISC data. To do so, the average scores for physical form, streamside zone and water quality for each catchment were combined. The sites monitored within the Mary catchment were 'high priority' and 'high conservation' sites on freehold land, whereas the Victorian ISC results were obtained from evenly spaced strategic sites. This led to some limitations in comparisons of the data.

The mean values for ISC and COG scores in the Mary Catchment were converted to a mutual score out of 100 to enable comparisons to be made between the two methods.

## Reporting

The results of the study were compiled into a detailed report, *Implementing the Mary River and Tributaries Rehabilitation Plan: monitoring and evaluation report 2003*, which was distributed to a wide range of stakeholders. To access the report (including further information on the study findings, highlights and monitoring methodology), see the Mary River Catchment Coordinating Committee website <[www.wb2020.qld.gov.au/icm/mrccc](http://www.wb2020.qld.gov.au/icm/mrccc)>.

## References

Watson, D, Maskall, D & Wedlock B 2003, *Implementing the Mary River and Tributaries Rehabilitation Plan: monitoring and evaluation report*, Mary River Catchment Coordinating Committee, viewed 21 November 2006, <[http://www.wb2020.qld.gov.au/icm/mrccc/publications/Mary\\_River\\_and\\_tributaries\\_Rehab\\_Plan\\_Mon\\_and\\_Eval.pdf](http://www.wb2020.qld.gov.au/icm/mrccc/publications/Mary_River_and_tributaries_Rehab_Plan_Mon_and_Eval.pdf)>.