

Mackay Whitsunday region

Second Report Card 2010

Reef Water Quality Protection Plan

Regional profile

The Mackay Whitsunday region covers an area of 9000 square kilometres and has significant biodiversity assets, mainly in national parks and state lands including marine parks. The subtropical to tropical climate is characterised by a distinct wet season between January and March. In 2009-2010 the region received well above median rainfall. In addition, Cyclone Ului impacted on the Mackay Whitsunday region in early 2010. The main agricultural land uses are grazing (42 per cent) and sugarcane (18 per cent) with some horticulture (approximately 0.05 per cent).

This report card measures progress from the 2009 baseline towards Reef Water Quality Protection Plan (Reef Plan) goals and targets. It assesses the combined results of all Reef Plan actions up to June 2010. Report cards are produced as part of the Paddock to Reef program.

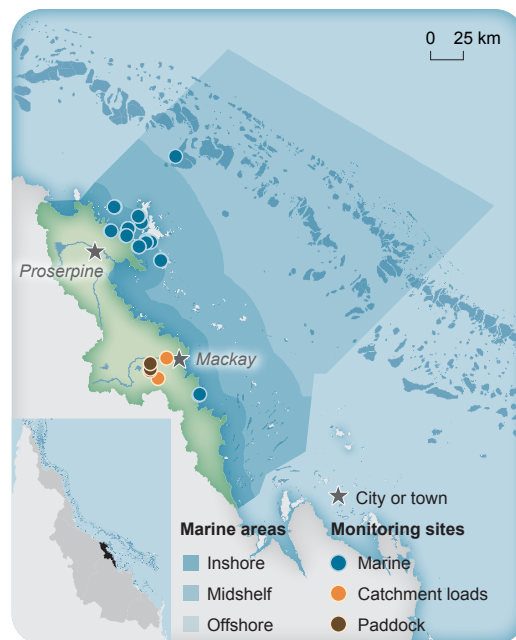
The regional Natural Resource Management body, Reef Catchments, supports the region's agricultural industries in adopting improved farming practices, lowering pollutant loads and removing associated threats to the reef. In order to determine the relative effectiveness of these improved practices, the region has implemented a detailed paddock scale monitoring and modelling program.

Key findings

- The overall marine condition in 2009-2010 was moderate. Inshore water quality and coral reefs remained moderate and seagrass meadows remained poor.
- Overall, progress towards Reef Plan targets has been encouraging; however it will take time for these achievements to translate into improved marine condition.
- Seventeen per cent of sugarcane growers, 41 per cent of horticulture producers and 17 per cent of graziers have adopted improved land management practices.
- The greatest proportional catchment load reduction was the pesticide load with an estimated 376 kilograms (18 per cent) less.
- The significant progress has been driven primarily by the Australian Government's Reef Rescue program along with Queensland Government and industry-led initiatives.

Paddock to Reef program

The Paddock to Reef program, funded jointly by the Australian and Queensland Governments, is a highly innovative approach to integrating monitoring and modelling information on management practices, catchment indicators, catchment loads and the health of the Great Barrier Reef.



Map of the Mackay Whitsunday region and Great Barrier Reef Marine Park showing the paddock, catchment and marine monitoring sites.

Progress and status

Targets		Region	Catchments			
			O'Connell	Pioneer	Plane	Proserpine
% adoption improved practices	Grazing		17			
	Horticulture		41			
	Sugarcane		17			
% loss	Wetlands	0.01	0	0.27	0.01	0
	Riparian	0.50	0.92	0.08	0.49	0.51
% groundcover		98	99	98	96	98
% load reduction	Nitrogen		4			
	Phosphorus		1			
	Sediment		3			
	Pesticides		18			
Overall marine condition						
Water quality						
Seagrass						
Corals						

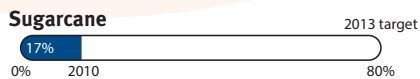
■ Very good ■ Poor
■ Good ■ Very poor
■ Moderate

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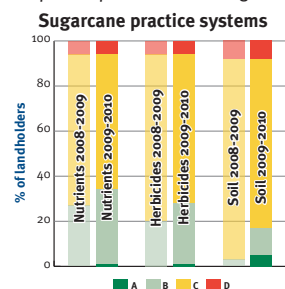
www.reefplan.qld.gov.au

Management practice results

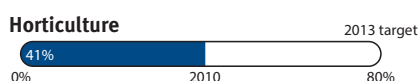
Land management practices have been improving over time. Progress since the 2008-2009 baseline is presented below.



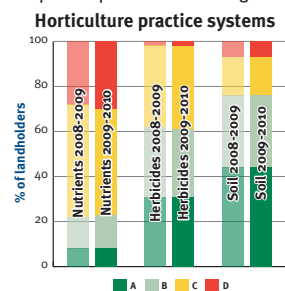
By June 2010, 17 per cent of sugarcane growers had adopted improved land management practices.



By June 2010, cutting-edge (A) or best management (B) practice systems were used by 34 per cent of sugarcane growers for nutrients, 28 per cent for herbicides and 17 per cent for soil.



By June 2010, 41 per cent of horticulture producers had adopted improved land management practices.



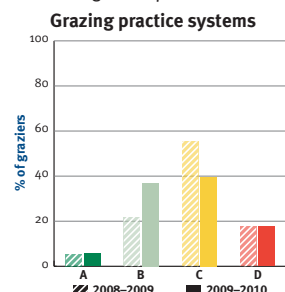
By June 2010, cutting-edge (A) or best management (B) practice systems were used by 23 per cent of horticulture producers for nutrients, 61 per cent for herbicides and 76 per cent for soil.

Improved management practice systems for sugarcane and horticulture are presented using the ABCD framework:

- A – Cutting-edge practices
- B – Best practices
- C – Common or code of practices
- D – Unacceptable practices.



By June 2010, 17 per cent of graziers had adopted improved land management practices.



By June 2010, 43 per cent of graziers were using (A or B) practice systems that are likely to maintain land in good to very good condition or improve land in lesser condition.

Improved grazing management practice systems are presented using the ABCD framework:

- A – Practices likely to maintain land in very good condition or improve land in lesser condition
- B – Practices likely to maintain land in good condition or improve land in lesser condition
- C – Practices that may maintain land in fair condition or gradually improve land in poor condition
- D – Practices likely to degrade land to poor condition.

Catchment results

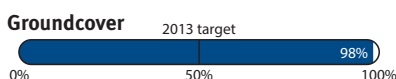
Historically, 11 per cent of wetlands and 22 per cent of riparian forest have been lost from pre-European extent.



Loss of wetlands remained relatively constant when comparing 2001 to 2005 (0.02 per cent) with 2005 to 2009 (0.01 per cent).



Loss of riparian forest increased from 0.46 percent (617 hectares) between 2001 and 2005 to 0.5 per cent (672 hectares) between 2005 and 2009. The O'Connell catchment had the highest loss of riparian forest with 0.92 per cent (312 hectares).

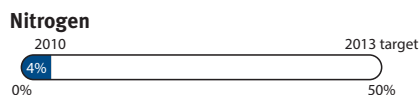


Late dry season groundcover for grazing lands was 98 per cent.

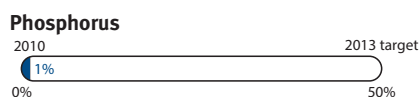
Catchment loads

The pollutant loads at the end of the catchment come from modelling, validated by monitoring, to remove the effect of a variable climate from year to year.

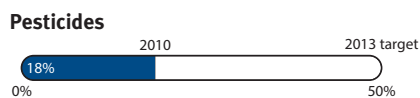
Land management changes in the horticulture industry have not been modelled. Changes in riparian management also could not be modelled due to the lack of data.



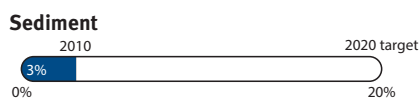
The estimated annual average total nitrogen load leaving catchments reduced by four per cent (76 tonnes).



The estimated annual average total phosphorus load leaving catchments reduced by one per cent (five tonnes).



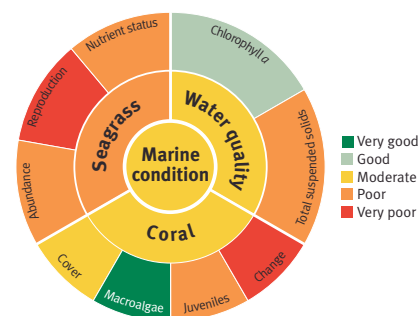
The estimated annual average pesticide load, largely from sugarcane cultivation, leaving catchments reduced by 18 per cent (376 kilograms).



The estimated annual average suspended sediment load leaving catchments reduced by three per cent (11,000 tonnes).

Marine results

The inshore area of the Mackay Whitsunday region was influenced by multiple high flow events as a result of above median rainfall. There were localised areas of coral bleaching where reefs were exposed to moderate levels of heat stress in late summer. Cyclone Ului also caused a substantial reduction in coral cover at localised sites in the region.



Marine graphic descriptions:

- **Chlorophyll a** indicates nutrient availability and productivity.
- **Total suspended solids** measures particulate matter in water.
- **Seagrass abundance** includes the cover and change in cover.
- **Reproduction** indicates the potential of seagrass meadows to recover from disturbances.
- **Nutrient status** measures the response of seagrass to nutrient conditions in surrounding waters.
- **Coral cover** is a measure of the percentage of coral on a reef and indicates the capacity of coral to persist under the current environmental conditions and its potential to recover.
- **Coral change** measures change in coral cover which indicates coral resilience to disturbances.
- **Macroalgal cover** - high abundance indicates poor water quality and negatively affects the resilience of coral communities.
- **Coral juvenile density** measures the abundance of corals less than 10 centimetres in diameter which indicates the recovery potential from disturbances.

Water quality

Inshore water quality was moderate, having varied from poor to moderate since 2005-2006. Both chlorophyll *a* and total suspended solids were, at times, above *Water Quality Guidelines for the Great Barrier Reef Marine Park* for inshore waters. Water quality was poorer in inshore areas.

A range of pesticides was detected including diuron, atrazine and hexazinone. Herbicides at all monitored sites at times exceeded the combined concentration harmful to marine plants. Sarina Inlet had the highest concentrations of herbicides compared to all other sites in the Great Barrier Reef.

Seagrass

Inshore seagrass meadows remained in poor condition, having progressively declined since 2005-2006. This reflects long-term declines in abundance and reproductive effort, which is a concern in terms of capacity of local seagrass meadows to recover from disturbances. The nutrient status of seagrass tissue was rated as poor and reflected local water quality, particularly high concentrations of nitrogen.

Coral

Inshore coral reefs remained in moderate condition. However, coral cover showed very poor recovery from past disturbances. Cyclone Ului caused a substantial reduction in coral cover at Daydream Island. Damage to other reefs in the region was minor. When considered in combination with poor densities of juvenile colonies, decreases in cover may have implications for the long-term resilience of coral communities.