

# Tedlands Station wetland complex

The Great Barrier Reef Coastal Wetlands Protection Program Pilot Program was commissioned by the Australian Government to deliver on-ground actions for the sustainable management of 22 priority wetlands in the Great Barrier Reef catchment. The \$2 million program was delivered over two years by a consortium led by Conservation Volunteers Australia and involved partnerships between government, community and landowners to identify and protect these wetlands.

## Project summary

The main objective of the Pilot Program project on Tedlands Station was to protect and rehabilitate the property's coastal wetland habitat. The project aimed to foster the property owners' involvement in environmentally sustainable production, and to negotiate nature refuge status for the highest-value areas of the property. Accordingly, the project has:

- assessed the condition of the wetland through sampling water quality and carrying out surveys of waterbirds, fish and their habitats
- prepared a property management plan that will maintain wetland values
- documented existing grazing and burning regimes and trialled new approaches.

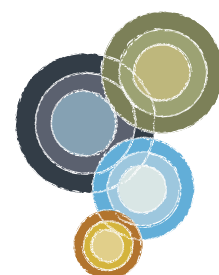
The results of these investigations were presented in a series of information bulletins. Additionally, the project involved the formation of a coordinated Feral Pig Control Group, which continues to operate under the management of SLCMA (Sarina Landcare Catchment Management Association).

## About the site

Tedlands Station is 25 km south of the Queensland coastal city of Mackay in the Sarina Shire, adjacent to the coast. The Tedlands Station wetlands include a complex of natural and modified wetland habitat types comprising riparian vegetated stream channels, channel hosted lagoons, melaleuca and palm swamp forests, and bunded inter-tidal areas that were once mangroves and salt couch grasslands. Most of the site is used for pastoral production. The western margin has a catchment dominated by sugarcane.



Photo 1: Alligator Waterhole adjoining the Tedlands Station homestead is a valuable deepwater lagoon (photo: Jim Tait)



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Native vegetation remains on almost 40 per cent of Tedlands Station, totalling 1660 hectares. Almost 90 per cent (1429 ha) of this is included in the voluntary Land for Wildlife program. This includes eleven regional ecosystems, several of which are 'at risk' within the Central Mackay Coast Bioregion (see table below).

Regional ecosystem class	Land area (ha)
'endangered'	338
'of concern'	251
'not of concern'	919
'disturbed vegetation'	152



Photo 2: Endangered regional ecosystems, including blue gum and paperbark woodland, on Tedlands Station (photo: Jim Tait).

The wetland complex is a nationally important area for shorebirds, including JAMBA and CAMBA listed species. It provides habitat for regionally significant populations of waterbirds as well as nursery, feeding and breeding habitat for key recreational and commercial fish species (particularly barramundi).

## Challenges

**Invasive exotic grasses** such as para grass and hymenachne have infested Tedlands Station for more than a decade, although they do not dominate all the wetland areas. Importantly, some of the grazing regimes already practised on Tedlands Station (e.g. heavy grazing pressure late in the dry season) are already limiting the dominance and habitat impacts of these exotic grasses.

Relatively large populations of **feral pigs** occur within the broader wetland complex surrounding Tedlands Station, and are a major concern for landholders. In addition to land disturbance, feral pigs cause severe ecological impacts including the disturbance of waterfowl nesting and feeding habitat, and direct predation on bird and crocodile nests. Feral pig control measures prior to the project included a biannual baiting program led by Sarina Shire Council's land protection section, along with a range of relatively ad hoc activities (due to limited resources).

**Loss of freshwater wetland connectivity** with downstream estuarine habitats is a threat to fish habitat values, particularly for marine breeding species such as barramundi, mangrove jack and tarpon. The main impediments to connectivity within the Tedlands Station wetland complex are water quality barriers due to extensive exotic grass infestations and road-crossing culverts associated with the tidal bunds.

Past vegetation clearing and intensive land use within the catchments draining into the Tedlands Station wetland complex have elevated the **sediment, nutrient and other contaminant loads** (including agrichemical residues) entering the wetlands. This has caused water quality deterioration and silting of waterbodies.

The owners of Tedlands Station have demonstrated a strong commitment to ecologically sustainable development, but they face the challenge of balancing this against maintaining productivity. Meeting the challenge requires a good understanding of wetland values, condition and threats, and of practical management responses. The pilot project provided the opportunity to promote the Tedlands wetland complex as an area warranting recognition and protection, and to carry out thorough investigations to help achieve this.

## Rehabilitation actions

Efforts to develop suitable **fire and grazing regimes** concentrated on the control of exotic pasture grasses. Monitoring sites were established with the assistance of the property managers, who were offered incentives to construct exclusion fencing and conduct controlled burns. The aim was to reduce exotic grass biomass and promote the growth of native understorey, overstorey and aquatic plants. The management regimes that were trialled included:

- grazing exclusion
- heavy grazing, late in the dry season
- cool burns (of pasture where the fuel load has been reduced by grazing, and/or in the cooler seasons)
- hot burns (ungrazed pasture, and/or in the hotter seasons).

To support these trials, the grass infestations were GIS mapped and the sites were photo monitored.



Photo 3: Monitoring of existing fenceline grazing regime on Tedlands Station highlights the importance of grazing for controlling the dominance of exotic pastures (photo: Jim Tait)

**Feral pigs** are detrimental both to biodiversity and to productivity, and the **Rocky Dam Creek Feral Pig Control Group** was formed to coordinate efforts at controlling them. The group includes Sarina Landcare Catchment Management Association (SLCMA), Sarina Shire Council, Queensland Parks and Wildlife Service (QPWS) and adjacent land managers. Fourteen land managers were invited to attend a meeting, and five of them subsequently participated in the feral pig control group. Training was provided in the use of traps, and seven traps were made available to the landholders, including four on Tedlands Station. A database was established to record the number of pigs trapped as part of the program and records are updated to monitor the effectiveness of the program and target hotspots beyond the current project.

The ongoing coordination of the Feral Pig Control Group is being handled by SLCMA, which aims to extend the program, including a baiting program, across the catchment.

The Department of Primary Industries and Fisheries (DPI&F) assessed the **connectivity** of Tedlands freshwater wetlands with downstream estuarine habitats. One approach was to carry out **electro-fisher surveys** (late dry season and post wet season) of the fish fauna of the bunded wetlands and Alligator waterhole. The findings, published in a DPI&F report and summarised in an information bulletin (see 'Further reading' below) indicated that there was relatively good estuarine connectivity to the Tedlands wetland systems, and DPI&F highlighted the regional barramundi nursery value of the site. The importance of current management practices (including the grazing regime) in maintaining suitable water quality conditions was also noted. However, fish diversity and abundance data did suggest that some seasonal water quality constraints (elevated nutrients, low dissolved oxygen levels) and connectivity limitations (road-crossing culvert) were detrimental to fish habitats, and that there was scope for improvement.

DPI&F also carried out sampling for **sediment, nutrient, and agrichemical residue contaminants** across five sites to determine whether additional management measures were required to manage these threats to water quality. The results of the monitoring are presented in an information bulletin (see 'Further reading' below). Elevated nutrient levels (above catchment target) were recorded within the wetland system, as well as elevated suspended solids during wet season flow events and elevated levels of agricultural chemical residues at almost all sampled sites other than the downstream bund outlet. These findings demonstrate the importance of the wetland complex as a sink for contaminant loads that would otherwise be exported to downstream ecosystems, including the Great Barrier Reef lagoon. Given the importance of the wetland itself, further efforts need to be made to reduce contaminant loads (sediment, nutrient and agrichemicals) from upstream land uses. This need is currently being addressed by the ongoing Sustainable Landscapes Program of the Mackay Whitsunday Natural Resource Management (MWNRM) group, which also operates in the catchment.

Underpinning the pilot project was an assessment of wetland values, condition, threats and related production management on Tedlands Station, undertaken by MWNRM and Econcern. The report of this assessment (see Bloor & Tait 2007, 'Further reading' below) provided recommendations for managing key wetland and remnant habitats on the station, and demonstrated that management of nature conservation values need not compromise production outcomes, and vice versa.

MWNRM produced a series of five **information bulletins** showing the results of monitoring, surveys and management initiatives (see 'Further reading' below). Bulletin 5, *On-farm conservation initiatives*, recommended that the landholders protect parts of the wetland complex through a formal nature refuge agreement. The land owners of Tedlands Station did not proceed with a formal nature refuge agreement. Nevertheless, their strong commitment to ecologically sustainable production remains, and is now reinforced by new information and management approaches initiated through the CWPP pilot project.

## Lessons learnt

### Innovations

One of the key findings of the project was that some of the existing management regimes (e.g. heavy grazing late in the dry season) are of critical importance in helping to maintain the ecological condition and values of the wetland complex. Evidence-based support for existing land-management practices is an unusual outcome from a government-funded nature conservation project, which would more commonly aim to alter landholders' management practices. Although there is still scope for additional ecological improvements on Tedlands Station, this result is helpful in gaining the support of the landholders and their engagement locally and regionally.

## Further reading

Bloor, M & Tait, J 2007, *Tedlands Station wetlands: assessment of wetland values and associated property management issues*, Mackay Whitsunday Natural Resource Management Group and Econcern.

Mackay Whitsunday Natural Resource Management Group 2007, *Tedlands Station wetlands project: grazing and fire regime management*, MWNRM information bulletin no. 1.

Mackay Whitsunday Natural Resource Management Group 2007, *Tedlands Station wetlands project: feral pig control program*, MWNRM information bulletin no. 2.

Mackay Whitsunday Natural Resource Management Group 2007, *Tedlands Station wetlands project: fish habitat values and management*, MWNRM information bulletin no. 3.

Mackay Whitsunday Natural Resource Management Group 2007, *Tedlands Station wetlands project: water quality investigations*, MWNRM information bulletin no. 4.

Mackay Whitsunday Natural Resource Management Group 2007, *Tedlands Station wetlands project: on-farm conservation of remnant vegetation and wetland values*, MWNRM information bulletin no. 5.

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Photos courtesy of WetlandCare Australia



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