Australian Government
Great Barrier Reef Marine Park Authority

CENTRAL QUEENSLAND FLOODS: Impact on the Great Barrier Reef

Information Sheet 1

13 January 2010

Current Situation

The Burnett, Fitzroy and Thompson Rivers and many other smaller river systems in Central Queensland have flooded in recent weeks, causing widespread damage to a number of coastal and inland towns and cities. The overflow of freshwater has reached some parts of the Great Barrier Reef, with visual assessments indicating the fresh water runoff, or flood plume, from the Fitzroy River has spread approximately 65km off the Capricorn Coast near Rockhampton.

The flood plume contains freshwater, sediments, nutrients, pesticides and other contaminants, all of which can have detrimental effects on coral reefs or other important marine habitats such as seagrass beds. Even when ecosystems are exposed to freswater plumes they do not necessarily die. Many plants and animals have machanisims to cope with low salinity and low light.However, this event has unusually large amounts of flood runoff with suspended material and the prevailing conditions may be different to previous events. This may be compounded by persistent rainfall previous to this flood event.

A coordinated water quality monitoring program is already in place in these regions to monitor and assess flood events such as this. The Great Barrier Reef Marine Park Authority (GBRMPA), through the Australian Government's $10.5 million Reef Rescue Marine Monitoring Program, together with James Cook University, Central Queensland University, Australian Institute of Marine Science, Queensland Department of Environment and Resource Management and a group of volunteers, all work together to ensure the monitoring program assesses levels of nutrients, sediments, pesticides and salinity as well as overall health of corals and seagrass beds.

Water quality monitoring at the mouths of the Fitzroy and Burnett Rivers, and north to the Keppel Islands has been undertaken.

All monitoring samples will be tested for:

- Salinity
- Total Suspended Solids (how clear the water is)
- Chlorophyll (an indicator of nutrient concentration)
- Water temperature and
- Pesticides.

Can I visit the Reef?

Presently, the affected area is localised to inshore areas off the Capricorn Coast near Rockhampton. However, we have been informed marine tourism operators in this region are still open for business. Please go to http://www.capricornholidays.com.au/ for information about the operators in this area. This current situation is not affecting the Whitsundays, Cairns or Port Douglas areas. Please go to http://www.queenslandholidays.com.au/ for information about operators across Queensland.

Photo taken at Low Isles Monday 10 January 2010

Photo by Rick, Low Isles Caretaker

Are there different types of flood plumes?

Flood plumes in the Marine Park occur when a substantial amount of rain falls within a catchment and this then flows to the marine environment. The characteristics of plume water often pose a range of potential threats to the health of marine ecosystems.[1] Various types of flood plumes may be observed:

- Heavy dark brown flood plumes indicative of high-very high sediment loads
- Light brownish flood plumes indicative of light sediment loads

1. Brodie. J; Devlin. M; Taylor. J; Waterhouse. J, 2001. *Flood Plumes in the Great Barrier Reef: Spatial and Temporal Patterns in Composition and Distribution.* Research Publication 68. Great Barrier Reef Marine Park Authority, Townsville.

- Light greenish flood plumes indicative of algal blooms occurring in high nutrient waters after sediment has dropped out.

Depending on the prevailing conditions, these plumes may stay close inshore or may move well offshore.

Due to the size and scale of the current flood events in the Fitzroy and Burnett catchments, it is possible the mid-shelf and outer/offshore reefs may be affected by the flood plumes. The extent of the plume is being monitored.

Impact to the Central Great Barrier Reef

The impact of this event on the Central Great Barrier Reef will not be known for several weeks, once full assessments of the affected areas have been conducted. The cumulative effects of freshwater, possible higher temperatures due to the warmer weather and high loads of sediments and nutrients can weaken corals and hinder their ability to recover from flooding or other stresses such as cyclones.

Runoff from the Fitzroy River - Peak Island and Humpy Island in the background.
Photo courtesy CQ Environmental/GKI Resorts Pty Ltd

Potential impacts of flood runoffs can include:

- Freshwater bleaching in shallow corals
- Disease and mortality from high sediment and nutrient loads
- Increased algal and seaweed blooms
- Smothering of corals and seagrass
- Reduced coral and seagrass growth
- Increased breeding activity of some fish and crustacean species such as barramundi, mangrove jack and prawns, and may mean greater catches of in coming months
- Improved breeding conditions for sponges and bivalves.

The GBRMPA, together with its partners and other agencies, will continue to monitor the affected areas.

How can I help?

The GBRMPA and marine scientists are working with a number of Great Barrier Reef tourism operators, commercial and recreational fishers and other Great Barrier Reef Marine Park users to collect information about the current event.

A Community Flood Monitoring tool has been created to enable Marine Park users to be able to feedback their observations and take water samples of the flood plume. Three simple and separate surveys have been created. If you would like to provide information go to:

- http://www.surveymonkey.com/s/fitzroyflood_plume,
- http://www.surveymonkey.com/s/FitzroyFlood_turbidity,
- http://www.surveymonkey.com/s/fitzroyflood_watersampling

If you have any questions about the Community Flood Monitoring please email southern.region@gbrmpa.gov.au or phone (07) **4921 4055.**

There are also a number of community and industry-based monitoring initiatives including Bleachwatch and the Sightings Network which Marine Park users and visitors can provide information. For more information go to www.gbrmpa.gov.au

Keep an eye out for floating vessels or large marine debris

A number of vessels broke their moorings during the recent flood events and remain missing. If you see a vessel you suspect may be drifting or abandoned, or if you observe large floating debris that may be a hazard for shipping please contact the **Yeppoon Coastguard** on (07) **4933 6600** or **Maritime Safety Queensland** in **Gladstone** on (07) **4973 1200** or **Mackay** on (07) **4944 3700**.

More information

The **Great Barrier Reef Marine Park Authority** will be updating information on the flood plume situation as it becomes available.

Mouth of the Fitzroy River - Balaclava Island in the background.
Photo courtesy CQ Environmental/GKI Resorts Pty Ltd