

Effects of Fire on the Wet Tropical Lowland Forest Eco-tones in the Wet Tropics of North Queensland after a 1-500 year severe tropical cyclone: (“Yasi”)

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Recent severe tropical cyclone events Larry and Yasi have provided a glimpse of what might happen if climate change eventuates. By monitoring regrowth in forest plots after fire treatments in the Cyclone Yasi disaster area it should be possible to get an insight into the possible effects of an increase in these extreme weather events. Overall it is commonly noted in the past and recent literature that the two main scenarios that will be most possible are:

1. Rainforest species will increase and thicken the forest. This is common in the pre-recorded history record, which shows an increase in rainfall with rising sea levels.
2. Lengthened dry seasons will increase fire risks and will open the forest further, especially after severe cyclones earlier. This is the most common proposed scenario, most notably that of Williams (2007).

However, historically there is much evidence that the rainforest was far more extensive when Europeans first arrived in North Queensland, and many areas regarded as natural open forest today were NOT open forests 200 years ago, EG: Lakeland Downs, northern beaches of Townsville region, western slopes of the Daintree and many more areas.

Some initial findings suggest the rainforest may be more resilient than Williams (2007) suggested. Below is a photo from Conn Creek near Cardwell which has not received much fire treatment over the last 20 years due to its location near human activities, and it is clear that the rainforest is well establishing itself.

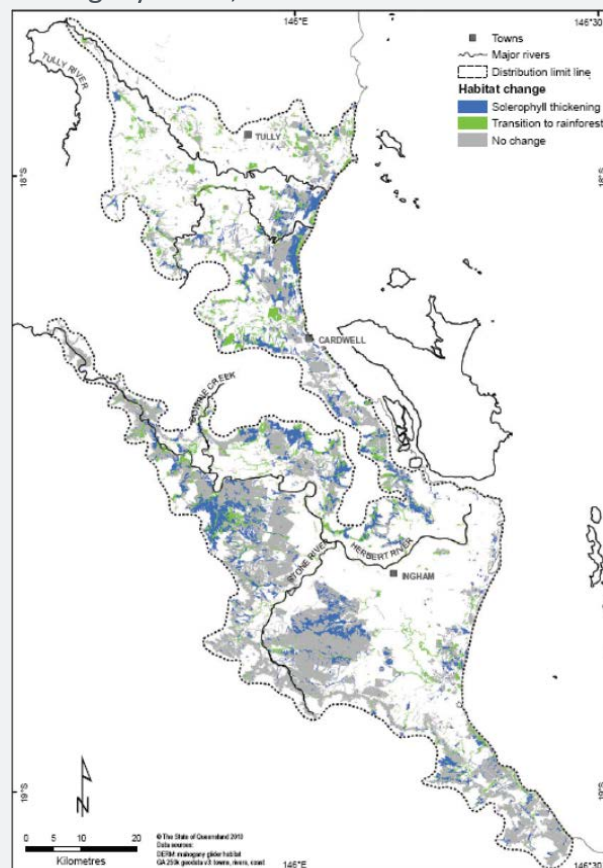
Below: a recent fire has stopped before entering the interior of a rainforest patch at Conn Creek near Cardwell, early in 2012



MAIN AIMS OF THE PROJECT

To judge effects of increased severe tropical cyclone activity (Yasi 1 in 500 year event) and the regrowth and fire that follows, on the lowland rainforest/sclerophyll eco-tones of the southern section of the Nth Qld Wet Tropics.

Research area: located in the lowland forest eco-tones in the southern section of the Nth Qld Wet Tropics, home to the endangered Mahogany Glider, see below:



Location of sites: There are 2 groups of sites; in the Tully and Hull River Heads area, and in the Hinchinbrook Channel area south of Cardwell.

Initial Findings:

- Where fire is absent, rainforest readily reinvades and dominates in 10-20 years
- Many rainforest seedlings and saplings readily produce basal regrowth after fire
- Cyclones tend to damage the younger trees, opening the canopy for around 5 years and allowing gliding mammals to travel further
- Large Eucalypts are persisting above a rainforest understorey, see photo to right

Right: a large Eucalyptus platyphylla emergent in rainforest at Muller’s Creek near Cardwell

THE MAIN QUESTIONS OF THE PROJECT

WHAT IS THE THRESHOLD of change from open forest to rainforest?

WHAT IS THE INTERVAL OF TIME that is required between fires to allow the rainforest to firmly establish itself?

WHAT EFFECT DO CYCLONES HAVE in influencing variations in answers to the above questions?

IS THE RAINFOREST GOING TO EXPAND OR CONTRACT AS A RESULT OF CLIMATE CHANGE?

Below: fire treatment being undertaken in the Hinchinbrook Channel south of Cardwell early 2012

