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The Wet Tropics' heritage of ancient flowering plants revealed

The importance of North Queensland's Wet Tropics rainforests as an evolutionary refuge for many of the world's most ancient rainforest plant lineages may have been underestimated, a new study conducted by CSIRO scientists and funded by the Marine and Tropical Sciences Research Facility (MTRSF) has found.

"We already knew that the Wet Tropics was home to an unusually large number of ancient plant lineages," said Dr Dan Metcalfe, who along with co-author Mr Andrew Ford is based at CSIRO's laboratories in Atherton. "Building on the results of previous studies, we can now say that sixteen ancient families of flowering plants are found in the region."

Other world-recognised areas of floral biodiversity, such as New Caledonia and Costa Rica, can boast of only eleven and fifteen ancient plant families, respectively. Thus, north Queensland's Wet Tropics rainforests house a globally valuable record of the evolution of flowering plants.

Some of the better-known representatives of these ancient flowering plant lineages include the toxic Idiot Fruit (*Idiospermum australiense*), which has survived in the Daintree region for over 100 million years, and the flowering liana genus *Austrobaileya*.

"While pollen records reveal that the rainforested area of north Queensland has contracted and expanded substantially over millions of years as the climate has changed, the fact that these ancient plant species are still around shows that there must have been refuge areas where the rainforest could persist," added Dan.

"In the face of climate change we need to increase the resilience of the rainforest, particularly in a landscape that has been modified by human activities," said Andrew Maclean, Executive Director of the Wet Tropics Management Authority (WTMA).

"Research like this enables us to identify species and habitats at risk and likely climate refuges, helping us to make better, more informed decisions," he added.

The Australian Government's \$40 million MTRSF aims to improve the sustainability of management and use of north Queensland's key environmental assets: the Great Barrier Reef and its catchments, Wet Tropics rainforests and the Torres Strait.

"The MTRSF does not fund research for research's sake," noted Sheriden Morris, Managing Director of the Reef and Rainforest Research Centre, which administers the MTRSF in North Queensland on behalf of the Australian Government Department of the Environment, Water, Heritage, and the Arts.

"Instead, we focus scientific effort on the problems facing the environments, communities and industries of north Queensland," she said. "And it's rewarding to see our collaborators – WTMA, in this case – finding MTRSF-generated information useful and putting it to work. Ultimately we all benefit."



Dr Dan Metcalfe in the field studying forest fragments near Ravenshoe, Atherton Tableland, North Queensland. Image courtesy of Andrew Ford.



Idiot fruit, *Idiospermum australiense*, which has lived in the Daintree for over 100 million years. Image courtesy of Andrew Ford.