

THE ENVIRONMENT

Beetle mania hits more high notes

Rosslyn Beeby reports on the wealth of species being discovered in Queensland's rainforest

IN THE past four years, Professor Nigel Stork has identified 1500 beetle species that live high up in the leafy canopy of Queensland's northern tropical rainforests. Of these, roughly 30 per cent are new — that's 450 previously unknown, unclassified Australian insects.

It's indicative of the rich, but largely unknown and under-researched, species diversity in the world's oldest surviving tropical rainforest.

"And each of these insect species is as different to the other as a cat is to a dog or a horse — dramatically different," says Stork, who estimates that in those four years he's collected 30,000 individual specimens.

Although they date back 415 million years, to the days of the dinosaurs, Australia's tropical rainforests are still a research frontier. Barely 30 years ago, a large new possum species — the white lemuroid — was discovered in high-altitude rainforests on Mt Lewis. About 30,000 plant species are found in the Wet Tropics as well as one-third of Australia's mammals, one-third of its frogs and 370 bird species (almost half of our total bird species).

The Wet Tropics World Heritage Area, which covers 900,000ha — from Townsville in the south to Cooktown in the north — is home to the highest diversity of species on the continent.

In recent weeks, there have been two Federal government announcements that hopefully signal a more secure ecological and cultural future for this internationally significant ecosystem — a new \$40 million tropical research centre and a historic agreement that opens the way for greater use of centuries of Aboriginal knowledge of land management.

Last year, the Rainforest and Reef Cooperative Research Centres failed to secure a new round of government funding, and a storm of protest erupted. Queensland Tourism argued that the decision would "rip the heart out" of the state's tourism assets, and that scientific research was a vital tool in developing tourism management plans.

Federal MPs Warren Entsch and Peter Lindsay raised concerns about jobs and diminishing higher-education opportunities. Not surprisingly, the issue figured prominently in last year's Federal election, both parties promising a commitment to long-term research.

Ten days ago, the Federal Government announced it would invest \$40 million over four years to establish a new marine and tropical research centre in far north Queensland. Government funding of \$3 million will initially be provided in 2005-06 to establish the Marine and Tropical Sciences Research Facility and to consolidate the work of the Reef and Rainforest CRCs before they are wound up.



PIONEER RESEARCHER: Nigel Stork in his laboratory with some of the 1500 beetle species he discovered in the Queensland tropical rainforest, 450 of them previously unknown.



PRETTY PEST: A spectacled flying fox, left, endangered because orchardists were electrocuting them in vast numbers, a practice that has now been stopped, and a sugar glider.



The question is, will this mean public-good research or reef 'n' rainforest bio-prospecting? A Federal government spokeswoman says the Government intends to "target funding towards world-class public-good environmental research".

The new research centre aims to address important environmental challenges "facing two of our greatest assets — the Great Barrier Reef and the Daintree World Heritage Area". Research priorities will include the impact of climate change on high-altitude rainforest species, water quality, rainforest-canopy research, conservation of biodiversity in World Heritage areas.

Q&A

He's discovered new beetles, explored the world's rainforests and marvelled at how insects use their feet. But, when he's riding high in the gondola of his canopy crane, would the flying foxes hear entomologist, ecologist and baritone Professor Nigel Stork singin' in the rainforest?

TT: Were you set on a career as a scientist?
Nigel: No, originally I thought about being a singer or working in theatre.

But when I was doing my PhD in Manchester, looking at insects through an electron-microscope changed my life.

TT: Why was that?
Nigel: I was studying how insects hang on to plants, and became fascinated by the remarkable diversity of the brush-like pads on their feet. These tiny brushes allow them to hang on to plant surfaces, even in strong winds. It's incredible.



ENDANGERED: A Richmond birdwing butterfly, once common in Queensland, but now under threat of extinction because of land-clearing. The Wet Tropics World Heritage Area covers 900,000ha — from Townsville in the south to Cooktown in the north.



RARE TRIO: One of the rainforest mammals most at risk from climate change, the white lemuroid possum, discovered only 30 years ago, left, an amethyst or scrub python and a Lumholtz tree kangaroo, one of only two tree kangaroo species in Australia. The Aborigines call it boongary.



Stork, chief executive of the Rainforest CRC, believes the new centre has the potential to lead the world in tropical ecology research.

"There will be an overlap for about a year, and during that time the two CRCs will continue working on a joint program to improve water quality," he says.

"There is so much potential for Australia to become a world leader in this area, and so much of the research we have done already has had an impact at an international level." The magazine *Science* ranked a paper by Rainforest CRC researcher Stephen Williams on the devastating impact of climate change on tropical ecosystems as the seventh-most

important scientific achievement of 2004. The paper also made the front cover of the leading global science journal *Nature*.

Stork nominates the CRC's canopy crane as a tool that has led to new discoveries about pollination of the tropical landscape. The 48m-tall crane spans over 1ha of tropical rainforest, with a suspended basket — similar to the gondola of a hot-air balloon — attached to the hook. This allows researchers to travel over and into the canopy. It's the first of its kind in the southern hemisphere, with a laboratory located 200m from it.

"It's the rainforest equivalent of a deep-sea submersible, that has allowed us to find out who is doing what in the rainforest canopy," says Stork. "Once you get up there, you can see the place is buzzing with insects — there's a lot to keep a researcher busy."

Stork is also hoping he can negotiate a joint research partnership with the Smithsonian Institute in the United States to establish a 50ha Australian rainforest study site.

Last week, a historic Wet Tropics Regional Agreement was signed between state and federal governments and 18 Rainforest Aboriginal groups in northern Queensland. The agreement formally acknowledges Aboriginal "aspirations, cultural values, spiritual links and obligations to the land and waters of the wet tropics". It also promises a more active involvement for Aboriginal people in environmental management of the region, and better opportunities for training and employment in World Heritage management agencies.

Aboriginal people will also be more involved as educators and interpreters of the Rainforest Aboriginal heritage.

The agreement, which took three years to negotiate, involved 36 Aboriginal representatives and a government team chaired by former executive director of the Wet Tropics Management Authority, Russell Watkinson. "It is probably one of the most complex and comprehensive agreements of its kind in the world," Watkinson says.

Recently appointed director of Canberra's Urban Parks, Watkinson rates his involvement in the negotiations as one of the proudest achievements of his career. Given his high-achieving record in parks management throughout Australia, that's a top accolade.

"I really have high hopes for this agreement and for what it will bring to the management of the Wet Tropics World Heritage Area," he says.

"One of the most endearing memories for me of those years of negotiations was the amount of goodwill shown by the Aboriginal community — extraordinary goodwill and generosity, given some of their historical experiences."

He has high praise for Allison Halliday, one of the co-chairs of the Aboriginal negotiating team: "She was a powerful force in making it happen. Her determination and patience were invaluable."

Before the signing ceremony at Innisfail, Watkinson said he believed it would be "one of the proudest and most emotional" days of his life.

"I have very evocative memories of the traditional smoking ceremonies that were performed to ward off any evil spirits that could have tried to undermine goodwill and influence the negotiations."

Perhaps a similar ceremony might be employed to create a climate of goodwill in which to negotiate the structure of the Government's new tropical research centre.



TT: Have you travelled the world searching for bugs?
Nigel: I've been to a lot of interesting places — to Brazil, Peru, Costa Rica, Cameroon, Borneo, Sulawesi and even to north Canada, to the Yukon.

TT: What's your most vivid memory?
Nigel: In Canada, I'd been looking for three or four hours at insects underground, and then climbed up on to a rock to wave and signal to the helicopter to collect me. I looked down and just below that rock — only a few feet away — [was] a group of wolf cubs playing.

TT: Have you encountered any tricky situations?
Nigel: Peru was nerve-wracking because of the political climate. A few bombs went off when I was there, but there was also a period of regular bomb alerts and evacuations when I was working at British Natural History Museum.

TT: When's your next performance?
Nigel: I'm singing a duet from *Phantom of the Opera* at a friend's birthday party.

TT: Any advice on how to balance work and leisure?
Nigel: Make time to go to the theatre, make friends outside your work and do what you can in your life to help stop global warming. Life is not a dress rehearsal.