

New genus of self-destructive palm found in Madagascar

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A gigantic palm that flowers itself to death and exists as part of an entirely unique genus has been discovered in Madagascar; its name will be published in the *Botanical Journal of the Linnean Society* on 17 January 2008. The mystery palm has a huge trunk which towers over 18m high and fan leaves which are 5m in diameter among the largest known in flowering plants. This is the most massive palm ever to be found in Madagascar.

The plant has an unusual and spectacular lifecycle; growing to dizzying heights before the stem tip converts into a giant terminal inflorescence and bursts into branches of hundreds of tiny flowers. Each flower is capable of being pollinated and developing into fruit and soon drips with nectar and is surrounded by swarming insects and birds. The nutrient reserves of the palm become completely depleted as soon as it fruits and the entire tree collapses and dies in a macabre demise.

Xavier Metz, a Frenchman who manages a cashew plantation nearby, and his family were walking in a remote area of north-western Madagascar when they stumbled across the giant palm and the huge pyramidal bunch of flowers sprouting out of the tip. They had never seen anything like it before and their photographs soon reached John Dransfield, co-author of the *Palms of Madagascar* and an Honorary Research Fellow of Kew, who was astonished when he saw material and images of the tree.

“I could hardly believe my eyes when I saw the images posted on the

web," he says. "The palm appeared superficially like the Talipot palm of Sri Lanka, but that had never been recorded for Madagascar. Clearly this was going to be an extremely exciting discovery and I just couldn't wait to examine specimens in detail."

When material of the palm collected by John's Malagasy student Mijoro Rakotoarinivo finally reached the Herbarium at the Royal Botanic Gardens Kew, the details of the flowers and inflorescence branches immediately suggested it was a new, undescribed species and genus with an affinity to the palm tribe Chuniophoeniceae. Leaf fragments were sent to the Jodrell laboratory at the Royal Botanic Gardens, Kew for DNA analysis, where John's conclusion was confirmed, that the palm was not just a new species but an entirely new genus within this tribe. There are only three other known genera in this tribe, scattered across Arabia, Thailand and China. The palm is from an evolutionary line not previously known to exist in Madagascar.

"The tribe has an extraordinary distribution and it is very difficult with current knowledge to explain how it could ever have reached Madagascar" says Dr Dransfield.

He travelled out to meet Xavier and Nathalie Metz - who had discovered the palm. It was concealed at the foot of a limestone outcrop in the rolling hills and flatlands of the Analalava district. This area has eight dry months a year and a mean annual temperature of 27°C. The palm grows in deep fertile soil at the foot of the limestone hill in ground that is seasonally flooded. He was astonished that this enormous palm had never been discovered before and concluded that the life-cycle must be unusually long for this extremely rare flowering and death sequence to have never been detected. The palm is so massive that it can even be seen in Google Earth.

"Ever since we started work on the palms of Madagascar in the 1980s,

we have made discovery after discovery new species and new genera but to me this is probably the most exciting of them all," says Dr Dransfield. "Most particularly it represents an evolutionary line not previously known from the island and one with a highly paradoxical distribution. Coupled with the great scientific interest of the palm is the fact that it is such an amazingly spectacular species and with such an unusual life cycle. In a way discovering this palm is every bit as significant from a biological point of view as when the extraordinary Aye-aye lemur was first discovered."

With less than a hundred individuals, this new palm presents significant challenges to conservationists, especially as the habitat seems so limited and flowering and fruiting of such a rare occurrence. We have very few opportunities to manage regeneration at the site or to disseminate it to botanic gardens in Madagascar and elsewhere. In a way the palm highlights the conservation challenges for all palms in Madagascar, many of which are seriously threatened with extinction mostly through habitat loss.

Madagascar is home to more than 10,000 plant species and 90% of Madagascar's plants occur nowhere else in the world. The country has a highly diverse palm flora with over 170 known species, all but six of which are endemic. Scientists predict that there are less than 100 individuals of this palm in Madagascar. Only 18 percent of Madagascar's native vegetation remains intact and a third of Madagascar's primary vegetation has disappeared since the 1970s.

Dr Dransfield had long talks with Xavier and Nathalie and local people from a nearby village to discuss how they thought the palm could be conserved. They worked together to set up a village committee to take control of the conservation of the palm and a patrol to protect the area it was found in. They are currently working with Kew and the Millennium Seed Bank to develop a method of selling seed to raise income for the

villagers and to distribute the palm as widely as possible to botanic gardens and growers around the globe.

Source: Wiley-Blackwell

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