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**Medical**

**Barcodes to fight cycad smuggling**

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Scientists at the University of Johannesburg have started a DNA barcoding project to stop the smuggling of endangered cycad species in the country.

Botany masters student Philip Rousseau started the project with the aim of creating a barcode library for the African Encephalartos species in an attempt to control collectors in America and the Far East who are prepared to pay up to ?6000 (about R71,503) for a large specimen of a rare species, university spokesman Herman Esterhuizen said in a statement.

The plants - either plucked from the wild or taken from nature reserves and botanical gardens - are sold illegally.

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"Of South Africa's 38 species of cycads, three are extinct in the wild and the remainder has been pushed close to the brink by thieves," said Rousseau.

"This project forms part of a global initiative to DNA barcode all the trees of the world within the next five years."

Professor Michelle van der Bank of UJ's Department of Botany and Plant Biotechnology said cycads are an ancient group of slow-growing plants, dating back to the Jurassic period. They are among the longest-lived and the most threatened group of plants world wide.

The DNA database will enable researchers and customs officials to identify specimens. Law enforcement officials would be able to use the barcode of an unidentified specimen and compare it with the reference barcode to find matching species.

"DNA is the basic genetic code that tells an organism how it should look and that gives the organism its characteristics," said Rousseau.

He explained researchers would extract DNA from a plant by taking a small part of the plant itself (less than 1 gram), crush it and treat it with chemicals. The plant's DNA would then be noted on a table with a colour coded map (barcode), showing the series of bindings that the plant's DNA is made up of.

This barcode would then be stored in a web-based database along with notes of the individual plants barcoded.

Rousseau said tougher regulations had been introduced against owning, cultivating or trading in cycads without an official permit.

"Cycads grow in hot and arid environments and they grow slowly. To get a long stem it might taken 400 to 800 years. As a result, their prices go through the roof," Rousseau was quoted as saying.

While new cycad species were being discovered, exploitation by humans resulted in many being listed as critically threatened or endangered.

"In South Africa, some cycad colonies have virtually been wiped out by collectors seeking a sample," he said.

"When a botanist a few years ago discovered a new species, Encephalartos cerinus, thieves plundered so many of the plants that they nearly wiped out the species within weeks of its discovery."

Given the current situation, many species may become extinct

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before they are discovered.

Rousseau said traders purposefully misidentified plants to make them look like more common species unlikely to raise the suspicion of law enforcement agencies.

"Identification is nearly impossible when plants are stripped of their leaves for transport purposes, and it is therefore also important to identify species when only fragments from an individual specimen are available."

UJ started a DNA database of the world's tree species in 2008. The TreebOL project, of which Van der Bank is a representative, is used to keep track of where tree species are located and whether they are at risk for extinction. - Sapa

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