



Clouded Leopard of Borneo Identified as a New Cat Species

GLAND, Switzerland, March 15, 2007 (ENS) - The clouded leopards found on the islands of Borneo and Sumatra belong to an entirely new species of cat that diverged from the mainland population of clouded leopards some 1.4 million years ago, new genetic research shows.

Based on their general physical appearance, all clouded leopards once were considered to belong to a single species. But recent genetic analysis has shown that the ones found on Borneo are so different that they are now classed as a separate species.

"Genetic research results clearly indicate that the clouded leopards of Borneo should be considered a separate species," said Dr. Stephen O'Brien, head of the Laboratory of Genomic Diversity at the U.S. National Cancer Institute. "DNA tests highlighted around 40 differences between the two species."

This is comparable to differences between other Panthera species. Lions and leopards, for instance, have 56 nucleotide differences.



Bornean clouded leopard photographed in the Danum Valley of the Malaysian state of Sabah located in northern Borneo (Photo courtesy "Current Biology")

Researchers at the

Laboratory of Genomic Diversity say the differences between the Borneo and mainland clouded leopard are comparable to the differences between species such as lion and tiger or tiger and leopard, jaguar and snow leopard.

"We estimate that Bornean clouded leopards diverged from mainland populations during the Pleistocene, when recurring



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episodes of global cooling and warming created opportunities for population isolation," write O'Brien and his colleagues in the December 5, 2006 issue of "Current Biology."

"The Sunda Shelf, between the Indonesian archipelago and Vietnam, was repeatedly exposed and then covered by changing sea levels. However, even when the archipelago was connected to the mainland, ancient river systems may have continued to isolate modern Borneo," they wrote, explaining the factors that allowed the Borneo clouded leopards to develop into a species separate from clouded leopards on the mainland.

The combined results of DNA analysis point to a one to three million year difference in separation, while the accepted distance between species is one to two million years.

The results of the genetic study are supported by separate research on geographical variation in the clouded leopard, based mainly on fur patterns and coloration of skins held in museums and collections.

"The moment we started comparing the skins of the mainland clouded leopard and the leopard found on Borneo, it was clear we were comparing two different species," said Dr. Andrew Kitchener, from the Department of Natural Sciences, National Museums Scotland. "It's incredible that no one has ever noticed these differences."

The Borneo clouded leopard has small cloud markings, many distinct spots within the cloud markings, greyer fur, and a double dorsal stripe. Overall, it is darker than the mainland species.

Clouded leopard from Thailand in mainland southeast Asia, anaesthetized for radiotracking, Caesar Kleberg Wildlife Research Institute (Photo by Lon Grassman, courtesy "Current Biology.")



Clouded leopards from the mainland have large clouds on their skin with fewer, often faint, spots within the cloud markings, and they are lighter in color, with a tendency toward tawny-colored fur and a partial double dorsal stripe.

"For over a hundred years we have been looking at this animal and never realized it was unique," said Stuart Chapman, WWF International Coordinator of the Heart of Borneo programme. "The fact that Borneo's top predator is now considered a separate species further emphasises the importance of conserving the Heart of Borneo."



Ear of Wind
By Leroy DeJolie, Navajo Nation Parks

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A total number of 5,000 to 11,000 Bornean clouded leopards are estimated to live on the world's third largest island.

The total number in Sumatra is estimated in the range of 3,000 to 7,000 individuals. Further studies are needed to obtain better population data.

Secretive, mid-sized carnivores, clouded leopards are the biggest predators on Borneo, sometimes as large as small panthers. They are noted for having the longest canine teeth relative to body size of any cat.

Destruction of their habitat is the main threat they face.

The last great forest home of the Bornean clouded leopard is a 220,000 square kilometer wild, mountainous region – about five times the size of Switzerland – covered with equatorial rainforest in the center of the island known as the Heart of Borneo.

Last month in Bali, Indonesia, the ministers of the three Bornean governments – Brunei Darussalam, Indonesia and Malaysia – signed an historic Declaration to conserve and sustainably manage the Heart of Borneo. This has put the area on the global stage of conservation priorities.



Borneo clouded leopard photographed on the island of Borneo in Lambir Hill National Park in the Malaysian state of

Sarawak. (Photo courtesy "Current Biology")

Clouded leopards occur in most forested habitats of Borneo, from the coast to interior mountain ranges. Most animals prefer Borneo's dense lowland and hill rainforests. They usually avoid open areas with few trees and are very sensitive to human disturbances.

Bornean clouded leopards feed on monkeys, mouse deer, barking deer, young bearded pigs and sambar deer, which are stalked on the ground or jumped upon from tree branches. Occasionally birds and reptiles such as monitor lizards are eaten as well.

The clouded leopard was first scientifically described in 1821 by the British naturalist Edward Griffith. The scientific name of the clouded leopard from the mainland is *Neofelis nebulosa*, while the Bornean clouded leopard is now called *Neofelis diardi*.

The identification of the new species comes just weeks after a WWF report showed that scientists had identified at least 52 new species of animals and plants over the past year on

Borneo.

The global conservation organization says these repeated findings show how crucial it is to conserve the habitat and species of Borneo.