



*Pongo tapanuliensis* is the first new great ape to be discovered since the bonobo in 1929.

## CONSERVATION BIOLOGY

## New ape found, sparking fears for its survival

Third species of orangutan, discovered in Sumatran forest, has population of just 800

By Erik Stokstad

Researchers have identified a new species of orangutan in an isolated forest on the Indonesian island of Sumatra. Fewer than 800 individuals remain, and the construction of a dam and road threaten the prime habitat of the ape, which is distinguished from its cousins by, among other things, frizzier hair and a taste for caterpillars.

“As a scientist, I’m thrilled by this discovery,” says Graham Banes, a primatologist at the University of Wisconsin in Madison who was not involved in the rare find, described online this week in *Current Biology*. “As a human, I’m horrified that we might not have enough time to save the species.”

A combination of genetic, anatomical, and ecological data convinced researchers that *Pongo tapanuliensis*, named for the Tapanuli districts where it is found, is distinct from the two accepted species of orangutan. Conservationists hope the find—the first new species of great ape to be discovered since the bonobo in 1929—will help raise awareness of the plight of orangutans. Both existing species are critically endangered, and the new species immediately surpasses them to become one of the world’s most endangered apes. The discovery “will enable us to get the message out about primate conservation in a major way,” predicts Russell Mittermeier, executive vice-chair of Conservation International in Arlington, Virginia.

The Tapanuli population had been lost to science for decades. In 1997, Erik Meijaard, a co-author of the paper and a biologist with Borneo Futures, a conservation group based in Bandar Seri Begawan, led a team that followed up on a 1935 report by a colonial-era zoologist. It mentioned orangutans in the Batang Toru forest, which by the 1990s was believed to be outside the orangutans’ range (see map, p. 573).

Clues that the Batang Toru population might be a breed apart began to emerge after Gabriella Fredriksson, a conservationist with the Sumatran Orangutan Conservation Programme (SOCP) in Medan, Indonesia, helped set up a field station in 2005. One clue came from their unusual diet—not just caterpillars, but also other foods such as conifer cones. And fecal samples yielded mitochondrial DNA that suggested they are more closely related to orangutans on the relatively distant island of Borneo than to those in nearer northern Sumatra. “This was very odd,” says co-author Michael Krützen, an evolutionary geneticist at the University of Zurich (UZH) in Switzerland.

Without a skeleton to study, scientists couldn’t tell whether these differences were enough to warrant a separate species. Then, in 2013, villagers killed an adult male orangutan after it invaded a garden. Its skull and jaw differed significantly from those of the two known species on 24 of 39 standard measurements, found co-author Anton Nurcahyo, a doctoral student at the Australian National University in Can-

berra. Other differences emerged, too. Photographs of two Tapanuli males and a female showed they had frizzier hair, and sound recordings analyzed by SOCP’s Matthew Nowak revealed calls with more pulses and higher pitches.

Genomic analysis confirmed the uniqueness of the population. Co-author Maja Mattle-Greminger at UZH and colleagues sequenced the genomes of one captive Tapanuli orangutan and 15 from Sumatra and Borneo. The researchers then combined these data with 20 previously published genomes, including another from Batang Toru, to work out a family tree. Alexander Nater, a co-author then at UZH, and the team concluded that by 3.4 million years ago, orangutans in northern Sumatra had split from those in southern Sumatra and Borneo. (The two islands and mainland Asia have been repeatedly joined and separated by changes in sea level.) Then, about 674,000 years ago, the populations in southern Sumatra and Borneo diverged.

Although orangutans in north and south Sumatra occasionally interbred after the lineages diverged, the Tapanuli orangutans became completely isolated by about 20,000 years ago, and the new genetic analysis shows signs of inbreeding. One factor in the divergence appears to have been cataclysmic eruptions of Mount Toba in Sumatra about 73,000 years ago, which destroyed habitat and likely hindered the dispersal of males. Humans arrived at about the same time, clearing forests and presumably hunting orangutans.