1 moose, 2 moose: Scientist seeks correction in number of species

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It is a misinterpretation of the application of the bedrock of scientific naming with regard to the number of moose species that Kris Hundertmark, a University of Alaska Fairbanks wildlife geneticist at the Institute of Arctic Biology, seeks to correct.

The adoption of Carl Linnaeus' two-part, genus-species system of naming, called taxonomy, has been used for centuries on all described organisms on Earth and is considered one of the greatest triumphs in science.

"When we give something its own name we're saying this is a unit of biodiversity that deserves to be conserved," Hundertmark said. "If you name something that doesn't deserve a name, you're wasting resources that could be spent on worthwhile groups."

The reference book Mammal Species of the World, which Hundertmark calls the "unofficial bible of what is a mammal species and what isn't," lists two species of moose. The two-species concept is based primarily on a difference in chromosome numbers and the physical structure, or morphology, of moose

Chromosomes are ranked and numbered by size, largest to smallest, and can be depicted in a standard format knows as a karyogram. A typical chromosome pair is shaped like an "X" connected at the middle, though some are V-shaped and connected at the apex. The karyogram for North American moose show 70 chromosome pairs. A Eurasian moose

karyogram shows two V-shaped chromosomes that appear to have united to form one X-shaped chromosome resulting in 68 pairs.

"We've always known that North American moose have one more pair of chromosomes than Eurasian moose," Hundertmark said. "But it is a minor rearrangement rather than a functional difference."

The morphology argument is a nonstarter because similar physical differences exist among other animals considered one species and "… moose are distributed throughout the Northern Hemisphere and would be expected to exhibit regional variation in morphology," said Hundertmark.

One way of defining a species is whether two individuals can mate and produce viable offspring. If they can, they're the same species; if they can't, they're not. But transporting moose for breeding experiments is prohibitively expensive and according to Hundertmark it is not unreasonable to assume that the two types can interbreed until it is proven otherwise.

To test the two-species hypothesis, Hundertmark examined the DNA from moose tissue samples collected by colleagues around the world. He arranged the samples into two groups based on the two-species hypothesis and into three groups based on continent of origin - Europe, Asia and North America - and examined the distribution of genetic variation within and between groups.

"It turns out that there are actually three genetic groups of moose, not two, and the genetic differences among those groups do not rise to the level of separate species. It is just regional variation," Hundertmark said.

Source: University of Alaska Fairbanks (news : web)