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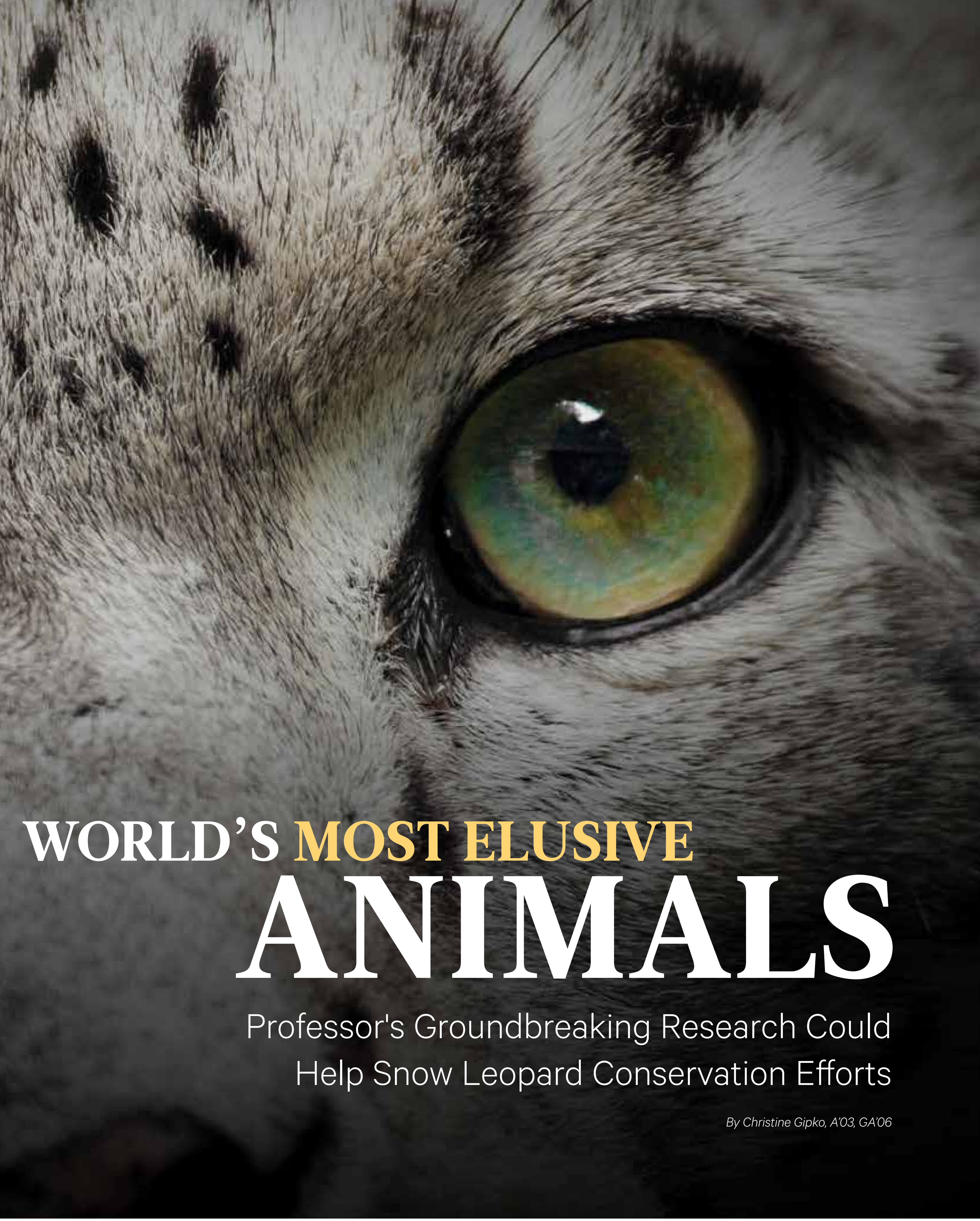


WORLD'S MOST ELUSIVE ANIMALS

Professor's Groundbreaking Research Could Help Snow Leopard Conservation Efforts

By Christine Gipko, A'03, GA'06

Photos above contributed by Dr. Rodney Jackson, Snow Leopard Conservancy; Dr. Jan Janecka, Duquesne University; Dr. Bariushaa Munkhtsog, Mongolian Academy of Sciences Institute of Biology; Steve Tracy, Steve Tracy Photography; and Pema Tsering Lhowa, National Trust for Nature Conservation/Snow Leopard Conservancy.

Biologists consider snow leopards the world's most elusive big cats, and for good reason. Their natural territory spans 12 countries and multiple mountain ranges, reaching elevations up to 18,000 feet and crossing areas steeped in poverty and political conflict.

With an already small population that until recently was on the decline, even people who can access their remote habitat rarely spot a snow leopard.

That's why the international research team led by Dr. Jan Janecka, assistant professor of biology at Duquesne University and conservation genetics program advisor for the Snow Leopard Conservancy, had to be innovative about collecting data for the first range-wide genetic assessment of *Panthera uncia.*

Over eight years, Janecka's team collected and analyzed scat from across the animal's Asian habitat. In studying patterns of alleles—varied genetic sequences—within the snow leopard gene pool, they made a groundbreaking discovery.

"With the data set of these scat samples we had an incredible opportunity to look at genetic structure," says Janecka. "What we found were three divergent genetic clusters that roughly correspond to unique biogeographic regions."

The geographic barriers between subspecies—the Gobi Desert cuts off the Northern group (*Panthera uncia irbis*), while the trans-Himalayan mountains separate the Western (*Panthera uncia uncia*) and Central (*Panthera uncia uncioides*) groups—may suggest historical fluctuations in habitat quality or even a previous separation of the stable habitat regions.

Unlike traditional methods of observation, Janecka's genetic approach demands little field time and yields an impressive breadth of data.

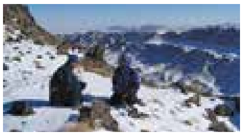
Janecka's findings, published in the *Journal of Heredity*, supplant the long-standing theory of no subspecies.

"Scientists had assumed that to the south—through the Himalayas and into central Asia—the population had a kind of continuous connection," explains Janecka, who was surprised by the study's outcome. "It was interesting and unexpected when the genetic data showed a substantial break in those places, justifying the three subspecies."

Janecka's discovery comes at a critical moment for snow leopards. Threatened by poaching and habitat loss, the population could face extinction without key conservation efforts. Still, the International Union for Conservation of Nature recently removed snow leopards from their endangered species list and reclassified the population as vulnerable. Concerned that this decision was based on limited data, Janecka is hopeful his new subspecies designations will make a lasting difference.

"To me, subspecies should be a way to help improve conservation management," says Janecka. "By having these subspecies designations, we can look at each smaller region to see how the population is doing. If some of these subspecies still meet the criteria for endangered, they can get the protection they need."




Janecka's study also opens a door to better understanding the snow leopards' overall health, environment and behavior. As the main large predator in their high-altitude habitat, snow leopards are an indicator species. A strong snow leopard population signals a healthy prey base of wild sheep and goats, along with thriving local vegetation for those animals.

But snow leopards also prey on local herders' stock, creating a conflict that threatens current and future generations of the big cats. A possible solution lies in the genetic data Janecka's team collected. Further analysis can determine the extent to which snow leopards use domestic animals as a consistent food source, and Janecka hopes this information will shape conservation management, too.

"Different conservation programs compensate herders for losing sheep and goats or help them with managing their herds so they don't lose as many animals," he says. "We want to better understand in which of those areas and to what extent snow leopards rely on livestock. Is it just a couple problem animals or the whole population?"

The answer to this question will allow conservationists to more effectively tailor their efforts to specific locations.

Before Janecka pioneered the genetic study of snow leopards, researchers relied on traditional methods like camera traps and radio collars. These required significant time in the field and only produced limited results.

"One of the problems is you have to put 30-plus cameras in an area over a long period of time, and there are limits to how much area you can cover," explains Janecka. "And even if you see a cat moving into a different part of the population, you don't know if that animal bred or how often it might have happened."

Unlike traditional methods of observation, Janecka's genetic approach demands little field time and yields an impressive breadth of data. But Janecka is quick to note that traditional methods still have a key role to play alongside genetic analysis.

"The good thing about camera trapping is you do get really stunning images and that helps with raising funds for conservation," he says with a grin. "It's a little more exciting to see than the poop."◆

Dr. Janecka's research is supported in part by the Snow Leopard Conservancy, a global organization focused on advancing community-based stewardship of the snow leopard through education, research and grassroots conservation action. Learn more about their efforts at www.snowleopardconservancy.org.