

## Snow Leopard Genetics: New Techniques

by Dr. Sam Wasser

Snow leopards are one of the most endangered and poorly understood of feline species. They live in high, often inaccessible mountain ranges of Nepal, India, Pakistan, Russia, Mongolia, and China. The remaining world population of wild snow leopards is unknown, but is thought to be as low as 2,500 or as high as 7,500. The snow leopards' secretive behavior and vast, rugged terrain make it extremely difficult for scientists to obtain information using traditional wildlife techniques.

The International Snow Leopard Trust (ISLT) and the Center for Wildlife Conservation (CWe) in Seattle, Washington are collaborating to apply new noninvasive sample collection methods and genetic technologies to captive and wild-caught snow leopard populations throughout the world. These new methods could, for the first time, provide critical information on genetics and distributions, and provide more accurate population estimates for wild populations.

The first part of this project involves determining the genetic status of captive snow leopards using variable DNA markers. Preliminary DNA analyses of 20 blood and tissue samples suggest that snow leopard genetic variability may already be

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seriously compromised. In addition, we have obtained scat samples from 14 captive snow leopards. The ability to extract DNA from scat is the cornerstone of this project. We have shown that DNA from feces is the same as from tissue or blood; thus one can collect snow leopard scats in the wild from animals that are nearly impossible to trap.

In the second part of this project, we will be analyzing fecal samples from selected populations in the

wild. Already over 50 wild snow leopard scat samples from areas in Russia and Mongolia have been collected, with many more to come. This exciting new research collaboration will promote the conservation of the species as a whole by establishing the extent of their genetic variability in the wild, reflecting their vulnerability to environmental change. It will provide a reliable means of counting the number and distributions of snow leopards throughout their range.

This, coupled with information on optimal snow leopard habitat, already available on a Geographic Information System (GIS) managed by ISLT, will help guide international management decisions about critical habitat areas designed to protect this beautiful and elusive species.

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