Wolves of the World

WOLVES IN INDIA

The Ancient Wolves of India

by Yadvendradev Jhala and Dinesh Kumar Sharma

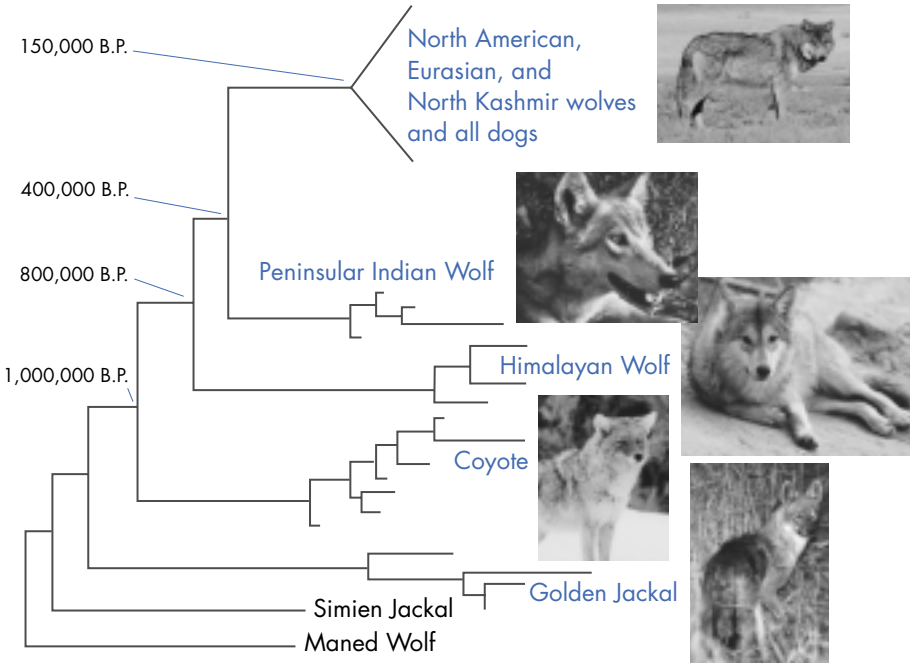
The peninsular Indian wolf (Canis lupus pallipes)*, above, and the Himalayan wolf* (Canis lupus chanco)*, right, are genetically different from the rest of the wolves and dogs of the world (the wolf-dog clade).*

Y. Jhala and D. Sharma

In today's explored world, it is indeed a rare event to discover a new species of mammal, especially that of a large carnivore. When this happens to be a wolf—the most studied of the carnivores—the discovery is as thrilling as it is surprising. The Indian wolves, which were in plain sight, yet whose origins were elusive to scientists, are the source of this surprise to wolf biologists throughout the world.

Scientists recognize approximately 13 subspecies (local geographic races) of gray wolves (*Canis lupus*). These subspecies distinctions fall apart, however, when scrutinized with modern genetic techniques and analysis. In fact, genetic studies have shown that all wolves and all dog breeds of the world are closely related. Dogs originated from multiple wolf ancestors and started to diverge about 150,000 years ago. A group of species that share features inherited from a common ancestor is called a "clade." All organisms contained in one clade—in this case, the wolf-dog clade—share a unique ancestor.

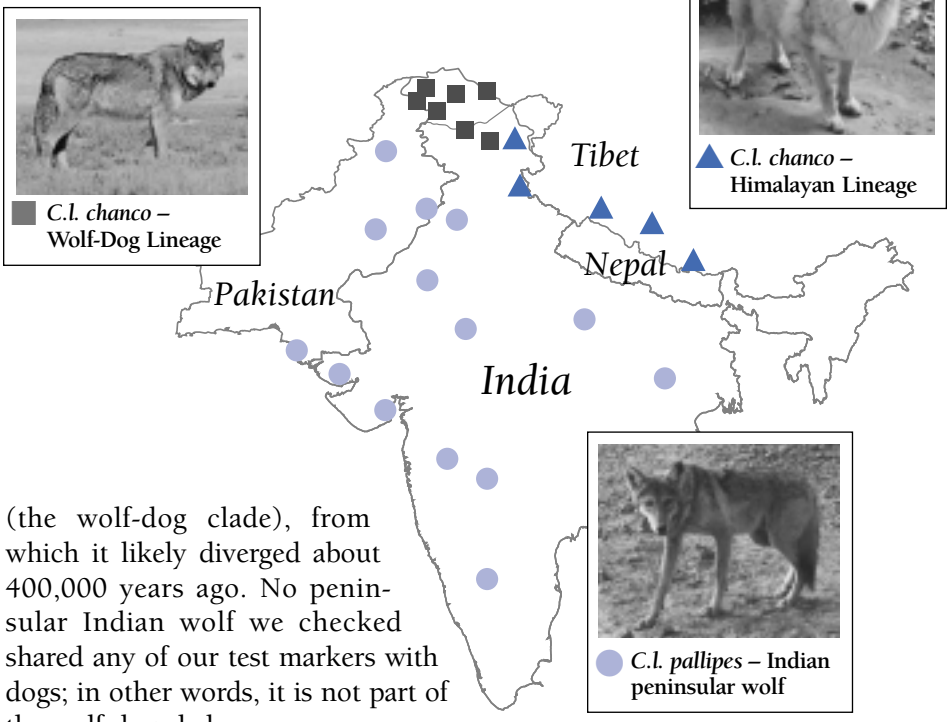
Evolutionary Relationships & Times of Divergence of Wolves and Dogs Before Present (B.P.)



In our latest study, conducted with Drs. R. Fleischer and J. Maldonado from the Smithsonian Institution, we compared a certain kind of DNA marker in more than 700 wolves and dogs from throughout the world with those of Indian wolves and native dogs. Contrary to our expectations, our results indicate that the Indian subcontinent supports three distinct wolf lineages, two of which are very ancient and unique to the subcontinent.

The first of these ancient wolves of India is the peninsular Indian wolf (*Canis lupus pallipes*). This wolf is genetically different from the rest of the wolves and dogs of the world

Distribution of the Three Wolf Lineages and Their Sampling Localities



(the wolf-dog clade), from which it likely diverged about 400,000 years ago. No peninsular Indian wolf we checked shared any of our test markers with dogs; in other words, it is not part of the wolf-dog clade.

Even more interestingly, another wolf (*Canis lupus chanco* – Himalayan Lineage), from the Himalayan region of eastern Kashmir, Himachal Pradesh, parts of Tibet and eastern Nepal, also belongs to a very ancient, divergent and ancestral lineage of wolves—the Himalayan lineage. The "molecular clock," which times the rate of changes observed in DNA, dates divergence of this lineage to about 800,000 years ago, when the Himalayan region was going through a major geologic and climatic upheaval. This wolf, too, shared none of our test markers with the dog and is thus not a member of the wolf-dog clade.

Only the third Indian wolf (*Canis lupus chanco* – Wolf-Dog Lineage), from the northwestern Himalayan region of Kashmir, shares our test markers with the wolf-dog clade that stretches across the rest of Eurasia and North America. Thus, the Indian subcontinent includes three diverse, distinct wolf lineages. This fact makes the Indian region the likely cradle of modern wolf evolution.

All the Indian dog samples as well as dog breeds from the rest of the world are genetically related to the wolf-dog clade and thus to *Canis lupus chanco,* the wolf of northwestern India. However, none of the dogs shared any of the genetic markers we checked with the two novel Indian wolf lineages (the peninsular Indian wolf and the Himalayan wolf), indicating that these two Indian wolf lineages played no role in the domestication of dogs from wolves. The two novel Indian wolf lineages differ genetically and physically to the extent that each could represent a distinct species.

We have published this study in the *Proceedings of the Royal Society, Biology Letters,* and highlight the conservation importance of Indian wolves. The peninsular Indian wolves as well as the Himalayan wolves are considered endangered, and both are protected by law. The peninsular wolves are widespread and number two to three thousand. We have extensively studied the ecology and behavior of these wolves during the past decade. In comparison, the status of the Himalayan wolves is unknown, and no systematic scientific studies of these wolves have been done to date.

Wolves throughout India and the Himalayas are persecuted for attacks on livestock. Additionally, they are threatened by habitat loss to agriculture and a rapidly growing human population. The Himalayan wolves may be one of the most endangered canids in the world.

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WOLVES IN THE UNITED STATES

Wolf Pair's Death Turns a Chapter in Yellowstone

by Dan Vergano

The deaths this month of two wolf sisters, the last of the Canadian wolves transplanted to Yellowstone National Park eight years ago, closes an era in the successful, and contentious, effort to reestablish wolves there, biologists say.

The pair were released in the 2.2-million-acre park, which spans parts of Wyoming, Idaho and Montana, in 1995-96, joining 29 other wolves in an effort to reintroduce a predator wiped out in the 1930s. More than 300 wolves live in and around the park today.

"Now none of the original ones are left," says Yellowstone Wolf Project chief Doug Smith of the National Park Service. "And how these died is indicative of how wolves are typically killed—by other wolves and by people."

One sister, dubbed 42F but known as "Cinderella," was killed February 2 by a rival wolf pack. Her sister, 41F, died 10 days later, ill with mange and limping from an injured leg. Game officials shot her after she killed a newborn calf.

Cinderella earned her nickname four years ago after helping kill a third sister, 40F, after suffering years of domination.

But rather than indicating disaster, the deaths point to success in the program to bring wolves back to Yellowstone, Smith says. Wolves there are expanding their domains and getting into fights with greater frequency as things get crowded.

"It's all about politics with wolves now; it's not biology," says longtime wolf watcher Ralph Maughan of Pocatello, Idaho. As territories shift in the park, deaths such as 42F's are "like something out of Shakespeare," Maughan says.

Like Macbeth without his Lady, 42F's partner, the park-born male wolf dubbed 21M, is left to hold together his Druid Peak wolf pack

Below: F42 and M21 were the breeding pair of the Druid Peak pack until F42's death in February 2004.


Dave Bopp

against other packs. Female and male alpha wolves, such as 42F and 21M, typically dominate their pack, acting as the sole breeding pair and leading the others on hunts. "The female alpha is usually the glue that holds the pack together," Maughan says.

After spending several days howling for his mate, 21M picked a new alpha female. So far, the pack is holding together, Smith says.

The death of 41F illustrates a source of contention in human politics over wolves. Wolves kill livestock—less often than was first predicted a decade ago, Smith says—but some ranchers say they aren't fairly compensated for such losses. "Wolves play an important role in the wilderness, but there are always going to be conflicts with people and those will have to be managed sensibly," says Walter Medwid of the International Wolf Center in Minneapolis.

In January, the U.S. Fish and Wildlife Service announced plans to "delist" the wolf from endangered to threatened status in Western states, citing the existence of more than 600 wolves total in Wyoming, Idaho and Montana. The move would allow ranchers to kill wolves caught preying on livestock without calling in federal officials.

With the death of the Yellowstone sisters, only one Canadian wolf nationwide remains from the 1995-96 reintroduction. A 14-year-old male wolf, B2, still lives in Central Idaho, the last of 35 wolves transplanted there at the same time as the Yellowstone wolves. A Methuselah among wolves, who typically live six years, B2 has taken up with a female and started a new pack, much to biologists' surprise. ■