

The eastern wolf: truths and myths – a molecular perspective

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There has been an extensive debate on origin and taxonomic status of wolf-like canids in the North American Great Lakes region and the consequences for conservation politics regarding these enigmatic predators. Many different hypothesis have been put forward, but in recent years the hypothesis that the eastern wolf represents a distinct species *Canis lycaon* that evolved in North America as sister species of the coyote *C. latrans* and not a sub-species of the old world evolved gray wolf *C. lupus* received an increasing number of followers despite questionable evidence for this particular hypothesis, which largely rests on the presence of exclusively coyote-like mtDNA in (present and historic) samples from the Great Lakes region.

Many recent studies have focused on elucidating the evolutionary history of this enigmatic canid taxon, but have used a restricted geographic and taxonomic sampling and/or applied insufficient amount of molecular markers. Using a broad geographic and taxonomic sampling (including historic samples) and applying maternally, paternally and biparentally inherited molecular markers, we demonstrate that the wolves of the Great Lakes regions do not represent a native North American wolf species but rather are a population of gray wolves that has repeatedly experienced introgression from the coyote. Increased genetic drift as a consequence of reduced population size during Pleistocene glaciations likely resulted in fixation of coyote-like haplotypes in this geographic region.

Thus, we demonstrate that both broad taxonomic and geographic sampling and large amounts of molecular markers with different modes of inheritance are required to elucidate the complex evolutionary history and hybridization dynamics of North American wolf-like canids.

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