

## COVID-19 Response

Masks are required for everyone, regardless of location or vaccination status, in all NPS buildings, crowded outdoor spaces, and all forms of enclosed public transportation. Additional details are available at [www.nps.gov/coronavirus](https://www.nps.gov/coronavirus). Before visiting, please check the [park website](#) to determine its operating status. Please [recreate responsibly](#).



National Park Service

## Series: Prehistoric Life of Tule Springs

ARTICLE

# Dire Wolf

Tule Springs Fossil Beds National Monument



*The dire wolf is a recent addition to the Pleistocene fauna found at Tule Springs Fossil Beds.*

NPS illustration by Benji Paysnoe.

## Scientific Name

*Canis (Aenocyon) dirus*

## Description

The dire wolf was the largest of the Late Pleistocene canids of North America. The skull could reach up to 12 inches in length and its teeth were larger and more robust than today's gray wolves. In terms of body size, the dire wolf was on average the size of the largest gray wolves which have a shoulder height of 38 inches and a body length of 69 inches.

The first dire wolf fossils were found in 1854 from the Ohio River in Indiana. American Paleontologist, Joseph Leidy, named this species in 1858 from these fossils along with some others from Nebraska. The Latin name for *Canis (Aenocyon) dirus* translates to "terrible wolf". The oldest record of the dire wolf dates to 250,000 years ago and they went extinct approximately 10,000 years ago.

## Relationships

Until recently, the morphology of the skull and skeleton of the dire wolf suggested that its ancestors split from a common Asian ancestor to today's gray wolves (*Canis lupus*). Emerging genetic data on several dire wolf specimens suggest that, surprisingly, they were not closely related to gray wolves, but had a closer relationship to today's jackals. These data suggest that dire wolves descended from a carnivore lineage going back 5 million years ago in North America, instead of wolf-like canids that spread from Eurasia into South America and North America roughly 1 million years ago. The similar morphological characteristics between gray wolves and dire wolves may be a result of convergent evolution and not closely shared ancestry. This 2021 study has suggested placing the dire wolf in a separate genus: *Aenocyon*.

## Distribution and Habitat

Fossils of dire wolves have been found in both North and South America. In North America, dire wolves have been found as far north as Alaska and down into southern Mexico. In the United States, fossils of dire wolves have been found on both the Atlantic and Pacific coasts and much of the central, southern, and southwestern regions. Thousands of dire wolf fossils have been collected from Rancho La Brea in Los Angeles, California. In South America, fossils of dire wolves dating to about 17,000 years ago have been found in Venezuela, Peru and Bolivia. Recently, a partial jaw of a dire wolf was identified from China, suggesting that the dire wolf crossed the Bering Land Bridge into Asia from North America.

The distribution of the dire wolf suggests it was adapted for multiple habitats, from boreal grasslands, coastal open woodlands, to tropical wetlands.

## Diet

Dire wolves were carnivorous. Isotopic analysis of dire wolf fossils suggest that horses were an important prey species and animals such ground sloths, bison, and camels made up less of their diet. Overall, the dire wolf was not a prey specialist like the Pleistocene saber-toothed cat. Tooth breakage in a large number of dire wolves found at Rancho La Brea have also led some scientists to suggest that dire wolves regularly competed for carcasses and chewed on bone.

## Age and Behavior

The large number of dire wolf fossils found at Rancho La Brea have suggested that like modern gray wolves and other canids, dire wolves formed large social groups to help hunt and raise pups. Sexual dimorphism is seen in male and female dire wolves with the males being larger and a bit more robust than the females.

## Tule Springs Dire Wolf

The dire wolf is another recent addition to the Pleistocene fauna found at Tule Springs. The first fossil of a dire wolf identified from Tule Springs Fossil Beds National Monument was a single patella (knee bone). The abundance of dire wolf fossils found at sites such as Rancho La Brea are unique in the fossil record-- large carnivore fossils are not commonly identified at Tule Springs Fossil Beds National Monument. Typically, ecosystems have a lot fewer predators than prey, so there are simply fewer of them to preserve as a fossil.

## Related Links

- [Tule Springs Fossil Beds National Monument – a Pleistocene treasure trove](#)
- [Tule Springs—Science and Research](#)
- [National Fossil Day](#)
- [NPS—Fossils and Paleontology](#)
- Tule Springs Fossil Beds National Monument, Nevada—[\[Geodiversity Atlas\]](#) [\[Park Home\]](#)

Series: Prehistoric Life of Tule Springs

- **Next Article:** Teratorn
- **Previous Article:** Giant Ground Sloths
- **Series Home**

YOU MIGHT ALSO LIKE

---



**Tule Springs Fossil Beds National Monument – a Pleistocene treasure trove >**  
ARTICLE



**Tule Springs Pronghorn >**  
ARTICLE



**The Camels >**  
ARTICLE



**Teratorn >**  
ARTICLE



**Columbian Mammoth >**  
ARTICLE



**Protectors of Tule Springs receives Prestigious George and Helen Hartzog Award >**  
ARTICLE

Tags:

Last updated: October 12, 2021

Was this page helpful?

Yes

No

An official form of the United States government. Provided by **Touchpoints**