

Updated Moose Counts Inform Wetland Management Planning in Rocky Mountain National Park

Wetlands cover only about four percent of Rocky Mountain National Park. Yet they support nearly one-third of the park's plant species, almost half of its bird species, and many of the animals visitors come to see. Protecting these wetlands starts with understanding the park's largest animal: moose. A recent parkwide inventory—the first of its kind for the park—gives park managers the clearest picture yet of where moose live, how many there are, and how that information can help guide future wetland management.



Bull moose in the Kawuneeche Valley of Rocky Mountain National Park.

NPS

Understanding Moose's Impact on Wetlands

Over the past several decades, park scientists have worked to restore wetlands affected by a combination of historical human land use, shifting climate patterns, and other ecological changes. Among the most significant of these changes has been the loss of tall willow, driven largely by heavy elk browsing (feeding on leaves and shoots), along with the decline of beavers. More recently, a growing moose population has added to that pressure. Hunting isn't allowed, and the park has few large predators to limit moose numbers. Grizzly bears have long been absent, and although Colorado has reintroduced wolves elsewhere in the state, none have settled in the park.

An adult moose can eat 50 to 60 pounds of willow a day, which can prevent these shrubs from growing tall enough to sustain healthy wetlands. The consequences are already visible in some areas. Between 1999 and 2019, the Kawuneeche Valley—where moose have been established the longest—lost 98 percent of its tall willow. Researchers believe heavy feeding by moose has been a primary driver of that decline, raising concerns that similar changes could spread to other parts of the park as the moose population continues to grow.

Counting Moose from the Air

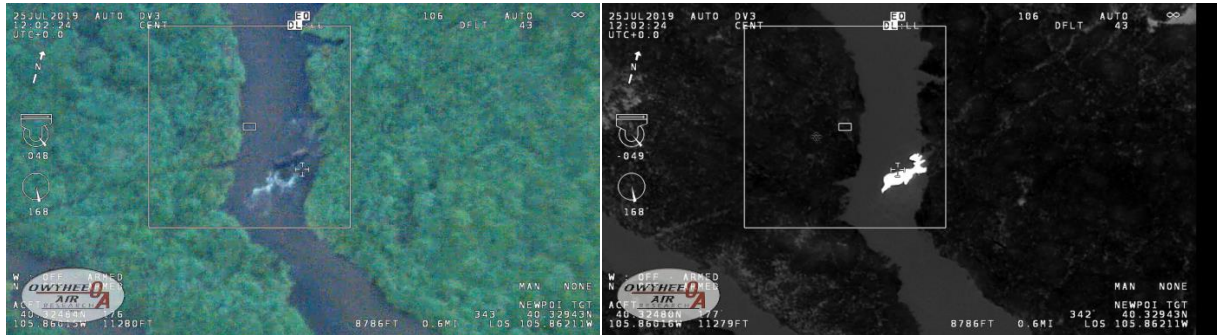
Moose are notoriously difficult to survey. They spend much of their time in dense willow thickets and forests, where they can be hard to spot from the ground or through traditional aerial surveys.



Researchers used this fixed-wing aircraft equipped with a thermal infrared camera to survey moose across the park.

NPS

To overcome that challenge, researchers surveyed the park using a fixed-wing aircraft equipped with a thermal infrared camera. Flights took place shortly before and after sunrise, when warm-bodied animals stood out against the cooler landscape. Two independent observers identified each animal and recorded its location, group size, and sex.



Switching between standard aerial and thermal infrared imagery shows how much easier moose are to spot using thermal infrared.

NPS

In July 2025, the team flew 92 survey routes across the entire park. During those flights, they observed 73 moose in 42 groups.

A Growing Population

Researchers estimated that approximately 240 moose live within the park. Although they observed 73 moose during the surveys, a statistical model accounted for areas that weren't surveyed and animals that were missed, providing an estimate of the park's total population. Moose were found throughout the park but were most common in riparian and wetland habitats, including a notable concentration in the Cache la Poudre River Headwaters.

The inventory also showed that the population continues to grow. Within the portion of the park surveyed in both 2020 and 2025, moose density increased by 49 percent—an average annual growth rate of 6.3 percent.

Planning for Healthier Wetlands

The inventory comes as park managers begin planning for future wetland restoration and moose management. The population estimate fills one of the most important data gaps identified by scientists and land managers, providing the information needed to evaluate possible management approaches.

The survey also established a repeatable monitoring method and identified ways to make future surveys even more efficient and precise. The park plans to repeat these surveys every few years to track changes in the moose population. This ongoing monitoring will help park staff adapt their moose management approach as new information becomes available. The ultimate goal: healthier willows, healthier wetlands, and ecosystems that support a rich diversity of plants and wildlife.

Learn More

- Explore the [full report](#) for additional study details and the [methods paper by Abouelezz and Hobbs](#) for more about the thermal infrared survey approach.
- Watch Rocky Mountain National Park's presentation, [Wetland Restoration and Moose Management](#).

August 2026