

TELLING SPECIES STORIES: VISUALIZING FUTURES FOR NORTH AMERICAN HABITAT DIORAMAS

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01: AMERICAN BISON AND PRONGHORN EXHIBIT

Part of the *Hall of North American Mammals*



Diorama Site:

Between Rawlins and Saratoga, Wyoming

- Temperate Grassland Biome
- Prairie Ecosystem

Diorama AMNH Description:

October Afternoon, Mid-1800s, Wyoming

This diorama is set in the mid-1800s, when the prairies teemed with tens of millions of bison. A few decades later fewer than a thousand remained. The species was nearly exterminated for hides and sport, and to subdue Native Americans who relied on bison for food and livelihood.

This “great slaughter” ignited the first effort to save a mammal from extinction. As bison dwindled, ranchers began to breed them, and some were transferred to sanctuaries. Today, this North American icon is numerous again - but nearly all bison are raised for meat on fenced ranches. Domestication and inbreeding means that truly wild bison are still quite rare.

Prairie of the Past: Near the North Platte River, Southern Wyoming

If you were a stagecoach passenger crossing the Great Plains in the 1860s, this would be the view from your window: bison and pronghorns as far as the horizon. Their numbers shaped the native ecosystem of this sea of grass. Bison clipped the grass, stimulating new, nutritious growth. Bison droppings nourished the soil. The shallow dishes of dirt that bison wallowed in stored precious rainwater.

As bison and pronghorns thrived, so did prairie dogs, cowbirds, and other grassland creatures. Today, much of North America’s native prairie has been plowed for crops, seeded with introduced grasses or turned to pasture for cattle.

SELECTED HABITAT DIORAMAS:

01: American Bison and Pronghorn Exhibit (Wyoming, USA)	3
<i>Facilitator: Nathalie Attallah</i>	
02: Wolf Exhibit (Northern Minnesota, USA)	9
<i>Facilitator: Sabrina Careri</i>	
03: Jaguar Exhibit (Sonora, Mexico)	14
<i>Facilitator: Ivan Shen</i>	
04: Musk Ox Exhibit (Ellesmere Island, Canada)	19
<i>Facilitator: Jenna Wu</i>	

ABOUT THE AMERICAN BISON (*Bison bison*)

Range:

Once lived in prairies, mountains and most open forests in North America, from Alaska, Canada, and Montana to the U.S.-Mexico Border, along the Rocky Mountain Range. Now most live on private ranches.

Environmental Stressors:

Unsustainable hunting in the 1800's and 1900's nearly exterminated bison in North America, which caused their gene pool to experience an extreme bottleneck effect. Today, reducing bison numbers are attributed to drought, introduced bovine diseases, and competition from domestic livestock (horses, cattle, sheep) and wild horses. Likewise, habitat loss, genetic modification caused by domestication, and hunting (both controlled and unregulated) continue to threaten their survival.

Food Ecology:

Bison are grazers and feed mostly on grasses, sedges and rushes. Their diets differ in the summer and winter months for the free-ranging populations. In the winter, they more often feed on lichens and mosses. When feeding on natural vegetation, they also select a other plant species varying with local habitats (e.g., wild oats, wheatgrass, windmill grass, sand dropseed, and more).

Did You Know?

- Bison are the largest land mammals in North America
- Bison play an important material and spiritual role in the cultures of Indigenous North American peoples
- Bison populations are experiencing an increasing trend over the past three generations, but the total remains a tiny fraction of their numbers 200 years ago
- Despite successive petitions to do so, Bison are not listed under the *U.S. Endangered Species Act*, but are considered a 'Near Threatened' species globally, on the International Union for Conservation of Nature Red List

ABOUT THE PRONGHORN (*Antilocapra americana*)

Range:

Pronghorn numbers have recovered well from historic hunting pressure, but now livestock fences imperil their great migrations. Their natural range extended from southern Canada to northern Mexico, but today are only found in the United States Great Plains, Wyoming, Montana, northeast California, southeast Oregon, Nevada, Utah, Colorado, Arizona, and New Mexico. However, the highest numbers of pronghorn now reside in Wyoming in the Red Desert and Yellowstone ecosystems.

Environmental Stressors:

Habitat loss, human-wildlife conflicts causing reduced mobility, and unsustainable hunting practices continue to reduce the population size. Variability in snow depth, coupled with the high energetic demand pronghorn face during gestation and lactation, affects their ability to fuel their own survival. Deep snow can be deadly for pronghorn, although the deaths tend to come in the summer, when female pronghorn are likely to die because of the tolls of low body fat from the last winter.

Feeding Ecology:

Pronghorn are herbivores and favor succulent, high-protein vegetation. Grass makes up only about 12 percent of the diet, and the rest is made of cacti and other shrub species. Pronghorn during Montana winters often starve on grasslands, but will survive in sagebrush habitats.

Did You Know?

- Pronghorn are the fastest land animal in North America, well known for its vision and the horns on its head
- The Red Desert of south-central Wyoming has long been known for robust pronghorn populations, but in the last two decades, herds have diminished up to 30 percent
- The population of Pronghorn is considered stable; conservation practices ended the decline in the early the 20th century
- Pronghorn are not listed under the *U.S. Endangered Species Act*, and are considered a species of 'Least Concern,' on the International Union for Conservation of Nature Red List

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★ **DIORAMA SITE**
Between Rawlins and Saratoga, Wyoming

■ **HISTORIC RANGE**

■ **CURRENT RANGE (WILD)**
Bison once lived in prairies, mountains and open forests in much of North America. Now most bison live on private ranches, which are not shown on this map.

AMERICAN BISON

Bison bison

WEIGHT
1,015–1,980 lb (460–900 kg) Adult males
790–1,190 lb (360–540 kg) Adult females

DIET
Herbivorous
☛ Mainly grasses

LITTER SIZE
Typically one calf

DID YOU KNOW?
Early French explorers called these animals *les boeufs*, meaning oxen. Eventually this name became “buffalo.” American bison actually are quite different from the buffaloes of Asia and Africa.

■ **HISTORIC RANGE**

■ **CURRENT RANGE**
Pronghorn numbers have recovered well from historic hunting pressure, but today livestock fences imperil their great migrations.

PRONGHORN

Antilocapra americana

WEIGHT
90–130 lb (40–60 kg) Adults

DIET
Herbivorous
☛ Shrubs, small plants
☛ Grasses ☛ Cacti

LITTER SIZE
Typically one or two fawns

DID YOU KNOW?
Pronghorns, which are native to North America, are more closely related to giraffes than deer. They can sprint up to 54 miles (86 km) per hour.

LOOK CLOSELY

MEDICINE BOW MOUNTAINS
This range is to the southeast in this scene. Bison once lived there, too, even at high elevations.

BISON WALLOW
Bison make depressions in soil or mud and roll around in them in part to escape heat and insects.

BROWN-HEADED COWBIRD
Molothrus ater
Grazing bison rustle insects in the grass and cowbirds follow closely to eat them.

BLACK-TAILED PRAIRIE DOG
Cynomys ludovicianus
Bison kept the grass low enough for prairie dogs to colonize: short grass is more nutritious and exposes predators.

BLUE GRAMA
Bouteloua gracilis
Like buffalograss, a drought-resistant native grass favored by bison. It has distinctive curved flowerheads.

BUFFALOGRASS
Bouteloua dactyloides
Bison thrived on short-grass prairies, where this short, native grass was abundant.

03: WOLF EXHIBIT

Part of the *Hall of North American Mammals*



Diorama Site:

Gunflint Lake Superior National Forest Minnesota

- Temperate Forest Biome
- Boreal Forest (Taiga) Ecosystem

Diorama AMNH Description:

December at Midnight: Gunflint Lake, Northern Minnesota

Step aside. This wolf pack is chasing a deer that is running for its life behind where you are standing. The pair may pursue the deer for several miles to exhaust it, then bring it down in a joint effort. Group hunting is how wolves can prey on animals much bigger than themselves.

Still, deer are fast, and this one had a head start—the tracks on the right show its frightened flight. If the wolves cannot close in quickly, they will give up and follow the scent of another prospect. As is common for carnivores that chase after their prey, wolf hunts fail far more often than they succeed.

The Wolf Pack: Shore of Gunflint Lake, Minnesota

Illuminated by moonlight and the shimmering Northern Lights, a pack of wolves speeds after a deer. The pack is the nucleus of wolf life. A pack can be as few as two or as many as several dozen. The leaders are usually a mating pair—the alpha male and female; the followers are chiefly their offspring.

The alpha pair dominates the family. The alpha female will snap and snarl at lesser females to prevent them from mating, for only she gets this privilege. The alpha male is the chorus-leader and decision-maker.

To ensure group hunting and pup-rearing, he will block members from leaving the pack. Still, some underlings do split off to form packs of their own—whereupon they become the competition.

ABOUT THE WOLF (*Canis Lupus*)

Range:

Wolves have the widest natural range of any land mammal other than humans and once occupied most of the northern hemisphere. They have adapted to live in a variety of conditions including forests, prairies, tundra geographies, and more.

Environmental Stressors:

Wolves continue to be threatened by competition with humans for livestock, and habitat loss due to fragmentation. Their habitats continue to be unsuitable as many prey species disappear due to changing climates and habitat destruction. Exaggerated concern regarding threats to humans have resulted in historic high levels of persecution, hunting and poisoning. Deep-rooted mythology, folklore, and religion evoke the wolf as evil, untrustworthy, and conniving, heightening human involved conflict with wolves, resulting in exacerbated fear and hatred.

Feeding Ecology:

Wolves are carnivores and primarily prey on large mammals including deer, moose, musk-ox, bison and more. Their supplemental diet is smaller mammals, fruits and berries as well as scavenged food from other predators.

Did You Know?

- Wolf population numbers are now improving after decades of persecution. They remain a compelling story for widespread conservation efforts, making a successful comeback. In fact, when this diorama was created, the woods of northern Minnesota was one of the only places where wild wolves still lived in the lower 48 states.
- As of 2022, wolves are now protected under the *U.S. Endangered Species Act*; threatened in Minnesota and endangered in the remaining states
- Wolves are considered a species of 'Least Concern,' on the International Union for Conservation of Nature Red List

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★ DIORAMA SITE
Gunflint Lake
Superior National Forest, Minnesota

■ HISTORIC RANGE

■ CURRENT RANGE

Wolves have the widest natural range of any land mammal other than humans and once occupied most of the Northern Hemisphere. Their numbers are now improving after decades of persecution.

WOLF
Canis lupus

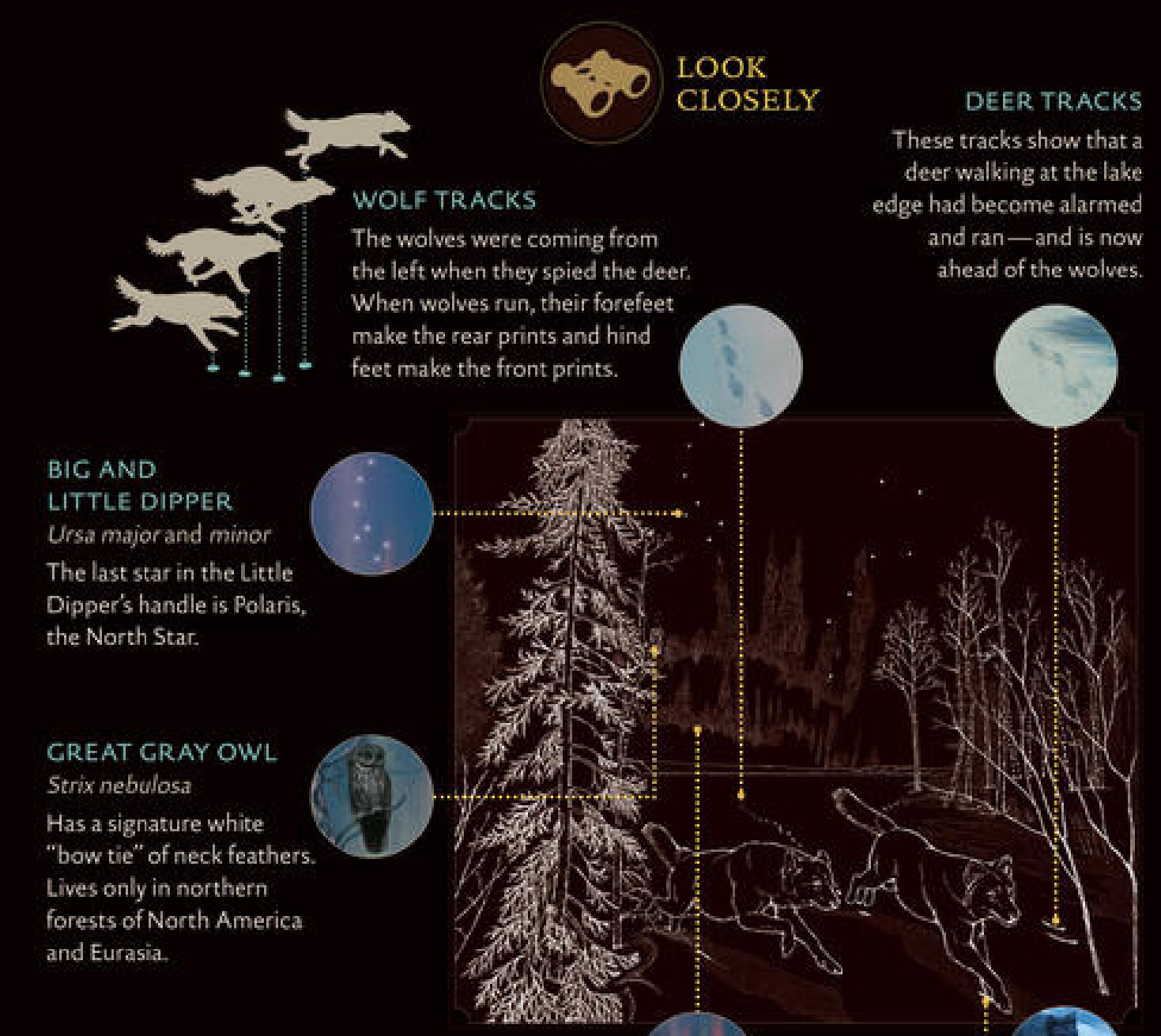


WEIGHT
65–175 lb (30–80 kg) Adult males
50–120 lb (23–55 kg) Adult females

DIET
Carnivorous
Deer, wapiti, moose, caribou
Bison, musk oxen Livestock
Wild sheep and goats
Small mammals Invertebrates
Birds, wild and domestic

LITTER SIZE
One to eleven pups

DID YOU KNOW?
All dogs evolved from wolves, the result of multiple domestication events that took place at least 15,000 years ago.



LOOK CLOSELY

WOLF TRACKS
The wolves were coming from the left when they spied the deer. When wolves run, their forefeet make the rear prints and hind feet make the front prints.

DEER TRACKS
These tracks show that a deer walking at the lake edge had become alarmed and ran—and is now ahead of the wolves.

BIG AND LITTLE DIPPER
Ursa major and minor
The last star in the Little Dipper's handle is Polaris, the North Star.

GREAT GRAY OWL
Strix nebulosa
Has a signature white "bow tie" of neck feathers. Lives only in northern forests of North America and Eurasia.

NORTHERN LIGHTS
Aurora borealis
A curtain of light that forms in northern skies. It results from charged particles emitted by the Sun interacting with atoms in Earth's atmosphere.

DEEP SNOW
Deep snow helps wolves make successful kills. Deer are heavier than wolves with narrower feet, so deer sink further as they run.

03: JAGUAR EXHIBIT

Part of the *Hall of North American Mammals*



Diorama Site:

Near Guaymas, Sonora, Mexico

- Tropical Rainforest Biome
- Tropical Forest + Sonoran Desert Ecosystem

Diorama AMNH Description:

October at Sunset, Sonora, Mexico

The jaguar is the largest cat in the Americas. Its muscular, compact frame is built for strength and stealth rather than extended pursuit. A jaguar's jaws can crush the skulls of small mammals and can even pierce turtle shells. For larger prey, it pounces, bringing down the victim by wrenching the head with a swipe of its wide paw.

These jaguars are seeking prey at dusk, as is typical for large predators. Sometimes siblings and mating pairs travel together, but usually jaguars roam alone. Young males may wander hundreds of miles to establish territory, which they mark in their catlike way: by spraying, cheek-rubbing and claw-raking.

Jaguars on the Edge: Near Guaymas, Sonora, Mexico

Poised on the eastern rim of a box canyon, a male jaguar studies a livestock corral in the shrubland below. Chiefly known as tropical rain forest animals, jaguars also tolerate drier warm climates such as the Sonoran Desert of the western United States and Mexico. Here at the fringe of their modern range, jaguars live sparsely, limited by what water and prey they can find.

This region wasn't always the margin of jaguar existence. The species actually evolved in North America from an ancestor that migrated here from Asia. Until 10,000 years ago, jaguars roamed the southern United States as far as Florida.

ABOUT THE JAGUAR (*Panthera onca*)

Range:

Jaguars have lost nearly half their historic range, and can now be found in South Western United States to Argentina, with the greatest population in Mexico through Central and South America.

Environmental Stressors:

Impacts of habitat loss and fragmentation (deforestation and loss of prey), and poaching are the greatest threats to the jaguar population. In the Peruvian jungle and the Sky Islands region of southern Arizona and northern Mexico, the jaguar population is expected to crash due to climate-change related conditions where increasing annual temperatures are causing prolonged periods of extreme drought and extreme participation repeatedly over short time periods.

Feeding Ecology:

Jaguars feed mostly on terrestrial mammals, and consume a variety of prey including peccaries, capybaras, pacas, agoutis, deer, opossum, rabbits, armadillos, caimans, turtles, livestock, as well as various reptiles, birds and fish species. They are known to use their claws, jaws, and teeth (they retract claws to move silently, and bite with powerful jaw muscles and large canine teeth).

Did You Know?

- Jaguar spots make their body forms harder to recognize in the forest, though not all jaguars are a yellow-tan. Some are black
- Jaguar populations are declining
- Jaguars are considered endangered, listed under the *U.S. Endangered Species Act*, and are considered 'Near Threatened' globally, on the International Union for Conservation of Nature Red List

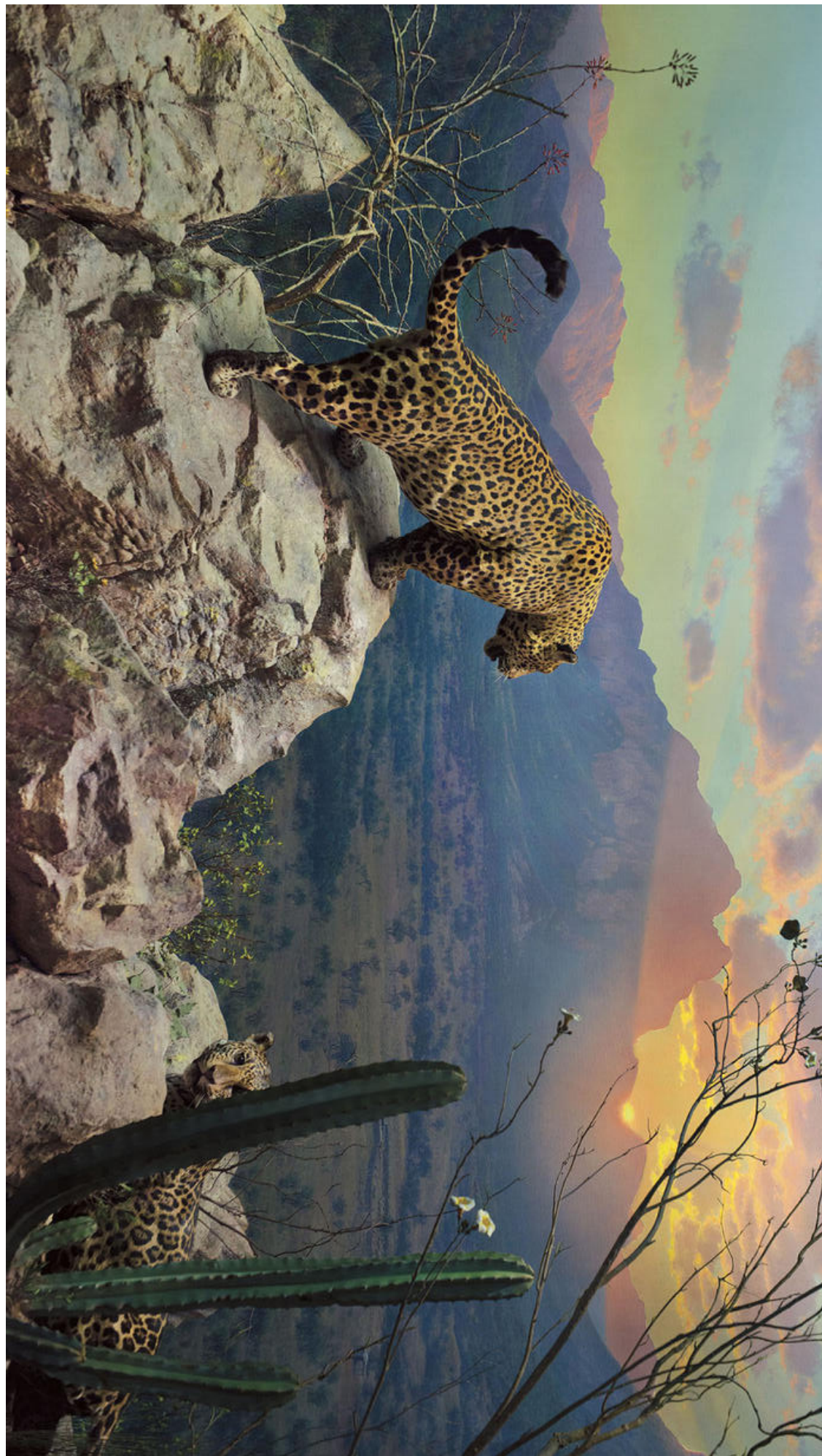
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JAGUAR

Panthera onca

WEIGHT
175–350 lb (80–160 kg) Adult males
65–185 lb (30–85 kg) Adult females

DIET
Carnivorous
 Peccaries, capybaras, tapirs, deer
 Opossums, agouti  Birds
 Livestock, infrequently  Fish
 Crocodilians, turtles, snakes

LITTER SIZE
Typically two cubs

DID YOU KNOW?
Jaguars are excellent swimmers and often hunt and play in water.

★ **DIORAMA SITE**
Near Guaymas, Sonora, Mexico

■ **HISTORIC RANGE**

■ **CURRENT RANGE**
Modern jaguars evolved in North America. They now live from the southwestern United States to Argentina. Poaching along with habitat and prey losses have significantly reduced their original range.



LOOK CLOSELY

TURKEY VULTURE

Cathartes aura

Uses its eyesight and unusually keen sense of smell to scan the ground for carrion.



MEXICAN JUMPING BEAN

Sebastiania pavoniana

The seeds of this shrub are often invaded by moth larvae that wriggle inside.



BOX CANYON

A steep-sided canyon, often with walls on three sides.



TREE MORNING GLORY

Ipomoea arborescens

In leaf only during the summer rainy season, it flowers soon after.



SENITA CACTUS

Pachycereus schottii

Has night-blooming flowers that are pollinated by a single species of moth.



CORRAL

Certain jaguars may develop a taste for domestic livestock.



03: MUSK OX EXHIBIT

Part of the *Hall of Ocean Life*



Diorama Site:

Northeast Ellesmere Island, Nunavut, Canada

- Arctic Biome
- Tundra Ecosystem

Diorama AMNH Description:

Summer, Ellesmere Island, Canada

A herd of musk oxen hunkers down to wait out a snowstorm. When the weather gets foul, their strategy is to stay and cope. Unlike Arctic caribou, musk oxen do not migrate seasonally. Instead, their squat, woolly bodies limit heat loss, even when temperatures plunge below -40°F (-40°C). Extreme shifts in climate, however, can distress musk oxen. But this too is part of their survival strategy. Study of ancient DNA reveals that over many millennia, musk ox populations have undergone repeated boom and bust cycles in response to climate fluctuations. Being able to rebound after population collapses may have helped musk oxen survive the end of the Ice Age when most other large mammals, like woolly mammoths, died out.

The Bellows, Ellesmere Island, Nunavut, Canada

This valley is typical of the Canadian high Arctic—a treeless, bleak terrain known as tundra, where the ground thaws for just a month or two of summer. Only then can it support a sparse carpet of grasses, mosses and heaths, sustaining caribou and musk oxen, the largest Arctic grazers. This ordinary Arctic landscape, however, is notable in the history of polar exploration. In the race to reach the North Pole, a British expedition first explored this valley in 1875. They named it “the Bellows” for its unrelenting winds. The team never did reach the pole.

ABOUT THE MUSK OX (*Ovibos moschatus*)

Range:

Greenland and the Canadian Arctic, pockets of Alaska, Siberia, and Scandinavia.

Environmental Stressors:

Climate, diseases, and anthropogenic changes are the principal drivers of musk ox population change and result in multiple stressors including habitat loss / degradation, and altered vegetation and species associations. Climate change in the Arctic accelerates the decline of this species as musk ox are losing suitable habitat causing climate gentrification, where herd sizes have dropped by 80 percent in the last decade. Climate warming has introduced diseases increasingly common extreme weather events during musk ox gestation periods has resulted in genetic pools with poorer survival rates.

Feeding Ecology:

Musk ox are herbivores, eating only plants, including grasses, sedges, forbs, mosses, lichens, and woody plants; more notably in the winter, including dwarf willows, dwarf alders, and dwarf birch.

Did You Know?

- Musk ox stay put during the arctic winters, relying on their woolly bodies to limit heat loss
- Musk ox live in herds which provides safety in numbers, but also competition when food is scarce (they are known to form defense formations, where they line up tightly to protect each other)
- Musk ox populations are decreasing, but the species is not listed under the U.S. *Endangered Species Act*
- Musk ox are considered a species of 'Least Concern,' on the International Union for Conservation of Nature Red List

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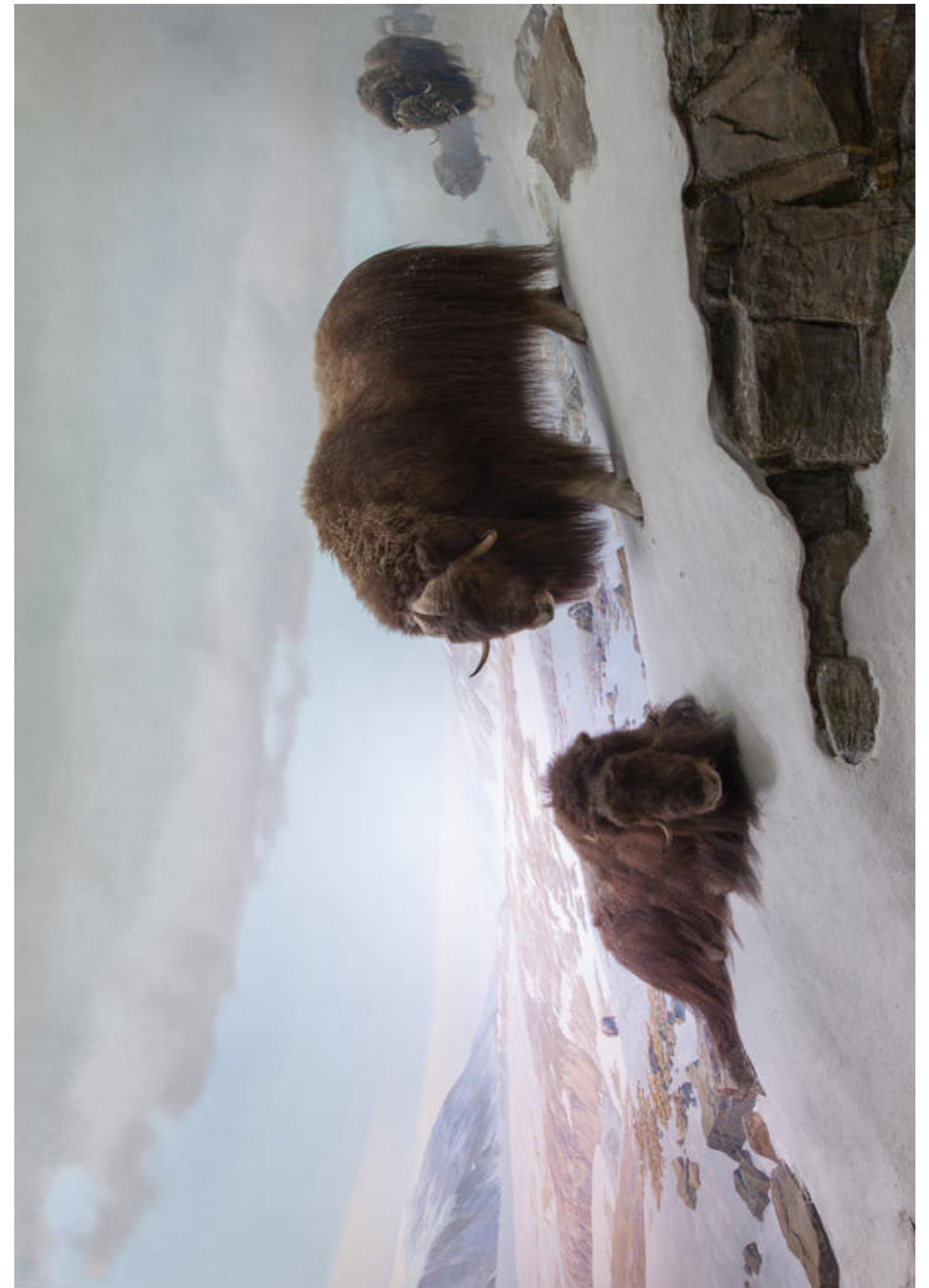
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★ DIORAMA SITE
Northeast Ellesmere Island,
Nunavut, Canada

■ CURRENT RANGE
The area musk oxen occupy has dramatically waxed and waned over millennia. Today they are confined to Greenland and the Canadian Arctic, as well as pockets of Alaska, Siberia and Scandinavia, where they have been reintroduced.

MUSK OX
Ovibos moschatus




WEIGHT
410–905 lb (185–410 kg) Adult males
350–420 lb (160–190 kg) Adult females

DIET
Herbivorous
☀ Summer: Grasses and other low plants
❄ Winter: Shrubs

LITTER SIZE
Typically one calf

DID YOU KNOW?
Musk oxen are more closely related to sheep than cattle.

LOOK CLOSELY



NIMBOSTRATUS CLOUDS
Cloud names that include the root “nimbus” bring rain or snow.

SNOWSTORM
Yearly snowfall is actually low in the Bellows and other interior areas of Ellesmere Island. This attracts grazing musk oxen.

GLACIATED ROCK
These rock surfaces were smoothed by glaciers that once covered them.

PLANTS
If it were not for the annual summer melt of permafrost (frozen ground), large areas of the Arctic would have no plant growth at all.

MUSK OX
Ovibos moschatus
These animals were collected in 1898 on Ellesmere Island during one of American explorer Robert Peary’s expeditions. On his 1908–1909 trip, Peary claimed he reached the North Pole.

HERD
Musk oxen find safety in herds, but group living can be a drawback when winter food is scarce.