WILDLIFE WATCHING GUIDE

TO

IDAHO'S UNGULATES

IDAHO FISH & GAME

IDAHO'S UNGULATES

Ungulates, or hoofed mammals, are among the most iconic and important wildlife species to Idaho. Whether it's a small group of mountain goats jumping around on rocky cliffs, a lone moose wading near a forested lakeshore, or hundreds of pronghorn streaming across the sagebrush, these animals seem to be universally interesting to humans.

This booklet will introduce you to Idaho's seven species of wild ungulates. Idaho visitors and residents alike value our state's wealth of wildlife diversity. We hope you enjoy learning about it as well.

TABLE OF CONTENTS

WHAT IS AN UNGULATE?

An ungulate is a mammal with hooves.

The term comes from the Latin word "ungula", meaning hoof. Hooves are simply the outer covering of the last bone in the toe and are made of keratinized skin (similar to a human fingernail).

While subject to intense scientific debate, the number of extant (living) species of ungulates may be as high as 450, worldwide. They are native to all continents except Antarctica and Australia. Some species have been transplanted around the globe, such as domesticated species (like cattle, horses, pigs, sheep, and goats) and those introduced to create new hunting opportunities (e.g., fallow deer and red deer). The greatest diversity of native ungulates occurs in Africa. Twelve species of ungulates occur in the United States. All of these except Dall sheep, bison, muskoxen, and collared peccary occur in Idaho.

Globally, almost all ungulates are "obligate herbivores" which means they have to eat plants to survive. Pigs and peccaries are the exception. While these animals eat mainly plants, they often have a more varied diet including bird eggs, insects, and scavenged animal carcasses.

UNGULATES CAN BE DIVIDED INTO TWO GROUPS:

1. Artiodactyla *even number of toes*
Deer, bison, goats, sheep, pigs, camels, and others.

2. Perissodactyla *odd number of toes*
Horses, rhinoceroses, and tapirs.

ALL IN THE FAMILY

Idaho's ungulates can be further divided into three groups called families.

Cervidae

1. **Moose** *Alces alces*
2. **Elk** *Cervus elaphus*
3. **Mule Deer** *Odocoileus hemionus*
4. **White-tailed Deer** *Odocoileus virginianus*

Male members of the cervid (deer) family grow antlers: paired, bony structures attached to the head, which are shed each winter and regrow each spring.

Antilocapridae

Pronghorn *Antilocapra americana*

Pronghorn is the only surviving species of the North American ungulate family Antilocapridae. The family name means both antelope and male goat, although pronghorn are not true antelope and are now referred to simply as pronghorn.

Pronghorn have horns consisting of a keratinous sheath, which is shed annually and regrown, over a bony core.

Bovidae

1. **Bighorn Sheep** *Ovis canadensis*
2. **Mountain Goat** *Oreamnos americanus*

Bovid means "hollow-horned." All male bovid species have horns. Some female species also have horns, but the female's horns are always smaller at the base than the male's horns. Bovid horns are permanent and almost always non-branching.

STAYING ALIVE:
UNGULATE ADAPTATIONS

EYES & LIMBS

Ungulates have eyes on the sides of the head. This provides tremendous field of vision – almost 360 degrees! While these eyes do not pick up fine details well, they see movement over a large area. This adaptation is useful for spotting predators.

Most ungulate species have evolved for fast running. Over generations, legs became longer and lighter. Feet became smaller and specialized joints developed. Mule deer, which evolved in southern, dry environments with hard-packed soil, are a good example of an ungulate that has evolved these features.

LIVING TOGETHER OR ALONE

Elk usually live in groups.

Other members of the deer family, like moose, like to live alone. Why do some animals live together and others live alone? Often, the habitat choices made by an ungulate are linked to their social mode – species living in open areas spend most of their lives in groups.

Elk in Idaho illustrate the value of group living. Elk use what's called the "selfish herd strategy" when grouping together in open terrain. This offers the greatest protection to elk near the center of the group. With many eyes to keep watch, the elk are able to detect a predator before it comes near enough to launch an attack. If attacked, the elk confuse the predator by running in different directions to escape.

Female elk and their young live in herds. The main reason they live together is for protection. Females leave the group to give birth, but soon come back when their babies are a few weeks old. By living together, elk have more sets of eyes looking out for danger. If a predator does attack, there will be more hooves to fight it off. Elk can also take advantage of babysitters. Elk take turns eating and looking after their young. A well-fed mother can take better care of herself and her calf.

Adult male and female ungulates do not mix often throughout the year. The two sexes tend to form separate groups and only come together during mating season. However, young males (sometimes up to three years old) stay with nursery groups – adult females and young. As these young males grow larger they eventually leave to join other groups of males.

Moose like to live alone. Moose can eat 40-60 pounds of food a day! In no time at all, a group of moose could do some serious damage to a grove of trees. By spacing out, they help to keep the habitat healthy. Sometimes moose live together in groups called "yards." You are likely to see a yard of moose during the winter when food is harder to find. Moose are sometimes forced to live together if food is only found in a few places. When food is plentiful, moose don't want or have to share.

FOOD & EATING

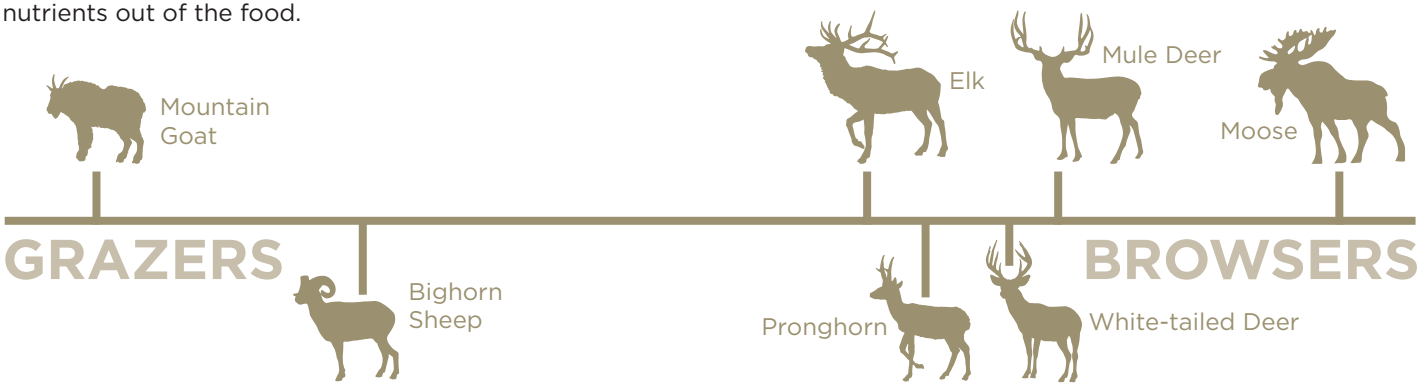
Plants are very hard to digest, but breaking them down into smaller pieces can help digestion. The ungulate tooth surface is highly folded with hard cutting edges for shearing food items. The jaw can move side-to-side as well, which helps with grinding food.

All of Idaho's ungulates are ruminants: they regurgitate food to chew and swallow again. To help them digest plants, ungulates have stomachs divided into four different chambers or rooms. They nip off plants, but they don't chew their food much before swallowing it. The plants go into the first chamber of the stomach. It is full of bacteria and other organisms that help break down the plants.

Ruminants chew their food twice. Have you ever heard of cows chewing their cud? They are chewing food regurgitated from their stomachs. Once chewed, the food is swallowed again and passes into the second and third parts of the stomach where water is taken out. The fourth chamber is the one that is most like your stomach. It absorbs the nutrients out of the food.

Having a stomach with many chambers not only allows an ungulate to eat tough plants, it also helps to keep them safe: once the first stomach is full, the ungulate can find a place to hide, rest, and fully digest their food without have to constantly look out for danger while eating.

Different species prefer different types of plants. Grazers, such as bighorn sheep, eat mainly grasses and sedges while browsers, such as moose, prefer leaves, buds and shoots of trees and shrubs. Since ungulates can both graze and browse, these food habits are best considered along a continuum, rather than as distinct categories.



FINDING A MATE:
Headgear

THE BATTLE FOR LOVE

Ungulates breed once per year—in Idaho this is usually between September and December. Newborns arrive the following spring, when fresh plant growth begins.

They are polygynous: females will only mate with one male, but males will pursue many females to maximize their individual chance of successful reproduction.

Mostly the large, strong, dominant males do the breeding. They will intimidate, chase, or fight off younger, smaller males attempting to mate.

The most visible features of ungulates—their horns and antlers—play a large role in mating behaviors and rituals. Along with teeth and hooves, antlers and horns can be considered weapons. Perhaps surprisingly, weapons are mostly used to fight other members of one's species (e.g., mule deer vs. mule deer), rather than to defend against predators (e.g., mule deer vs. wolf).

ANTLERS

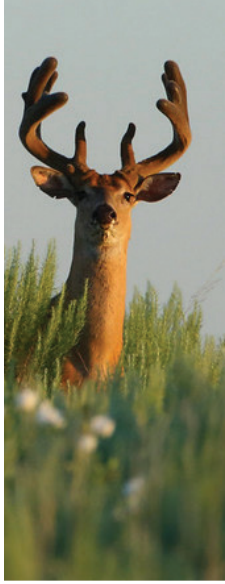
Antlers are paired, branching, bony structures found on male cervids (deer, elk, and moose).

Antlers grow under a layer of specialized skin called "velvet," named for its short, soft hairs. Velvet is loaded with nerve tissue and is therefore very sensitive when growing. Beneath the velvet, on the surface of the antler, lie blood vessels that supply most of the nutrients to the growing structure.

Antlers grow quickly in response to increasing day length in the spring and summer – up to 1" a day during the summer – and harden around the end of summer when testosterone levels rise in the blood. Once hardening is complete the velvet dies and separates from the underlying antler. Cervids rub the velvet off on trees and shrubs, revealing the dead bone beneath.

Antlers of elk and moose can account for more than five percent of total body weight. This is a tremendous investment of energy and nutrients. Antler shape seems to be controlled by genetics, while size is largely affected by nutrition.

During mating season confrontations, male cervids usually fight head-to-head, pushing and twisting against an opponent. When a foe is thrown off balance, he can be poked in the side or rump by his opponent's antlers. After the mating season is over, antlers drop off. Moose often lose their paddled antlers in December while elk lose their antlers as late as April.



HORNS

Both of Idaho's bovids (mountain goat and bighorn sheep) and pronghorn have horns. These horns have two main parts: an inner bone core attached to the skull and outer keratin sheaths. Goat and sheep horns do not branch like antlers and are permanently attached throughout the animal's life.

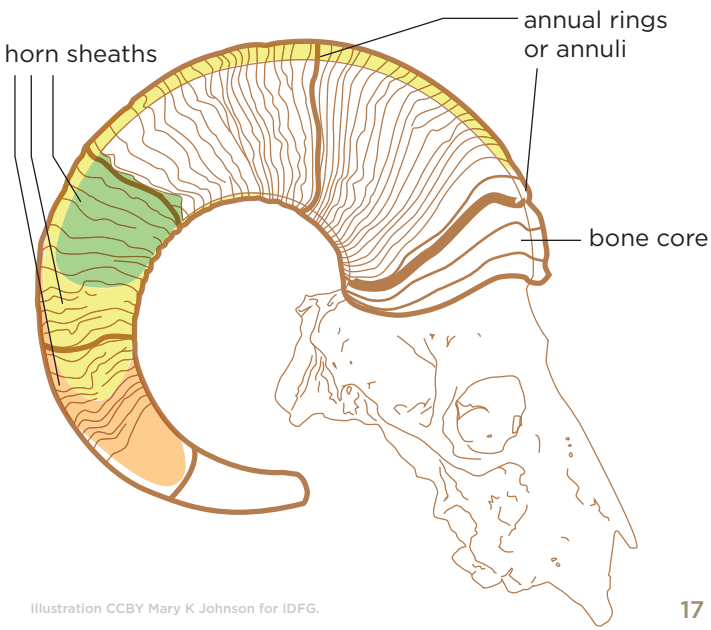
The horn sheaths of pronghorn, however, are branched; each sheath has a forward-pointing tine, hence the name pronghorn. Additionally, both male and female pronghorn shed and regrow horn sheaths each year.

Horns stop growing in late fall or early winter, and then resume growing the following spring. In some species, notably sheep and goats, a distinct ring marks the boundary between these periods. An animal's age can often be estimated by counting these rings (annuli).

Both males and females of all grow horns. Males usually have larger horns, which are much thicker at their base than those of females.

Horn shape and size dictate how they are used for fighting. The short, sharp horns of the mountain goat can penetrate deep into an opponent, causing lethal damage. Combatants often stand side by side, stabbing at the other's flanks. In contrast, bighorn sheep are bashers – opponents engage in head-to-head collisions with tremendous force, often from a running start.

BIGHORN RAM HORN STRUCTURE



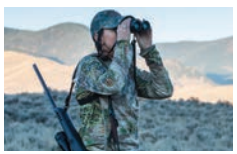
OFFSPRING:
THE NEXT GENERATIONS

Young ungulates are raised entirely by their mothers. Like other mammals, newborns consume their mother's milk until they are ready for solid food. Young are born with eyes open and can walk and run shortly after birth.

Mothers must maintain their own health by feeding properly while still protecting their young from harm. In order to accomplish both tasks, ungulates use one of two strategies: following or hiding. **Followers** stay close to their mothers during the day, going wherever mom goes. **Hiders** stay in a general area by themselves, often hiding under thick cover, while the mother leaves to feed, returning once or twice a day to nurse the calf. People sometimes find newborn deer alone and assume they were abandoned. This is rarely the case.

FOLLOWER	HIDER
Bighorn Sheep	Elk
Mountain Goat	Moose
	Mule Deer
	Pronghorn
	White-tailed Deer

COMMON UNGULATE PREDATORS



Newborn ungulates are particularly vulnerable to predation, as are old and sick individuals.

Sage
Tempe Regan
temperegan.com

IDAHO'S UNGULATES

COMMON NAME	HEIGHT (ft) at SHOULDER	WEIGHT (lbs)	APPEARANCE	HORNS vs ANTLERS	HABITAT TYPE	RUT/TIMING	AVERAGE LIFESPAN (years)
Bighorn Sheep 	3' - 3.5' male 2.5' - 3' female	160 - 250 male 100 - 200 female	Gray brown fur and large horns that curl almost in a circle (males); horns on females are much smaller.	Horns	Rugged canyon and mountain terrain.	Mates November and December; young born in May; weigh 8 - 10 lbs; almost always single birth, twins are rare.	9 - 14
Elk 	5.0' male 4.5' female	700 - 1000 male 500 - 800 female	Light brown fur, darker neck and legs, beige rump patch, and large heavy branched antlers (males).	Antlers (males)	Mid to high-elevation conifer forests, meadow complexes, and hardwood stands in summer; open, south-facing slopes at low to mid-elevations during winter.	Young born May-June; weigh 30 - 40 lbs; twins are rare.	10 - 13
Moose 	6.0' male 5.5' female	1000 - 1600 male 800 - 1300 female	Dark brown fur, lower legs lighter, loose skin hanging from chin, small tail, and large rack of antlers (males).	Antlers (males)	Coniferous forests of north Idaho, mixed aspen and conifer forests of southeast and central Idaho, and riparian cottonwood and willows in southern Idaho.	Mates September to October; young born in June; weight 28 - 35 lb; single births most common.	8 - 10
Mountain Goat 	3.5'	150 - 220	White shaggy fur, bearded, with black horns that curve background.	Horns	Isolated, high-elevation areas with rocky cliffs that experience harsh weather conditions.	Mates November to December; young born late May to early June; weigh 4 - 6 lb; usually single, sometimes twins.	11 - 13
Mule Deer 	2.75' - 3.6' male 2.6' - 3.3' female	125 - 250 male 95 - 165 female	Tan fur, large dark-edged ears, white rump patch, ropelike tail with black tip, and evenly branched antlers (males).	Antlers (males)	Rocky, brushy areas, open meadows, pine forests, aspen tree groves and areas next to waterways in summer; open, south-facing slopes at low to mid-elevations during winter.	Mates November to December; young born May to June; weigh 6 lbs; single first birth, twins common after 1st pregnancy, triplets rare.	4 - 10
Pronghorn 	2.7' - 3.5'	90 - 140 male 75 - 100 female	Tan/brown fur with white belly, white rump patch, short white tail, and white bands on neck and chin.	Horns	Grasslands and sagebrush in southern Idaho.	Mates September to October; young born May to June; weigh 5 - 9 lbs; single first birth, twins common after 1st pregnancy.	10 - 15
White-tailed Deer 	3' - 3.9'	125 - 225 male 90 - 200 female	Red-brown fur in summer and gray-brown in winter; white throat and belly with white band around nose and large, thick bushy tail. Antler tines grow off one main beam (males).	Antlers (males)	Forested and meadow areas in north Idaho; riparian areas in southern Idaho.	Mates November to December; young born in May/June; weigh 5 - 8 lbs; twins are common, triplets rare.	8 - 10

Mountain Monarchs
Kelly Weimer
kellyweimerart.com

BIGHORN SHEEP
Ovis canadensis

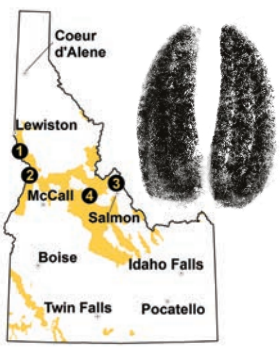
Bighorn sheep are an iconic part of Idaho's natural heritage. Named because of the male's huge horns that curl almost in a circle, their gray-brown coats help them to blend into the mountainside. They are at home on rough, uneven ground as they have a rough pad on the bottom of their two-toed, spread-out hooves; they are excellent climbers and jumpers. The age of a ram (male) can be counted from the growth rings of its horns; ewes (females) horns are much smaller.

During the breeding season, rams face off in duels, battering their horns together in violent collisions. This establishes dominance and can last all day; the dominant ram earns the right to mate with the ewes.

Idaho has two populations of Bighorn sheep: Rocky Mountain bighorns live in the central mountains from Hells Canyon on the west to the Montana border on the east. California bighorns occupy southern Idaho's canyons and rangelands south of Interstate 84.

Best places to view:

1. Craig Mountain WMA
2. Snake River in Hells Canyon NRA
3. Redrock Sportsman's Access
4. Middle Fork Salmon River Canyon



Fun fact: Prior to the mid-1800s, Bighorn sheep were the most abundant big game animal in Idaho. Bighorn sheep occurred naturally in Hells Canyon but were eliminated in the early part of the century as a result of disease introduced by domestic sheep as well as unregulated hunting. Translocations have been conducted in the area to reestablish populations.

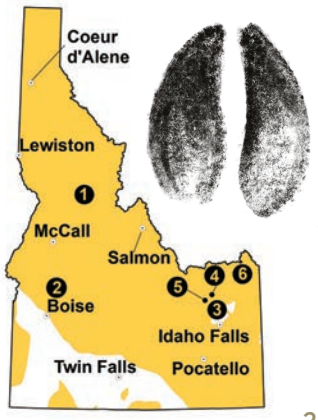
ELK
Cervus elaphus

- Elk move onto south-facing slopes in the winter where snow depth is less and follow spring green-up into the higher elevations in late spring.
- As herbivores, elk must eat about three pounds of food per day for every 100 pounds it weighs. This can add up to more than 15 pounds of food!
- One widely used name, *wapiti*, is a Cree word believed to mean "white rump."
- An elk's winter coat is five times warmer than its summer coat.
- It takes about four – five months for an elk to completely grow a set of antlers; growing at about one inch a day!

Fun fact: When bull elk bugle, there are actually two forces at work. Elk roar and whistle simultaneously by using their vocal cords for deep sounds, and their noses to make high-pitched whistles. A hollow pathway exists between the throat and nostrils which a bull elk forces air through, making a high shrieking sound, flaring and contracting the nostrils to adjust pitch, essentially playing his own head like a flute.

Best places to view: Elk can be seen throughout most of Idaho, however the best viewing opportunities are generally in the sourthern half of the state.

1. Red River WMA
2. Garden Valley
3. Market Lake WMA
4. Camas NWR
5. Mud Lake WMA
6. Harriman State Park



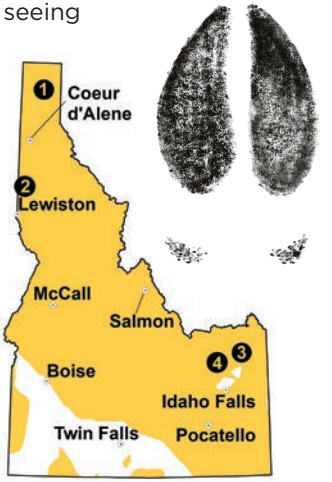
MOOSE
Alces alces

- Moose are the largest member of the deer family (cervidae), weighing nearly 2000 pounds.
- Sometimes affectionately referred to as "swamp donkey."
- Their wide hooves help them walk in muddy, marshy ground and snow.
- They spend much of their time in lakes and rivers to keep cool in the summer—sometimes swimming 10 or more miles!
- Year-round, moose snack mostly on leaves, stems, twigs, and the bark of small shrubs. A full-grown moose can gobble up to 40-60 pounds of food a day.

Fun fact: Moose have no upper front teeth.

Best places to view: It is relatively difficult to spot a moose from one of Idaho's highways. Road travelers occasionally see moose crossing the highways or feeding on the edges of nearby ponds or meadows.

You have a better chance of seeing moose in their natural habitat by hiking or boating into the wilderness. Idaho rivers and lakes are a good place to find moose in the spring and summer.



Places such as:

1. McArthur Lake WMA
2. Moscow Mountain
3. Sand Creek WMA
4. Camas National Wildlife Refuge

MOUNTAIN GOAT
Oreamnos americanus

beard

- Mountain goats are true acrobats as they live on steep, rocky areas of some of Idaho's tallest mountains.
- The hooves on each foot have a hard outer shell and a rubbery, concave footpad which acts like a suction cup when weight is applied.
- Horns tell the age of a mountain goat just like the way the rings of a tree or the scales of a fish do—the horns will have one less ring than the goats age (e.g., 2-year-old goat will have one ring).

Best places to view: Spotting a mountain goat while out in the backcountry is possible. Statewide population size ranges from 15 to 500. Herds can be small and fragmented, with animals scattered throughout the central Idaho Wilderness as well as in the Panhandle, Hells Canyon, and the Snake River range (west of the Tetons and Wyoming state boundary line).

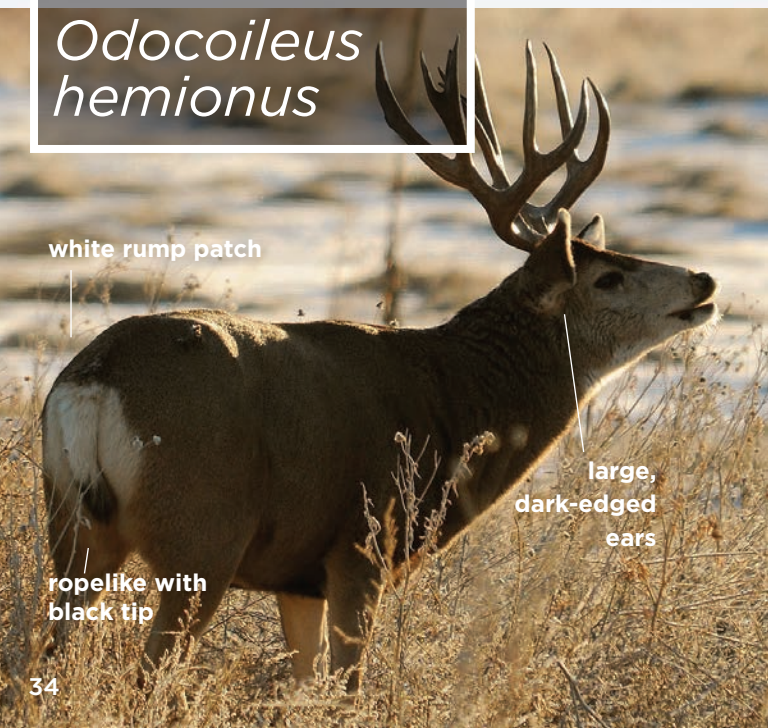
Look for them at:

1. Scotchman Peak
2. Hells Canyon Dam
3. Sawtooth Mountains
4. Yankee Fork
5. Billy's Bridge on Hwy 75
6. Targhee Creek

Fun fact: Mountain goats would make any rock climber jealous. They can pull themselves up from ledge to ledge with just their front feet; have been known to leap 10 feet from one rock ledge to another; and can turn around on a platform that is only inches wide!

MULE DEER

Odocoileus hemionus



- Idaho's most abundant and most widely distributed big game animal.
- When threatened, they will often bounce away by pushing all four hooves off the ground at once; this is called "stotting."
- Their eyes are located on the side of their head, providing 210 degrees of vision.
- Their slender legs are not well adapted to traveling through deep snow so they stay close to southfacing slopes and valleys.
- May migrate 50 to 75 miles between their summer and winter habitats.

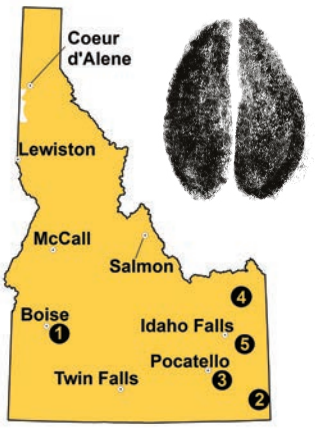
Fun fact: Mule deer have no upper teeth, only a hard palate.

Best places to view: Mule deer are widespread in the central mountains and southern deserts of Idaho. During the summer and spring, mule deer may be found on mountain slopes where shrubs, flowering plants and grasses grow. Look for them along the canyon grasslands of the Snake and Salmon rivers.

During the winter, deep snow makes it difficult for mule deer to access food; they move down from higher mountain elevations into lower elevation valleys and south-facing hillsides.

Important winter range locations include:

1. Boise River WMA
2. Montpelier WMA
3. Portneuf WMA
4. Sand Creek WMA
5. Tex Creek WMA



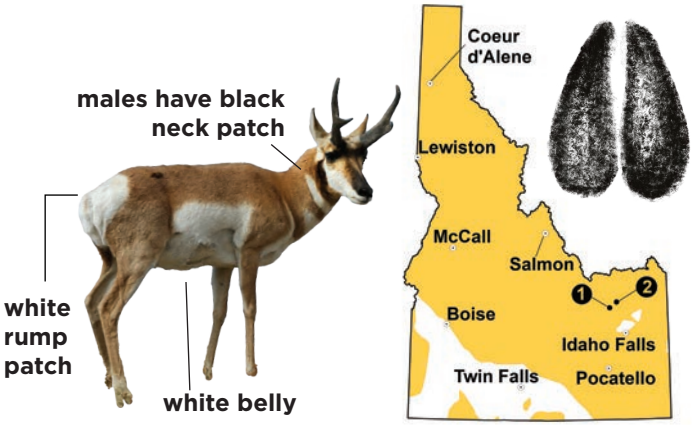
PRONGHORN

Antilocapra americana

- Pronghorn are herd animals and can be found in wide open spaces like grasslands and shrubby areas where the plants don't get much over two feet high.
- They love the sagebrush in southern Idaho—it is their main source of food in the winter.
- When they spot danger, they warn other pronghorns in the herd by sticking up the white hairs on their rump.

Best places to view: Driving Hwy 93 south of Salmon towards Idaho Falls is an almost guaranteed pronghorn sighting.

1. Mud Lake WMA
2. Camas National Wildlife Refuge



Fun fact: Pronghorns are thought to be the fastest mammal in North America. They have bursts of speed that are greater than 60 miles-per-hour and they can sustain speeds of 30 to 45 miles-per-hour over long distances.

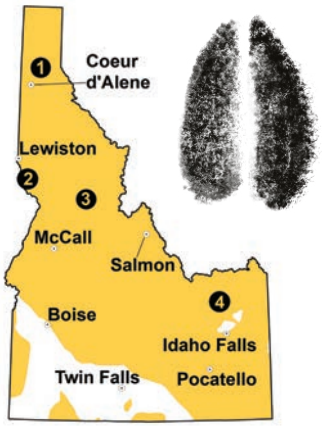
WHITE-TAILED DEER

Odocoileus virginianus

- When alarmed, white-tailed deer raise their tail and wave it side to side while moving away—this is called "flagging" and is unique to the species.
- They can consume seven pounds of food daily of shrubs and evergreens (winter) and grasses and agricultural crops (summer).
- Mate from November to December; their young (often two fawns) are born seven months later.
- Use scent glands on at least seven spots on their body (forehead, eyes, nostrils, between the toes, inside the foreskin, outside and inside hind legs) to leave messages for other deer.

Fun fact: A white-tailed deer tail is about 10.6 inches long!

Best places to view: White-tailed deer are mostly found north of the Salmon River but are becoming more common in central Idaho. They like woodlands, dense brush and marshy areas. They especially like the areas where different habitats meet, like the edges between meadows and forests. In northern Idaho, they can be seen in most forested areas. In southern Idaho, they may be found in riparian areas along some rivers.



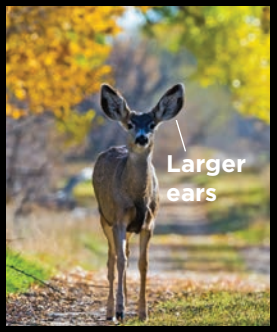
Viewing opportunities at:

1. Farragut WMA
2. Craig Mountain WMA
3. Red River WMA
4. Camas National Wildlife Refuge

MULE DEER VS WHITE-TAILED DEER

Here's how to tell white-tailed deer from mule deer. Size and coloration can vary in both species, depending on environmental factors.

Some key differences:



VIEWING TIPS & ETIQUETTE

DO:

- ✓ **Use binoculars,** spotting scopes, and zoom lenses to get a closer look.
- ✓ **Sit quietly** and slowly scan your surroundings. Watch for movement, shapes, and colors.
- ✓ **Learn** about the different habitats species prefer and when they use them. Focus your attention on these times and places.
- ✓ **Avoid fawning and calving habitat** during May and June. Newborns are very vulnerable to disturbance and need this critical time to feed and grow.
- ✓ **When in the alpine**, stay lower on the mountain than wildlife such as sheep and goats. These species become stressed when other animals approach them from above.
- ✓ **Protect** wintering wildlife by avoiding areas where they gather. When animals are forced to burn extra calories to avoid people, it can make a life-or-death difference.

SAFETY:

- ✓ **Never approach ungulates**, especially during fall/winter mating season when males can be aggressive, or during the birthing season in spring and early summer as mothers will defend their offspring.
- ✓ **Most hunting seasons for Idaho ungulates** open August 30 each year. Be respectful of hunters and wear highly visible clothing.

HOW YOU CAN HELP:

- ✓ **Report wildlife safety concerns** and any suspected illegal activity such as hunting out of season to the Citizens Against Poaching Hotline: 1-800-632-5999 or idfg.idaho.gov/poacher
- ✓ **Learn more about Idaho's ungulates** and share your observations. No observation is too rare or too common and each observation has value for wildlife managers: idfg.idaho.gov/species/observations

TO LEARN MORE

For more information on ungulates and other Idaho wildlife, contact:

Idaho Department of Fish and Game
Wildlife Diversity Program-Watchable Wildlife
PO Box 25
Boise, ID 83707
208-334-3700
idfg.idaho.gov/watch/wildlife

Special thanks to the Government of Yukon Wildlife Viewing Program for assistance with content and layout.

Design: Mary K Johnson

Design Production: Kelly Kennedy Yokoyama

Reviewers: Deniz Aygen, Frances Cassirer, Tara Ball, Hollie Miyasaki, Rick Ward, and Laura Wolf

Maps: Matt Warren

IDAHO FISH & GAME

Idaho WATCHABLE Wildlife