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# NORTHWEST WILDLIFE PRESERVATION SOCIETY

## Dall's Sheep

*Ovis dalli*



Photo credit: Northwest Territories Wildlife Division

By David Harrison

About 100,000 years ago the ancestors of the wild sheep of North America crossed the Bering "Land Bridge" that once connected what is now North West Alaska and Siberia. Humans did not make this trip until 10,000–35,000 years ago. Actions of nature related to ice ages divided the herds of wild sheep into two different ice-free regions: those in the north region evolved into the *thinhorn sheep*, while those in the southern region evolved into *bighorns*. Dall's sheep are *thinhorns*. Both the bighorns and the thinhorns are immediately recognizable by their huge backward-curling horns, which unlike deer and others are not shed annually but kept for life. The distinguishing feature of Dall's sheep is their bright white coat which makes them particularly visible as the snow recedes from their habitat in summer.

Because of their impressive heads, they have long been a "prize" for hunters and a delight for adventurous photographers and wildlife viewers. Fortunately they have been naturally protected by the remoteness and altitude of their rocky and mountainous ranges, as well as by more recent environmental laws and licensing control. In Canada, Dall's sheep are concentrated in the Yukon, the Richardson and Mackenzie ranges of the Northwest Territories (NWT), and the Skeena mountains of northern British Columbia; they also occur throughout Alaska. Total population was estimated in 1997 at 70,000 in Alaska, 15,000 to 20,000 in the NWT, over 18,000 in the Yukon and 500 in British Columbia, (half of those in the World Heritage Tatshenshini-Alsek Provincial Wilderness Park).

## Characteristics

Dall's sheep are immediately recognizable by their white coats and distinctive horns. The rams have massive, backward curling horns that take eight years to reach a full circle. The ewes have short, slender spiked horns with only a slight curl. Another thinhorn similar to Dall's is the larger Stone's sheep (*Ovis dalli stonei*) which may be found in northern BC. It is only white in the rump, belly, and inside of legs while its body coat is very dark. (The bighorn sheep found mainly in the southern interior of BC, several US states, and Mexico are larger, heavier, and have thicker more robust horns.)

Mature Dall's rams are approximately 90 cm (36 in) high at the shoulder and weigh about 90 kg (200 lb), while ewes are smaller and weigh much less. The ram's horns grow to about 90 cm long, with a horn spread of the same dimension. Ewes' spikes are less than 38 cm (15 in).

The horns of Dall's sheep continue to grow throughout their lives and are never shed. You can tell the age of the sheep, especially the males, by the growth rings (*annuli*) on their horns. It's a little like telling the age of a tree by counting its inner rings. The horns grow steadily in spring, summer and fall, but stop growing in winter, which accounts for the rings. In the early years, the horns grow fast but in later years the growth slows and the rings are more closely spaced.

## Habitat

Dall's sheep inhabit dry mountainous regions of the Yukon, Northwest Territories, British Columbia, and Alaska. They seek sub-alpine grass and shrub vegetation at high altitudes. They prefer rocky slopes, cliffs, and outcrops that provide protection against predators. Most populations have separate summer and winter ranges, with the better foraging in the higher summer ranges where grasses, sedges and up to 1000 plant species can be found as the winds blow away the snow.

## Life Cycle

Ewes start to have lambs when they are two or three years old; they have only one lamb each year. The mating season is in November-December when the sheep are in the lower parts of their range. The lambs are born about 6 months later (May-June) and in preparation for birth, the ewes will have climbed up to the higher, more rugged and rocky part of their spring range. There they can be undisturbed and seek better protection from predators (see [Threats](#)). Ewe and lamb stay in the cliffs until the lamb is strong enough to travel and start foraging for itself, but the ewe-lamb pairs still stay together for some time.

Until winter approaches, Dall's sheep graze on alpine meadows and open slopes on a diet of grasses, sedges, and a wide variety of plants that abound in that summer range. The sheep congregate in separate bands and separate meadows or grazing areas: ewes, lambs and yearling rams (which don't yet mate) in one band – as many as 50, and older rams in the other. The oldest member of a band is its leader.

In the fall both groups descend to lower levels and foothill meadows for the mating season. The winter diet changes to woody plants that the sheep can find in the snow such as willow, sage, cranberry, crowberry and mountain avens. Lamb mortality in the winter can be high because of snow conditions, low temperatures, and food availability. Older sheep can survive on stored fat until spring.

The life span of a Dall's sheep is up to 15 years.

## Behaviour

Head-butting contests between the rams of this species are a distinctive event in the life cycle. The purpose is to establish social dominance in the group, rather than as a mating ritual. However, the contests typically do occur in the mating (rutting) season.



Photo source: [www.nwtwildlife.com](http://www.nwtwildlife.com)

These duels begin with pushing and shoving. Then, as if on a signal, the duellists part and move back about 10-15 metres before walking, then running towards each other until they lunge onto their forelegs and crash horn onto horn. The sound of the horns hitting each other can be heard up to a kilometre away. The motivation is to emerge as the dominant ram in the group, and the duel may continue for hours until the stronger ram drives off the weaker.

Newborn lambs also behave in a distinctive pattern. When first born, they stay close to their mother, but after only a few days they begin to scramble up and down cliffs. At ten days old, they start to nibble grass, though are not weaned for up to nine months. Meanwhile, they form “play” groups of their own. They can even form “nurseries” with a number of lambs accompanied by a single ewe.

## Threats

The day-to-day survival of a Dall's sheep is threatened by a number of species. Wolves are their main natural predators, but there are threats also from coyote, lynx, grizzly bear, and golden eagles swoop down on young lambs that stray from the ewe.

Adequate nutrition is often difficult in the winter season when the lower habitat of the sheep's winter range may bring the sheep into closer contact with humans. This can be dangerous, because people may have adversely affected this alternative habitat. Also, domestic sheep and cattle can transmit diseases. Roads may create a barrier to the sheep's seasonal migration. Other threats from humans include mineral exploitation and hunting.

Long before western settlement Dall's sheep were hunted by First Nations people who made full subsistence use of their skin, flesh meat, and even horns. Subsistence (food) hunting for some northern communities is still preserved.

In the 1900s, hunting by westerners for such handsome “trophy” horns became a major threat to the population of all wild sheep. In recent decades, controls on recreational hunting have been introduced and protected areas created in national, provincial and state parks. Subsistence hunting by some First Nations such as the Champagne and Aishihik First Nations in the Yukon are also permitted.

As of 2005, Dall's sheep were on the BC provincial “Blue List” showing conservation status of endangered species; this is due to their small numbers (<500) in the province. The Blue ranking means “of special concern,” “imperilled” or “vulnerable”; this is higher risk than Yellow (secure) but lower than Red (endangered) and Extinct. On global and national lists, the species has low risk (widespread, abundant and secure), because of its larger numbers in the other provinces and Alaska.

## What We Can Do To Help

1. Do what we can to protect the habitat, especially the sub-alpine winter range and lambing areas. Know the rules and regulations for access and hunting all types of wild animals.
2. Avoid disturbing the animals by aircraft, helicopter, or approaching too closely in any way.
3. Consider wildlife spotting and photography as an alternative to hunting.
4. Learn more about Dall's sheep through the Book and Web Resources listed here.

## Other Interesting Facts

-----The Bering “Land Bridge” that the sheep originally came to North America on was not just a few kilometres across. It was actually over 1600 km (1000 miles) wide. Sea levels had fallen about 100 metres (300 feet) during glacial periods as open water evaporated and became part of the polar ice sheet. Also crossing from Asia to North America by this means were muskox, lemmings, and mammoths from the Pleistene epoch.

-----A related sheep, the Snow sheep (*Ovis nivicola*) or Siberian Bighorn sheep, still lives in the Kamchatka region of Siberia.

-----Dall's sheep is the only wild white sheep in the world. It was named in 1897 after an American palaeontologist and explorer of the natural resources of the Yukon and Alaska in the 1860s and 1870s.

----The horns of the Dall's sheep consist of a bony core and an outer covering of keratin, the same substance as human fingernails; the horns are quite heavy, weighing up to 10 kg (22 lb).

----The eyesight of a Dall's sheep has been compared to that of a human aided by strong binoculars.

----In the spring, many Dall's sheep travel quite a distance to visit natural "mineral licks" and eat the soil. It's a bit like us taking a mineral supplement. These minerals may stain their snowy white coat.

----Though Dall's sheep have evolved with two-toed (cloven) hoofs, which makes them sure-footed on the rocky landscape, they can still perish from falls, avalanches, or deep snow.

----The wild sheep is prominent on the coat-of-arms of British Columbia. The shield is supported on the right by the Dall's sheep.



Source: BC Government: <http://www.protocol.gov.bc.ca/protocol/prgs/symbols/symbols.htm>

## Bibliography

### Book Resources

Banfield, A.W.F., *Mammals of Canada*. Toronto: University of Toronto Press, 1974.

Post, Kerrie et al., *Wild Sheep of North America: north of the 49th*. Victoria: BC Ministry of Environment, Lands and Parks, 1997 (WILD BC, PO Box 9354, Stn Prov Govt, Victoria BC V8W 9M1).

Savage, Arthur and Candace, *Wild Mammals of Western Canada*. Saskatoon: Western Producer Prairie Books, 1981.

Scotter, G.W. and T.J. Ulrich. *Mammals of the Canadian Rockies*. Saskatoon: Fifth House, 1995

Wooding, F., *Wild Mammals of Canada*. Toronto: McGraw-Hill Ryerson, 1982.

### Web Resources

Alaska Dept. of Fish and Game

<http://www.adfg.state.ak.us/pubs/notebook/biggame/dallshee.php>

Good general overview including "fun facts"

Animal Diversity Web (A. Gozdzik, U. of Michigan Museum of Zoology)

[http://animaldiversity.ummz.umich.edu/site/accounts/information/Ovis\\_dalli.html](http://animaldiversity.ummz.umich.edu/site/accounts/information/Ovis_dalli.html)

Excellent information on all main aspects of the Dall's sheep. It's worthwhile to bookmark the parent website (<http://animaldiversity.ummz.umich.edu/site/index.html>) for easy-to-read material on other animals too.

National Wildlife Federation (US) - eNature

<http://www.enature.com/fieldguide/showSpeciesIMG.asp?imageID=18922>

*eNature.com gives shorter write-ups on this and other wildlife.*

Northwest Territories, Wildlife Division

[www.nwtwildlife.com](http://www.nwtwildlife.com)

*Very comprehensive website with authoritative and current detail plus excellent photos.*

Parks Canada, Canada's World Heritage Sites

[http://www.pc.gc.ca/progs/spm-whs/itm4-/page7\\_E.asp](http://www.pc.gc.ca/progs/spm-whs/itm4-/page7_E.asp) or link from <http://www.pc.gc.ca/>

*The first website describes plans for World Heritage parks such the Nahanni and Canadian Rocky Mountains with mention of Dall's and Bighorn sheep. The second page is the home of Parks Canada with many interesting links.*

Thinkquest

[http://library.thinkquest.org/3500/dall\\_sheep.html](http://library.thinkquest.org/3500/dall_sheep.html)

*Easy-to-read overview of characteristics, habitat, etc. on a site created by students for students. Links to other Arctic animals.*