BRITISH COLUMBIA MOUNTAIN GOAT SOCIETY

SMITHERS BC CANADA

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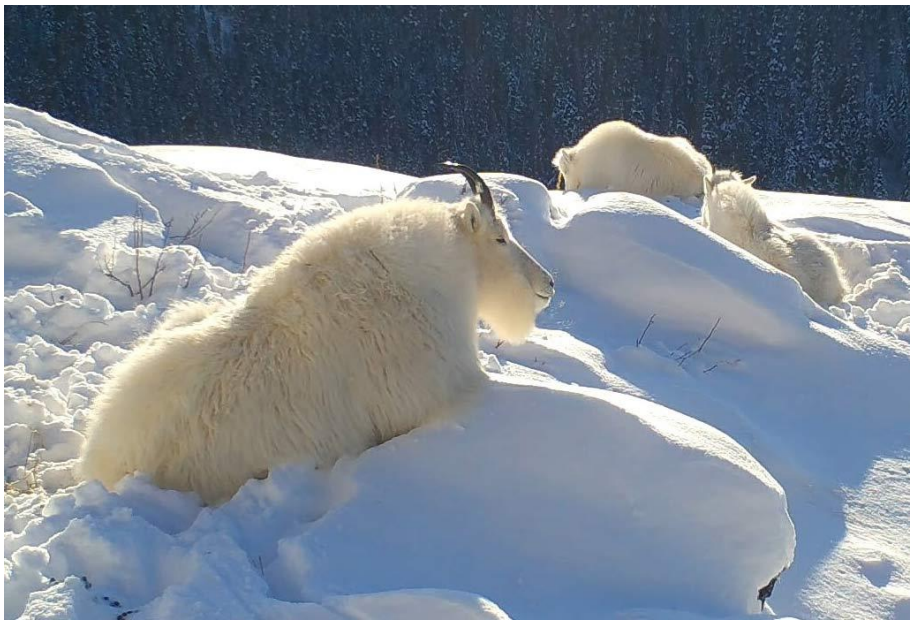
Greetings BCMGS members,

Mountain goat eyes are unique – here's why.

Mountain Goat Eyesight

Mountain goats have excellent night vision, as seen in our latest video ***Mountain Goats – The Rut***. In that video, goats run along a narrow ledge in total darkness. In addition to night vision, mountain goat eyes can also survive ultraviolet (UV) light in daylight strong enough to cause us snow-blindness.



When we hike on local mountains in summer, we have to use sunglasses to protect our eyes from snow blindness. On a trip years ago, we had a new hiker who forgot to bring sunglasses. After walking across snowfields in bright sunlight for an hour, he was unable to keep his eyes open due to pain from snow blindness. We had no extra sunglasses, so we fabricated snow goggles from duct tape to cover his glasses. We left a narrow slit so that he could see where he was going. It worked.

The World Health Organization has shown that, for every 1000 meter gain in elevation, UV levels increase by approximately 10 per cent. Fresh snow is a particularly good reflector and almost doubles UV exposure.

Combine the effect of high elevation and the reflection off of clean snow, and the UV level can increase by over 100% on snowfields at 1828 meters (6000 ft), compared to the UV in the snow-free valley below. The reflection off of snow can be enough to sunburn the inside of your nostrils.

Mountain goats spend more time at higher elevations than any other ungulate. They spend hours travelling across or resting on high-elevation snowfields. How can they adapt to such high UV and still be able to see well in the dark at night?

Recent research has shown that eyes of some arctic wildlife are well adapted to both night vision and high UV radiation during the day. The human eye only sees light with a wavelength of 400 to 700 nm. Caribou in the arctic can see that spectrum of light plus ultraviolet light from 315 to 400 nm. That gives caribou the ability to see well in dim starlight at night. And it protects their eyes from harsh UV radiation in daylight.

Mountain goats are also adapted to arctic conditions. Can goats see ultraviolet light? We could not find any reference to mountain goats in research literature, but sheep and cattle are very distant relatives to mountain goats and both are listed as capable of seeing a small portion of ultraviolet light.

Let's now go back to mountain goats and the glacial history of BC over the last 22,000 years.

Even More Big Story

Mountain goats today live on mountains surrounded by mature forests. For a goat, a forest is a scary place where predators lurk, ready to pounce. Mountain goats are not well suited to a forest. They are slow runners and tire easily. Predators such as bears and wolves can run much faster than a mountain goat and a forest is the perfect place for an ambush.

But 22,000 years ago, there were few if any forests in British Columbia. Most of the province was covered by up to 1500 meters of glacial ice. The ice sheet destroyed the forests that stood before the glaciation began.

As the climate started to warm 18,000 years ago, the glacial ice thinned and melted around the tops of mountains and along ridges. The land revealed between the glaciers and snowfields was bare ground, rock and gravel. The first plants to grow were grasses, sedges, forbs and small shrubs. There were no mature forests. All the land resembled our alpine meadows of today.

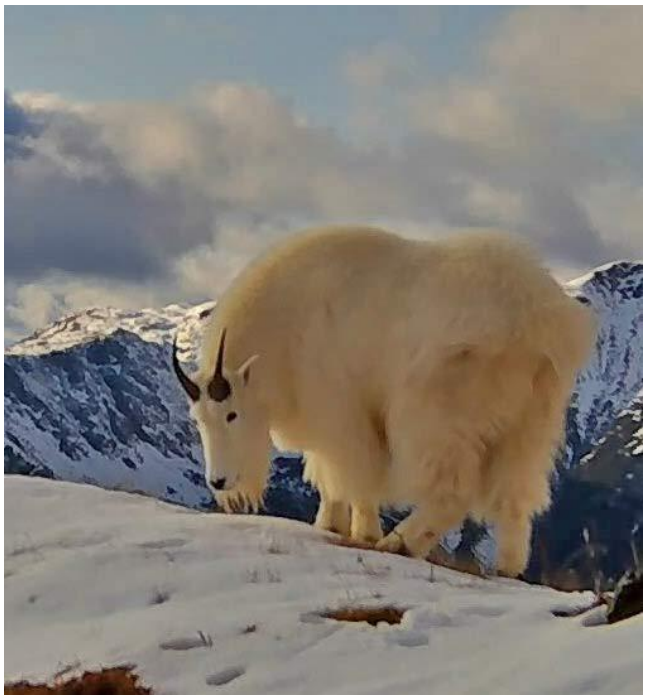
Anweiler Plateau north of Terrace BC is a good example of land recently covered by glacial ice.

Any tree seed that fell to the ground in BC before the glaciation did not survive under the ice. Instead, trees had to grow back in from the edge of the ice sheet. The soil was cold and wet, exactly the conditions that trees do not tolerate well. It took thousands of years for the land to warm and dry enough for forests to cover the valleys. Meanwhile, mountain goats moved in.

During the glaciation in BC, some mountain goats survived in ice-free areas of the Yukon. Other mountain goats persisted south of the ice sheet in the northwestern states. Mountain goats dispersed from both the north and south, back into all of BC starting 14,000 years ago, thanks in part to the lack of forests at the beginning of the great thaw.

The grasses and sedges found alongside the glaciers and snowfields were high quality forage. The landscape was open, and mountain goats were able to see any predator at a great distance. It was easy for mountain goats to travel across valleys from one mountain to the next, not like today when goats must travel through closed forests.

There are signs of the old ice sheet all around us. Our mountain glaciers are remnants of the last glacial ice. Local mountains with rounded tops were shaped by the weight of the ice sheet that slid over them. Many of the wet meadows and fens we see today started growing 11,000 years ago. They first formed when mosses were the only plants that could grow in the wet soil around glacial streams and ponds. Today, as our wet meadows dry and warm, we see trees grow in along the edge. As the ground warms on mountain sides, trees advance up slope into open alpine. The last major glaciation is still going on. It's now the last chapter and forests have once again covered BC valleys– at least until the next glaciation starts.



The attached file is all about learned behaviour. The paper is meant to draw attention to how valuable mature mountain goats are to their herd. What happens when one of the mature leaders of the herd are harvested? How long does it take for the rest of the herd to re-learn that goat's knowledge? At what price?

Until the next time

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