

Kicking Horse Resort Field Trip

Whitebark Pine (*Pinus Albicaulis*)
The area that makes up Kicking Horse Mountain Resort is a thriving habitat for many species, including the critically endangered Whitebark Pine (*Pinus albicaulis*).

This high altitude pine tree is distinctive with its smooth, silvery bark and large cones that grow on the very top of the tree. They are also easily identifiable by the cluster of 5 needle bundles that grow from 5-9cm in length. Can you identify the white bark pine trees in the area?

The magnificent Whitebark Pine has many factors against them in today's world. With ongoing issues such as climate change and invasive species, tied with low reproduction and limited opportunities for natural regeneration, it has become clear it is time for some intervention.

Ecosystem = Habitat
The Whitebark Pine plays a central role as a keystone and foundational species in subalpine ecosystems such as this one. The hardy roots of the Whitebark Pine lay a deep foundation in the harsh high elevation environment, which in turn facilitates growth for vegetation that otherwise would not be able to produce in this ecosystem alone. Their roots also help to stabilize soil and snow, limiting erosion and even wildfire prevention. This makes the Whitebark Pine a key player in the alpine water cycle by holding onto the snowpack, which helps to maintain snow melt regulations and downstream flow. The Whitebark Pine also creates a staple diet for wildlife such as grizzly bears, red squirrels, and Clark nutcrackers – which rely on their large nutrient rich seeds.

Slow Growing
Typically, these hardy high elevation trees could live upwards to 1000 years old. They are slow reproducers and do not begin to produce cones until they are 30 to 50 years of age. Significant cone production does not begin until they are 60-80 years of age, and peak production does not occur until the tree is 250 years of age.

Whitebark Pine natural regeneration is limited due to almost solely relying on the medium-sized grey and black bird with a dagger for a beak, known as the Clark Nutcracker (*Nucifraga columbiana*). The cones of the Whitebark Pine are tough to crack and do not release their seeds like most other conifer trees. The sharp back of the Clark Nutcracker is a useful tool to break open these tough cones in order to get to the nutrient rich seeds. The Clark nutcracker can hold up to 150 seeds in their sublingual pouch, and typically cache 5-15 seeds at a time into the earth. They can bury one of thousands of seeds every year and remember where those seed caches are buried however, many of the Whitebark Pine trees that you see along this trail were once seeds cached and never dug up by the Clark Nutcracker.

Endangered
Whitebark Pine became critically endangered in 2012 due to a combination of invasive species and climate change. The leading threats to the survival of Whitebark Pine include White Pine Blister Rust (pictured), wildfire and mountain pine beetle. In particular, White Pine Blister Rust is responsible for 50% of the decline of pine species in the past century. In the interior mountain ecosystems, such as this one, the decline of Whitebark Pine is at 1.5% per year, which is over 76% over the next 100 years. Across Canada the decline is 50% over the next century.

How to save a species
Kicking Horse Mountain Resort has partnered with the Whitebark Pine Ecosystem Foundation of Canada to help give this essential species a fighting chance. As part of the Whitebark Pine Fraternity Ski Area Certification, we have committed to protecting and preserving the White bark pine found at Kicking Horse through education and conservation initiatives.

Logos: RCR Resorts of the Canadian Rockies, KICKING HORSE MOUNTAIN RESORT, Whitebark Pine Ecosystem Foundation, WHITEBARK PINE - FRATERNITY SKI AREA.

Getting Here

It's a two-hour drive from Revelstoke to Kicking Horse Resort. Allow even more time to account for weather, construction, and traffic. Further, there is a time change between Revelstoke and Golden. We will all meet at the community centre and convoy to the site but directions below are in the event of getting separated from the group. Meet at 9:45 am at the Community Centre. Meet at 1:00 (mountain time) at Kicking Horse Resort.

Note: There is a time change between Revelstoke and the field trip location, it is just under a 2 hour drive; leaving at 9:45 is equivalent to departing at 10:45 Golden time.

If you get misplaced during transit, meet at Guest Services at Kicking Horse Resort

Revelstoke

British Columbia

- > Take Townley St to Trans-Canada Hwy/BC-1 E
4 min (2.8 km)
- > Follow Trans-Canada Hwy/BC-1 E to BC-95 S in Golden
1 hr 34 min (143 km)
- ✓ Drive to Kicking Horse Trail
15 min (13.3 km)
- ➔ Turn right onto BC-95 S (signs for Radium/Hot springs/Cranbrook)
850 m
- ↶ BC-95 S turns left and becomes 10th Ave N
70 m
- ↶ Turn left onto 9th St N
450 m
- ➔ Turn right onto Kicking Horse Dr
1.8 km
- ↑ Continue onto Kicking Horse Trail
📍 Destination will be on the left
10.1 km

Boo

Boo was born in the wild, not in captivity. Tragically, his mother was shot and killed by a poacher in June 2002, leaving Boo and his brother, Cari, orphaned and defenceless at just five months of age. The cubs might have been euthanized but instead were given a second lease on life and a new home at the Kicking Horse Grizzly Bear Refuge.

Among other things, the refuge permits a rare in-depth analysis of grizzly bear hibernation. A log den was constructed within the refuge for the cubs to use in the winter. This custom-built den includes a motion-activated camera in the roof that allows continuous monitoring of activity inside. As a result, we now know that grizzly bears engage in limited activity during the winter, unlike true hibernators. For that reason, we now use the more accurate term winter dormancy rather than hibernation when referring to a bear's winter slumber.

Sadly, Cari never awoke from his first winter dormancy and passed away within the den. The provincial veterinary laboratory performed a necropsy and discovered that Cari had died from a spontaneous twist of his intestines.

Boo demonstrated remarkable resilience by overcoming the loss of both his mother and brother. Since Cari's death, Boo has lived alone at the refuge. However, male grizzly bears are very solitary animals, so being alone is a natural condition for him. Nevertheless, Boo sometimes gets the urge to meet lady grizzlies during mating season. It was national news when Boo escaped from the refuge in June 2006 for this reason, before eventually returning voluntarily.

By observing Boo over the last 10 years, we have concluded that an orphaned grizzly cub can learn essential life skills independently, without a mother bear's guidance, provided the cub has suitable habitat, space, and opportunity like that provided by the refuge. Over ten years ago Boo was provided with whitebark pine cones as a part of his diet.

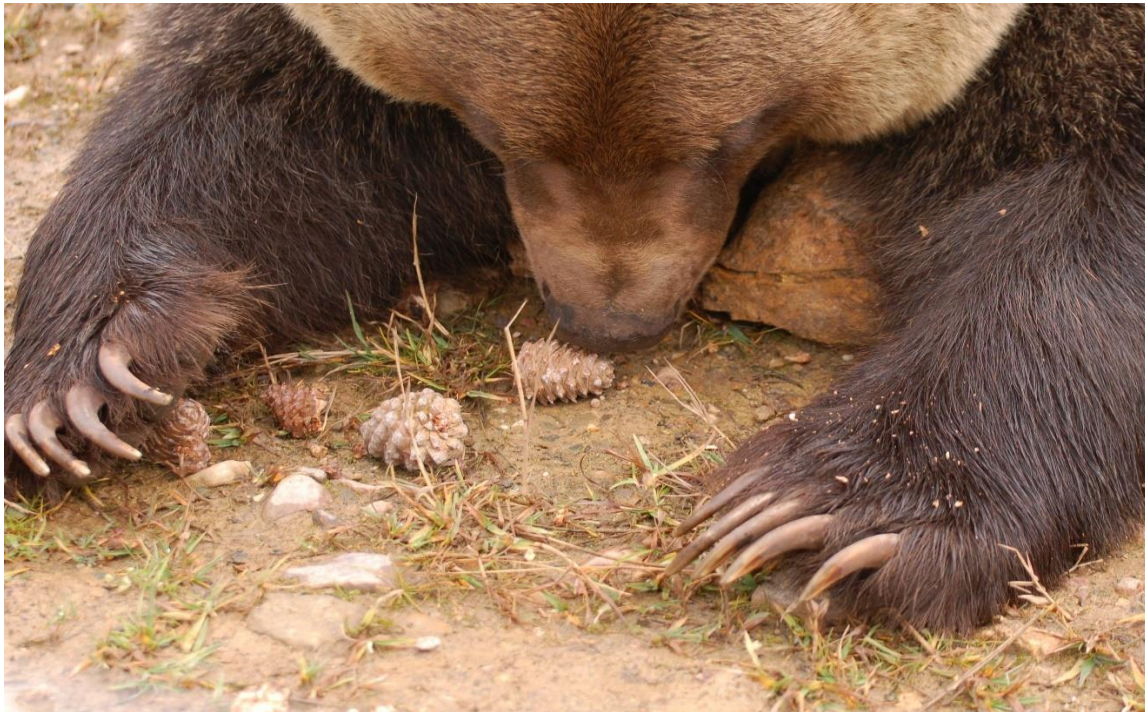


Figure 1. Boo eating whitebark pine seeds.

Cone Collections at Kicking Horse

Cone collections have been undertaken multiple times at Kicking Horse including collections on CPR, Terminator, and Redemption Ridges.

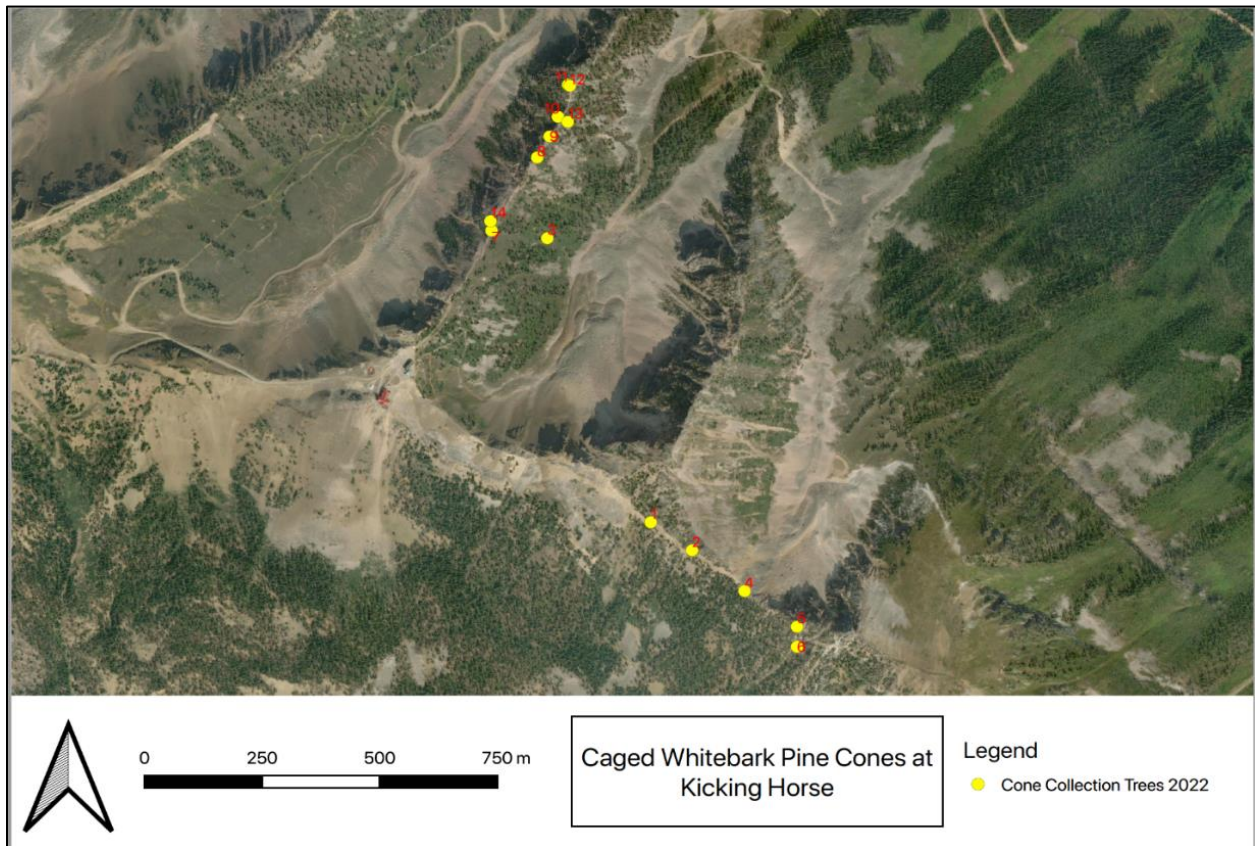


Figure 2. Location of cone collection trees from 2022.

Planting at Kicking Horse

In 2021 the BC Forest Carbon Initiative led the planting of whitebark pine on the ski area. Surveys in 2023 showed survival to be generally poor but it is encouraging that ski areas are considering planting whitebark pine over cutting them.



Figure 3. Areas planted by the Forest Carbon Initiative in 2021.