



BRITISH COLUMBIA MOUNTAIN GOAT SOCIETY

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Mountain Goat Dispersal Obstacles Calculator

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Definition

Dispersal by mountain goats can be defined as travel from the home mountain through lowland forest to another mountain. Dispersal can be temporary for a day or two, for a year or two or permanent. Dispersal is vital to the health and sustainability of mountain goats. Dispersal contributes to genetic diversity amongst isolated goat herds. Dispersing goats may also establish new populations on mountains that have no recent history of mountain goats.

Ancient dispersal

Dispersal was the way that mountain goats first inhabited much of their current range in British Columbia. During the last ice age, glaciers with a depth of 1.6 kilometers covered many mountains in BC. As the ice receded 10,000 years ago, peaks and valleys were bare of plants and covered with rock, gravel and silt. The first plants to grow were grasses, sedges and shrubs such as birch and willow. The landscape resembled open tundra rather than the closed forest we see today. Mountain goats moved into the mountains of British Columbia from ice-free areas in the Yukon and in the United States. Mountain goats dispersed from one mountain to the next until most suitable mountains in BC were inhabited.

Human influence

Dispersal has always been limited by natural obstacles such as rivers and lakes. Human activities started to create obstacles to dispersal after the 1850's when Europeans and other immigrant settlers built fences and roads. Since 1950, industrial logging resulted in large clear-cuts in BC along with new logging roads in many watersheds. From 1970 to the present, large industrial sites have been built and extensive farm land has been cleared and fenced. All these increases in infrastructure result in obstacles to mountain goat dispersal.

Assumptions

The calculator makes the following assumptions about mountain goats. Some assumptions are derived from scientific studies. Other assumptions are based on personal observations.

Mountain goats disperse along the shortest, most direct route from one mountain to another.

They disperse mainly in July, August or September.

Mountain goats can easily disperse more than 40 kilometers.

Goats can walk at a rate of 4 to 6 kilometers per hour through forested areas.

Mountain goats that disperse in August or September will have their short summer coat.

Goats can swim across any lake or river in BC less than one km wide.

Mountain goats that attempt to cross lakes or rivers more than one kilometer wide risk drowning due to adsorption of water into their coat,

Mountain goats can either jump over a standard 4-strand farm barbed wire fence or squeeze under the lowest wire.

Goats cannot scale a chain link fence more than 2 meters high

Mountain goats can climb any cliff face along rivers in BC but may not be able to get out of the river water at the base of a vertical rock wall that lacks a ledge or beach.

Mountain goats can survive or avoid attacks from farm dogs.

Goats can wait until dark to move safely across busy roads, industrial sites, residential areas, etc

More males than females disperse

Males aged 2 to 3 years are more likely to disperse than females of the same age.

The percentage of males aged 2 to 3 years that disperse in one year may range from 0% to 59%.

Dispersing mountain goats are subject to increased predation in the forest and may not survive the trip.

Mature billies may disperse to neighbouring mountains during the rut in late November and early December.

Calculator goals

One goal of the dispersal calculator is to make planners aware of the extent that various infrastructure makes mountain goat dispersal more difficult. The second goal of the dispersal calculator is to give planners a way to measure the cumulative effect of various public and private infrastructures on mountain goat dispersal.

Using the calculator

One method is to plot the dispersal path on Google Earth, satellite view. You will be able to see most obstacles in the Google Earth image such as roads, rivers, farm fences, highways, etc. You can use the ruler function on Google Earth to measure distances. Elevation values can be determined by placing the cursor on various locations and reading the elevation in the lower screen bar.