



Snowmobilers and Backcountry Skiers in the Bulkley Valley Winter Recreation Initiative 2008

Backcountry skiing and snowmobiling are often in conflict in the Bulkley River Valley of northern British Columbia. This paper examines the cause of the problem and proposes solutions that will permit the two sports to coexist and grow for the benefit of residents and visitors.

Snowmobiling

Snowmobiling is an important sport in the Bulkley Valley. It ranks third in numbers of participants in the snow sports category that includes downhill skiing, snowshoe use, ski mountaineering and cross-country skiing. Snowmobiling enables many local residents to get outside and enjoy winter weather and to appreciate the extraordinary beauty of our backcountry in winter. Snowmobiling includes individuals with disabilities and physical limitations who may have no other way to travel in our backcountry during winter.

Snowmobiling in the Bulkley Valley is maintaining popularity despite the decreasing numbers of snowmobiles sold worldwide. From a high of 257,936 snowmobiles sold in 1998, the number sold worldwide has steadily declined to 160,318 in 2007.

(Retrieved from the International Snowmobile Manufacturers Association
http://www.snowmobile.org/facts_snfacts.asp from March 31, 2008)

Snowmobile engine emissions

All motorized sports have limitations imposed by the design of the machine. Snowmobiles must be lightweight to stay on top of soft snow. Snowmobiles are tracked vehicles and need a very powerful engine to drive the wide, heavy track necessary for flotation and traction in snow. As a result, most snowmobiles have lightweight 2-stroke engines with a high power-to-weight ratio. Unfortunately, a traditional carbureted 2-stroke engine uses 20 to 35% more fuel than a 4-stroke engine. That extra fuel is unburned and dumped from the exhaust onto the snow or into the air and makes up part of the pollutants known as hydrocarbon emissions (HC).

The traditional 2-stroke engine also relies on oil mixed in the fuel for engine lubrication. The traditional ratio is 1 part oil to 50 parts gasoline. Part of that engine oil is burned and exhausted as a gas or fine particulate. The rest is unburned and causes the "chainsaw" smell and the cloud of pollutants seen behind many older snowmobiles when the engine is running. The engine oil in the exhaust makes up part of the HC emissions.

Unburned fuel and engine oil in the exhaust of traditional 2-stroke engines can add up. As an example, if there are 15 snowmobiles with traditional 2-stroke engines at each of four designated snowmobile areas in the Bulkley Valley and each snowmobile burns 7 Imperial gallons (32L) of fuel, the combined gasoline used in one day is 420 gallons (1907L) and a combined total of 8.4 gallons (38L) of 2-stroke oil will be exhausted on the snow and into the air. If there were 40 days

to a winter snowmobile season, the total combined amount of 2-stroke engine oil exhausted in one winter would be 336 gallons (1525L). This is in addition to the combined total of 3360 gallons (15,254L) of unburned gasoline that would be wasted and exhausted onto the snow or into the air over the same season.

High hydrocarbon engine emissions can affect other users. In calm air, the smell of HC emissions can persist for up to 20 minutes after a single snowmobile has passed by, and may be an irritant or nuisance for other recreation users in the area.

Another major pollutant from traditional carbureted 2-stroke engines is carbon monoxide, an odorless and deadly gas known as CO. This pollutant is exhausted to the air and is the reason why you should never run a snowmobile in a closed space. CO in small concentrations can cause dizziness, nausea, or headaches. Carbon monoxide poisoning is not an irritant for skiers some distance away but it is a risk factor for snowmobile operators if a number of snowmobiles with traditional 2-stroke engines follow one another closely when air is calm.

Snowmobile engine emissions also include high levels of carbon dioxide, one of the greenhouse gases, and smaller amounts of toxins including benzene. The Environmental Protection Agency (EPA) in the United States has calculated that emissions from one traditional 2-stroke snowmobile engine over one hour equals the combined total of emissions from 95 modern cars for one hour.

(Retrieved from *Environmental Impacts of Newly Regulated Nonroad Engines*, Environmental Protection Agency, September 2002, <http://www.epa.gov/otaq/regs/nonroad/2002/f02033.pdf>)

The good news is that emissions from new snowmobiles are now being regulated. In 2006, the EPA in the United States introduced regulations that limit the amount of HC and CO pollutants emitted to the air by snowmobiles. All new snowmobiles sold in Canada conform to the new EPA standards. Snowmobiles with 2-stroke engines manufactured from 2006 to 2009 are required to reduce HC levels by 33% (from 150 grams/kW-hour to 100 grams/kW-hour). CO levels decrease 31% (from 400 grams/kW-hour to 275 grams/kW-hour).

In the second phase of the reduction, by 2012, HC levels will be reduced to 75 grams/kW-hour, a total reduction of 50%. CO levels will decrease by a total of 50% from 400 to 200 grams/kW-hour. (Retrieved from http://www.facstaff.bucknell.edu/mvigeant/univ270_05/univ270ts/page5.htm)

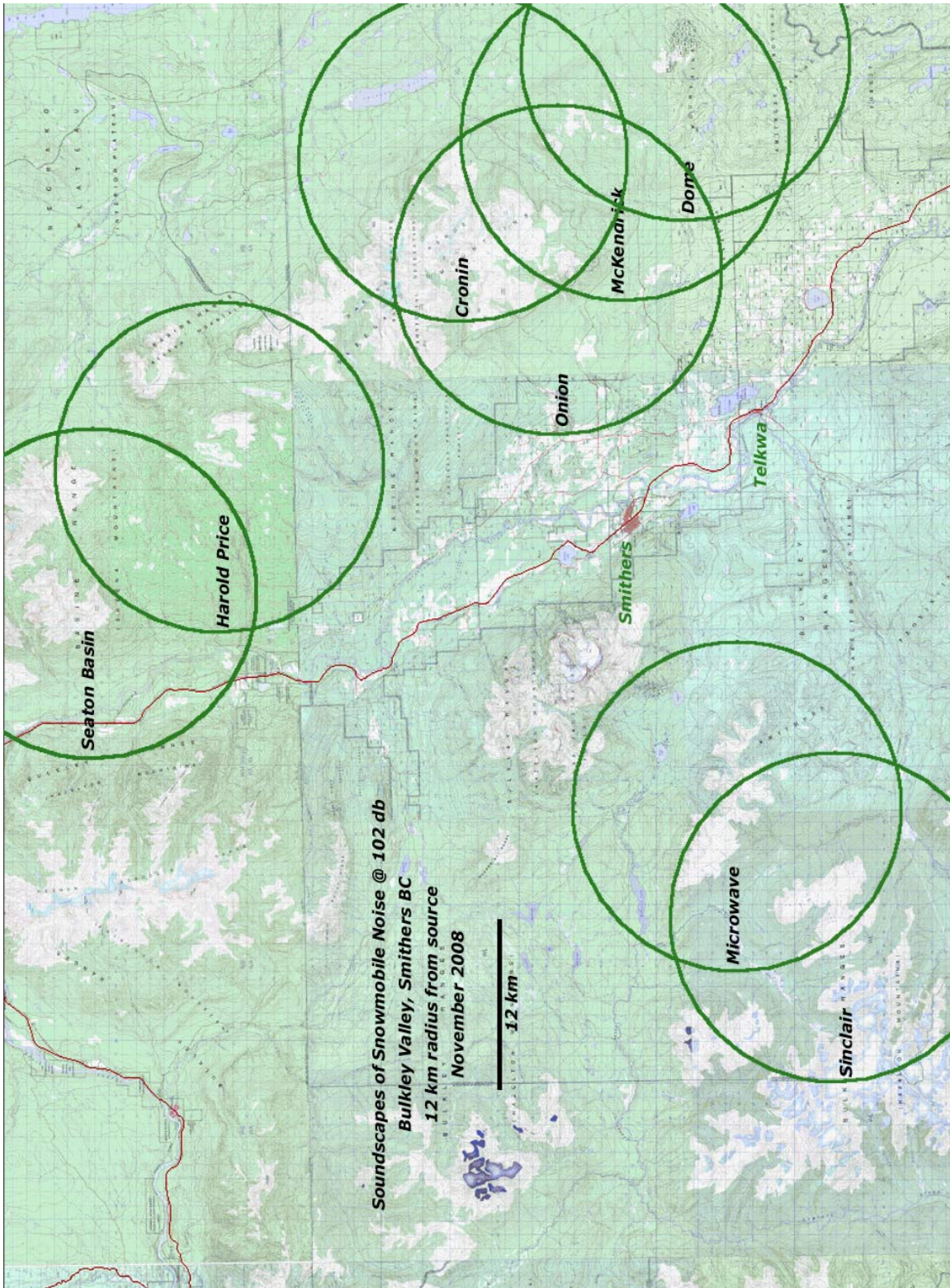
The EPA estimates that cleaning up the class of engines that include recreational 2-stroke engines will result in health benefits totaling \$8 billion in the United States by 2030, including a reduction in hospital admissions and premature deaths. In addition, nationwide fuel savings are estimated at 800 million gallons annually. (Retrieved from <http://www.epa.gov/otaq/regs/nonroad/2002/f02037.pdf>)

Snowmobile manufacturers have designed new technologies to meet the EPA challenge. The latest snowmobile engines, such as the BRP 600 HO E-TEC, achieve better fuel mileage, reduce wasted fuel and require less 2-stroke engine oil. That results in less smoke and “chainsaw” smells. Emissions from the best of the new 2-stroke engines with direct injection already meet the 2012 EPA standards. They match or better the emissions from the more efficient 4-stroke engine. The new standards will make our backcountry cleaner and will reduce the exhaust smells and pollution associated with snowmobiling. Until new machines replace older snowmobiles, our backcountry will suffer from engine emissions from traditional carbureted 2-stroke engines.

Excessive snowmobile noise

Some older snowmobiles lack enough power to climb steep slopes, as a result some owners replace the stock exhaust with tuned pipes that increase both power and exhaust noise. In the Bulkley Valley, some snowmobiles in the Pine Creek basin can be easily heard from the Prairie on Hudson Bay Mountain, a distance of 12 km. Other snowmobiles on the Onion can be easily

heard from the McKendrick Meadows, a distance of 10 km. Many people find the high-pitched sound of a snowmobile engine annoying. Excessive snowmobile noise can alienate neighbours and backcountry skiers within the 24 km diameter “sound bubble” broadcast from each offending snowmobile. See the soundscape map attached.



The good news is that snowmobile manufacturers have recently designed new stock exhaust systems and drive trains that are relatively quiet and still maintain high engine power output so that there is no need for after-market tuned pipes. New exhaust systems conform to noise standards set by the Society of Automotive Engineers (SAE). The J192 standard imposes a 78 dB level at 50 feet or about the sound level of a passenger car driving past at 30 feet. Compare that to 102 dB common for a 1966 snowmobile, enough noise to cause hearing damage if exposure lasts for more than 15 minutes. An increase of 10 dB doubles the loudness of a sound, so the 1966 snowmobile at 102 dB is more than four times louder than a new machine that meets the J192 standard at 78dB. (Retrieved from <http://www.omafra.gov.on.ca/english/engineer/facts/96-033.htm>)

The National Park Service in the United States requires an even lower sound level of 73 dB for snowmobiles entering Yellowstone National Park. (Retrieved from http://www.nps.gov/yell/parkmgmt/current_batlist.htm) Many stock snowmobiles now meet that lower sound requirement. For the benefit of both the non-motorized public and snowmobile operators' hearing, quieter is better.

When the older snowmobiles with loud tuned pipes are finally retired, exhaust sound from the newer snowmobiles should no longer be a problem as long as owners do not modify stock exhaust systems and increase the sound level. When snowmobiles are quiet, backcountry motorized areas can be located closer to backcountry ski areas without causing interference from exhaust or drive train noise.

Fitness

Driving a snowmobile does not require or promote a high level of fitness. It takes a good sense of balance to ride well and some physical strength but the exercise is not cardio-vascular. Driving a snowmobile does not work the heart and lungs enough to promote fitness as much as active snow sports such as cross-country skiing. This is especially important for youth. Fitness levels during childhood and the teen years help determine the health of the individual throughout his or her lifetime. The popularity of video games and TV indoors makes it essential that youth spend time outdoors and exercise heart and lungs. If a youth drives snowmobiles, he or she should be encouraged to participate in active sports that build cardio-vascular fitness such as hockey, soccer, cross-country skiing, etc.

Wildlife

Snowmobiles can affect wildlife in the alpine and sub-alpine. Mountain goats and caribou are the most vulnerable, especially in late winter when nutrition and feed are limited and the animals are doing their best to survive until spring. Snowmobiles have been shown by research to cause caribou to move from prime feeding areas. (*Displacement of Mountain Caribou From Winter Habitat by Snowmobiles*, Seip et al, BC Forest Service, November 28, 2005)

Snowmobiles are easily capable of 60 kph average speeds over hilly alpine and can cover a very large area or an entire mountain in a day. They can "push" wildlife from feeding areas but the snowmobile operators may or may not actually see the animals affected. Snowmobiles can interfere with mountain goats by passing them on high mountain slopes while high-marking. Buffer zones around prime feeding areas are needed to protect goats and caribou from snowmobile traffic.

A backcountry skier can also affect wildlife but skiers travel about 1/20th the speed that a snowmobile can travel. Skiers' slow pace gives wildlife a chance to react slowly and without much energy loss. Skiers typically move in a single track causing a very narrow corridor of disturbance

while snowmobiles cover large areas. Skiers do not generate loud noises that can be heard for many kilometers and do not produce engine emissions that can drift over an entire mountain.

Effect on other users

Snowmobilers prefer open terrain or semi-treed rolling hills and ridges at sub-alpine or alpine elevations with a low or moderate incidence of snow avalanche – the same terrain preferred by many backcountry skiers. But snowmobile use is not compatible with backcountry skiing. Skiers cannot share an area with snowmobiles.

Snowmobile tracks freeze hard (sinter) and can trip skiers. Snowmobiles can completely track a large area in a matter of hours, making skiing in that area impossible or at best undesirable. The speed, noise and exhaust smells of snowmobiles degrade the backcountry experience desired by many backcountry skiers.

At present, snowmobiles can control the recreation use of an area by simply driving across the terrain and making tracks. Once an area is tracked, skiers will leave. Skiers and snowshoe users are at a fundamental disadvantage: they are impacted by motorized use, but in turn they do not impact snowmobile use. Since snowmobiles can have such a drastic effect on skiers, designated backcountry ski areas must be free of snowmobile noise, smells and tracks and protected by regulation. Voluntary compliance has not worked well over the last 11 years.

Share of terrain

Snowmobile areas encompass more than twice as much land area as backcountry ski areas in our region. But there are reasons that backcountry skiing should have a greater share of the terrain in the future. Skiing is a socially and environmentally higher use of backcountry. Skiing makes no noise, does not pollute and creates a limited number of small tracks that maintain wilderness values, compared to snowmobiling. Backcountry skiing has less impact on wildlife, it is one of the best sports for improving cardio-vascular fitness. A greater number of skiers can be accommodated in a given area at the same time without crowding.

Most local residents choose to not own a snowmobile and are by default non-motorized recreation users. More residents choose physically active snow sports such cross-country skiing or snowshoeing rather than snowmobiling, a sport that does not involve cardio-vascular exercise. Many local residents have the skills and fitness required for backcountry skiing, snowshoeing or ski mountaineering.

There is potential for a large growth in the numbers of backcountry skiers if sufficient non-motorized areas are provided and protected from motorized use. This is especially true if there is a good assortment of ski areas close to town suitable for day trips as well as remote areas for multi-day trips.

Sled-skiing

Snowmobile use is changing. Backcountry skiers and ski mountaineers are using snowmobiles to access remote areas. They snowmobile to an area, leave the machine, ski the terrain for the day and then use the snowmobile to return to their vehicle. The snowmobile is not used directly for recreation but only for access. This “sled skiing” trend should be encouraged as long as snowmobile access does not interfere with other non-motorized users in the designated area. It combines the advantage of snowmobile access with the fitness of cross-country skiing. Sled-skiing provides access to backcountry areas that are too far from nearby roads for a day trip and it increases the amount of terrain available to be designated for backcountry skiing.

Limits to expansion

The increased speed and technical ability of new snowmobiles to travel steep slopes and soft powder snow will result in a high demand for new snowmobile terrain in order to remedy driver boredom and crowding in the future. At the same time, the supply of suitable new snowmobile terrain will reach its end; there is only a limited inventory of alpine terrain in our region. Eventually, snowmobilers will have to use their designated areas more intensively. The same will happen to backcountry skiers, but the improvements in skiing equipment happen on a smaller scale and skiers still rely on muscle power that limits the speed of travel.

Ski cabins

Local backcountry skiing areas and ski cabins have been lost to snowmobile use over the past two decades. Backcountry skiing requires a large expenditure of time and physical energy for each trip. To make long trips feasible, remote backcountry ski areas may require a cabin to make the work of getting into the area worthwhile and to permit multi-day stays. New cabin sites must be protected by regulation to avoid tracking of the area and takeover by motorized users.

Winter road access

Winter road access is important for both snowmobilers and backcountry skiers. All snow sports contribute to a healthy life style and reduce public health costs. It is in the public interest and cost effective to snowplough roads to promote access to both winter motorized and winter non-motorized recreation areas. Roads that are currently ploughed using club or private funding are not maintained to a reasonable standard due to the expense. Clubs should not have to spend limited revenues for ploughing winter roads that benefit the entire community.

Designated areas

The following are the most popular winter motorized and non-motorized recreation areas in the Smithers Timber Supply Area of the Bulkley Valley with the estimated square kilometers in parentheses.

Designated winter motorized areas in use – Dome (16), Microwave (36), Sinclair (30), Harold Price (9), Onion (24)

Undesignated motorized areas in use – Seaton Basin (3.75), Cronin (16), Four Lakes (7.2), McKendrick Meadows (18)

Total = 159.95 sq km

Designated winter non-motorized areas in use: Babine Park west of Harvey Mountain (40), the Prairie on Hudson Bay Mountain (12), Harold Price Meadows (3), Canyon Creek (1), Silvern Lake/Passby (7), Ashman Ridge (3.7)

Total = 66.7 sq km

The RAMP

The RAMP process designates recreation use of Crown land through consensus agreement by local stakeholders. The Bulkley Valley residents have looked to government to assist in completing the local Recreation Access Management Plan (RAMP), a part of the BV Land and Resource Management Plan signed by government in 1998. The community has waited eleven years but the RAMP is still incomplete. The lack of a completed RAMP favours unplanned motorized use by default by neglecting the interests of non-motorized users. It also fails to recognize the legitimate interests of motorized users and stifles their ability to plan long-term. The

lack of a completed RAMP allows conflicts to fester for years. The government agency in charge of community planning, the Integrated Land Management Bureau (ILMB) has shown no interest in completing the RAMP so we are recommending that the RAMP process be moved from the ILMB to another agency.

Conclusion

The technical advances in snowmobile design have resulted in practically unlimited motorized access to all of our local backcountry in winter. Snowmobiles in the future will run cleaner and quieter but they will continue to displace backcountry skiers unless regulations protect backcountry ski areas. Government has failed the community to date by refusing to support negotiations and compromise in a re-opened RAMP process. It is in the best interest of the community that sufficient winter non-motorized recreation areas are available to meet the growing demand and to balance recreation opportunities. Backcountry ski areas need protection from snowmobile traffic by regulation, monitoring and enforcement.

Winter Recreation Initiative 2008 recommendations:

1. That new BC Provincial regulations be created to make it illegal to replace or modify stock snowmobile exhaust systems and emissions equipment that result in an increase of sound levels and/or emissions.
2. That winter non-motorized backcountry ski areas be protected from intrusion by snowmobiles by legal regulation, education, monitoring and enforcement.
3. That 40 sq km of designated backcountry ski areas be added to create a new combined total of 110 sq km devoted to winter non-motorized use in the Bulkley Valley. This is necessary to balance recreation opportunities and encourage the growth of backcountry skiing and the healthy lifestyle involved. A re-opened Recreation Access Management Plan (RAMP) can designate new non-motorized areas with the assistance of the ILMB, or the Ministry of Tourism, Culture and the Arts.
4. That a snowmobile-free buffer zone be established and enforced around each prime feeding areas for mountain goats and caribou, as determined by Ministry of Environment staff.
5. That snow ploughing of the following roads and parking lots be done at public expense by the Ministry of Forests and Range or the Ministry of Tourism, Culture and the Arts if the roads are not being ploughed for forest industry use:
 - Blunt Forest Service Road to 22 km
 - Telkwa Forest Service Road to 18 km
 - Meadow Creek Forest Service Road to the Harold Price trailhead
 - Onion, Dome and Canyon Creek Ski Area parking lots

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The BV Outdoor Recreation Society is a citizens group based in Smithers, BC with the following purposes:

- a. To conserve mountain and forest habitat
- b. To conserve wildlife and wildlife habitat
- c. To promote responsible use of off-road motorized vehicles

d. To maintain and enhance a balance of recreation opportunities

Contact the BV Outdoor Recreation Society at bvors@bcnorth.ca