

Guidelines for Industrial Activity in Bear Country

For the mineral exploration, placer mining and oil & gas industries





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Environmental Research Group
(MPERG)

MPERG is a co-operative working group formed to promote research into mining, oil and gas and environmental issues in Yukon. Members represent the federal and Yukon governments, Yukon First Nations, mining companies and non-governmental organizations.

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industries, regulatory agencies, and Environment Yukon for collaborating in the development of these guidelines.

For additional copies,
contact MPERG at:

Box 2703
Whitehorse, Yukon Y1A 2C6
Located at 2099 – 2nd Avenue

Phone: (867) 456-3808

Fax: (867) 393-6232

mperg@gov.yk.ca

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Cover (Bear) – Gerry Perrier; all others Yukon government unless otherwise noted.

SIBCS = Safety in Bear Country Society

A Clear Need for Guidelines

Mineral and oil & gas exploration and development, as well as placer mining, have increased in Yukon in the past few years. Wilderness tourism and outfitted hunts are popular too. Increased activity in the backcountry can affect bear behaviour as well as increase the likelihood of negative bear-human encounters.

The Mining and Petroleum Environmental Research Group (MPERG) saw the need to develop guidelines to minimize the impacts of increased human activity on bears and bear habitat.

These guidelines provide best practices for minimizing the disturbance to bears and bear habitat and for preventing and handling bear encounters.

Information on bear biology, foods and behaviour is also

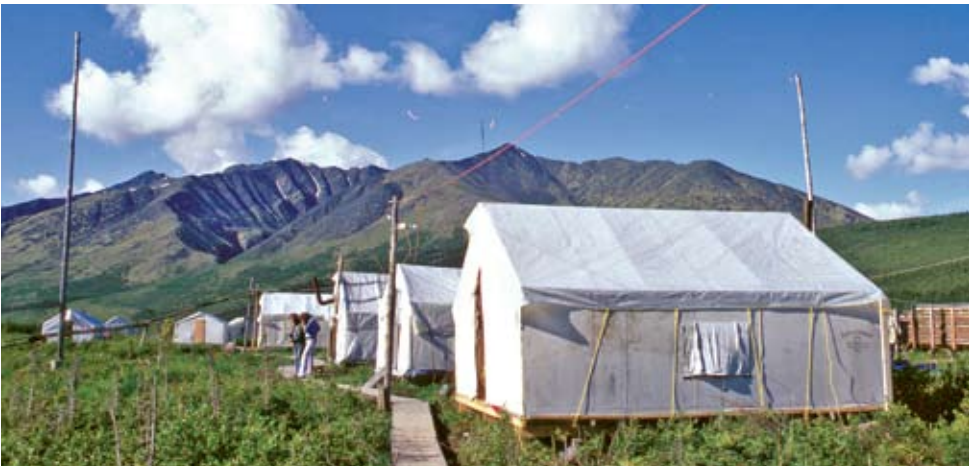
provided to aid understanding and guide decisions about camp set-up and field activities. Additional resources are listed at the back of this booklet.

These guidelines are intended for:

- Hard rock and placer miners
- Mineral exploration companies
- Oil & gas exploration and development companies
- Hunting outfitters
- Wilderness tourism companies and others using backcountry camps

In the workplace, employers and supervisors are required to take all reasonable precautions to prevent injuries to workers.

Remember that bears are not the only factor in planning for a safe and successful season. Land use, water, public health and other permits may be required depending on the size and location of the camp.



Industrial Activity and Bears

Bears have an intrinsic value and are important to the proper functioning of ecosystems. Mineral exploration, oil and gas development and placer mining are important to the Yukon economy. It is possible to have a successful camp operation that can safely share the landscape with bears.

Bears are important

Visitors and Yukoners alike consider bear viewing a special experience. In fact, viewing wildlife is the most common answer when visitors are asked what they want from their Yukon trip. Guided bear viewing and hunting trips generate economic benefits for nearby communities.

Bears, particularly grizzlies, are extremely vulnerable to extinction as the population cannot recover quickly if too many animals are killed. Female bears reproduce

at a late age, produce few young over their lifetimes and cubs have low survival rates. Removing bears – or driving them out of prime breeding, feeding and denning habitat – affects bear populations and the health of ecosystems in the long-term.

Conflict is preventable

Industrial activity can affect bear populations in several ways:

- ▶ alienation from important habitats,
- ▶ increased energy expenditure,
- ▶ injury or death.

By ensuring that your camp is properly located, designed, and maintained, and your activities take bear habitat and bear behaviour into account, you can reduce the likelihood of your camp or crew harming – or being harmed by – the bears in the vicinity.



Preventing Human-Bear Encounters

Overall 30–40 black bears and 10–15 grizzly bears are reported killed each year due to conflicts with humans in Yukon.

The simplest and best way to prevent human-bear encounters is not to attract bears in the first place.

The responsible handling of food and garbage is key to eliminating bear problems. Approximately 70% of all reported human-bear conflicts are due to garbage odour attraction.

Bears in pursuit of improperly stored food and garbage can seriously damage property and may affect camp operations.

Habituating bears to human food or garbage (“spoiling”) can lead to human-bear conflicts, and injury or death of bears, crew members or future users of the area.

Avoid bear habitat when possible.

Do not locate camps or work in areas that may be frequented by bears. While home ranges for black and especially grizzly bears are large, riparian habitat (streams, riverbanks and lakeshores) and subalpine areas are especially important as feeding and travel corridors.

Figures on the number of operational days lost and expenses incurred in dealing with habituated



bears and property destruction are not officially collected, but anecdotally are significant. Take the necessary precautions to limit your impact on bears – and theirs on you – anywhere within your operating area.

Provide information, training and equipment to protect employees.

In bear country, this means providing bear awareness training and bear spray, in addition to developing safe work procedures such as those described in this booklet. Other procedures may be implemented where hazard assessments warrant and as far as reasonably practicable.

All camp and field personnel should be familiar with preventative measures and dealing with close range bear-human encounters. These are outlined in the videos *Staying Safe in Bear Country* and *Working in Bear Country*, and in the booklet *How you can stay safe in bear country*.

Encountering Each Other

Bears can respond in a number of ways to the presence of humans:

- ▶ Intolerant bears avoid humans and can be easily displaced from important habitat they need for survival and reproduction.
- ▶ Tolerant bears accept varying degrees of human presence and are less easily displaced. They may be attracted to the presence of food and/or garbage, and are more likely to become in conflict with humans.

Best Practices

Camp Location

Consult with the district Conservation Officer about possible camp locations before establishing camp.

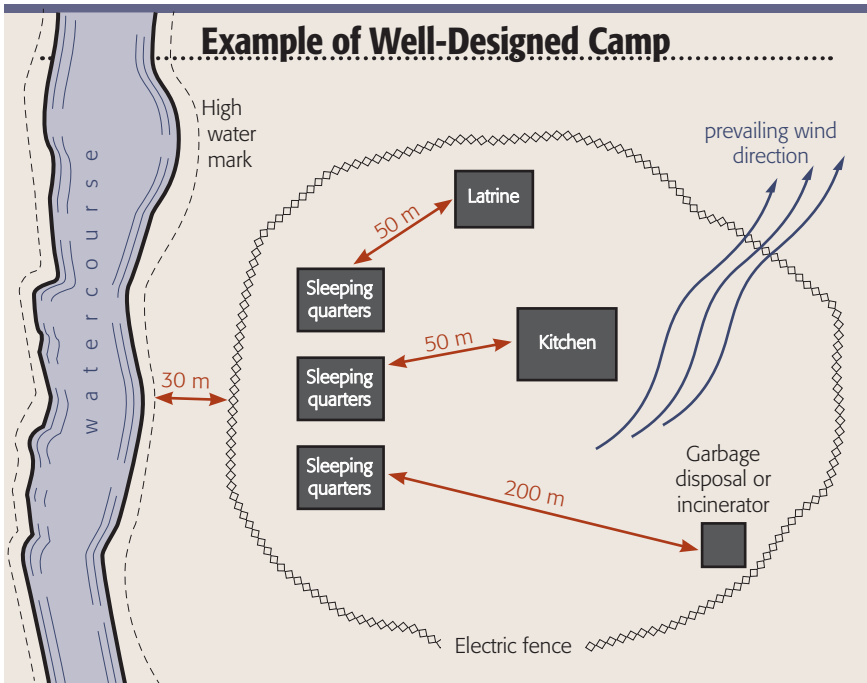
- ▶ Establish camps at least 30 m from the high water mark (avoid riparian areas).
- ▶ Do not set up camps near dumps or near camps/sites with previous bear problems because bears are known to return to sites on an annual basis.
- ▶ Avoid habitats rich in bear foods (horsetails, berry patches), and salmon spawning areas. See pages 16–17.

When to call for help

If a bear repeatedly visits your camp, or exhibits curious or aggressive behaviour towards your crew members, contact the district Conservation Officer (CO) immediately. (See page 20 for contact numbers.)

Decisions regarding the appropriate action should be left up to the CO. Options include deterrence, removal of attractants, and/or relocation or destruction of the bear, depending on the circumstances.

- ▶ Avoid areas with recent bear sign (scat, tracks, rub trees, diggings, game trails, feeding activity).
- ▶ Avoid noisy areas near rushing water. Bears can't hear you coming.
- ▶ Restrict all activities, including camp location, to at least 1 km from a suspected or confirmed bear den site. Bears tend to cluster denning activity in certain areas year after year and reuse denning sites approximately 25% of the time.



Camp Design

Proper camp design is important because location and fencing aren't always fail-proof:

- ▶ Give adequate space for the camp within the electric fence.
- ▶ Arrange tents or trailers in a line rather than a circle. They should be well spaced, but not scattered.
- ▶ Install windows at entrances and exits of tents and trailers to increase visibility to the exterior.
- ▶ Clear brush from trails leading to and from buildings and tents to improve visibility and ensure line of sight.
- ▶ Locate the cook tent, food storage area and latrine in open spots, well away (~50 m or more) from sleeping quarters.
- ▶ Locate the cook tent down-wind (use the prevailing wind) from sleeping quarters if possible.
- ▶ Keep the garbage disposal area and burning vessel visible from a distance, downwind from camp and ~200 m from sleeping areas.
- ▶ Ensure all activity areas are well lit if possible.



Daniele Rechstein

Fencing

Electric fencing around all camp facilities is an effective method for keeping bears out of camps and is strongly recommended. A solar panel/battery storage system or generator is needed to power the fence. Recent improvements include:

- ▶ Low cost – \$500 - \$5000 depending on number of openings, corners, gates and overall length.
- ▶ Easy to install – light-weight, durable materials, relatively short set up time depending on size of camp (few hours to a few days).

The type of camp influences the type of fence:

- ▶ Portable electric fence – Ideal for short term camps. Uses medium gauge wire with 7/8" fiberglass posts, 6 wires.
- ▶ High tensile electric fence – Ideal for longer-term or permanent camps. Uses 12-gauge wire, 2½" hollow fiberglass posts, 8 wires.

Food storage and cooking

It is unlawful under the Yukon *Wildlife Act* to encourage any wildlife to become a nuisance by leaving food or garbage in an area where wildlife can access it or be attracted by it.

Food storage methods vary depending on the amount of food involved:

- ▶ Large amount of food – use metal food storage lockers with latches, locking fridges or freezers, bear-proof garbage containers, bear-proof shed, steel shipping containers, and/or steel drums with locking lids.
- ▶ Small amount of food – use bear resistant canisters, hang food 3 m above ground and 1.5 m from vertical support.
- ▶ Lunches for field crews – pack food and drinks in airtight containers and ensure all garbage is packed back.

In all camps:

- ▶ Cook with adequate ventilation, and ensure kitchen areas are kept clean.

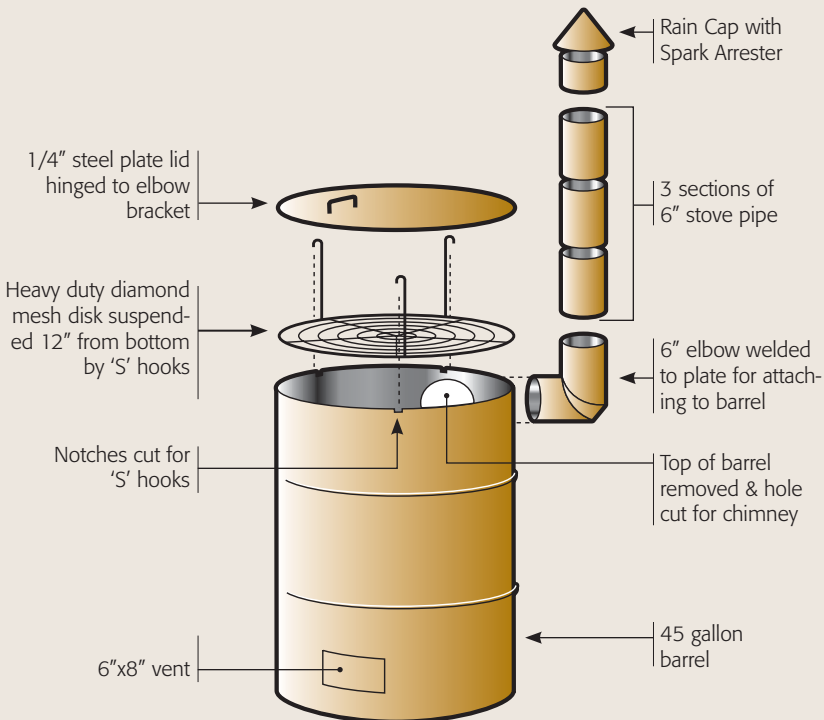
- ▶ Re-use or completely burn all grease and oils in a burning vessel or incinerator.
- ▶ Strain food particles from dishwater and dispose of with the garbage.
- ▶ Do not allow food or cooking in sleeping tents.
- ▶ Ensure crew members never feed bears or other wildlife. Often the presence of a bear or other scavengers (ravens, foxes, coyotes, marten, etc.) will attract other bears.

Waste disposal

Your permits will set out burning, incineration and garbage disposal requirements for your size of camp:

- ▶ Use of a Yukon Burn Barrel (a 45-gallon barrel with a suspended basket, lid, venting hole, and spark-arresting chimney) is sufficient for smaller camps.
- ▶ Use of a commercially-designed forced air, fuel-fired incinerator is required for larger operations.

Yukon Burn Barrel



- ▶ Do not bury food waste. This is ineffective as bears have a keen sense of smell and are known to dig pits up to 2 m deep to gain access to garbage.
- ▶ Do not burn food waste in open pits or drums as it produces hazardous emissions that may be harmful to people and the environment, and does not eliminate bear attractants.
- ▶ Use a burning vessel or incinerator to generate the high temperatures needed to reduce smoke emissions, contaminants and bear attractants.
- ▶ Incinerate all combustible and odorous kitchen waste after every meal. Do not temporarily store garbage outside.
- ▶ Remove incinerated residue from site using supply backhauls if possible.

Fuel Storage

- ▶ Store motor oil, diesel, gas and anti-freeze in airtight containers in a location that is inaccessible to bears such as a well-made shed, or steel locking container. Bears are often attracted to these types of synthetic materials.





Camp Maintenance

- ▶ Assign a full-time staff member to garbage management if your camp has more than three people in it. Their tasks should include incinerating, maintaining the incinerator, scheduling garbage pick-up, and maintaining a clean camp.
- ▶ Ensure that an inventory of spare parts for your burning vessel or incinerator is on hand so that equipment failure does not result in an accumulation of food waste.
- ▶ Practice regular maintenance and testing of your electric fence including removal of vegetation or other materials that might touch the wires and ground the fence's electrical charge.
- ▶ Treat latrine facilities with lime and cover with earth on a regular basis.
- ▶ Report all dead animals within close proximity to operating areas and remove or incinerate all carcasses within 1 km of camp.

Camp Shutdown

Seasonal shutdown – the focus is on minimizing animal interest in the camp site:

- ▶ Remove all wildlife attractants.
- ▶ If practical, back haul any solid waste to nearest maintained dump.
- ▶ Remove or safely store on-site any materials that may result in injury to wildlife (wire, steel, glass, plastic).
- ▶ Back haul or bury non-combustible garbage on-site with 1 metre of overburden.

Final camp abandonment – the focus is on returning the site to its natural state, without any special attraction for bears:

- ▶ Remove all buildings, machines, materials, fuel drums, used hydro-carbons, unburied solid waste, and metal from site.
- ▶ Rip/loosen compacted soils to allow for natural revegetation.

Deterrence at Camp

Several options are available to deter a bear from entering or investigating a camp:

Noise deterrents include air horns, bear bangers, cracker shells, or firearm warning shots. Bear bangers should be aimed to discharge between you and the bear for the greatest chance that the bear runs away. There is a fire risk when using bear bangers.



Non-lethal firearm projectiles such as bean bags and rubber bullets may also be used with a 12-gauge shotgun. Crews should be trained and practiced in the proper use of noise and non-lethal deterrents and they should be accessible at all times.

Well-trained bear dogs are useful for detecting and deterring bears.

A **helicopter** may be used in limited circumstances to protect life and property. Improper use of helicopters to haze wildlife may be perceived as harassment under the *Wildlife Act*. Contact a Conservation Officer before using a helicopter to haze a bear away from camp.

If the bear is an immediate threat to life and all practical means of averting the threat have failed, killing the animal may be necessary. **Shooting** a bear is the **last resort** and should only be for the **immediate protection of life** and property. Ensure that at least one crew member has current firearms safety training including proficient use of firearms.

If a bear is killed in defense of life or property, you are legally required to report the incident to a Conservation Officer as soon as possible. The entire carcass must be left intact. (Do not remove any parts of the bear – claws, gall bladder etc.). The CO will provide further instructions.

Deterrence Up Close

Crews must receive **bear-awareness training**, including information on bear behaviour, how to avoid bear encounters in the field and how to respond to bears in the case of an encounter.

Ensure field staff have adequate and regular **communications procedures** in place to stay in touch with each other when in the field. They must be able to call for assistance in the event of an emergency.

Carry **bear spray**. It is an effective method for fending off aggressive, charging and attacking bears if used properly and under the right conditions. (Weather conditions such as wind, rain and cold may influence the effectiveness of the bear spray.) It should be easy to get at, not tucked away in a pack. Provide training to staff on the proper use, transport and storage of bear spray. Use full canisters only, before their expiry date.

As a last resort, a **firearm** can be used to protect yourself in the event of a bear attack. Be aware, however, that few people have the skills required to deliver lethal shots to an attacking bear with



SIBCS

a firearm in the extremely short time available. Remember, if a bear is killed in self-defense, you are legally required to report the incident to a Conservation Officer as soon as possible.



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Understanding Bears

Grizzly Bears

Grizzly bears are found throughout Yukon, from the B.C. border to the Arctic coast. There are approximately 6,000 – 7,000 grizzly bears, representing 30% of Canada's grizzly bear population.

Grizzly bears have a very low rate of reproduction. Compared to other species, females breed later in life (7-9 years), less often and cub survival is lower. As a result, the grizzly bear population is extremely vulnerable to extirpation (regional extinction) because they are not able to recover from overharvesting or excessive removal of adults from the breeding population.

Grizzly bears are especially sensitive to the availability of food. Females have to accumulate

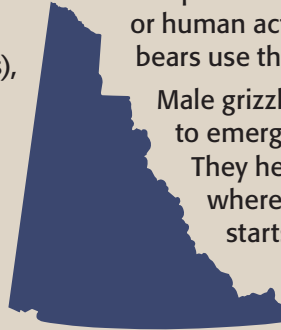
enough fat over the summer so that the eggs fertilized in the spring will implant and she will reproduce the next spring.

Grizzly bears require large undisturbed areas for feeding, denning, thermal cover, security cover, breeding and traveling. The presence of humans and/or human activity can affect how bears use these areas.

Male grizzly bears are the first to emerge from their dens. They head to valley bottoms where spring snow melt starts the growth of new vegetation.

Females emerge from their den later and remain

at higher elevations where the over-wintered cranberries, crowberries, alpine sweet-vetch and winter-killed ungulates are important spring food sources for them.



In the summer, riparian areas (streams, riverbanks and lakeshores) provide rich new growth in the form of horsetails and other vegetation. In the fall, alpine and subalpine regions provide a diet of grasses, horsetails, berries and ground squirrels required for the accumulation of weight before denning.

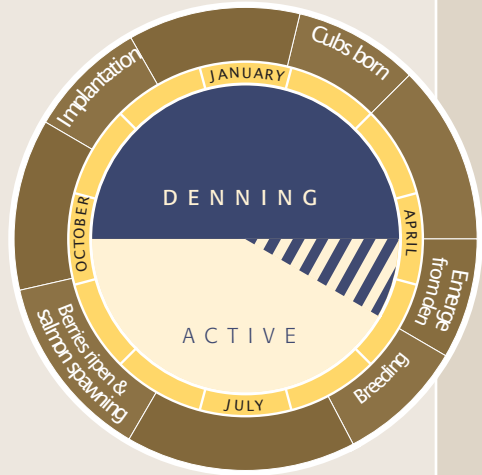
Spawning salmon along some Yukon rivers are also an important food source for grizzly bears in the fall. Meat protein sources also include insects (e.g. ants, moths, and wasps), rodents, caribou and moose calves, and carrion. Riparian areas are especially important to grizzly bears as travel corridors and bedding areas to escape the summer heat.



Stefan Gottermann

Periods of Activity

A bear's activity level and the likelihood of a bear-human encounter vary depending on many factors.



During the early and mid-summer before berries ripen, and during berry-poor years, bears are more likely to pursue human sources of food and odors.

Even while denning in winter, bears may periodically leave their dens as a result of disturbance, variations in temperature, deterioration of den conditions, and in search of food.

Black Bears

Black bears are distributed from the B.C. border to the northern tree line near Old Crow, concentrated along forested river valleys. There are approximately 10,000 black bears in Yukon.

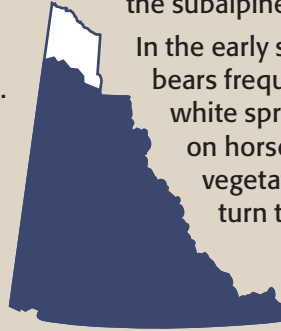
Black bears in the north have a low rate of reproduction because females start breeding later in life (5–8 years) and few cubs survive. For example, a 20 year-old sow may only have 2–4 litters over her lifetime, with many failing to survive to adulthood.

Black bears may den for up to seven months, limiting the amount of time available to acquire sufficient food for growth and reproduction. Human activity may alter black bears' use of important habitats required for food, water, denning and cover.

After emerging from the den, black bears favour grassy south facing slopes and hillsides where they eat overwintered berries and grasses. Along rivers they feed on horsetails and fresh willow catkins. Newborn moose and caribou calves are an important food source in the spring in both the subalpine and valley bottoms.

In the early summer, black bears frequent openings in white spruce forests to feed on horsetails and other vegetation. Later they turn to ripe soapberries in aspen and cottonwood stands. As the nutritional

value of horsetails and grasses declines, black bears may eat fish, cottonwood catkins or become tempted by improperly stored garbage while waiting for berries to ripen.





Bruce Bennett

Catkins

In the fall, black bears feed on blueberries in black spruce forests and may move to higher elevations to take advantage of other berry crops. Forest litter is consumed incidentally when they are searching for other foods.

Meat protein sources for black bears may include ants, wasps, rodents, ungulate calves, salmon, and carrion. Black bears are also known to use riparian areas of salmon spawning streams, although their use of riparian and subalpine areas may be influenced by the presence of grizzly bears.



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Polar Bears

Polar bears inhabit the northern coastal regions of Yukon, mainly associated with multi-year pack ice and the availability of seals. Polar bears have been seen as far inland as 150 km, however.



Yukon's polar bears are part of the Southern Beaufort Sea population (approximately 1,500 individuals) that range along the coast from Alaska to the Baillie Islands, NWT.

Due to major differences in size, diet, habitat associations, behaviour, denning requirements and travelling patterns, workers and camp operators need to take additional precautions in areas frequented by polar bears. See the resources listed on page 18.

Avoid Areas of Common Bear Foods

Roots



Alpine sweet-vetch
(*Hedysarum alpinum*)

Plants/Flowers*



Horsetail
(*Equisetum arvense*)



Locoweed
(*Oxytropis* spp.)



Bearflower
(*Boykinia richardsonii*)

Berries



Crowberry or mossberry
(*Empetrum nigrum*)



Bog Blueberries
(*Vaccinium uliginosum*)



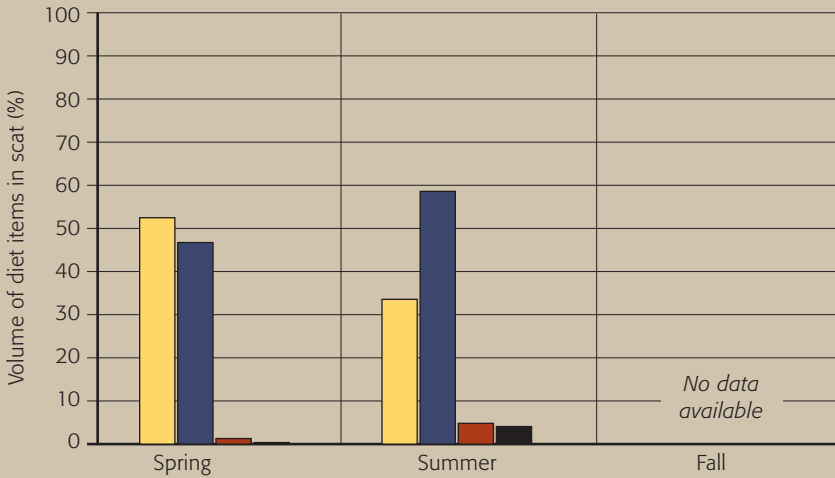
Soapberry
(*Shepherdia canadensis*)



Bearberry
(*Arctostaphylos uva-ursi*)

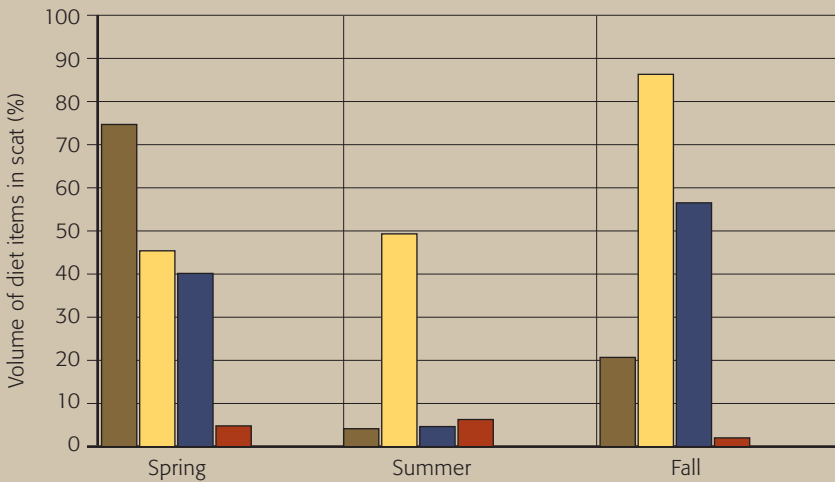
Black Bear Diet

(MacHutchon, 1989)



Grizzly Bear Diet

(MacHutchon and Wellwood, 2003)



Roots
 Plants/Flowers*
 Berries
 Meat
 Forest Litter

* Black bears eat mostly horsetail. Grizzlies eat horsetail, grasses, and bearflower and locoweed flowers.

Resources

Mention in this document of commercial goods or services does not constitute an endorsement by the Government of Yukon.

Websites

Bear Biology

www.environmentyukon.gov.yk.ca/wildlifebiodiversity/mammals/blackbear.php

www.environmentyukon.gov.yk.ca/wildlifebiodiversity/mammals/grizzly.php

www.bearsmart.com/bearFacts

fwp.mt.gov/bearid/default.html

www.hww.ca/hww2.asp?id=90

www.hww.ca/hww2.asp?id=83

Bear Safety

www.environmentyukon.gov.yk.ca/camping/bearsafety.php

www.centerforwildlifeinformation.org/BeBearAware/BearSpray/bearspray.html

www.bearsmart.com

www.bearaware.bc.ca

www.igbconline.org/html/safety.html

www.canadianrockies.net/Grizzly/gbsafety.html

www.dec.state.ak.us/eh/fss/public/bearbroch.pdf

Bear Safe Containers

www.wildlife.alaska.gov/index.cfm?adfg=bears.containers



Electric Fencing

www.**bearsmart.com**/bearSmartCommunities/ProtectingLivestock&Crops/
ElectricFencing.html

www.**margosupplies.com**/canadian1/fencing.htm

www.**electrobearguard.com**/Product.html

www.**waterstrider.com**/bear-repellent-portable-electric-fence.htm

Incinerators and Burning Vessels

www.**wildlife.alaska.gov**/index.cfm?adfg=bears.incinerators

www.**westlandincinerator.com**/html/Home-page.html

www.**wellcoenergy.com**/products/drilling2.asp

www.**ketek.ca**

www.**inproheat.com**/solid_waste.htm

Firearms

www.**cfc-cafc.gc.ca**/factsheets/safety_training_e.asp

www.**environmentyukon.gov.yk.ca**/huntingtrapping/huntingregulations.php

Polar Bears

www.**hww.ca**/hww2p.asp?id=99&cid=0

www.**nunavutparks.com**/visitor-information/polar-bear-safety.html

www.**macecanada.com**/downloads/polar_bear.pdf

Brochures

Environment Yukon

- How you can stay safe in bear country
- Bear Viewing Along Yukon Highways
- How to Keep Bears Out of Your Yard
- Be Bear Aware
- Into the Yukon Wilderness

Parks Canada

- You are in Bear Country
- Keep the Wild in Wildlife

Videos

- Staying Safe in Bear Country
- Working in Bear Country
- Polar Bears: A Guide to Safety

To order call: 1-888-440-4640 or
on-line at www.distributionaccess.com/new/index.cfm.

Contact Information

Environment Yukon

Box 2703, Whitehorse, Yukon Y1A 2C6
Located at 10 Burns Road

Phone: (867) 667-5652

Toll free (in Yukon): 1-800-661-0408, ext. 5652

Fax: (867) 393-6213

Email: environmentyukon@gov.yk.ca

Conservation Officer Services Branch

Phone: (867) 667-8005

Toll free (in Yukon): 1-800-661-0408 ext. 8005

Fax: (867) 393-6206

Email: environmentyukon@gov.yk.ca

District Conservation Officers

Whitehorse: 667-5221

Haines Junction: 634-2247

Watson Lake: 536-7363

Old Crow: 966-3040

Mayo: 996-2202

Faro: 994-2862

Ross River: 969-2202

Teslin: 390-2685

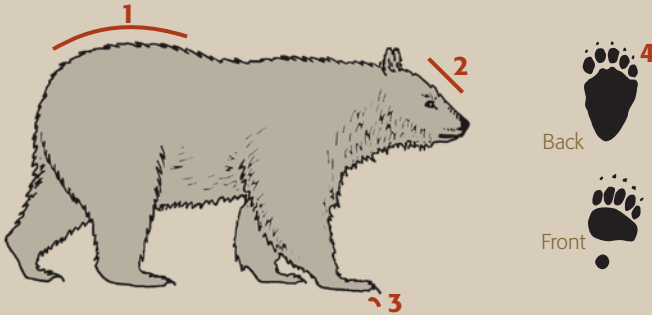
Dawson: 993-5492

Turn in Poachers / Polluters

1-800-661-0525

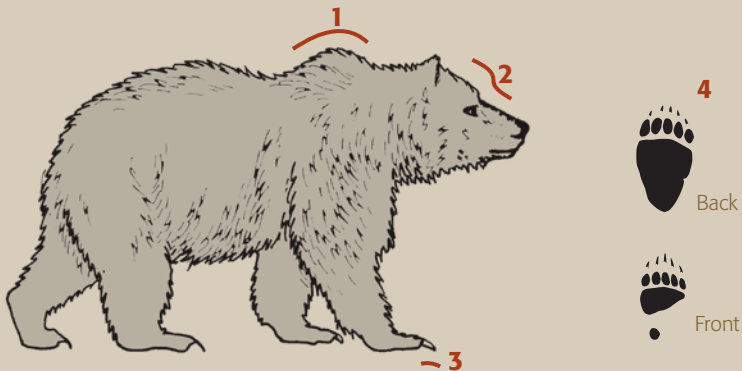


Black Bear



1. Highest point of back is over hind legs.
2. In profile, muzzle is straight and long.
3. Front claws are dark coloured, relatively short and well curved.
4. Tracks often do not include claw imprints. Toes imprint with space between.

Grizzly Bear



1. Highest point of back is over the shoulders.
2. In profile, brow gives face a dished or concave look.
3. Front claws are light coloured, 10 cm long or longer and slightly curved.
4. Tracks usually include claw imprints. Toes imprint very close to touching.



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