

Brochures

- Roadside Bear Viewing (YTG)
- Garbage Incinerators for Small Camps (YTG)
- Bear Problems: Try Electric Fencing (YTG)
- How to Keep Bears out of Your Yard (YTG)
- Be Bear Aware (YTG)
- Into the Yukon Wilderness (YTG)
- You are in Bear Country (Parks Canada)
- Keep the Wild in Wildlife (Parks Canada)

Videos

Safety in Bear Country Society. 2001. **Staying Safe in Bear Country**. Available from: <https://www.distributionaccess.com/new/index.cfm>. Order desk: 1-888-440-4640.

Safety in Bear Country Society. 2001. **Working in Bear Country**. Available from: <https://www.distributionaccess.com/new/index.cfm>. Order desk: 1-888-440-4640.

Safety in Bear Country Society. 2006. **Polar Bears: A Guide to Safety**. Available from: <https://www.distributionaccess.com/new/index.cfm>. Order desk: 1-888-440-4640.



Guidelines for Industrial Activity in Bear Country

For mineral exploration, placer mining and oil & gas industries

Yukon
Environment



Yukon
Environment





Guidelines for Industrial Activity in Bear Country:

*For mineral exploration, placer
mining and oil & gas industries
2008*

Thank you to all the individuals from the mineral exploration, tourism, mining, Yukon Department of Environment and regulatory agencies for taking time to review and comment on these guidelines

Prepared by: EDI Environmental Dynamics Inc.
Prepared for: Mining and Petroleum Environmental Research Group (MPERG). All photos copyright Yukon Government and cited contributors.

MPERG is a co-operative working group made up of the Federal and Yukon Governments, Yukon First Nations, mining companies and non-governmental organizations for the promotion of research into mining and environmental issues in Yukon.

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- <http://www.igbconline.org/html/safety.html>
- <http://www.environmentyukon.gov.yk.ca/pdf/ityw.pdf>
- <http://www.canadianrockies.net/Grizzly/gbsafety.html>
- <http://www.taiga.net/yourYukon/col137.html>
- <http://www.dec.state.ak.us/eh/fss/public/bearbroch.pdf>
- <http://www.environmentyukon.gov.yk.ca/wildlifebiodiversity/bearaware.php>

Bear Safe Containers

- <http://www.wildlife.alaska.gov/index.cfm?adfg=bears.containers>
- <http://www.haulall.com/bearhid.htm>

Electric Fencing

- <http://www.margosupplies.com/canadian1/fencing.htm>
- <http://www.udap.com/bearshock.htm>
- <http://www.electrobearguard.com/Product.html>
- <http://www.waterstrider.com/bear-repellent-portable-electric-fence.htm>
- <http://www.bearsmart.com/bearSmartCommunities/ProtectingLivestock&Crops/ElectricFencing.html>
- <http://www.go.to/powerfence>
- <http://www.wcs.org/international/northamerica/Adirondacks/adirondackbbear/adirondackbbearsolutions/adirondackbbearfences>

Firearms

- http://www.cfc-cafc.gc.ca/factsheets/safety_training_e.asp
- <http://www.environmentyukon.gov.yk.ca/huntingtrapping/huntingregulations.php>

Incinerators and Burning Vessels

- <http://www.wildlife.alaska.gov/index.cfm?adfg=bears.incinerators>
- <http://www.dec.state.ak.us/eh/docs/sw/Burning%20Garbage%20Factsheet.pdf>
- <http://www.inciner8.com/>
- <http://www.batchloadincinerators.com/smartash.html>
- <http://www.westlandincinerator.com/html/Home-page.html>
- <http://www.wellcoenergy.com/products/drilling2.asp>
- <http://www.ketek.ca/>
- http://www.inproheat.com/solid_waste.htm

Polar Bears

- <http://www.nunavutparks.com/visitor-information/polar-bear-safety.html>
- http://www.wwf.ca/NewsAndFacts/NewsRoom/factsheet_polarbears.asp
- <http://www.polarbearsinternational.org/>
- http://www.macecanada.com/downloads/polar_bear.pdf
- <http://www.hww.ca/hww2p.asp?id=99&cid=0>



Contact Information

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Local Conservation Officers

- Whitehorse: 667-5221
- Dawson: 993-5492
- Watson Lake: 536-7363
- Haines Junction: 634-2247
- Mayo: 996-2202
- Old Crow: 966-3040
- Ross River: 969-2202
- Faro: 994-2862
- Teslin: 390-2685

Websites

Bear Biology

<http://www.environmentyukon.gov.yk.ca/wildlifebiodiversity/mammals/blackbear.php>

<http://www.environmentyukon.gov.yk.ca/wildlifebiodiversity/mammals/grizzly.php>

<http://www.taiga.net/wmac/species/grizzly/index.html>

<http://www.bearsmart.com/bearFacts>

<http://fwp.mt.gov/bearid/default.html>

<http://www.hww.ca/hww2.asp?id=90>

<http://www.hww.ca/hww2.asp?id=83>

Bear Safety

<http://www.environmentyukon.gov.yk.ca/wildlifebiodiversity/bearsafety.php>

<http://www.centerforwildlifeinformation.org/BeBearAware/BearSpray/bearspray.html>

<http://www.bearsmart.com.html>

<http://www.bearaware.bc.ca/>

Why Bears are Important

Yukon has 30% of Canada's grizzly bear population and a healthy black bear population.

Bear populations cannot recover quickly if animals are killed. Female bears reproduce at a late age, produce few young over their lifetimes and cubs have low survival rates.

Bears in pursuit of improperly stored food and garbage can seriously damage property. Damage to property can cause delays in your operations.

You, your family or your crew members may be injured or killed by a bear. Provide the proper "bear awareness" training for yourself and your crew.

Bears are valuable. Guide-outfitters offer grizzly bear hunting trips for \$9,000 – \$15,000. Exclusive bear viewing opportunities can generate economic benefits for local communities.

The viewing of bears and other wildlife is an important activity for visitors and residents.

"Wildlife" was the most mentioned experience visitors wanted when coming to the Yukon, and wildlife viewing was the second most popular activity (after walking/hiking) for visitors who participated in a wilderness or outdoor activity.

Bears have an intrinsic value and are important to the proper functioning of ecosystems. If bears are unintentionally or intentionally fed human food, they may have to be killed. This affects bear populations and the health of ecosystems.

Most bear/human conflict is preventable. By ensuring that your camp is properly located, designed, and maintained you can reduce negative bear encounters.



Background

In the last number of years, the Yukon has seen overall increases in mineral exploration, oil & gas development and placer mining continues to be a steady producer of gold. With increased industrial activity in the backcountry, the likelihood of negative bear/human encounters and the impact of human presence on bears will increase. Therefore, the Mining and Petroleum Environmental Research Group (MPERG) saw the need to develop guidelines to minimize deleterious effects of increased mining activity on bears and bear habitat. These effects may include alienation from important habitats, increased energy expenditures, and injury or death of bears and/or humans. With careful planning and education these effects will be reduced.

The objective of this document is to provide best practices to minimize disturbances to bears and bear habitat and suggest contingency planning should a bear encounter occur. Information for other activities in bear country are listed at the back of this booklet.

Who should read this booklet?

These guidelines are intended to be useful for:

- Placer miners
- Mining companies
- Exploration companies
- Oil & Gas companies
- Guide outfitter and ecotourism companies
- Groups using backcountry camps

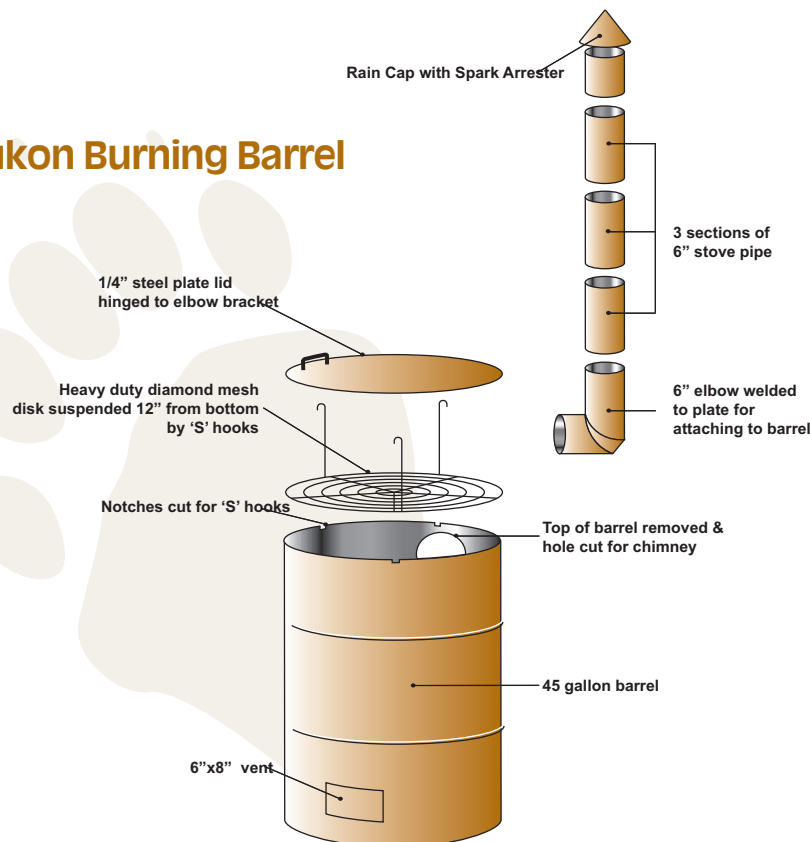
Concern	Best Practices
Deterrents	<ul style="list-style-type: none"> • Non-lethal noise deterrents include air horns, bear bangers, cracker shells, rubber bullets or firearm warning shots. Bear bangers should be aimed to discharge between you and the bear for best results. There is a fire risk when using bear bangers. Crews should be trained and practiced in the proper use of these 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, a person may be forced to destroy the animal. 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 you are legally required to contact a Conservation Officer and report the killing as soon as possible. The hide and skull must be cared for. Do not remove any parts of the bear (claws, gall bladder etc.)
Close encounters	<ul style="list-style-type: none"> • Provide your crew with bear-awareness training and information about bear behaviour, how to avoid bear encounters in the field and how to respond to bears in the case of an encounter. Refer to the references and links provided below for more information on bear safety. • Ensure field staff have adequate and regular communications procedures in place to stay in touch with each other when in the field, and to be able to call for assistance in the event of an emergency. • Carry bear spray as your first line of defense. Bear spray can be an effective method for fending off threatening and attacking bears if used properly and under the right conditions. Bear spray should only be used on an aggressive or charging bear. Provide training to staff on the proper use, transport and storage of bear spray. Weather conditions such as wind, rain and cold may influence the effectiveness of the bear spray. • As a last resort, a firearm can be used to protect yourself in the event of a bear attack, although few people have the skills required to deliver lethal shots to an attacking bear with a firearm in the extremely short time available. If a bear is killed in self defense, you must contact a Conservation Officer as soon as possible. • Ensure that at least one crew member has current firearms safety training.



Dealing with Negative Bear Encounters

If a bear repeatedly visits your camp, or exhibits curious or aggressive behaviour towards your crew members, contact a local Conservation Officer immediately. Decisions regarding the appropriate action should be left up to the local Conservation Officer. This may involve deterrence, removal of attractants and/or relocation or destruction of the bear depending on the circumstances.

Yukon Burning Barrel



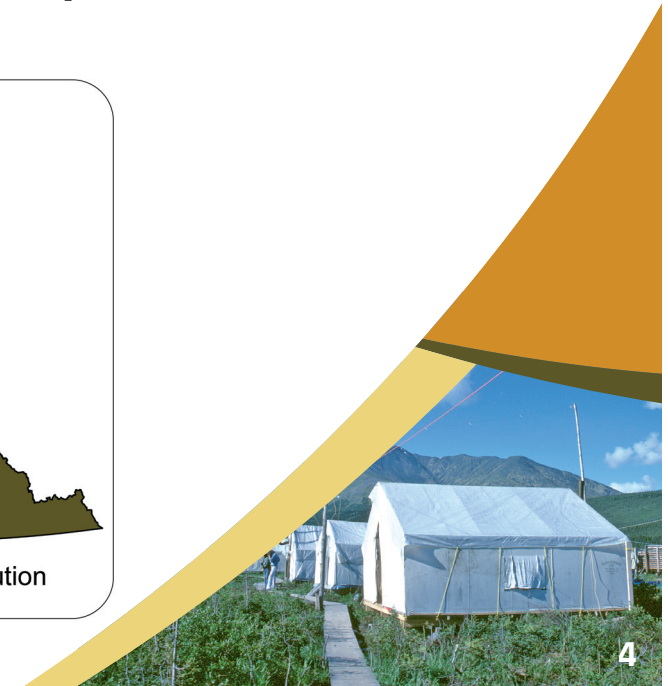
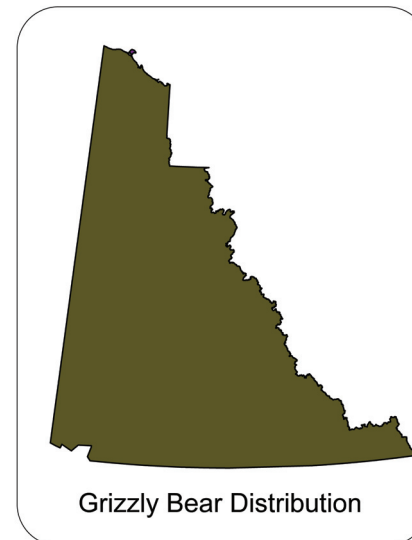
Bear Biology

Grizzly Bears

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

Grizzly bears have a very low rate of reproduction because females breed later in life, less often and cub survival is lower than for other species. Therefore, grizzly bears are extremely vulnerable to 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. For example, females have to accumulate enough fat over the short summer season so that the eggs fertilized in the spring will implant and she will reproduce the next spring.

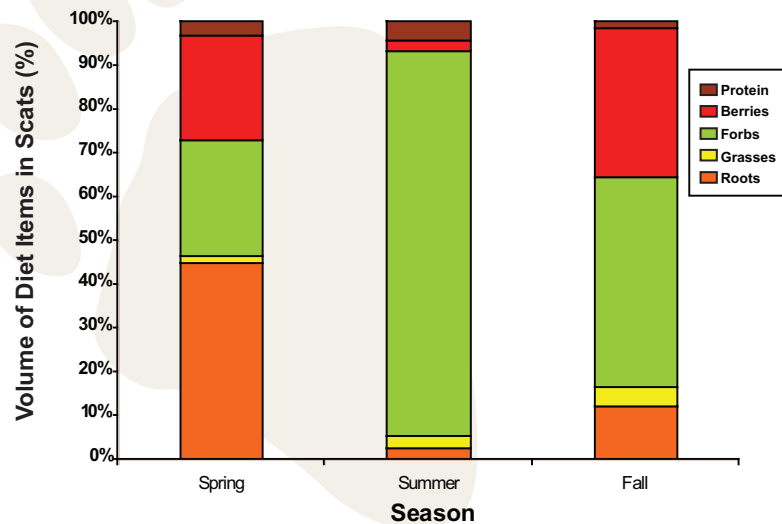
Grizzly bears require large undisturbed areas for feeding, denning, thermal cover, security cover, breeding and traveling. The use of these habitats by bears can be affected by human presence and activities.





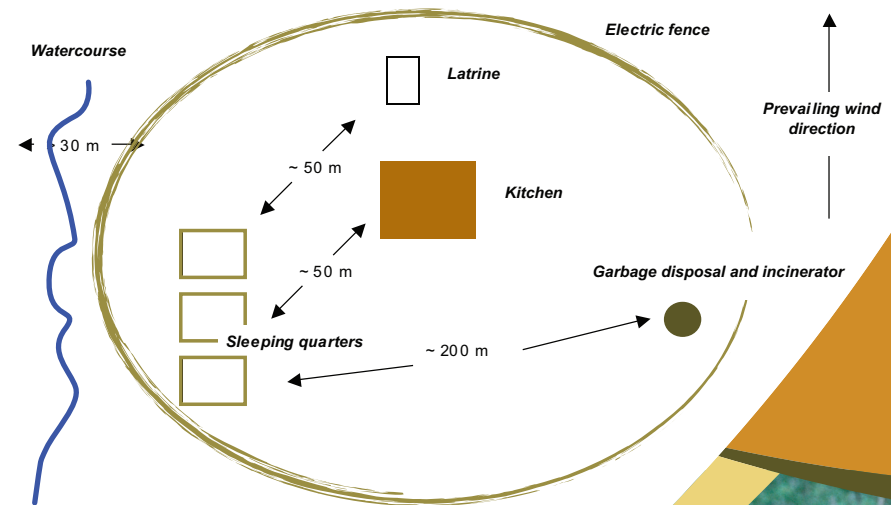
Male grizzly bears are the first to emerge from their den and head to valley bottoms where spring snow melt initiates the growth of new vegetation.

Overwintered crowberries, alpine sweet-vetch and winter-killed ungulates are important for grizzly bears in the spring, especially females who emerge from their den later and remain at higher elevations. In the summer, riparian areas provide rich, new growth in the form of horsetails and other vegetation. In the fall, alpine and montane regions provide 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. Protein sources also include insects (e.g., ant, 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.



Concern	Best Practices
Camp Shutdown	<p>Seasonal shutdown</p> <ul style="list-style-type: none"> 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 m of overburden. <p>Final camp abandonment</p> <ul style="list-style-type: none"> Remove all buildings, machines, materials, fuel drums, used hydro caribous, unburied solid waste, and metal from site; Rip/loosen compacted soils to allow for natural revegetation.

Example of Well-Designed Camp



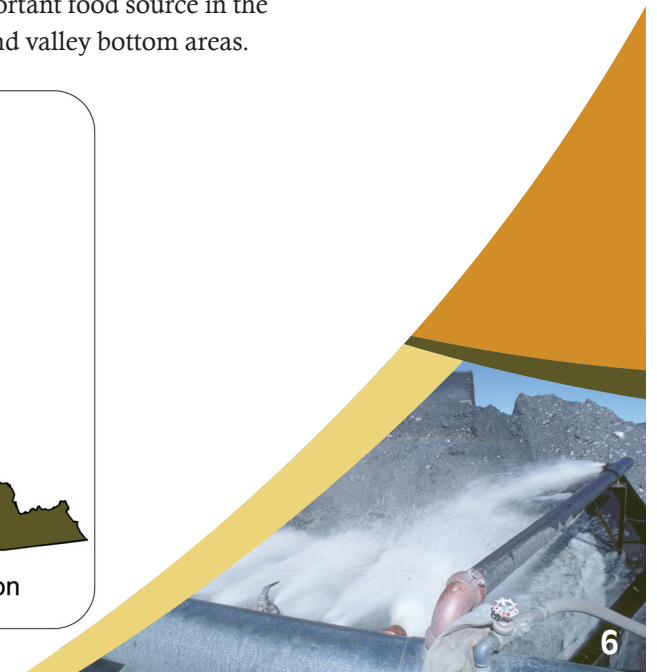
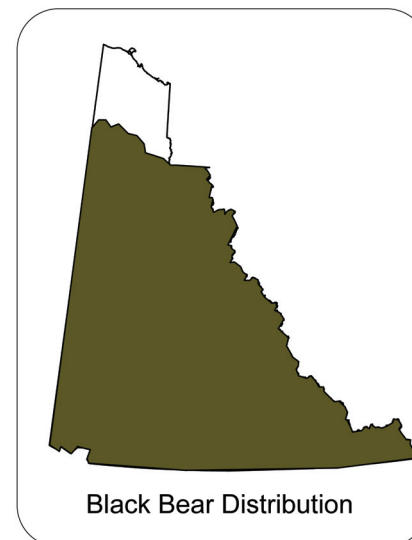
Bear Biology

Black Bears

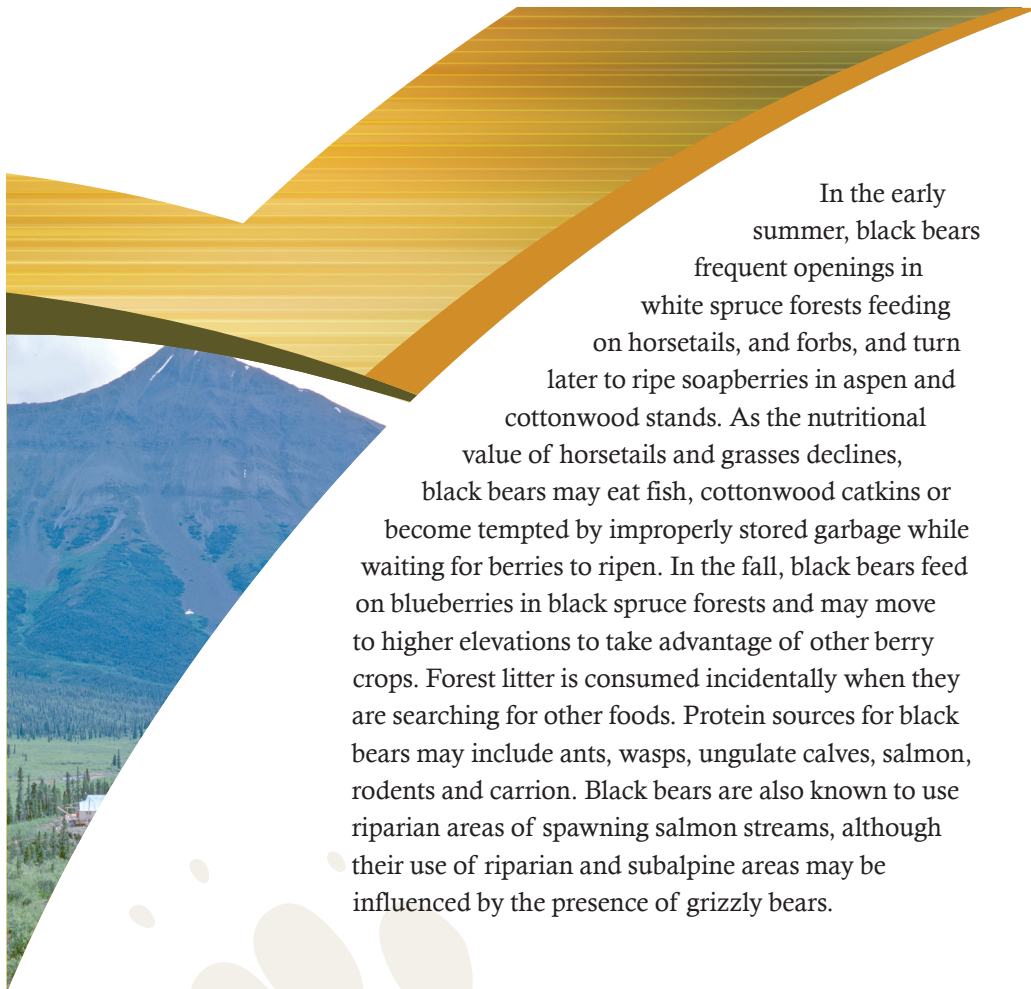
Black bears are distributed from the B.C. border to the northern tree line near Old Crow, concentrated along forested river valleys. There are approximately 10,000 black bears in the Yukon.

In the Yukon, black bears have a low rate of reproduction because females start breeding later in life (7–9 yrs) and have few surviving cubs. 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 7 months in the Yukon, limiting the amount of time available to acquire sufficient food for growth and reproduction. As with grizzly bears, the presence of human activity may alter their use of important habitats required for food, water, denning and cover.

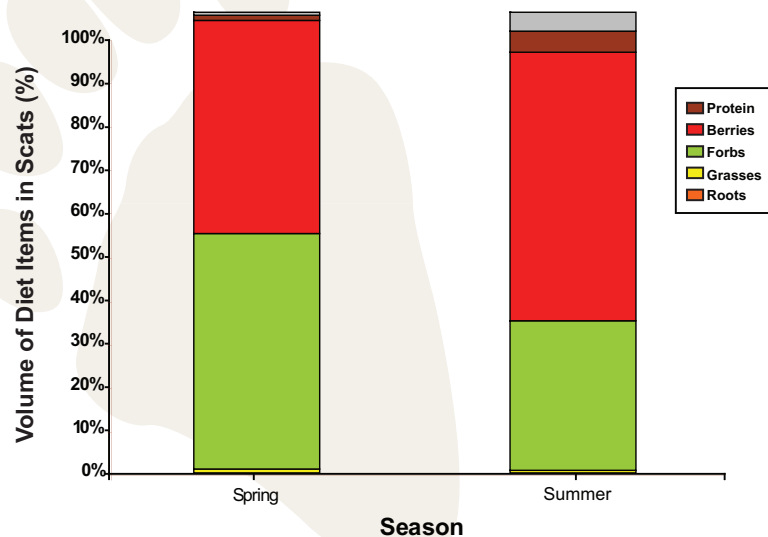
After emerging from the den, black bears favour grassy south facing slopes and hillsides where they eat overwintered berries and grasses. Along rivers they feed on fresh willow catkins and horsetails. Newborn moose and caribou calves are an important food source in the spring in both the subalpine and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



Concern	Best Practices
<p>Camp Maintenance (cont'd)</p>	<p>Waste disposal</p> <ul style="list-style-type: none"> • Burying food waste is ineffective as bears have a keen sense of smell and are known to dig pits up to 2 meters deep to gain access to garbage; • Burning in open pits or drums produce hazardous emissions that may be harmful to people and the environment and does not eliminate bear attractants; • Burn all combustible and odorous kitchen waste after every meal using a burning vessel or incinerator. Complete incineration of garbage at high temperatures is essential. Higher temperatures reduce smoke emissions, contaminants, and bear food attractants. A 45-gallon barrel with suspended basket, lid, venting hole, and spark-arresting chimney is sufficient for smaller camps (e.g. Yukon Burn Barrel). A commercially designed forced air, fuel-fired incinerator is required for larger operations. Please refer to your permits regarding burning, incineration and garbage disposal requirements for your size of camp. • Dedicate a full-time staff member to garbage management if > 3 man camp (e.g. incinerating, maintaining incinerator, scheduling garbage pick-up, maintaining clean camp); • Incinerate after every meal, do not temporarily store garbage outside; • 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; • Remove incinerated residue from site using supply backhauls if possible; • Report all dead animals within close proximity to operating areas and remove or incinerate all carcasses within 1 km of camp; • Latrine facilities should be treated with lime and covered with earth on a regular basis. <p>Fuel Storage</p> <ul style="list-style-type: none"> • Bears are often attracted to synthetic materials such as plastic and motor oil; • 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 containers; <p>Electric fence</p> <ul style="list-style-type: none"> • Ensure regular maintenance of electric fence including prevention of vegetation or other materials from grounding the fence's electrical charge.



In the early summer, black bears frequent openings in white spruce forests feeding on horsetails, and forbs, and turn later 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. 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. Protein sources for black bears may include ants, wasps, ungulate calves, salmon, rodents and carrion. Black bears are also known to use riparian areas of spawning salmon streams, although their use of riparian and subalpine areas may be influenced by the presence of grizzly bears.



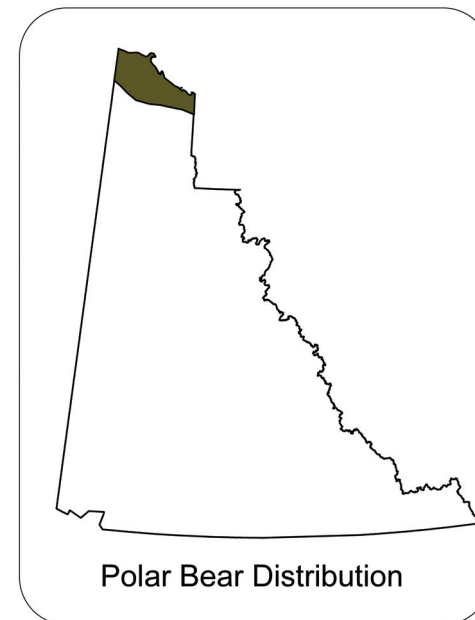
Concern	Best Practices
Camp Design (cont'd)	<ul style="list-style-type: none"> • <i>High tensile electric fence;</i> <ul style="list-style-type: none"> o Ideal for permanent, or longer-term camps; o 12" gauge wire, 2½" hollow fiberglass posts, 8 wires. <p>Camp Design</p> <ul style="list-style-type: none"> • No method is fail-proof, so proper camp design is still important; <ul style="list-style-type: none"> o Arrange tents or trailers in a line rather than a circle; o Tents or trailers should be well spaced, but not scattered; o Cook tent, food storage area and latrine should be in open spots well away (~ 50 m or more) from sleeping quarters; o Cook tent should be located downwind (use the prevailing wind) from sleeping quarters if possible; o Garbage disposal area and burning vessel should be visible from a distance, downwind from camp and ~ 200 m from sleeping areas; o Ensure all activity areas are well lit if possible; o Install windows at entrances and exits of tents and trailers to increase visibility; o Give adequate space for camp within electric fence; o Clear brush from trails leading to and from buildings and tents to improve visibility and ensure line of sight.
Camp Maintenance	<p>Food storage/cooking</p> <ul style="list-style-type: none"> • Store food inside using odor free, bear safe food storage containers or facilities; <ul style="list-style-type: none"> o Large amount of food — metal food storage lockers with latches, locking fridges or freezers, bear-proof garbage containers, bear-proof shed, steel shipping containers, steel drum with locking lid; o Small amount of food — bear resistant canisters, hang food 3 m above ground and 1.5 m from vertical support; • Cook with adequate ventilation, and ensure kitchen areas are kept clean; • No food or cooking in sleeping tents; • All grease and oils should be re-used or burnt completely in a burning vessel or incinerator; • Strain food particles from dishwater and dispose of with the garbage; • Ensure crew members never feed bears.

Bear Biology

Polar Bears

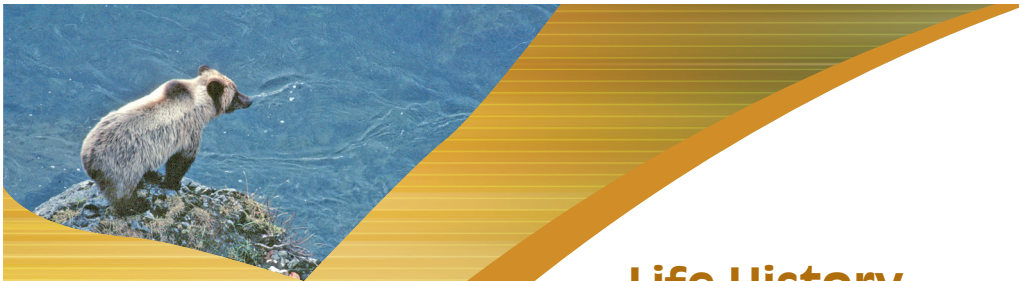
Polar bears inhabit the northern coastal regions of the Yukon, mainly associated with multi-year pack ice and availability of seals. However, polar bears have been seen as far as 150 km inland. Polar bears in the Yukon are part of the Southern Beaufort Sea population (approximately 2,000 individuals) that range along the coast from Alaska to the Baillie Islands, N.W.T.

Due to major differences in size, diet, habitat associations, behaviour, denning requirements and travelling patterns, operators should take specific precautions while working in areas frequented by polar bears. This booklet provides information specific to reducing impacts of industrial activity on grizzly and black bears only. Therefore, if you are working in the northern, coastal regions of the Yukon inhabited by polar bears please refer to the sources listed at the end of this booklet and contact your local Regional Biologist for more information.



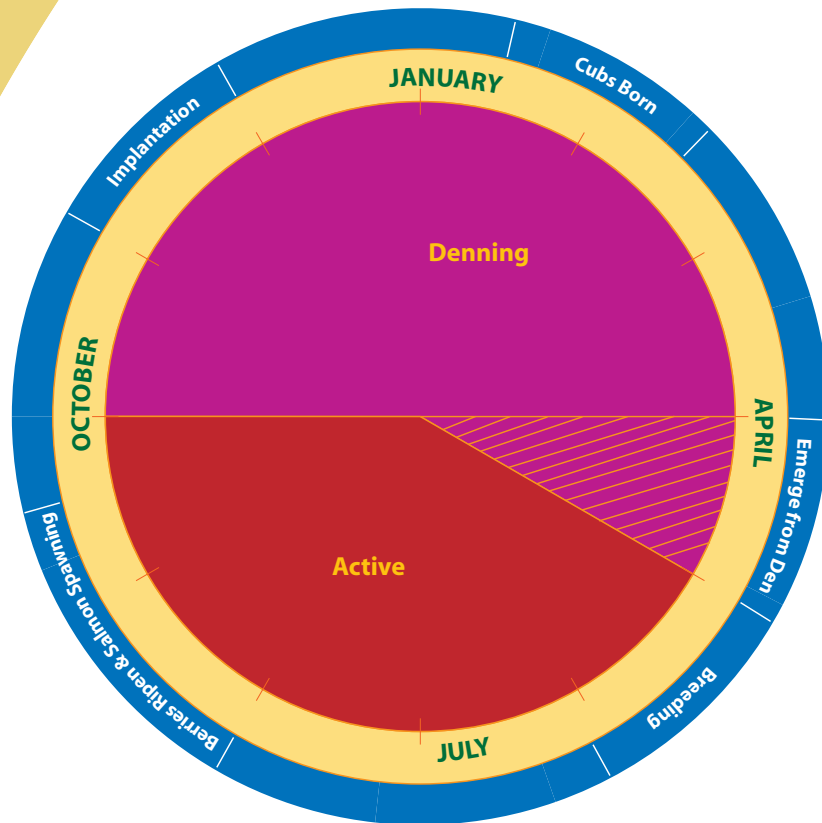
Concern	Best Practices
<p>Camp Location</p>	<ul style="list-style-type: none"> • Consult with local Conservation Officer to discuss possible camp locations before establishing camp; • Avoid habitats rich in bear foods (horsetails, berry patches); • Avoid areas with recent bear sign (scat, tracks, rub trees, diggings, game trails, feeding activity); • Avoid salmon spawning areas; • Camps should be established at least 30 m from high water mark (i.e., avoid riparian areas); • Avoid setting up camps near dumps or camps with previous bear problems, as bears are known to return to sites on an annual basis; • All activities including camp location should be > 1000 m from a suspected or confirmed bear den site, as bears tend to cluster denning activity in certain areas year after year, and reuse denning sites approximately 25% of the time; • Avoid noisy areas near rushing water.
<p>Camp Design</p>	<p>Electric fence</p> <ul style="list-style-type: none"> • Electric fence installed around all camp facilities is strongly recommended for all camps due to recent improvements in: <ul style="list-style-type: none"> o Cost - inexpensive depending on number of openings, corners, gates and length (\$500 - \$5000); o Ease of installation — lightweight, durable materials, instructions provided; o Set up time is relatively short depending on size of camp (few hours – few days); o Self-sufficiency — solar panels/battery storage system, or generator; o Reliability — 100% reliability if properly used and maintained; o Design flexibility — options available for large and small camps (portable and high tensile). • <i>Portable electric fence;</i> <ul style="list-style-type: none"> o Ideal for short term camps; o Medium gauge wire, 7/8” fiberglass posts, 6 wires.





Life History of Grizzly and Black Bears

Bears are especially attracted to human sources of food and odors during the early and mid summer before berries ripen and during berry-poor years. Bears may periodically leave their dens in the winter as a result of disturbance, variations in temperature, deterioration of den conditions, and in search of food.



to limit your impact on bears anywhere within your operating area. For example, approximately 70% of all reported bear-human conflicts are due to garbage odor attraction and an average of 40 black bears per year are reported killed due to conflicts with humans in the Yukon.

In the workplace, employers and supervisors are responsible for bear safety training. Yukon Workers' Compensation and Safety Board produces the guidebook "Worker Safety in Bear Country" outlining precautions, natural history, and what to do if you encounter a bear. The Yukon Department of Environment provides specific information on close range bear-human encounters in their publication "Safety in Bear Country".

Effects of Disturbance

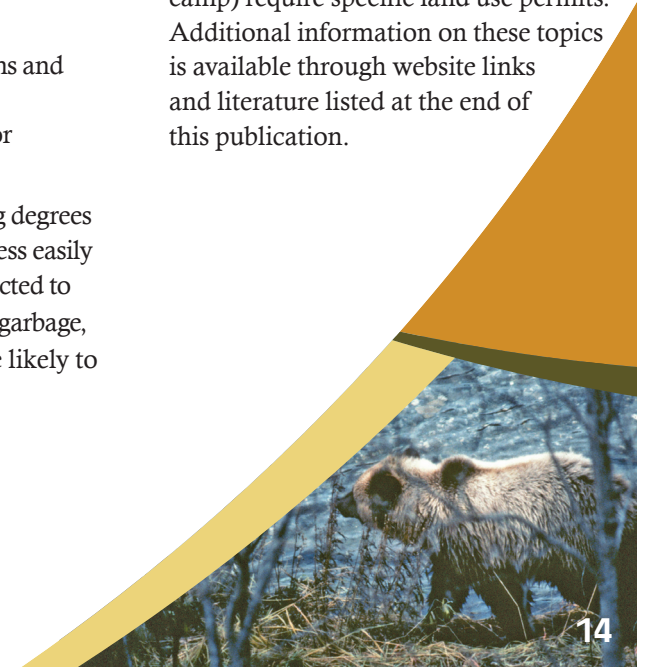
Bears can respond in a number of ways to human presence:

1. Intolerant bears avoid humans and can be easily displaced from important habitat required for survival and reproduction
2. 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 therefore they are more likely to be in conflict with people.

Guidelines to Minimize Bear-Human Conflict

Prevention of Bear Encounters

The most important way to reduce bear encounters is to prevent attraction by planning the proper location, design and maintenance of your camps and facilities. **The responsible handling of food and garbage** is key to eliminating bear problems. Repercussions of improperly maintained camps may include the "spoiling" of a wild bear causing bear-human conflicts, property damage, injuries or death of bears, crew members or future users of the area. These guidelines are pertinent for all small and large mineral exploration and placer mining camps. Larger operations (> 250 person-days per camp) require specific land use permits. Additional information on these topics is available through website links and literature listed at the end of this publication.





Mining and Exploration

Placer Mining Activities

Placer mines are often small, family-run operations employing on average 2–3 people. Placer mining activity is concentrated during the summer months when miners use a variety of heavy and light machinery to excavate stream gravels for placer gold deposits.

Mineral Exploration

The purpose of mineral exploration is to locate new sources of metals or useful minerals for extraction. In the early stages of mineral exploration, small exploration camps are set up, usually consisting of seasonal fly camps and small tents, or a few wall tents or trailers that may persist for several seasons. The size of the camp depends on the length of the job and the number of people employed. Fixed and rotary aircraft are often required to bring in supplies and take out mineral samples from the camp. Mineral exploration occurs mostly in the late spring and early fall (May – late September).

Oil & Gas Exploration

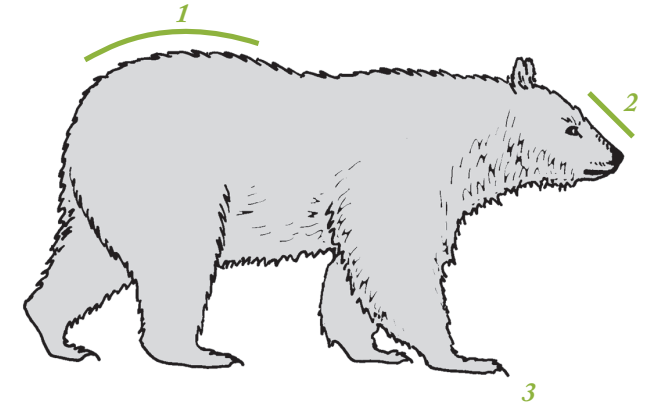
Oil and gas exploration activities include airborne and ground-based seismic exploration and well drilling. Similar to mineral exploration activities, oil & gas exploration requires small, remote camps and larger facilities, depending on the activity.

Potential for Bear-Human Encounters

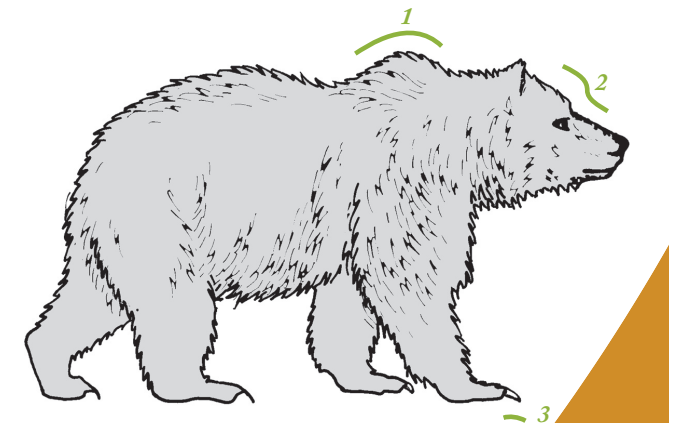
Black bears and especially grizzly bears have large home ranges. The home ranges of these two species may overlap along riparian and subalpine areas. The first step to reducing the chance of bear-human conflicts is to plan where your activities and camps are in relation to bear habitats. Avoid having activities and camps in areas that may be frequented by bears. These areas include travel corridors along riparian areas and areas with good sources of bear foods. Regardless, you and your crew should take the necessary precautions

Bear Identification

Black Bear Prints







Grizzly Bear Prints





Common Bear Foods

	Alpine sweet-vetch <i>(Hedysarum alpinum)</i>
	Horsetail <i>(Equisetum arvense)</i>
	Soapberry <i>(Shepherdia canadensis)</i>
	Bearberry <i>(Arctostaphylos uva-ursi)</i>



Crowberry or mossberry
(Empetrum nigrum)

Bog Blueberries
(Vaccinium uliginosum)

Locoweed
(Oxytropis spp.)

Bearflower
(Boykinia richardsonii)

