City of West Kelowna Bear Hazard Assessment

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CITY OF WEST KELOWNA

WILD SAFE BC
British Columbia Conservation Foundation

EXECUTIVE SUMMARY

The Bear Smart Community Program has been designed to address the root causes of human-bear conflicts in a community, resulting in a safer community for both people and bears. The City of West Kelowna has shown commitment to becoming a Bear Smart Community by partnering with WildSafeBC on attractant management education and commissioning this Bear Hazard Assessment (BHA).

West Kelowna is a fast-growing community in the Central Okanagan with a large component of agriculture intermixed with residential, commercial, industrial, and parks and open space zoning. The community has many trails, regional and municipal parks, and riparian areas that provide travel corridors for bears into the community.

Within the City there have been 1,978 reports regarding black bears to the Conservation Officer Service from January 1, 2014, to December 15, 2023. Where a bear attractant was included in the report, garbage was most often identified at 72% (n=642), followed by residential fruit trees at 13% (n=111) and bird feeders at 3% (n=30). The majority of these reports originated from the residential neighbourhoods in Shannon Lake (n=740), West Kelowna Estates/Rose Valley (n=341), and Glenrosa (n=221).

Since 2016, there have been 47 black bears that have been lethally removed by the Conservation Officer Service within the City of West Kelowna. Most of these bears had histories of accessing garbage, or other attractants, and were considered highly food conditioned and human habituated. The worst years for bears and human-bear conflicts were 2021 and 2022 where a total of 25 bears were destroyed.

The BHA identifies risk factors by neighbourhood including the history of bear reports, proximity to bear habitat and security cover, presence of unsecured bear attractants, type of human activity and human safety concerns. The BHA provides the following recommendations:

1. Replace non-bear-resistant public garbage receptacles in parks and playgrounds with certified bear-resistant models. Prioritize those identified as high and medium-high risk.
2. Ensure dumpsters have metal lids, especially in high risk neighbourhoods.
3. Prevent black bear access to RDCO-managed transfer stations.
4. Provide or facilitate access to IGBC-certified bear-resistant garbage carts for residents that do not have a reasonable or alternate means to store current carts indoors.
5. Ensure future food waste collection programs follow Bear Smart principles. Explore grants to make this more feasible.
6. Update bylaws to include Bear Smart language and best practices including addressing other attractants such as fruit trees, bird feeders, chickens and beehives.
7. Update Zoning Bylaw No.0265 Section 3.12 to allow the use of modern CSA/UL approved electric fences that are installed according to WildSafeBC guidelines in all zoning areas.
8. Require the use of electric fencing for residential chickens and beehives as well as commercial fruit-bearing crops within residential areas and neighbourhoods.
9. Implement fines when education efforts are not effective and ensure fines are sufficient to encourage Bear Smart behaviours and practices.

10. Ensure bylaw enforcement continues to collaborate with partners and has the resources to become more proactive.
11. Revise Official Community Plan (OCP) policies to include the requirement for bear-resistant enclosures for all new and re-developed areas; Bear Smart landscaping guidelines; establishment and maintenance of a Bear Working Group; and ensure ongoing maintenance of parks, public spaces, and trailheads.
12. Continue Bear Smart education and collaborations with partners, agencies, and other organizations.

This BHA is one of six criteria that must be fulfilled before a community can apply to the Province to become officially recognized as a Bear Smart Community. The next step would be to develop a Human-Bear Conflict Management Plan (HBCMP). The establishment of a Human-Bear Conflict Working Group is highly recommended to effectively develop, implement and adapt this plan on an ongoing basis. Members of the Working Group should include City of West Kelowna staff such as bylaw, planning and parks, an RDCO solid waste services representative, the Conservation Officer Service, and other partners such as WildSafeBC. The HBCMP should also consider the findings of the Westbank First Nation BHA and include the participation of a Westbank First Nation representative.

There are many changes expected over the next few years as the City of West Kelowna is expected to require an additional 5,383 dwelling units by 2040. The OCP outlines the City's anticipation that the existing neighbourhoods of Rose Valley, Smith Creek and Shannon Lake, Lakeview Heights, Goats Peak and Gellatly Village, will accommodate 36% of the new units and will consist mostly of single-family homes, low-rise apartments, townhomes and duplexes. Most of these are high-risk neighbourhoods that contain bear travel corridors and are situated near bear habitat. In addition, the Regional District is considering providing food waste collection to residents in the region which will affect how organics are stored by residents and potential access by bears. These changes all provide opportunities to implement Bear Smart strategies cost-effectively rather than retrofit an expensive solution at a later date.

ACKNOWLEDGEMENT

Thank you to the City of West Kelowna for their commitment to reducing human-bear conflicts and for funding this Bear Hazard Assessment. WildSafeBC is grateful for the many people who made themselves available to share their knowledge with us either through personal interviews or anonymously through the survey. Thanks go out to Conservation Officer Ken Owens, Provincial Biologist TJ Gooliaff, Regional District of Central Okanagan staff Rae Stewart and Cynthia Coates, and Westbank First Nation Law Enforcement Officer Wayne Murdock. This Bear Hazard Assessment was made possible through the support of City of West Kelowna staff including Paul Gipps, Mike Cain, Trish Robertson, Mark Roberts, Sandy Webster, Alan Clay, Kassidie Cornell, Jessica Hewitt, Mike Bowser and Carla Eaton. Special thanks go out to Karilyn Alex from the Okanagan Nation Alliance for providing information on historical and current salmon returns in the region. In addition, thank you to WildSafeBC staff including Jenna Scherger who assisted in delivering the social science survey. Finally, thank you to Kurt Frei for reviewing the final draft.

WildSafeBC recognizes, acknowledges, and appreciates that we are able to live, work and learn on the traditional territories of First Nations and Indigenous Peoples of BC. Acknowledging the principles of truth and reconciliation, we recognize and respect the history, languages and cultures of First Nations, Métis, Inuit and all Indigenous Peoples of Canada whose presence continues to enrich our lives and country.

DISCLAIMER

This report has been prepared to fulfill the guidelines of the Province of British Columbia Bear Smart Community Program. The report has been prepared with the best information available. No liability is assumed with respect to the use and application of the information it contains.

This Bear Hazard Assessment is not a complete picture of bear attractants and hazards in the community due to the limits of collecting data within a short time frame and restricting records to public property. Furthermore, historical human-bear conflict data from the Conservation Officer Service reporting line are limited to those conflicts that were reported.

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INTRODUCTION

WHAT IS A BEAR HAZARD ASSESSMENT?

This Bear Hazard Assessment (BHA) identifies current and potential risks that influence existing or potential human-bear conflicts within the City of West Kelowna and meets one of the criteria of the Bear Smart Community Program (Province of B.C., 2023). The BHA will provide recommendations for reducing human-bear conflicts that can inform the work of the City of West Kelowna to develop a Human-Bear Conflict Management Plan (HBCMP). The BHA objectives are to compile, and map where feasible, the following information:

- History of bear reports and complaints,
- Non-natural food sources and attractants such as garbage,
- Identify high-quality and high-use bear habitat and potential travel corridors,
- Identify areas that may be at higher risk of human-bear conflicts such as schools, campgrounds, playgrounds, and recreation areas adjacent or overlapping bear habitat,
- Identify activities outside the community but within the home ranges of local bears that may affect their movement patterns and foraging behaviour,
- Community attitudes and perspectives related to bears and attractant management,
- Current human-bear conflict mitigation strategies, and
- Identify potential data limitations.

In addition, the BHA will review current progress towards achieving Bear Smart Community Program criteria and make recommendations on how to address incomplete components.

BEAR SMART COMMUNITY PROGRAM

The goal of the Bear Smart Community Program is to address the root causes of human-bear conflict, and in doing so, to reduce the number of bears that are destroyed while increasing human safety (Province of B.C., 2023). It is a voluntary program that has been designed by the British Columbia Ministry of Environment and Climate Change Strategy in partnership with the British Columbia Conservation Foundation and the Union of British Columbia Municipalities (Davis et al., 2002). It provides local governments with a series of criteria that, when fully implemented and maintained, have been shown to be effective in reducing preventable human-bear conflicts.

The six Bear Smart Community Program criteria are:

1. Prepare a bear hazard assessment of the community and surrounding area.
2. Prepare a human-bear conflict management plan.
3. Revise planning and decision-making documents such as Official Community Plans and/or Solid Waste Management Plans.
4. Implement a continuing education program consistent with WildSafeBC or Ministry standards.
5. Develop and maintain a bear-resistant solid waste management system.
6. Implement "Bear Smart" bylaws.

STUDY AREA

The focus of this BHA is the City of West Kelowna which is in the Central Okanagan Region of British Columbia along the west side of Okanagan Lake and within the traditional and unceded territories of the Syilx Okanagan People (Figure 1). The City borders the Regional District of the Central Okanagan (RDCO) West Electoral Area, the Corporation of the District of Peachland, and the Westbank First Nation (WFN) Tsinstikeptum Reserves 9 and 10. The two Reserves have approximately 10,000 residents over an area of about 980 hectares (City of West Kelowna[a], 2023). Of those residents, 855 are Westbank First Nation members (Westbank First Nation, 2023). The WFN are self-governing and commissioned a BHA from WildSafeBC which was completed in 2021 and updated in 2022 (Bjordal et al.). Since bears travel frequently through both jurisdictions, both the WFN and City of West Kelowna BHAs should be considered in tandem whenever possible.

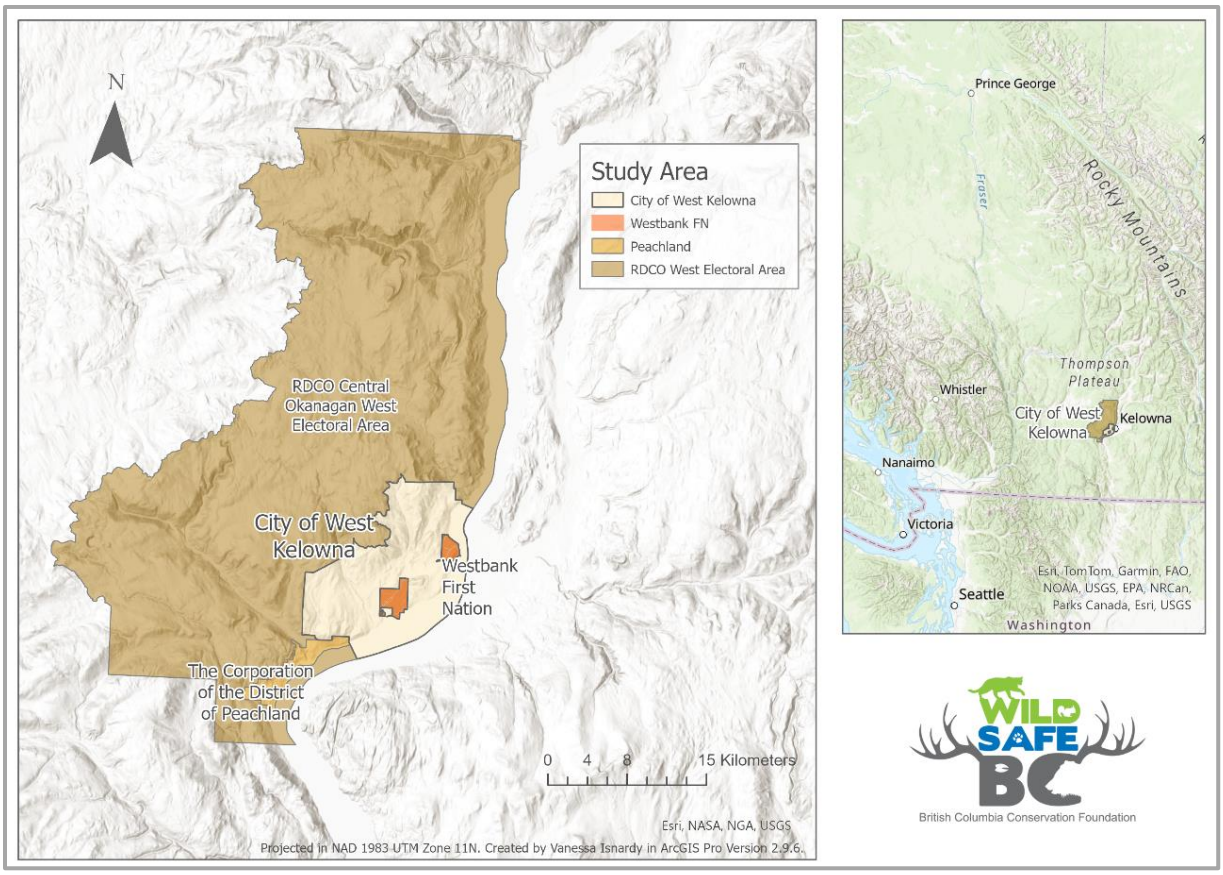


Figure 1. The focus of this BHA is the City of West Kelowna, located in the Central Okanagan Region of B.C.

West Kelowna covers an area of 123.43 km^2 (City of West Kelowna[a], 2023) with an estimated population of 36,078 residents in 2021 (Statistics Canada, 2023). The City expects to welcome an additional 12,000 residents by 2040 (City of West Kelowna[a], 2023). Development is constrained by the steep topography, Okanagan Lake, and designated agricultural land (City of West Kelowna[a], 2023). Of the 13,970 dwelling types in the City, 9,505 (68.0%) are single-family detached homes (Statistics Canada, 2021).

The City of West Kelowna has 14 distinct neighbourhoods (City of West Kelowna[b], 2023) with commercial areas on either side of Provincial Highway 97, one of the busiest highways in the Okanagan. The highway bisects the City and leads to Okanagan Lake Bridge and the City of Kelowna (Figure 2). The bridge had an average of 64,522 daily summer crossings in 2022 (Ministry of Transportation and Infrastructure, 2023).

Daily average temperatures range from -2.6°C in December to 19.5°C in July based on the 1981 to 2010 Canadian Climate Normals station data recorded at the Kelowna airport (Government of Canada: Climate Normals, 2023). The station receives an average of 311 mm of rain per year and 89 cm of snow. The study area sits within the Southern Interior Ecoprovince and contains a high biological diversity of many rare and endangered species (Iverson and Cadrin, 2003).

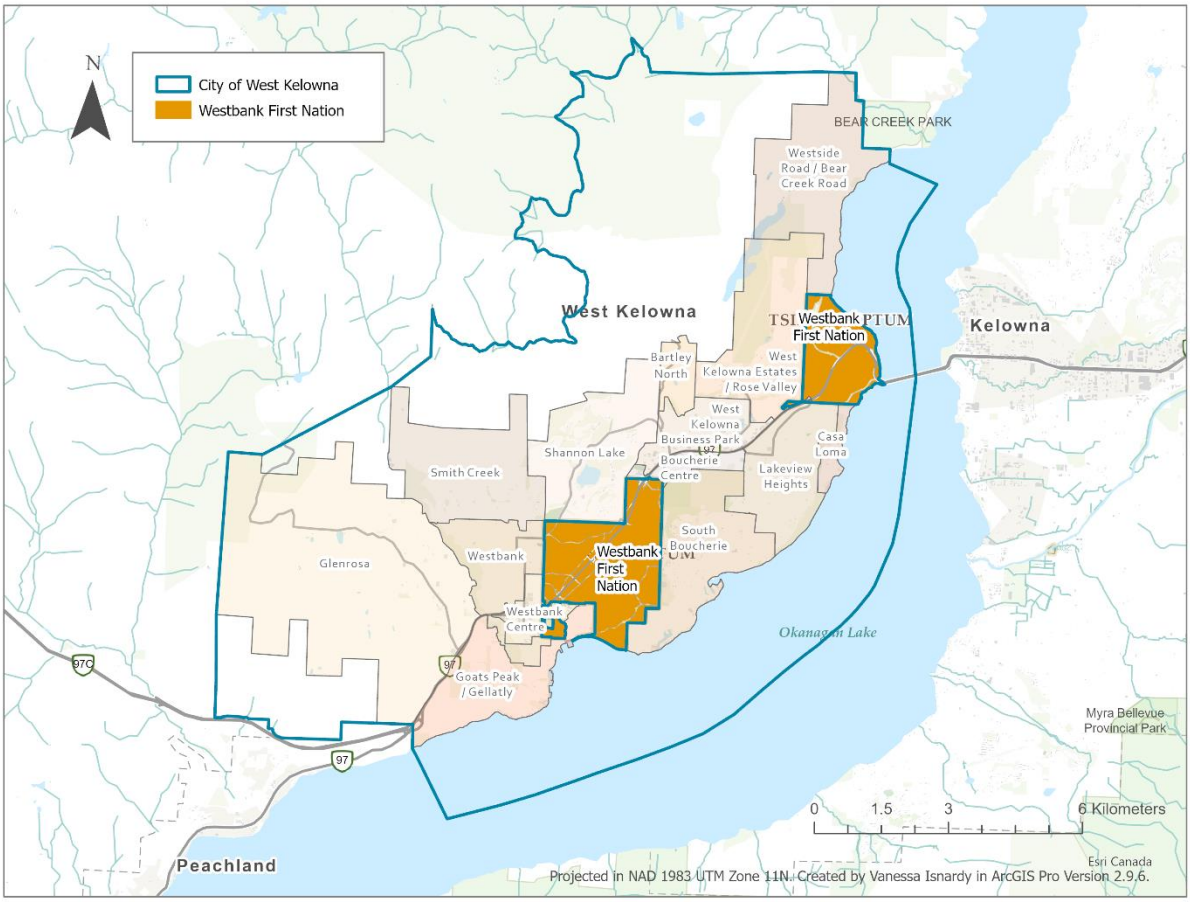


Figure 2. City of West Kelowna neighbourhoods (GIS layers: City of West Kelowna[b], 2023).

BEAR HAZARD ASSESSMENT METHODS

LITERATURE REVIEW

This document is informed by the Westbank First Nation Bear Hazard Assessment (Bjordal et al., 2022), the Bear Smart Community Background Report (Davis et al., 2002), various peer-reviewed studies and reports on bear biology and ecology, bylaws and resources published on the City of West Kelowna and RDCO websites, and the City of West Kelowna's 2020-2040 Official Community Plan (2023).

BEAR REPORT DATA

In BC, the Report All Poachers and Polluters (RAPP) phone number (1-877-952-7277) is the primary way the public are asked to report animals classified as dangerous according to the BC Wildlife Act which include bears, cougars, wolves and coyotes. The public are requested to report instances when dangerous wildlife is observed accessing human-supplied food sources, not easily scared off, or in the vicinity of a city park or school (Province of B.C., 2022). The relevant Human-Wildlife Conflict Report (HWCR) data used for this analysis includes:

- Location, date, and time of report,
- Species involved,
- Coordinates of the encounter,
- Encounter type which is defined by the Province (e.g., sighting, food-conditioned, damage to property, injured/distressed, dead wildlife, aggressive etc.),
- Outcome of the encounter (e.g., advice provided, destroyed by COS, not specified), and
- Attractant(s) associated with the report if applicable (garbage, barbeque, livestock, fruit trees, etc.). If the report is a sighting and an attractant is not identified, this field will be entered as "not applicable".

A review and synthesis of bear reports made to the Conservation Officer Service (COS) was performed utilizing historical data from WildSafeBC's Wildlife Alert Reporting Program (WARP) from January 1, 2014 to December 31, 2022 and HWCR data provided by the Province of British Columbia from January 1, 2016 to December 15, 2023. WARP data had been available publicly until it was taken offline in mid-2023 (WildSafeBC, 2023). As a result of updates to the Province's WEBEOC database as of May 14, 2022, there have been challenges in reconciling information with the WildSafeBC WARP Program. During this period, 18% (n=55) of the reports did not have coordinates and were included in the summary reports but not the mapping.

There are several limitations to the data as reports are limited to those encounters that are reported to the RAPP line. Therefore, it is not an indication of wildlife distribution and abundance. Bears are likely to be using quality bear habitats adjacent to or within the community's green spaces. If they are not perceived as a threat or not observed, then they are not likely to be present in the data. Additionally, not all reports are attended to or confirmed by the COS, and there may be cases of misidentification of wildlife species. As such, the data provides one metric to measure human-bear interactions in the region.

INTERVIEWS AND SURVEYS

Several people with relevant knowledge were interviewed including Conservation Officer Ken Owens, West Kelowna Bylaw Services Manager Mike Cain, Manager of Parks Mark Roberts, Westbank First Nation Law Enforcement Officer Wayne Murdock, Provincial Biologist TJ Gooliaff, staff at the RDCO-managed Westside Transfer Station, and RDCO Waste Reduction Facilitators Cynthia Coates and Rae Stewart. In addition, a public survey was delivered to the community via Survey Monkey and there were 463 participants.

Social science is being used more frequently to understand human values and attitudes towards bears which can inform more effective, multi-faceted approaches to human-bear conflict reduction (Johnson et al., 2018). WildSafeBC developed the Community Human-Bear Interaction Survey with guidance from Dr. Beatrice Frank. The survey utilizes social science methodologies to enhance our understanding of people's perceptions of bears and management strategies. Results can inform more effective communication strategies and suggest actions that people are willing to take if barriers to adoption are reduced or removed. The survey has been replicated and delivered in several communities throughout B.C., including the Westbank First Nation.

The survey consists of 44 questions, with questions 33 to 44 being personal information questions that were not included in this analysis. The survey was delivered via SurveyMonkey from August 14 to October 2, 2023, and promoted by the WildSafeBC Central Okanagan coordinator and the City of West Kelowna. There was a significant pause in the promotion of the survey during the McDougall Creek Fire but the survey remained open during this period.

FIELD SURVEY

Field surveys were performed from June 5 to June 9 and data was collected using ArcGIS Field Maps. Attractant data and points of interest information were collected on public property with a focus on schools, parks and trailheads. All website-published municipal parks were reviewed and assessed for attractants and sightlines as well as the nearby RDCO trailheads and the Westside Residential Waste Disposal and Recycling Centre. Items that were not mapped included single-family garbage and recycling containers as they can be expected at every residence with various methods of storage. Residential solid waste management is therefore discussed collectively. Fruit trees and other attractants on private property were not mapped but inferences were made based on interviews, social science survey findings and HWCR data.

BEAR HABITAT AND NATURAL FOODS

A review of potential bear habitat and forage foods was identified, described, and mapped using the Province's Columbia's Biogeoclimatic Ecosystem Classification (BEC) system (Ryan et al., 2022) and a multi-data analysis of projects that included grizzly bear habitat and forage foods (MacHutchon, 2021). Habitat features that bears are likely to use as travel corridors are discussed as well as the effects of the recent McDougall Creek Fire.

CLASSIFICATION OF RISK AREAS

Risk ratings were grouped by neighbourhood and risk factors were discussed based on evidence of past bear activity, presence of attractants, proximity to quality bear habitat and cover, and overlap with human activities (e.g., schoolyards, parks, and recreation areas).

BEAR SMART CRITERIA

The City of West Kelowna has taken several steps towards reducing human-bear conflict and meeting the six Bear Smart Community Program criteria. These efforts have been summarized as well as opportunities for further work and discussion.

RESULTS

BEAR DISTRIBUTION AND CONSERVATION RANKINGS

Black bears (*Ursus americanus*) are widely distributed throughout British Columbia with home ranges of 5 to 25 km^2 for females and 25 to 150 km^2 for males (Province of B.C., 2001). Their population status is considered secure both Federally and Provincially. Grizzly bears (*Ursus arctos*) are listed under the Species at Risk Act (SARA) as a species of Special Concern (Schedule 1) and are identified as a Blue-Listed species in British Columbia.

Grizzly bears are considered extirpated from the Central Okanagan, with the closest populations occurring west of Princeton and Merritt and east in the Central Monashees (TJ Gooliaff, personal communication, June 20, 2023; Ministry of Forests, Lands, Natural Resource Operations and Rural Development and Ministry of Environment and Climate Change, 2022). This is a result of increasing human populations, settlements and the conversion of land for agriculture.

Human-bear conflicts in these areas lead to the loss of these populations. However, with home ranges of 20 to 200 km^2 for females and 60 to 700 km^2 for males (Province of B.C., 2002), it is possible for grizzly bears, especially young males, to attempt to disperse into the region. Grizzly bear reports have been confirmed on the east side of Okanagan Lake near Kelowna. However, there hasn't been a confirmed grizzly bear sighting in West Kelowna in the past 10 years (K. Owens, personal communication, February 12, 2024). Cinnamon or brown-phased black bears are common in the Okanagan and are often misidentified as grizzly bears.

BEAR BEHAVIOUR AND ECOLOGY

Bears hibernate over the winter in response to a lack of food. During this time adults do not eat, drink, or defecate. Female sows give birth to cubs in late January to early February and nurse them until they emerge from their dens in spring. Black bears will care for their young until the following spring. In June, receptive females will shun older offspring during mating. Female offspring often settle on or near their mother's home range while males often disperse further to find their own territory.

Bear behaviour is predicated by social hierarchy with juveniles, and sows with cubs, avoiding dominant boars. Infanticide, the killing of young by adult bears, is not unusual. Black bears prefer to forage and travel in forested areas that include sedges, grasses, seasonal berries, and insects (Bowerstock et al., 2021). In urban areas, these areas are often undeveloped green spaces and parkland. While riskier, some bears will forage along roadsides in the spring when they flush with new growth and nutritious dandelions.

Black bears will establish dens in large diameter tree cavities if available or they may use rock cavities, brush piles or holes dug into the ground (Province of B.C., 2001). Within the study areas, black bears have been known to den under fallen over trees or occasionally under porches of homes (K. Owens, personal communication, February 12, 2024). Black bears may reuse a den intermittently over many years and dens may also be reused by different individuals (Davis et al., 2012). A den site must remain dry throughout the winter and snow acts as an important insulator.

FACTORS LEADING TO HUMAN-BEAR CONFLICTS

Bears have evolved over thousands of years to forage on natural foods and avoid potential threats posed by humans. However, when bear travel corridors and habitat overlap human-dominated landscapes, interactions with people increase. Bears, even apex grizzly bears, often choose to avoid human activity as they perceive it as a risky scenario (Ordiz et al., 2011).

While urban environments present risk, they also provide benefits such as concentrated and consistent food resources (e.g., organics found in garbage and compost, fruit and nut trees, bird seed, produce in gardens, watered green spaces, and free-ranging livestock). Black bears are more likely to forage in urban environments during urban spring green-up and as they enter hyperphagia in late summer and fall (Merkle et al., 2013, Klees van Bommel et al., 2022). This is exacerbated when natural food production is poor (Johnson et al., 2015, Baruch-Mordo, 2014). To avoid human activities, black bears may become more nocturnal when traveling and foraging for food (Beckmann & Berger, 2003; Baruch-Mordo et al., 2013; Klees van Bommel et al., 2022).

A habituated black bear tolerates humans in much closer proximity than non-habituated black bears, which can lead to unsafe interactions between bears and people (McCullough, 1982). How quickly black bears become human habituated can vary among individual bears. When black bears access human-provided food, they can become food conditioned and spend increased time foraging in urban areas (Braunstein et al., 2020; Hopkins et al., 2010). Females that rear their cubs in urban landscapes are more likely to produce offspring that will continue to access anthropogenic food sources as independent adults (Mazur, 2008).

Human habituation and food conditioning are distinct behaviours and bears can become habituated to people without becoming food conditioned such as in bear viewing where there is no association between people and a food reward (Herrero et al., 2010). However, food-conditioned bears often show signs of being habituated to people (Hopkins et al., 2010).

Bears are strongly food motivated, and food-conditioned bears can threaten human safety when they become more bold or protective of food sources (Hopkins et al., 2010). This can result in encounters at close range, damage to property, injury to pets and livestock, and aggressive encounters that result in human injury (Braunstein et al., 2020). Food-conditioned bears that spend time foraging in urban communities are more likely to be struck by vehicles or be lethally removed by wildlife agencies (Baruch-Mordo et al., 2013; Spencer et al., 2007; Laufenberg et al., 2018). It is not known if communities act as ecological traps for black bears but it has been shown for grizzly bears in the South Rockies (Lamb et al., 2016). An ecological trap is when an animal mistakenly selects a habitat that lowers its overall fitness and survival compared to other available habitats. Combined with climate-induced natural food shortages, human-caused mortality may have an increasingly pronounced effect on local black bear populations (Laufenberg et al., 2018).

The leading strategy for keeping people safe and preventing human-caused mortality in bears is to prevent access to anthropogenic food sources and prevent bears from becoming food conditioned (e.g., Lewis et al., 2015; Marley et al., 2017; Baruch-Mordo et al., 2013; Johnson et al., 2018; Klees van Bommel et al., 2022).

RELOCATION AND TRANSLOCATION AS BEAR MANAGEMENT STRATEGIES

Bears become knowledgeable about where to find food and water, secure a winter den, find a mate, and avoid conflicts with other bears within their home ranges. Relocation is a term used for capturing and releasing a wild animal within its home range. Translocation is a strategy used to move an animal beyond its home range. Translocations can lead to poor outcomes for individual animals if not carefully evaluated by wildlife biologists and they are used sparingly. Relocations are often considered relatively ineffective as bears will often travel long distances to return to known food sources (Spencer et al., 2007). Both options are expensive and do not address the root causes of human-bear conflicts. A bear that is either relocated or removed is often replaced by a new bear that begins the cycle of conflict if attractants are not addressed in the community.

BEAR HABITAT AND NATURAL FOODS IN THE REGION

Both grizzly and black bears are omnivores, opportunistic predators, and scavengers, that rely mostly on vegetation to form the bulk of their diet (Province of BC, 2001, Ministry of Water, Land and Air Protection, 2004). Interior black bears eat a wide variety of foods throughout the season. When they emerge from their dens in the spring they select areas that green up first and forage on grasses, forbs, carrion, insects, and opportunistically on newborn ungulates (Bowerstock et al., 2021; Province of BC, 2001). As the season progresses, fruits such as black huckleberry (*Vaccinium membranaceum*), grouseberry (*V.scoparium*), soopolallie (*Shepherdia canadensis*), and saskatoon (*Amelanchier alnifolia*) will dominate their diets and they will seek out dense berry patches (McLellan, 2011). As the berries begin to wane, black bears will forage more on herbaceous plants and grasses (McLellan, 2011). If spawning salmon are available, bears will also take advantage of these dense sources of protein. However, the low salmon returns in West Kelowna are not likely to form an important part of a bear's diet (TJ Gooliaff, personal communication, June 20, 2023).

While black bear habitat data is not available in the Okanagan, British Columbia's Biogeoclimatic Ecosystem Classification (BEC) system allows us to make some predictions as to what plant types are likely to occur within the study area (Ryan et al., 2022) and compare that to grizzly bear foods that have been identified in the Southern Interior (MacHutchon, 2021). Since black and grizzly bear diets are similar, some inferences can be made as to what habitat resources black bears may be using spatially. However, these are broad as it does not account for land disturbances such as logging, development, and/or fire. The timing of when bears are accessing these resources depends on local plant phenology and soil conditions, which may vary year to year depending on weather conditions.

The BEC system groups similar ecosystems (at climax stage) or ecological zones by components such as vegetation, soils and climate. BEC zones are coded by Zone, Subzone, Variant, Version then Site Series (Figure 3). For the purpose of this report, summaries only go to the Variant level of detail and utilizes Provincial Field Guides LMH 75 (MacKillop et al, 2022) and LMH76 (Ryan et al., 2022).

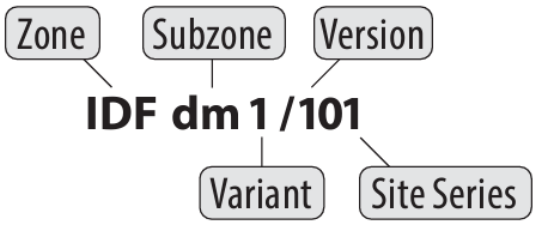
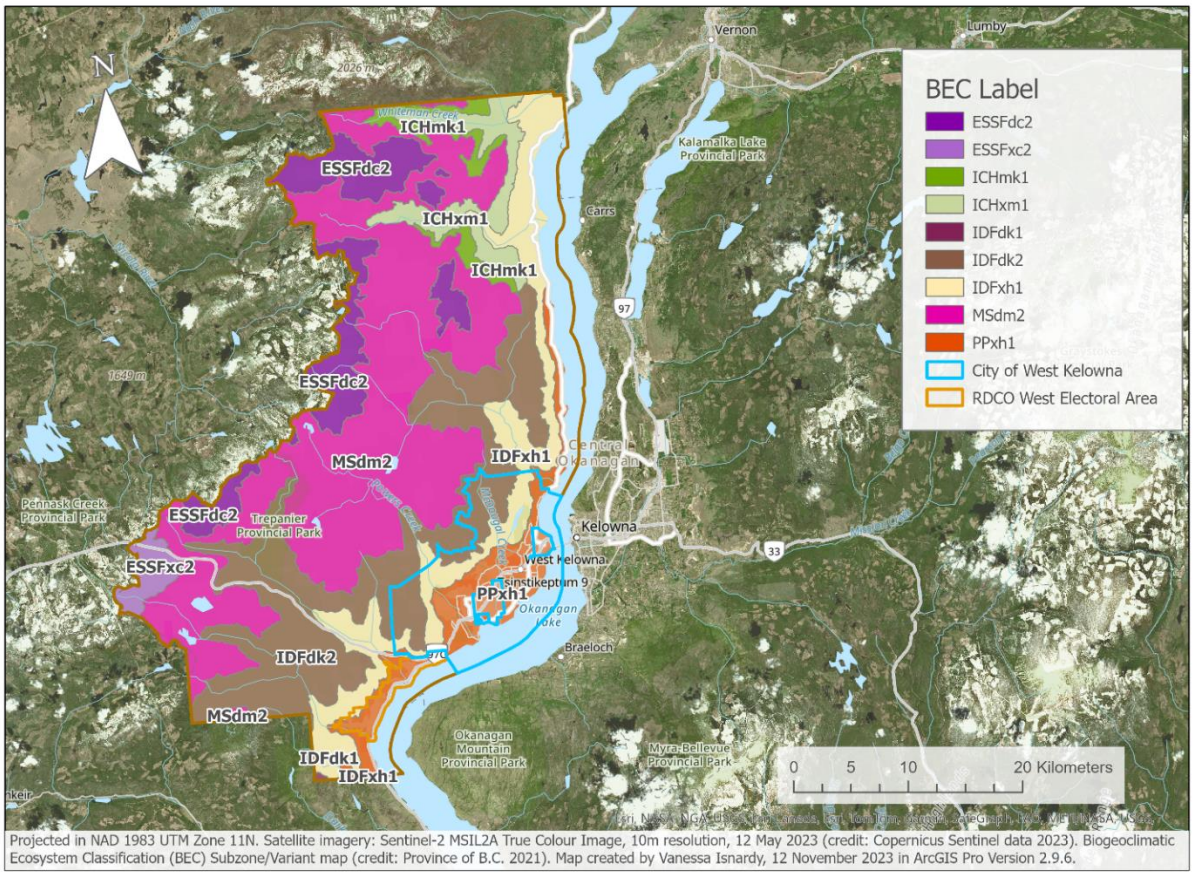


Figure 3. BEC system site series coding (MacKillop et al., 2021)

The study area includes nine BEC subzones with PPxh1, IDFxh1 and IDFdk2 occurring within the City of West Kelowna and the others occurring with the RDCO West Electoral Area (Table 1; Figure 4). A general description of these BEC Zone Variants follows with key foods for bears. A summary table of bear forage foods is provided in Appendix I. The table uses icons to represent the likelihood of a bear forage food being present in each BEC Zone Variant based on 20 project areas that documented grizzly bear habitat and diet (MacHutchon, 2021).

Table 1. Biogeoclimatic Ecosystem Classification (BEC) zones in the study area.

BEC Label	Zone Name	Subzone Name	Variant Name	City of West Kelowna	RDCO
ESSFdc2	Engelmann Spruce – Subalpine Fir	Dry Cold	Cascade		☑
ESSFxc2	Engelmann Spruce – Subalpine Fir	Very Dry Cold	Thompson		☑
ICHmk1	Interior Cedar - Hemlock	Moist Cool	Okanagan		☑
ICHxm1	Interior Cedar - Hemlock	Very Dry Mild	Shuswap		☑
IDFdk1	Interior Douglas-fir	Dry Cool	Thompson		☑
IDFdk2	Interior Douglas-fir	Dry Cool	Cascade	☑	☑
IDFxh1	Interior Douglas-fir	Very Dry Hot	Okanagan	☑	☑
MSdm2	Montane Spruce	Dry Mild	Cascade		☑
PPxh1	Ponderosa Pine	Very Dry Hot	Okanagan	☑	☑



Projected in NAD 1983 UTM Zone 11N. Satellite imagery: Sentinel-2 MSIL2A True Colour Image, 10m resolution, 12 May 2023 (credit: Copernicus Sentinel data 2023). Biogeoclimatic Ecosystem Classification (BEC) Subzone/Variant map (credit: Province of B.C. 2021). Map created by Vanessa Isnardy, 12 November 2023 in ArcGIS Pro Version 2.9.6.

Figure 4. Biogeoclimatic Ecosystem Classification (BEC) zones within RDCO West Electoral Area and the City of West Kelowna.

ESSFxc2 – Thompson Very Dry Cold Engelmann Spruce – Subalpine Fir

This is the highest elevation Variant and it is characterized by a cool climate that is moist in winter, spring and summer and dry in fall. The forests are predominantly lodgepole pine (*Pinus contorta*), sub-alpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea englemannii*). The understory is dominated by grouseberry (*Vaccinium scoparium*) and in some site series black huckleberry (*Vaccinium membranaceum*). Black bears will forage on berries and herbs over the summer.

ESSFdc2 – Cascade Dry Cold Engelmann Spruce – Subalpine Fir

This ESSFdc2 is the second-highest elevation Variant within the study area and is characterized by a cool climate that is moist in winter and spring and dry in the summer and fall. The dominant trees are Engelmann spruce and sub-alpine fir with some lodgepole pine. In open, mature forests, the dominant understory includes black huckleberry an important food for bears in summer and fall as well as grouseberry. Very wet forests can be abundant with horsetail which bears favour after snowmelt and before berries ripen.

MSdm2 – Cascade Dry Mild Montane Spruce

The MSdm2 lies above the IDFdk2 and just outside of the City's boundary at the northern end. The climate consists of dry and warm falls followed by cool and moist winters and springs and cool dry summers. This Subzone has the greatest variety of tree species which include lodgepole pine, interior white spruce (*Picea glauca*), subalpine fir, Douglas-fir and occasionally trembling aspen (*Populus tremuloides*). Key bear foods include black huckleberry and grouseberry. Moist forested sites support a variety of forbs for bears and the wettest zones may have devil's club (*Oplopanax horridus*) and common horsetails (*Equisetum arvense*) which are important forage for bears. Mature forests with large diameter trees provide important denning sites for black bears.

ICHxm1 (formerly IDFmw1) – Shuswap Very Dry Mild Interior Cedar – Hemlock

The ICHxm1 occurs above the IDFxh1 in the northern part of the study area and outside of the City boundary. This is a dry climate Subzone with warm springs, mild winters, hot falls, and very hot summers. This is a transition zone between the dry climates of the IDF and the moist ICH and therefore there is a large variety of tree species that can occur here including Douglas-fir (dry to mesic sites), ponderosa pine (*Pinus ponderosa*) (dry sites), western redcedar (*Thuja plicata*)(mesic to wet sites), paper birch (*Betula papyrifera*)(mesic sites), western larch (Larix occidentalis)(mesic sites), lodgepole pine (mesic sites) and interior white spruce (moist sites). The high diversity and patchwork of different habitats supports a high level of biodiversity and species-at-risk. Some of the important foods for bears include saskatoon (*Amelanchier alnifolia*) and kinnikinnick (*Arctostaphylos uva-ursi*) on drier sites, soopolallie on mesic sites, and thimbleberry (*Rubus parviflorus*), red-osier dogwood (*Cornus sericea*), black gooseberry (*Ribes lacustre*) and devil's club on moist to very wet sites. There may be others as the Subzone can support a wide-variety of forbs and berry-producing shrubs. Large diameter trees can provide important den sites for bears.

ICHmk1 – Okanagan Moist Cool Interior Cedar – Hemlock

The ICHmk1 occurs above the ICHxm1 and shares many similarities except for the presence of subalpine fir. It is also located in the northern part of the study area and outside the City's boundary.

IDFdk2 – Cascade Dry Cool Interior Douglas-fir

The IDFdk2 is the highest elevation variant with the City of West Kelowna with a similar climate to IDFdk1 with a similar forest canopy but as it can be slightly wetter, can also have interior white spruce in wet site series. Those wetter site series will also have red-osier dogwood, black gooseberry, horsetail, and black twinberry (*Lonicera involucrata*). Mesic areas will have grouseberry (*Vaccinium scoparium*), kinnikinnick and soopolallie. The drier areas will have saskatoon, prickly rose (*Rosa acicularis*) and kinnikinnick.

IDFdk1 – Thompson Dry Cool Interior Douglas-fir

The IDFdk1 is one of the three Variants found within the City of West Kelowna and sits between IDFdk2 and PPxh1. It is characterized by a very dry climate with cool winters, mild springs and warm summers and falls. Where not disturbed, the IDFdk1 is dominated by forests of Douglas-fir and lodgepole pine.

On very dry sites, there are mixed stands of Douglas-fir and ponderosa pine with an understory of bluebunch wheatgrass. On wetter sites, bear forage foods such as horsetail, red-osier dogwood, black twin-berry, prickly rose, and a diversity of herbs can be found. As sites become dryer, kinnikinnick becomes more dominant. Other potential berry-producing shrubs include soopolallie and saskatoon.

IDFxh1 – Okanagan Very Dry Hot Interior Douglas-fir

North of the City of West Kelowna, the IDFxh1 occurs right to shoreline of Okanagan Lake but within the City, it sits above the PPxh1 Subzone. The IDFxh1 is dry year-round with mild winters, warm summers and hot summers and falls. Trees consist of mixed stands of Douglas-fir and ponderosa pine and drought is a limiting factor for tree growth. Where Douglas-fir is more dominant, the understory tends to consist of pinegrass and where it is moist it will have more shrubs. Wet sites will be dominated by horsetails. On drier sites with ponderosa pine, the understory is dominated by bluebunch wheatgrass (*Pseudoroegneria spicata*). Where grasslands occur, they are very productive compared to lower elevation zones and can recover more quickly after disturbance. Historically, frequent-low severity fires prevented tree encroachment and helped maintain mostly open forests. Denser forests with accumulated surface fuels are more vulnerable to stand-replacing fires.

The IDFxwh1 has a wide diversity of habitats including open and closed forests, riparian areas, saline ponds, meadows, wetlands, and rocky areas. This variety, and north to south connectivity, supports many species such as deer, Rocky Mountain elk, cougar, moose, and bobcat as well as a high number of at-risk species. Large Douglas-fir and ponderosa pine provide important denning sites for black bears. Key foods for bears include saskatoon, soopolallie, chokecherry (*Prunus virginiana*), kinnikinnick, and prickly rose. On wetter sites common horsetail, red-osier dogwood, black gooseberry, thimbleberry, and a variety of herbs.

PPxh1 – Okanagan Very Dry Hot Ponderosa Pine

The PPxh1 is the lowest elevation variant with the City of West Kelowna and follows the shoreline. It is also the most altered by human development and agricultural conversion. The natural climax state of the PPxh1 is of forests dominated by ponderosa pine/bluebunch wheatgrass on drier sites and Douglas-fir/pinegrass (*Calamagrostis rubescens*) on wetter and cooler aspects. Grasslands occupy over one-third of the PPxh1 however the health and extent of these sensitive ecosystems withing the study area is not included in the scope of this project. This Subzone contains some of the most at-risk and species and ecosystems in Canada. Black bears use the open forested areas as travel corridors and forage on saskatoon, choke cherry, kinnikinnick, and introduced species such as common dandelions (*Taraxacum officinale*), alfalfa (*Medicago sativa*), and a variety of other forbs (especially in the spring).

McDougall Creek Fire

The McDougall Creek Fire (K52767) was reported August 15, 2023 and would burn an estimated 13,970 ha by the time it was declared fully extinguished on October 18, 2023 (B.C. Wildfire Service, 2023). The effects of wildfire, both immediately during the active fire, and secondary ecological effects post-fire, depend on a variety of factors. While the McDougall Creek Fire was active, black bears, including cubs of the year, would have been mobile and able to move away from the fire depending on the breadth and speed of the fire front. Bears and other wildlife can be injured or killed when fires are fast moving, actively crowning, and creating ground smoke, which can lead to smoke inhalation and/or burns (Lyon et al., 2000). However, the direct mortality to bears and other larger wildlife appear not to significantly affect populations as a whole (Lyon et al., 2000).

Secondary ecological effects of the McDougall Creek Fire are more likely to have a greater effect on black bear population dynamics in the area and will be dependent on habitat type and condition, fire severity, and the spatial pattern of fire on the landscape (Lyons et al., 2000). Short-term negative effects include loss of forage food, security cover, clean water, and den sites. Limited benefits may be fire-killed mammals that bears can scavenge on. Many of the species of plants that bears forage on will benefit from low to moderate-severity fire. Herbaceous forbs and grasses are likely to recover with one year of the fire and benefit from increases in nutrients and openings in the forest canopy (Lyons et al., 2000), especially in the lower elevation BEC zones.

Berry-producing shrubs can also benefit from low to moderate-severity fires. Indigenous Peoples used cultural fire to increase community safety and prevent encroachment by other shrub species and conifers that would compete with huckleberry and blueberry plants (Gottesfeld, 1994). For example, black huckleberry (*V. membranaceum*), a highly valued berry by bears and people, is a moderately fire-adapted species. It is typically found in cooler sites above valley bottoms and the following is a summary from the Fire Effects Information System (Simonin, 2000). The foliage of the black huckleberry has a low flammability, and in low severity fires the top part of the plant may survive. If not, the plant can regenerate from the rhizomes or root crown. In low to moderately severe fires, black huckleberry can return to pre-fire coverage in three to seven years and stem counts tend to increase. This increase in density is most common in low-severity surface fires that kill the top of the plant and encourage heavy sprouting from rhizomes. In moderate to high severity surface fires, the plant's rhizomes can be potentially damaged if the soil or duff layer gets too hot and this can potentially kill the plant outright. Ground fires can also kill the rhizomes. In large areas that are severely burned, black huckleberries may not be able to recolonize an area for decades because they rely on vegetative reproduction and rarely reproduce from seed.

Fire effects are complex and a complete or fine-scale analysis is beyond the scope of this study. However, spatial mapping of the fire severity may inform future land management and restoration objectives and provide an overview of the overall effect of the fire. The Normalized Burn Ratio (NBR) and resulting Differenced Normalized Burn Ratio (dNBR) can be used to estimate burn severity and can be assessed using GIS analysis of satellite imagery (Earth Lab, 2022; Lentile et al., 2006).

Within the City of West Kelowna 7 ha (0.1%) were severely burned and 1,404 ha (11.4%) were moderately to highly severely burned while 2,665 ha (21.6%) was burned with low to moderate severity (Table 2; Figure 5). The low to moderately burned areas may become more productive for bears over the next five years depending on moisture and climatic conditions.

Table 2. Areas burned by severity and percentage of total area within the City of West Kelowna watershed and the City of West Kelowna.

Severity Level	dNBR range	City of West Kelowna Watershed Area Burned and Unburned (ha)	Percent of Total Area	City of West Kelowna Area Burned and Unburned (ha)	Percent of Total Area
High Severity	> 0.660	77	0.1%	7	0.1%
Moderate to High Severity	0.440 to 0.659	3,785	5.3%	1,404	11.4%
Moderate to Low Severity	0.270 to 0.439	3,778	5.3%	1,160	9.4%
Low Severity	0.100 to 0.269	7,199	10.0%	1,505	12.2%
Unburned	< 0.100	57,115	79.4%	8,228	66.9%
Total Area		71,955		12,304	

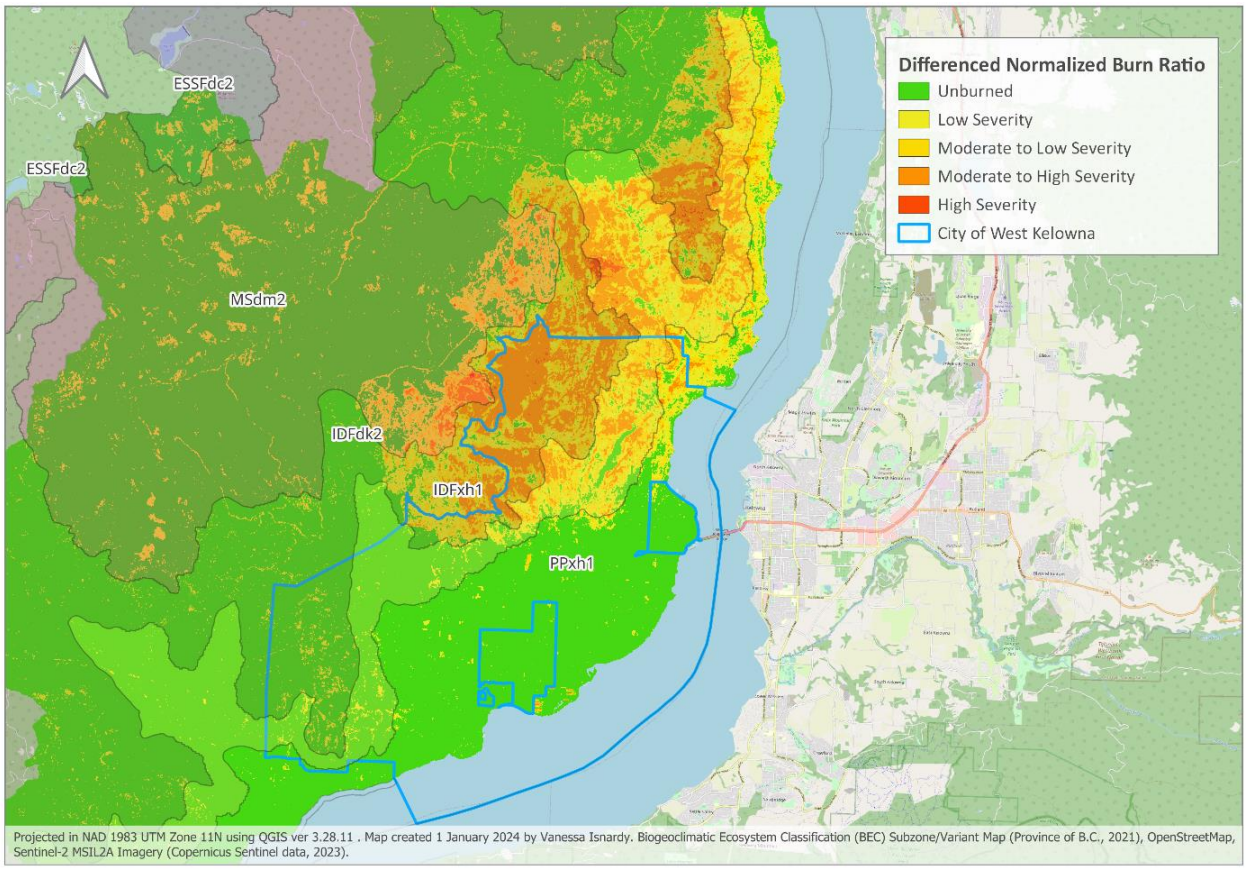


Figure 5. McDougall Creek Fire burn severity assessed using Sentinel-2 MSIL2A satellite imagery and Differenced Normalized Burn Ratio.

BEAR REPORT DATA

Within the City of Kelowna region, there have been 1,978 reports regarding black bears from January 1, 2014 to 15 December 2023 (Figure 6). Note that one bear can generate multiple reports. The average number of reports is 151 with the highest number of reports of black bears in 2021 (n=340) and 2022 (n=256). Black bear reports are trending higher in West Kelowna but are cyclical in nature. This can be a result of multiple factors including natural black bear population cycles, natural food availability, intraspecies competition for food resources, dispersal of juvenile bears, lethal removal, increased development in bear habitat, variations in attractant management, and awareness of the Conservation Officer Service RAPP line for bear reports. June and September tend to be the months with the highest number of reports (Figure 7).

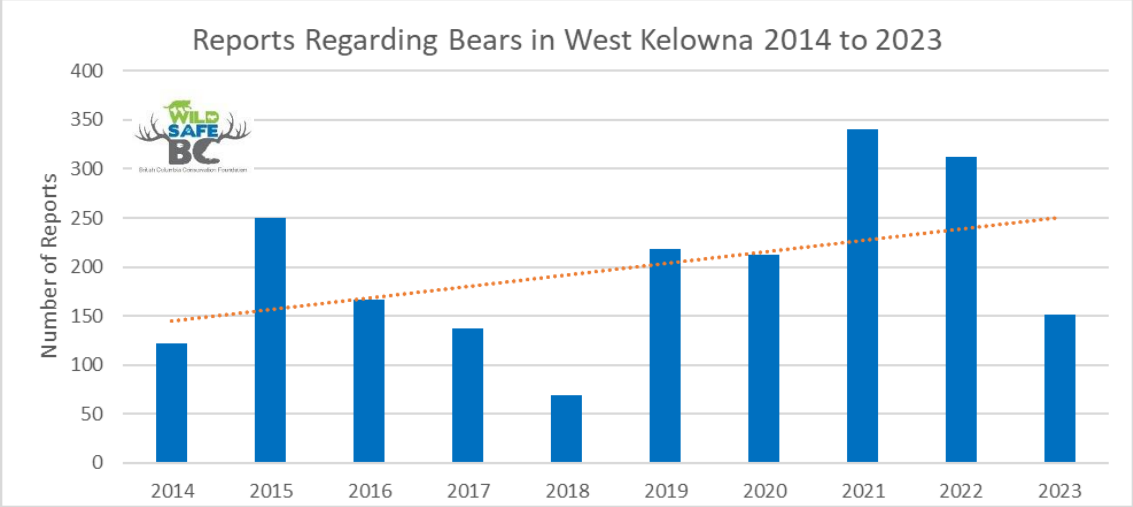


Figure 6. Black bear reports made to the Conservation Officer Service in West Kelowna 2014-2023 with linear regression trendline.

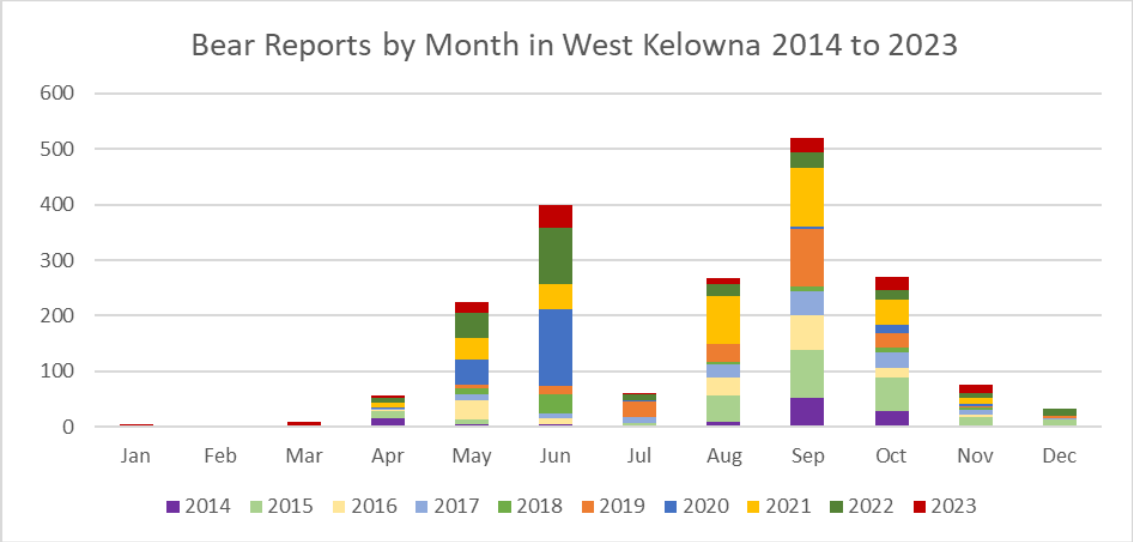


Figure 7. Black bear reports made to the Conservation Officer Service in West Kelowna by month, 2014 to 2023.

From 2014 to 2023, the average number of black bear reports was 192 per year. Reports in 2023 were 151, which is lower than the 10-year average. Since 2014, just under half of bear reports were sightings (46%) where an attractant was not reported but a bear was observed in the community. Where a bear attractant was included in the report, garbage was most often identified at 72% (n=642), followed by fruit trees at 13% (n=111) and bird feeders at 3% (n=30)(Figure 8).

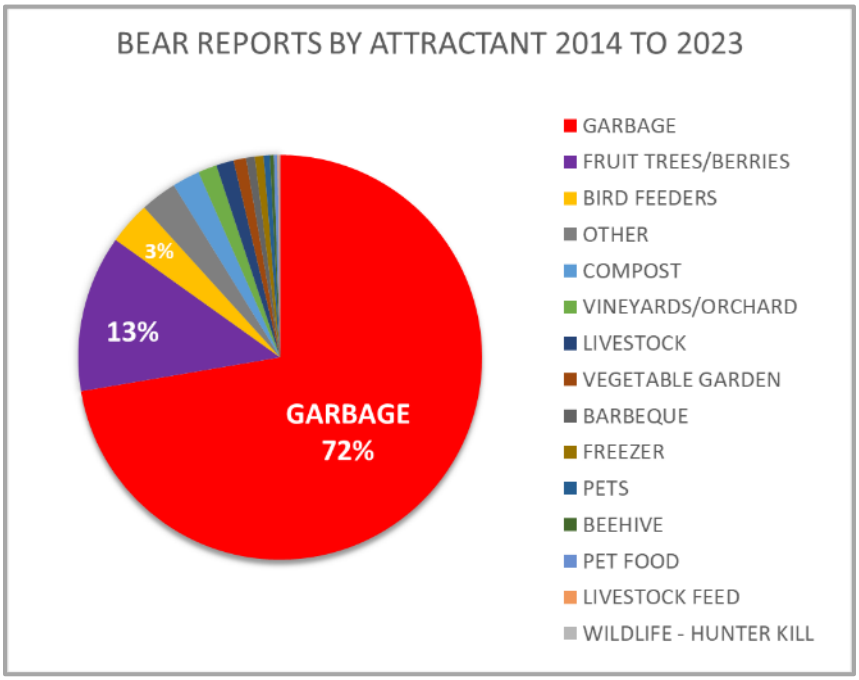


Figure 8. Reports where an attractant was identified in West Kelowna from 1 January 2014 to 15 December 2023.

Throughout most of B.C., garbage is most often cited as an attractant, however fruit trees in season have been shown to rival garbage as an attractant (Merkle et al., 2013). While garbage may contain edible waste that provides a caloric reward, the amount can vary from household to household. Seasonally, fruit trees have a dense concentration of calories that can be more predictable and easily accessed than garbage. During public surveys of human perceptions towards bears, including the survey for this BHA, respondents indicated that they were much less likely to report a bear accessing fruit compared to garbage, as it was perceived as a harmless and natural food source.

Since 2016, there have been 48 black bears that have been lethally removed within the City of West Kelowna (Table 3). While some of these bears had life-threatening injuries and were euthanized as a result, most were destroyed as they had histories of accessing garbage, or other attractants, and were considered highly food conditioned and human habituated.

Table 3. Black bears destroyed within the City of West Kelowna by the Conservation Officer Service and/or Other (source: Province of BC).

Black Bears	2016	2017	2018	2019	2020	2021	2022	2023	TTL
Destroyed by COS	1		1	5	7	13	12	7	47
Destroyed by Other		1					1		1
Total	1	1	1	5	7	13	13	7	48

Despite the lower than average reports, 7 bears were destroyed in early 2023 after accessing garbage and one bear was noted entering a home. In fact, the last three years have been some of the deadliest for bears in West Kelowna, with most being lethally removed as a result of access to garbage and other attractants, and then becoming food conditioned. A recent example includes the destruction of a food-conditioned family unit in the Shannon Lake neighbourhood in May of 2023 which resulted in a petition for stronger bylaws to address unsecured wildlife attractants (Gibson, June 15, 2023) .

West Kelowna Neighbourhoods

The City of West Kelowna has 14 distinct neighbourhoods with most black bear reports generated from residential areas (Figure 9). While no neighbourhood is immune to black bear visits, the highest number of reports occurred in Shannon Lake (n=740), West Kelowna Estates/Rose Valley (n=341), and Glenrosa (n=221) (Figure 9; Figure 10). These largely residential communities are adjacent to natural bear habitat on the northwest side of Highway 97 and have numerous parks and greenspaces which facilitate bear movements. Bears will cross Highway 97, especially at night when there is less traffic, and then use trail networks, green spaces, creeks, and ravines, as travel corridors to reach neighbourhoods such as Lakeview Heights (n=98) and Westbank (n=72).

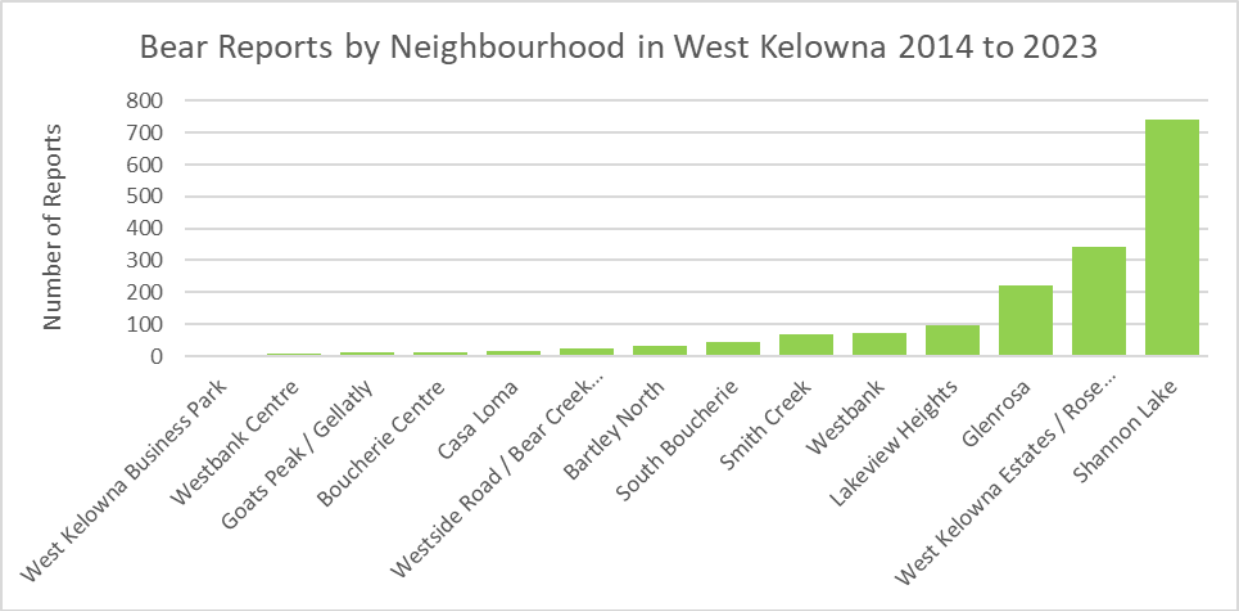


Figure 9. Black bear reports by West Kelowna neighbourhood from 1 January 2014 to 15 December 2023.

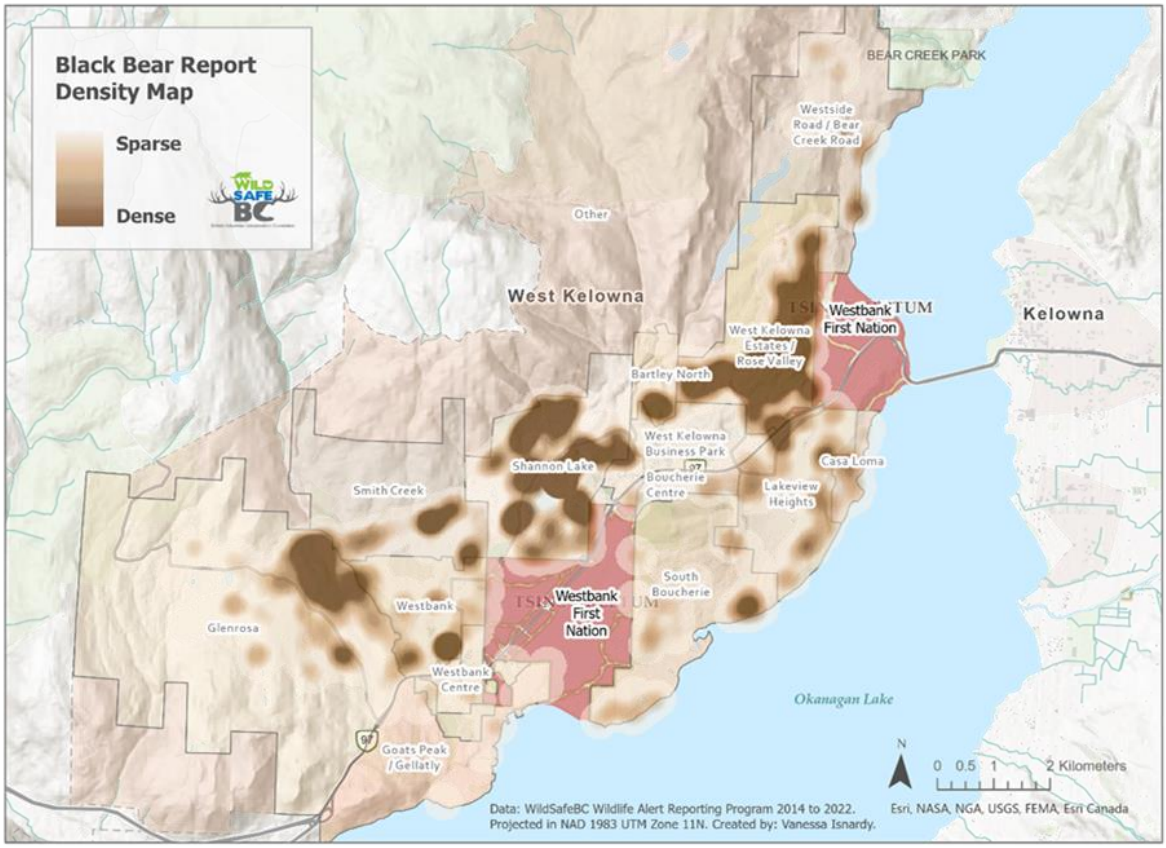


Figure 10. Heat map distribution of bear reports in West Kelowna indicating areas and neighbourhoods of highest bear activity.

The City of West Kelowna is expected to require an additional 5,383 dwelling units by 2040 (City of West Kelowna[a], 2023). Future growth will be constrained to the City's Official Community Plan (OCP) Growth Boundary and 52% of projected housing types will be single-family residences (City of West Kelowna[a], 2023). The OCP expects the existing neighbourhoods of Rose Valley, Smith Creek and Shannon Lake, Lakeview Heights, Goats Peak and Gellatly Village, will accommodate 36% of the new units and will consist mostly of single-family homes, low-rise apartments, townhomes and duplexes. The remaining will take place in two urban centres (40%), Westbank and Boucherie, and the balance will be in the Smith Creek and Goat's Peak Comprehensive Development (CD) Plan Areas.

HUMAN-BEAR INTERACTION SURVEY

There were 463 people who participated in the social science survey with most of the responses occurring directly after the City of West Kelowna's public service announcement delivered via Constant Contact on August 15, 2023 (n=355). According to the survey demographic results, most survey participants live year-round (95%) in single-family homes (85%) and the majority (94%) own their home. The top four ways residents heard about the survey were the City of West Kelowna's website (n=164), social media (n=97), email from the City of West Kelowna (n=92), and news media (n=48). Respondents had the option to skip questions and results have been aggregated for each response. The key findings of the survey are presented below.

The majority of respondents (n=390; 84%) responded that they liked having bears in the community, while some had concerns over conflicts (n=155; 33%) or human safety (n= 59; 13%) (Figure 11). The remainder either did not like bears in the community (n=51; 11%) or they did not have a particular feeling about bears (n=22; 5%). All participants answered this question.

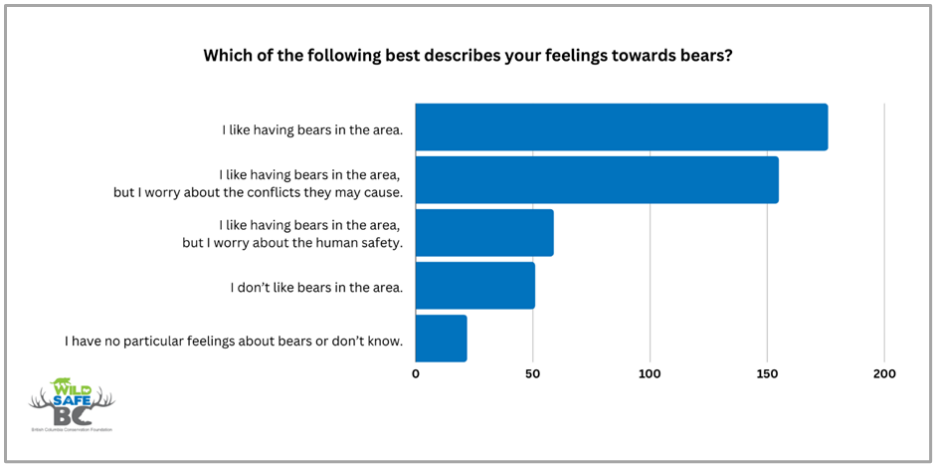


Figure 11. Survey results question 1: Which of the following best describes your feelings towards bears?

Residents were asked a variety of value questions about human-bear coexistence. The results were sorted by weighted average with most residents (n=429; 93%) agreeing that bears are an important part of the natural ecosystem and that learning to co-exist with bears is a normal part of living in West Kelowna (Figure 12). However, 32% (n=149) were afraid of encountering a bear. The selective killing of bears that damage property was disagreed with by 78% (n=362) of respondents and 8% (n=39) were neutral on the matter. All participants answered this question.

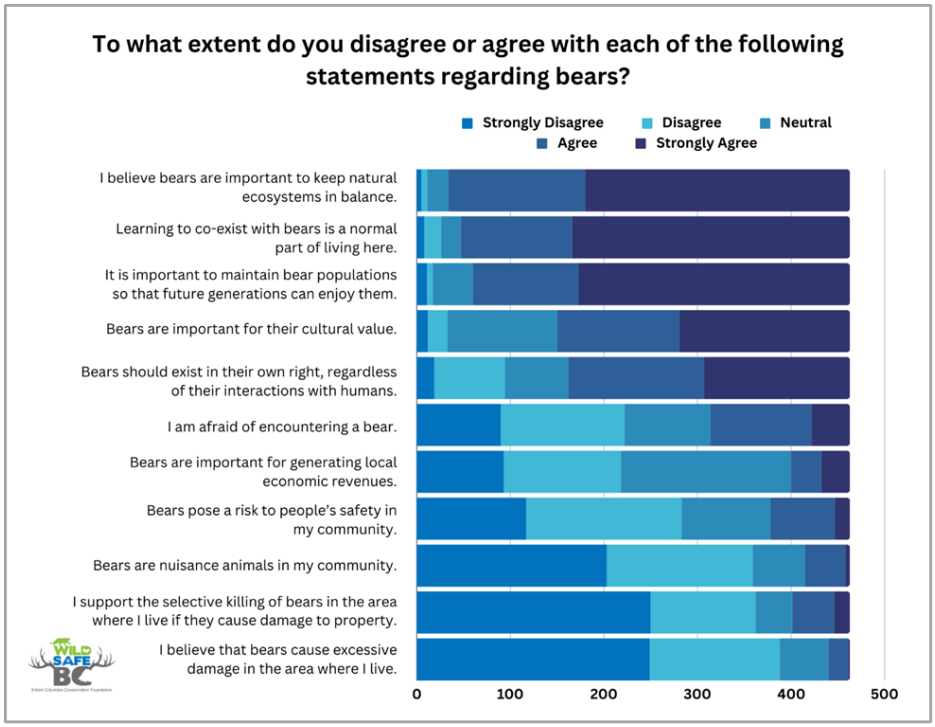


Figure 12. Survey results question 2: To what extent do you disagree or agree with each of the following statements regarding bears?

Residents were then asked about their concerns related to human and animal safety. While some expressed some level of concern for their personal safety (61%), there were more that had some concern for those that are elderly, vulnerable, or for their children (68%). For those that had pets, 58% indicated they had some level of concern. Respondents were least concerned regarding livestock with 123 (68%) responding they had no concerns and 270 (59%) stating this did not apply to them. This question was answered by 459 people and skipped by 4.

There was little consensus as to whether conflicts were increasing or decreasing in the community however, many residents (72%) have witnessed bears either on their property of their street in the past three years with 49% having seen them at least three times in the past three years (Figure 13).

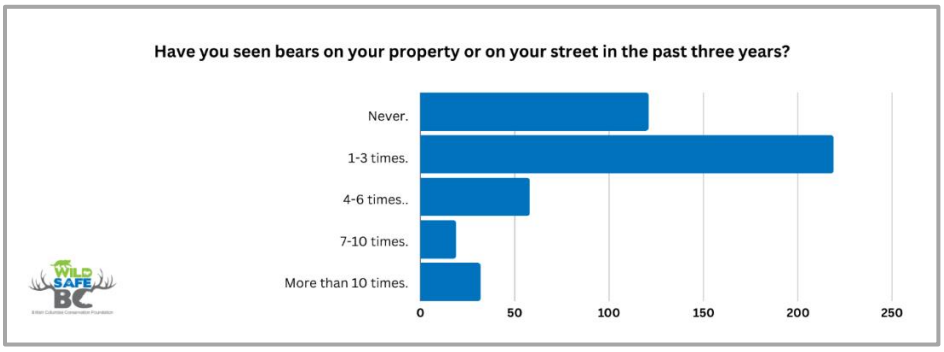


Figure 13. Survey results question 10: Have you seen bears on your property or on your street in the past three years?

Of those that had seen bears on their property or street (n=383; 75%), most (n=281; 83%) reported bears were just passing through while 38% (n=130) had observed bears accessing garbage and 18% (n=61) had seen bears eat fruit (Figure 21). Participants were able to select more than one answer. Other attractants that bears had been observed accessing were berries from ornamental plants such as crabapple (n=25; 7%), birdseed (n=24; 7%) and recyclables (n=22; 7%).

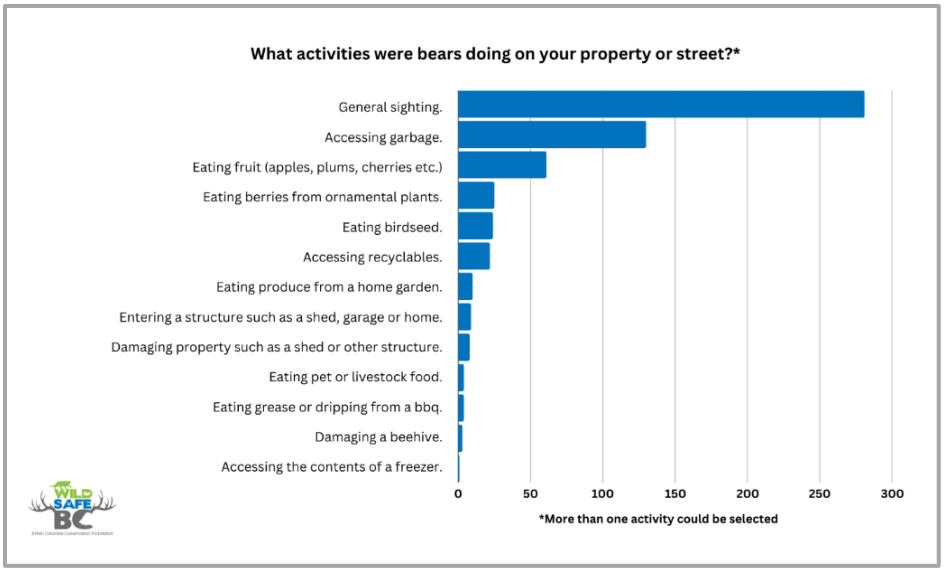


Figure 14. Survey results question 11: What activities were bears doing on your property or street? Select all that apply.

Few bears were observed damaging property (less than 1%). This question was answered by 49 people and skipped by 14. It also generated 61 comments. Some people noted that while they had not observed bears directly, they had seen signs such as bear scat, garbage strewn across properties, or had recorded their presence on security cameras. One person commented that a bear had entered their home through an open kitchen window.

Participants were then asked if they called the Conservation Officer Service through the Report All Poachers and Polluters (RAPP) line to report bears accessing non-natural attractants, involved in negative interactions, being aggressive, and/or being in populated areas where they can pose a risk to human safety. While 14 people skipped this question, most of those who did respond indicated that they had not called the RAPP line (n=398; 89%). If they responded no, they were then asked what some of the reasons might have been for not reporting the interaction. This question was skipped by 77 of the participants. Of those that did respond (n=386), half (n= 193; 50%) responded that they had not experienced this type of encounter with bears before. Other reasons selected included not feeling it was necessary (n=146; 38%) and fearing the bear would be killed (n=105; 27%).

Residents were provided a brief summary of the Bear Smart Community Program and were asked how important it is to their community (Figure 22). The majority felt it was either very important (n=335; 75%), important (n=71; 16%) or moderately important (n=19; 4%). The remaining answered slightly important (n=8; 2%), not important (n=8; 2%) or unsure (n=7; 2%). There were 15 people who skipped this question.

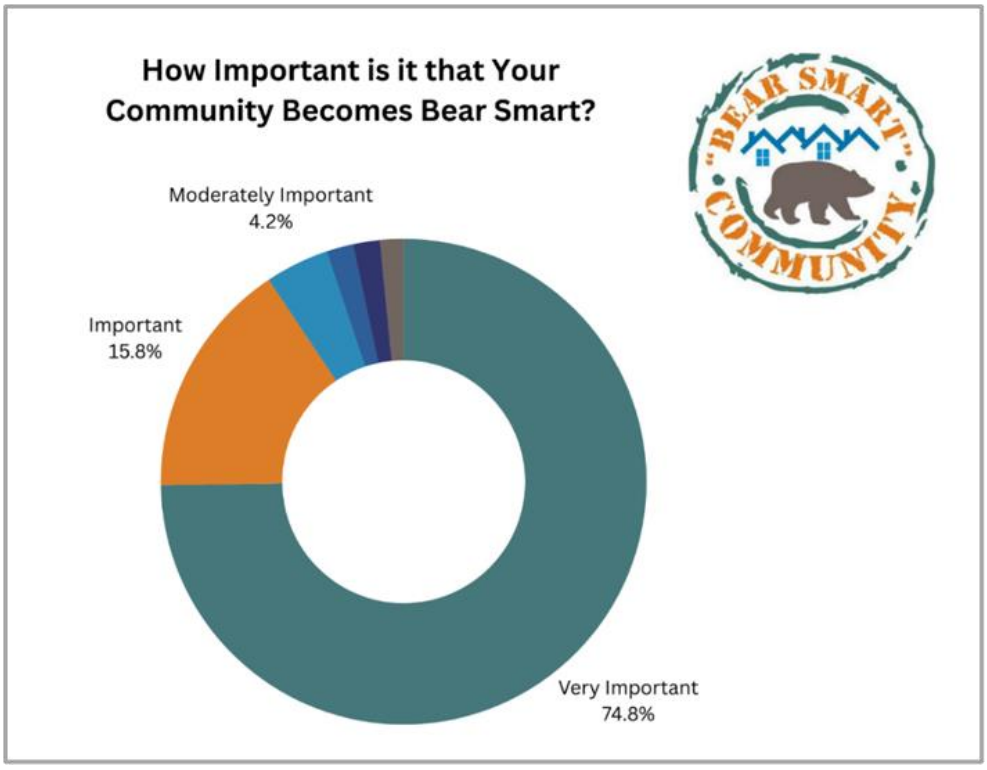


Figure 15. Survey results question 14: How important is it to you that the community where you live becomes Bear Smart?

The remaining questions in the survey, except for the demographic questions, focused on potential attractants in the community. These included the most common ones that could potentially attract bears in West Kelowna including garbage, compost, fruit trees, bird feeders, pets and pet food, freezers stored outdoors, chickens and beehives.

Garbage is the most reported attractant in West Kelowna, however 76% (n=337) of the participants in the survey indicated they stored their garbage indoors. For those that provided comments (n=55; 10%), many expressed that they did not have garages and/or there was a need for bear-resistant garbage containers. Other barriers included inconsistent or inconvenient collection times (n=35; 8%) which required garbage to be set out the night before or to be left out for collection over long periods during the day. These garbage-related questions were answered by 446 people and skipped by 17.

Most people responded that they do not compost (n=350; 79%). Of those, several indicated they would compost if there was a safe way to do so. For those that do compost, 6% (n=25) were not aware that compost attracts bears and 10% (n=45) were not sure how to compost in a way that would not produce odours. Many commented that they only compost yard waste and vegetable scraps and some have stopped composting because of incidents with bears, rats, or raccoons. Also of note, a few mentioned using a Lomi composter. Lomi is the brand name for one of several counter-top appliances available that reduce the volume of kitchen waste by grinding and dehydrating it. These compost-related questions were answered by 443 people and skipped by 20.

Most survey participants (n=406; 92%) indicated that they do not own fruit trees. For those that do, residents responded that they either lacked the time to manage their fruit tree(s) (n=12; 3%), or they found it too expensive to manage their fruit tree(s) (n=10; 2%). Several participants commented that they had no concerns with bears accessing the fruit from their trees. Many respondents that owned fruit trees indicated that they would take steps to prevent bears from accessing fruit trees including:

- Pick unripe fruit and let it ripen indoors (n=28; 6%)
- Clean windfall up as soon as possible (n=80; 18%)
- Pick ripe fruit immediately (n=97; 22%)
- Prune trees to a manageable height (n=54; 12%)
- Learn how to best manage my fruit tree (n=46; 10%)
- Remove trees that are not used (n=23; 5%)
- Connect with fruit gleaning organizations such as Okanagan Fruit Tree Project (n=19; 4%)
- Knock off blossoms to reduce fruit production (n=15; 3%)
- Use electric fencing if bylaws allowed it (n=4; 1%)

These fruit tree-related questions were answered by 442 people and skipped by 21.

Most survey participants do not feed birds (n=406; 93%). For those that do, 4% (n=19) were not aware that bird feeders attract bears and 35 (n=13) indicated that did not have time to manage their bird feeder.

Respondents used a variety of strategies to avoid attracting bears including:

- Only placing bird feeders out when bears are less active (December to March)(n=66; 15%)
- Keeping the ground free of seeds (n=30; 7%)
- Using small amounts of seed at a time (n=30; 7%)
- Using bird baths or bird houses instead to enjoy the birds (n=30; 7%)
- Planting flowers to attract and naturally feed birds (n=52; 12%)

These bird feeder-related questions were answered by 437 people and skipped by 26.

Residents were asked about any barriers that prevented them from keeping their pets and pet food from attracting bears. There were 41 people that skipped this question and 66% (n=280) indicated that that they do not own or take care of pets. Of those who did indicate they took care of pets, 20% (n=83) indicated they needed to let their pet off leash to exercise and 9% (n=38) said they didn't have yards. To reduce conflicts with bears, many people selected several of the strategies including storing pet food inside (n=213; 50%), bringing pets in at night (n=159; 38%), ensuring dogs are on a leash or under complete control (n= 149; 35%), fencing their backyard (n=139; 33%) and/or carrying bear spray (n=93; 22%). These pet-related questions were answered by 422 people.

Participants were asked if they had outdoor freezers, beehives or chicken coops. Most participants (n=375; 89%) indicated that they did not store freezers outside and the question did not apply to them. Only a small number (n=3) indicated they stored freezers outdoors because they lacked space inside.

There were 7 people who indicated they owned chickens. Of those, 4 did not believe their coop was a bear attractant. Barriers to preventing bears from accessing their chicken coops included the cost of proper fencing and electric fencing (n=2), current bylaws preventing the use of electric fencing in areas zoned as residential or commercial (n=2), lack of knowledge on how to install (n=1) or purchase (n=1) electric fencing.

None of the participants indicated they owned a beehive although one person commented that there were beehives on the property next to them in the neighbourhood of Westbank Centre.

HUMAN SOURCES OF BEAR ATTRACTANTS

Solid Waste Management

The Regional District of Central Okanagan (RDCO) provides curbside collection of garbage, recycling, and yard waste to single-family homes within the City of Kelowna but does not provide services to the Westbank First Nation (Regional District of Central Okanagan, 2023). Residents in Traders Cove and along North Westside Road are required to self-haul to one of two transfer stations: Traders Cove or North Westside. Traders Cove is the closest to West Kelowna and was reviewed during the assessment. The automated cart collection service is provided by the RDCO's contractor, E360 Solutions, and residents are required to use the carts provided (Table 4; Figure 16).

Table 4. Solid waste curbside collection within the RDCO.

Solid Waste	Collection Frequency	Cart Size
Garbage	Weekly	120L
Recycling	Bi-weekly (alternates with yard waste)	240L
Yard Waste	Bi-weekly (Mar 1 - Dec 31)	240L

The wheeled polycarts have non-locking lids and are not bear or wildlife resistant. While some residents store their carts inside their garages, many carts were observed stored outside between collection days (Figure 16). This included residents in rural areas with long driveways that left their carts on the road next the entrance gate.

Figure 16. Solid waste carts stored outside between collection days in West Kelowna.

Residents with excess waste can place up to two additional bags of garbage beside their cart, as long as they have purchased and attached a “Tag-a-Bag” sticker. Yard waste can include pumpkins and fruit droppings but no kitchen compost or other food scraps. Additionally, residents can self-haul solid waste to the Westside Residential Disposal and Recycling Centre within the City of West Kelowna, or the Glenmore Landfill located in and managed by the City of Kelowna.

Residents in condominiums, apartments, and other strata-managed complexes, as well as businesses and other non-residential waste producers, use private contractors to collect their waste. Commercial dumpsters typically have plastic covers that are easy for people to use but can also be easily accessed by bears (Figure 17).

Figure 17. Multi-dwelling garbage and recycling dumpsters in a residential neighbourhood (left) and a commercial dumpster at a recreational facility (right).

Residential garbage is the most reported attractant associated with 642 reports from 2014 to 2023 in West Kelowna. When an attractant is noted, garbage is identified an average of 72% of the time throughout the City. The neighbourhoods that have the highest reports of bears accessing garbage include Shannon Lake (n=243), Rose Valley (n=143), Glenrosa (n=105), and Smith Creek (n=36)(Figure 18).

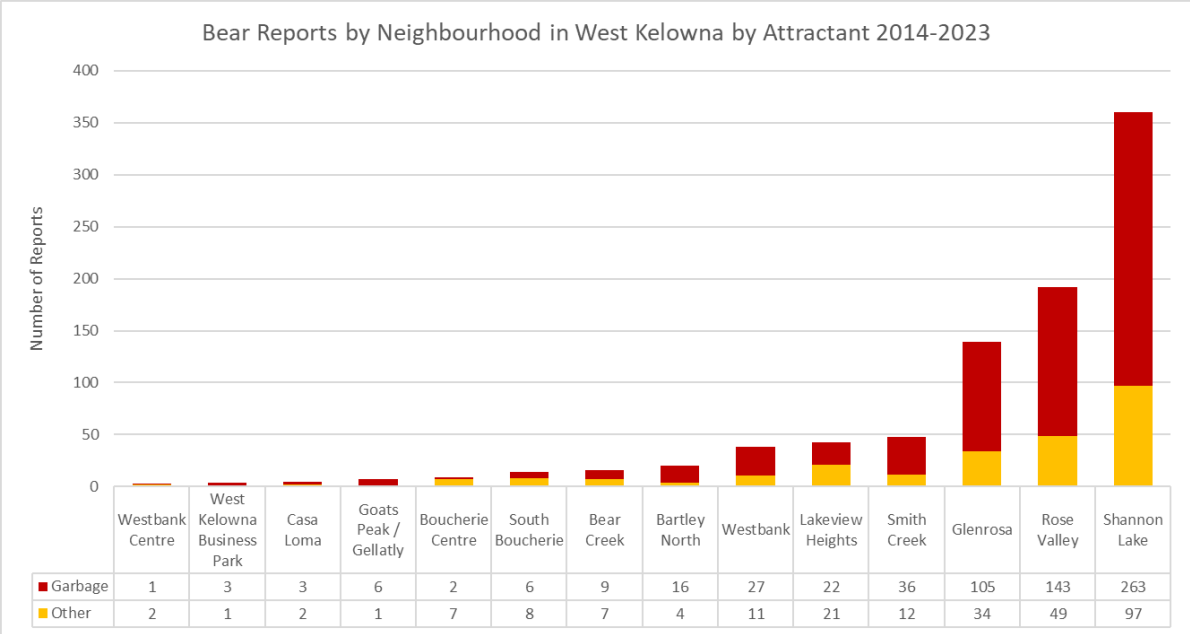


Figure 18. Reports regarding black bears accessing human-sourced attractants with garbage forming the highest percentage.

Westside Residential Waste Disposal and Recycling Centre

The Westside Residential Waste Disposal and Recycling Centre is located approximately 500 m west of Shannon Lake with residential neighbourhoods in between and to the east. It accepts garbage, recyclables, yard waste and some large items such as appliances, clean wood, metal, tires, propane tanks, batteries and mattresses. They are open Friday to Monday, 7:30 am to 4:00 pm.

The transfer station accepts household garbage into two large 52 ft metal dumpsters that have mesh lid covers that are not used (Figure 19A). These are hauled out and replaced with empty bins when they are full. Garbage can remain in the open dumpsters while they are closed. Staff have observed a wide variety of animals during the day such as deer, coyote, and marmots. During operating hours, the busy nature of the facility, along with lack of vegetation to provide cover, likely deters many bears from approaching the facility.

Previously, the transfer station was an open landfill which has since been covered. There is evidence that it was electrified in the past with several wires, posts and insulators remaining (Figure 19B). The electric fencing is currently disconnected and no longer maintained. The chain-link fence has multiple openings that have been cut by people trying to scavenge when the facility is closed (Figure 19B). Since then, surveillance has been installed and according to local staff, a security system notifies the facility manager when a person or large animal accesses the facility.

Figure 19. A) Garbage bins with mesh cover and B) openings in the perimeter fence and evidence of fence electrification in the past.

The recyclables are accepted in open containers (Figure 20). The transfer station no longer accepts cooking oil or grease for recycling as these products have attracted bears to the facility in the past. While recyclables do not generally provide a food reward for bears, they are still considered an attractant because of their odours.

Figure 20. Public facing (left) and back of recycling containers (right).

Traders Cove

Traders Cove Transfer Station is located just north of Bear Creek Provincial Park along Westside Road and outside of the City of West Kelowna municipal boundary. It is only authorized for use by Traders Cove residents and open for limited hours (Table 5).

Table 5. Traders Cove Transfer Station hours of operation.

Summer Hours
Wednesdays 6:30 am to 11:30 a m; Saturdays 9 am to 1 pm; Sundays 9 am to 5 pm.
Winter Hours
Wednesdays 6:30 am to 10:30 am; Saturdays 9 am to 1 pm; Sundays 9 am to 1 pm.

The station accepts recyclables, yard waste and two bags of garbage per household per week. However, illegal dumping outside of opening hours has been frequently reported and was also observed during this assessment (Figure 21). Note that the tires pictured are not accepted at this location. The area is not protected by electric fencing.

Figure 21. Traders Cove transfer station (left) and illegal dumping at the gate (right).

RDCO Garbage Cart Pilot

From 2019 to 2022, the RDCO launched a bear-resistant garbage cart pilot program in select neighbourhoods (R. Stewart, personal communication, June 2, 2023). The RDCO tested three types of carts deemed to be bear-resistant by manufacturers. Residents could qualify for the program if they did not have a garage or other structure to secure their carts indoors. Based on the results of the feedback surveys and performance in the field, the RDCO decided to pause the pilot program in 2023.

In addition to the pilot, 27 residents of 2210 Horizon Drive that did not have garages also received carts from the RDCO in September and October of 2023 with locking mechanisms that were not certified bear resistant (Figure 22). According to Stewart, these carts were well-received by residents and none were returned at the end of the pilot. While not certified, they were an improvement over the regular carts without any locking mechanism.

Figure 22. Non certified carts provided to residents on Horizon drive with a locking mechanism.

Certified Bear-Resistant Carts and Certification Programs

A certified bear-resistant cart is a product that has been tested with live bears using standardized protocols. The Interagency Grizzly Bear Committee (IGBC) began the Bear-Resistant Product Testing Program in the 1980s in partnership with the Grizzly and Wolf Discovery Centre and Washington State University Bear Centre (Interagency Grizzly Bear Committee, 2023). The protocols were developed in consultation with several agencies and organizations.

To receive certification, a product must withstand a bear's efforts to access its contents after one hour of contact time. WildSafeBC had also provided this service for a several years in partnership with the BC Wildlife Park and was able to test carts with both grizzly and black bears. However, the WildSafeBC testing program has since been discontinued and products listed as WildSafeBC-certified no longer carry valid certification. A list of currently certified carts is updated annually on the IGBC website. It is recommended that this list be referred to before committing to a purchase. It is important to note that certification only applies to a specific model and size, and any modifications of the design or function will void the certification.

Also, a cart that is described to be wildlife-resistant, may only consider wildlife to be smaller species such as raccoons, ravens and skunks which are typically found in densely urbanized centres. Bear-resistance must meet a higher threshold.

Bear-resistant carts are typically available in several options. The strongest carts tend to be rotationally molded or double-walled but they are also the heaviest and most expensive. Lighter carts are injection molded. For them to be more resistant to bears, they typically need metal reinforcement around the lid. Locking mechanisms vary with the simplest involving the use of metal carabiners that clip into a latch. Other carts may be semi-automated or fully-automated. A full-automated cart remains locked when it is set on the curb and then unlocks automatically when tipped upside down during garbage collection using automated garbage trucks. These carts are advantageous as many bears are able to learn the frequency of garbage collection and will take advantage of carts set out on collection day.

RDCO Collection of Food Waste

Results of a 2022 Food Waste Feasibility Study suggested that putting food waste into yard waste carts was the preferred option for Central Okanagan residents (Regional District of Central Okanagan, 2024[a]). In October 2023, the RDCO began Phase 1 of a public engagement process to gather public feedback on a potential food waste collection program for the Central Okanagan (Regional District of Central Okanagan, 2024[b]). This process included a survey of 1,800 randomly selected residents and online engagement. The survey indicated 73% were in support of a food-waste collection program. However, attracting wildlife and pests, as well as potential odours, mess, and space constraints, were the top concerns and barriers to successful implementation. A resident was quoted as saying "I love this idea. My concern is would a proper bin for inside my home to store the food waste, be provided?"

Hazard Assessment Field Survey

The field assessment took place within the City of West Kelowna between June 5 and 9 and included a survey of publicly accessible outdoor spaces with a focus on community parks, regional parks, trailheads, community facilities, community gardens and schools. These locations were selected as they are used by youth, vulnerable people, and people using trail systems that overlap with bear habitat and travel corridors. In all, 145 locations were surveyed and attractant data was collected using ArcGIS Field Maps at 111 municipal parks, 10 regional park trailheads, 12 community facilities, 3 community gardens, and 12 schools (Figure 23; Appendix II).

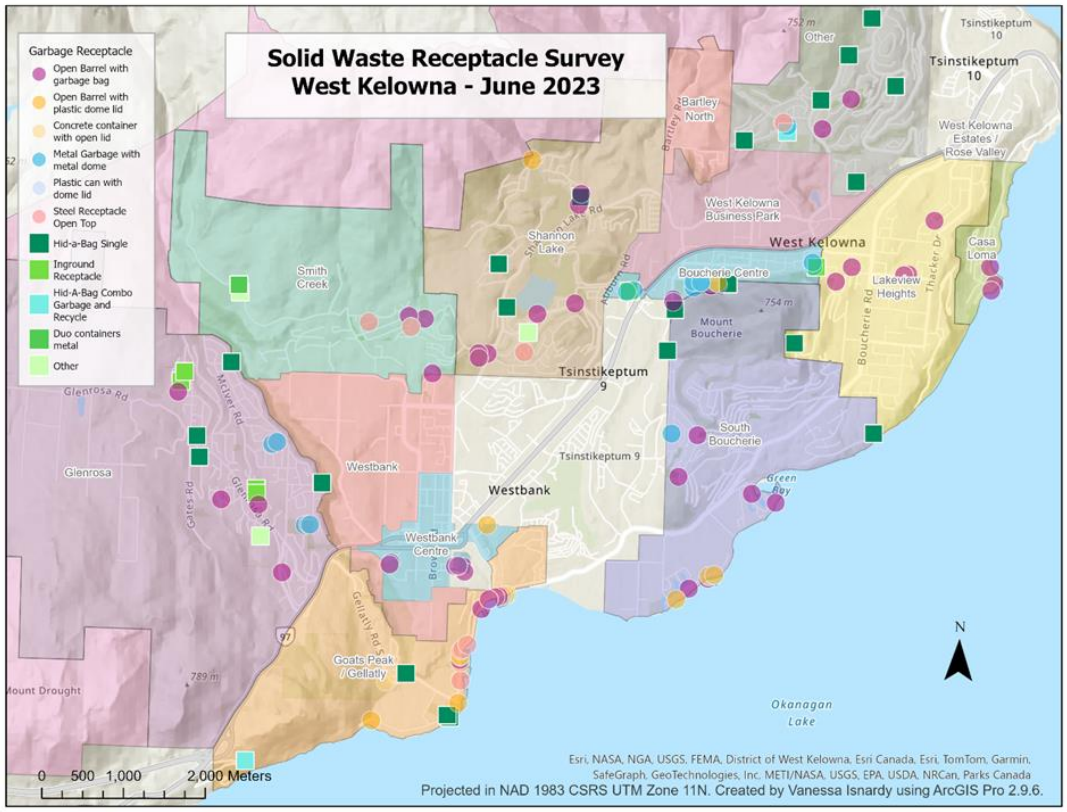


Figure 23. Survey of solid waste receptacles within the City of West Kelowna, June 2023.

Data collected included location coordinates, location name, neighbourhood, location description, type of facility/amenity, type of solid waste receptacle, photos, and any additional notes. Additional considerations noted were the presence of fruit or nut-bearing trees and shrubs on site as well as the proximity of bear habitat. The area was assessed for vegetation management which can affect sightlines and provide cover for bears.

A total of 32 certified bear-resistant containers were found with 11 installed at City of West Kelowna facilities, 7 at local schools, and 14 at RDCO Regional Parks. All RDCO regional park trailheads and facilities only had certified bear-resistant Haul-All garbage and/or recycling containers (Figure 24). Schools mostly had a combination of certified bear-resistant containers (Figure 25) and barrels (GMET) with metal lids that are not certified bear-resistant (Figure 24). Astoria park had a unique bear-resistant model certified by Living with Wildlife which features a foot push pedal to operate the door (Figure 25).

Figure 25. Certified bear-resistant Haul-All Hid-A-Bag receptacles. Single garage receptacle at Shannon Lake (left). Combination garbage and recyclable receptacle at Goats Peak (middle). Double garbage receptacles at Smith Creek managed by Recreation Sites and Trails BC in partnership with West Kelowna Trail Crew Society (right).

Figure 24. Many schools used bear-resistant inground receptacles (left). Astoria Park certified bear-resistant model (right).

Most of the 11 certified bear-resistant containers on City property were installed in areas with frequent bear reports. According to the City of West Kelowna's Parks Manager, an additional six single Hid-A-Bag Haul-All garbage receptacles were installed in the following municipal parks in 2023: Ranch, Mar Fee, Moonbeam, McIver, McMorland and Cabernet.

There remain at least another 84 public garbage receptacles managed by the City of West Kelowna that are not bear-resistant (Figure 26; Appendix II). These consist of 55 open barrels (GBAOPEN), 17 open barrels with plastic lids (GBAPL), 9 metal receptacles with open tops (GSO), 1 open barrel with a metal dome lid (GMET), and 1 concrete receptacle with an open lid (GCONC). In 2024, 7 Haul-All receptacles are planned for installation at Shannon Woods Dog park, Westbank Centre (2), Memorial Skate Park, Shannon Springs Park (2) and Sunview Park (M. Roberts, personal communication, February 5, 2024).

Figure 26. Different types of non-bear-resistant public garbage receptacles in West Kelowna.

In addition, many of the bus stops have garbage receptacles attached to the bus stop sign. These were not all mapped but a representative example is provided (Figure 26). Along with most commercial businesses and residential multi-dwelling units, most of the City's community centres and public facilities use garbage dumpsters with plastic lids (Figure 26).

During the assessment, none of the garbage receptacles were full or overflowing and most parks had little evidence of litter. Garbage collected by City of West Kelowna park staff is brought to an open top dumpster at Kinsmen Park which is located across from the Westside Transfer Station on Shannon Lake Road (Figure 27). The dumpster is typically emptied once per week. The dumpster is located in a residential area with frequent bear reports.

Figure 27. City of West Kelowna park staff bring garbage collected from park receptacles to an open dumpster (circled in red) located at Kinsmen Park.

Orchards and Vineyards

When an attractant is noted in a report to the Conservation Officer Service, residential fruit trees are the most reported attractant after garbage. There were 125 residential fruit tree-related reports from 2014 to 2023 and 15 related to commercial orchards and vineyards. Fruit is a high caloric reward for bears but unlike organics found in garbage, it is only available seasonally. When bears forage on fruit trees they become food conditioned and can become habituated to human presence and activities. When the fruit is no longer consumable, they will often move on to other available attractants before hibernating.

Commercial orchards and wineries are an important part of the region's economy and culture. Except for the urbanized core of Westbank and Boucherie Centre, much of the community of West Kelowna has agricultural zoning mixed in among residential neighbourhoods. Some of these areas are fenced and some are open and easily accessible (Figure 28).

Figure 28. Residential neighbourhoods and fruit-producing crops inter-mixed in West Kelowna.

Bears foraging in orchards and vineyards can also be a safety concern for workers or visiting tourists and visitors. When fruit is not picked, such as when cherries split and are not of economic value, they may be left for bears to forage. These bears become increasingly food conditioned and human habituated and will often move into residential areas when the fruit is no longer available.

While some orchards have deer fencing to exclude wildlife, that is not sufficient to exclude motivated bears as they are agile climbers. Some producers in the Okanagan may resort to lethally removing bears as they can be legally harvested on private property throughout the month of August in Okanagan – Region 8 (Province of B.C., 2023). All Provincial, Federal and municipal laws still apply and bears less than two years old cannot be harvested, or any other bear in their accompaniment. Bears also cannot be hunted within 100 m of a residence. Refer to B.C. Wildlife Hunting Regulation B.C. Reg. 190/84 for Region 8 for complete information and details.

In the spring, many of the orchardists rely on commercial apiarists to bring beehives to pollinate their crops. Some orchards also support beehives year-round. Beehives contain a high caloric reward for bears that feed on both the bee larvae and the honey produced. Beehives accessed by bears are often damaged beyond repair and can lead to significant losses for the apiarists (Figure 29).

Figure 29. Beehives damaged by a bear on Vancouver Island.

Community Gardens

Community gardens are located at Shannon Woods Park, Rose Meadow Park and across from Westbank Centre Park. Shannon Woods and the Westbank Centre gardens both have several, mature, fruit-bearing trees (Figure 30). All gardens grew produce that could attract bears, however they currently generate few human-bear conflict reports. At minimum, compost should be well-managed at these gardens and not include any animal products (e.g., meat, dairy, bones or grease).

Figure 30. A) Rose Meadow Park. B) Shannon Woods Park C) Westbank Centre. D) Mature fruit-bearing trees at Shannon Woods. E) Raspberry bushes at Rose Meadow Park.

Residential Fruit Trees

It is difficult to assess fruit trees on private property as most are in people's back yards and not visible from public areas. Therefore, this BHA relies on conflicts reported to the Conservation Officer Service and feedback during the social science survey. The data indicates there is a reluctance to report bears accessing fruit trees as they are perceived as harmless sources of natural food. Along with the ability of orchards to harvest bears on private property, fruit tree-related bear interactions are likely under-reported in West Kelowna, and should not be underestimated as a significant source of calories that leads to bear food conditioning.

Park and School Field Maintenance

Most of the parks and schools were well-brushed and had excellent sightlines. This reduction in forage food and security cover discourages bears from using travel corridors next to parks when people are present and improves safety for park users. However, some of the parks and schools had some naturally occurring fruit-bearing trees and shrubs and the following were noted during the survey:

- Mature saskatoon shrubs at Horizon Park,
- Mature saskatoon shrubs at Moonbeam Park,
- Several types of fruit bearing shrubs along the fence line at Shannon Ridge Park along Shannon Lake however chain-link fencing provides some protection and separation,
- Oregon grape used as a natural fence at Smith Creek Park along Saddleridge Drive (also affecting sightlines), and
- Saskatoon shrubs at McIver Park also affecting sightlines.

Many of the parks and most of the schools had chain-link fencing in place between the play areas and natural green spaces.

Recreation Trails

There are extensive networks of walking trails throughout the City ranging from paved trails, connection trails with stairways, and naturalized areas. There are also trail systems that cross municipal, regional district and Provincially-managed land for hiking, dog walking, and mountain biking. These trails are used by locals and visitors as the Central Okanagan has become a popular tourist destination. These trails often pass through or overlap bear travel corridors and bears may linger in these areas if there is forage.

Bears will generally avoid people if they are aware of their presence. However, activities such as trail running and mountain biking can trigger a chase response in some individuals. Dogs can also lead to human-bear conflicts, especially when they are off leash and approach a bear. Urban bears are also less likely to yield to trail users as they become more human habituated.

Activities that may lead to riskier encounter with bears include:

- Travelling quietly or at a high rate of speed (e.g., trail running, mountain biking or cycling),
- Wearing headphones and not being aware of your surroundings,
- Traveling into the wind,
- Traveling in an area with higher ambient noise (e.g., running water),
- Encountering bears with young or near a food source,
- Travelling with dogs off leash,
- Approaching a bear (e.g., not yielding to a bear on a trail or approaching to take a photo), and
- Trying to intentionally feed bears.

The RDCO has installed interpretive kiosks and wayfinding signage at many trailheads. For instance, at Mount Boucherie, there is signage warning trail users of potential rattlesnakes and the City has installed temporary signage regarding bear sightings in the area (Figure 31).

Figure 31. Examples of signage at trailheads at Mount Boucherie Regional Park.

Golf Courses

There are two golf courses in West Kelowna which include Shannon Lake Golf Course in the Shannon Lake neighbourhood and Two Eagles Golf Course and Academy located within Westbank First Nation Tsinstikeptum Reserve 9. Bears will use the treed edges of golf courses as travel corridors and may forage on grasses, sedges and/or dandelions along the greens. Human-bear conflicts can occur when bears access golf carts or bags that contain food, or when people approach bears to get a closer look or take photos. Restaurants that store unsecured organic waste and/or cooking oil outdoors can also lead to food-conditioning bears.

Dogs and Wildlife

While many trails allow dogs within the City and the RDCO, they must be kept on-leash at all times. Signage to remind people to keep dogs on leash are installed at many trailheads. The City has four designated off-leash dog parks: Gellatly Dog Beach, Mar Fee Park, Shannon Woods Park and Westbank Centre Park. All but Mar Fee Park have fencing to provide some separation between dogs and wildlife.

Dogs that chase bears can instigate an attack not only on the dog but anyone nearby. A review of black bear attacks on people in North America revealed that dogs were involved in about 50% of the encounters (Hristienko et al., 2014). Reports of encounters between bears and dogs to the Conservation Officer Service within the City of Kelowna are relatively uncommon. However, 83 people in the social science survey indicated they often exercised their dogs off leash.

While interactions between pets and bears are not frequently reported, interactions between dogs and other wildlife such as deer and coyotes are more frequent in the region. This has sometimes resulted in pets being injured or killed. At times, people are also injured when trying to intervene to protect their pets. Many dogs are inquisitive and will also investigate areas where rattlesnakes may be resting which can lead to a venomous bite. Maintaining dogs on leash as per local bylaws is essential for preventing conflicts with wildlife.

RISK ASSESSMENT

Risk areas for human-bear conflict have been identified as areas where bear habitat, corridors, and attractants overlap with human-use areas. While no part of West Kelowna is immune to human-bear conflict, it is suggested that certain areas may be of higher risk as a result of:

- Presence of bear attractants,
- Proximity to quality bear habitat and cover,
- Evidence of past bear activity,
- Type of human activity, and
- Human safety concerns and use by children and vulnerable people.

Risk areas have been grouped by neighbourhood and values such as schools, parks and trails, have been nested within each area (Table 6). Residential areas generated the most reports community-wide as there are generally more travel corridors and green spaces as well as unsecured attractants generated by residents. Neighbourhoods that are zoned for compact or mobile homes tend to have less secure garbage as they do not have garages or centralized locations to secure their waste.

These ratings have also considered the future potential for human-bear conflicts, especially in areas such Goats Peak and Smith Creek that are areas planned for future single-family residential development. The short-term increase in bear forage foods as a result of the McDougall Creek Fire were also considered. Providing risk ratings is somewhat subjective but can serve as a guide when prioritizing human-bear conflict mitigation strategies in the community.

Table 6. Summary of risk assessment by neighbourhood in West Kelowna.

Neighbourhoods	Risk Assessment	Risk Assessment Considerations
Shannon Lakes	High	• 740 black bear reports (2014-2023) • 1 elementary school • Several community parks and trails ○ Shannon Ridge Park with natural attractants • Shannon Lake Regional Park with natural attractants and trails • Golf course • Proximity to black bear habitat • Black bear travel corridors • Recent fire effects
Rose Valley / West Kelowna Estates	High	• 341 black bear reports (2014-2023) • 2 elementary schools • Several community parks and trails ○ Horizon and Moonbeam Parks with natural attractants • Rose Valley Regional Park with many trails • Proximity to black bear habitat • Mostly R1 and some RC4 zoning • Faulkner and Keefe Creek travel corridors • Compact homes with no garages • Recent fire effects
Bartley North	High	• 33 black bear reports (2014-2023) • Small residential RMP zoned area with no garages and situated near bear habitat • Recent fire effects
Smith Creek	High	• 70 black bear reports (2014-2023) • Mostly R1 with some community parks ○ Smith Creek Park with natural attractants • Mountain biking and hiking trails • Glen Canyon Regional Park with natural attractants, trails and bear travel corridors • Recent fire effects • High growth potential of single-family homes
Glenrosa	High	• 221 black bear reports (2014-2023) • 4 elementary school • Several community parks and trails ○ McIver Park with natural attractants and poor sightlines • Glen Canyon Regional Park with natural attractants, trails, and bear travel corridors • Proximity to black bear habitat

Neighbourhoods	Risk Assessment	Risk Assessment Considerations
Goats Peak/Gellatly	Medium	• 14 black bear reports (2014-2023) • Gellatly Nut Farm Regional Park • High growth potential for single-family homes • Powers Creek supports returning Kokanee salmon • Black bear travel corridor • Goats Peak and Glen Canyon Regional Parks with trails and bear travel corridors
Boucherie Centre	Medium	• 13 black bear reports (2014-2023) • Mount Boucherie Regional Park • 3 schools (elementary, middle and senior) and community centre and sports field back onto Mount Boucherie
South Boucherie	Medium	• 47 black bear reports (2014-2023) • Mount Boucherie Regional Park • McDougall Creek • Commercial vineyards/orchards • 1 elementary school
Lakeview Heights	Medium	• 98 black bear reports (2014-2023) • Commercial vineyards/orchards • Several community parks • Kalamoir Regional Park • Residential growth potential
Bear Creek / Westside Road	Medium	• 25 black bear reports (2014-2023) • Proximity to bear habitat • Recent fire effects
Westbank and Westbank Centre	Medium	• 79 black bear reports (2014-2023) • Community facilities and garden located near Powers Creek and Glen Canyon Regional Park • Commercial orchards/vineyards
Casa Loma	Low	• 18 black bear reports (2014-2023)
West Kelowna Business Park	Low	• 6 black bear reports (2014-2023)

Bear Creek / Westside Road - Medium

This region at the north end of the City is comprised mostly of large rural residential lots, resource land, natural areas, environmentally sensitive ecosystems, as well as the Raymer Comprehensive Development Plan Area (City of West Kelowna, 2022)(Figure 32). There is a narrow strip of smaller single-family R1 zoned waterfront lots east of Bear Creek Road that are located between Bear Creek Provincial Park to the north and Westbank First Nation to the south. The residential areas generated 25 black bear reports from 2014-2023. Attractants reported included garbage (n=4), freezer (n=2), fruit trees (n=1), beehive (n=1)

While the neighbourhood has a smaller population, and no schools or community parks, it backs onto bear habitat and may experience future increased bear activity as the area recovers from the McDougall Creek fire and there is an increase in nutritious forage foods for bears such as grasses and forbs.

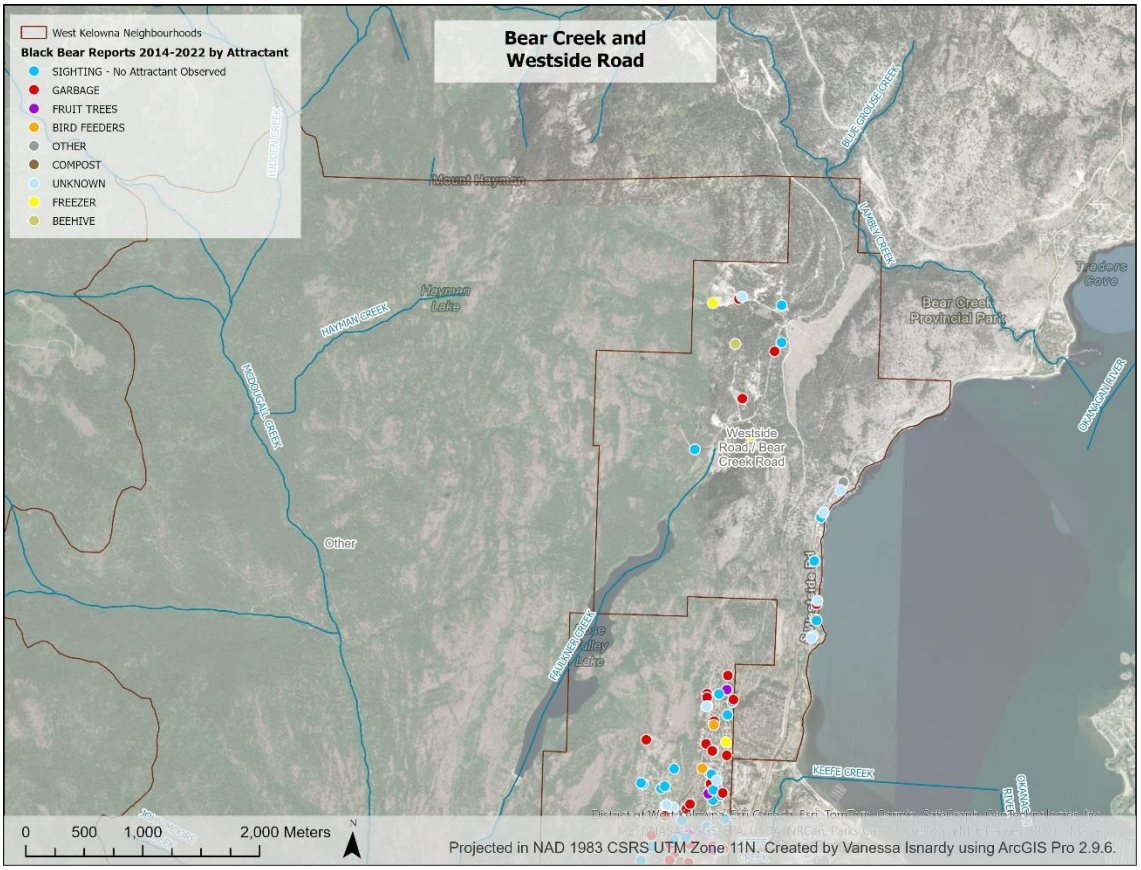


Figure 32. Black bear reports by attractant in the Bear Creek – Westside Road neighbourhood from 2014 to 2022.

Rose Valley – West Kelowna Estates - High

This neighbourhood is bordered to the north and west by the 250 ha Rose Valley Regional Park and beyond that extensive natural black bear habitat (Figure 33). This Regional Park borders Rose Valley Lake along the easter shore. The lake serves as the water reservoir for some West Kelowna neighbourhoods. To the east of the neighbourhood is Westbank First Nation. The West Kelowna Business Park and Highway 97 border the south edge. This neighbourhood is mostly zoned R1 (single-family) except for the Regional Park and the smaller community parks nested within the neighbourhoods zoned P1 (City of West Kelowna, 2022). There are also some small parcels zoned for Compact Single Detached Residential (RC4). Homes built in RC4 zoning often lack a garage to store garbage carts securely indoors.

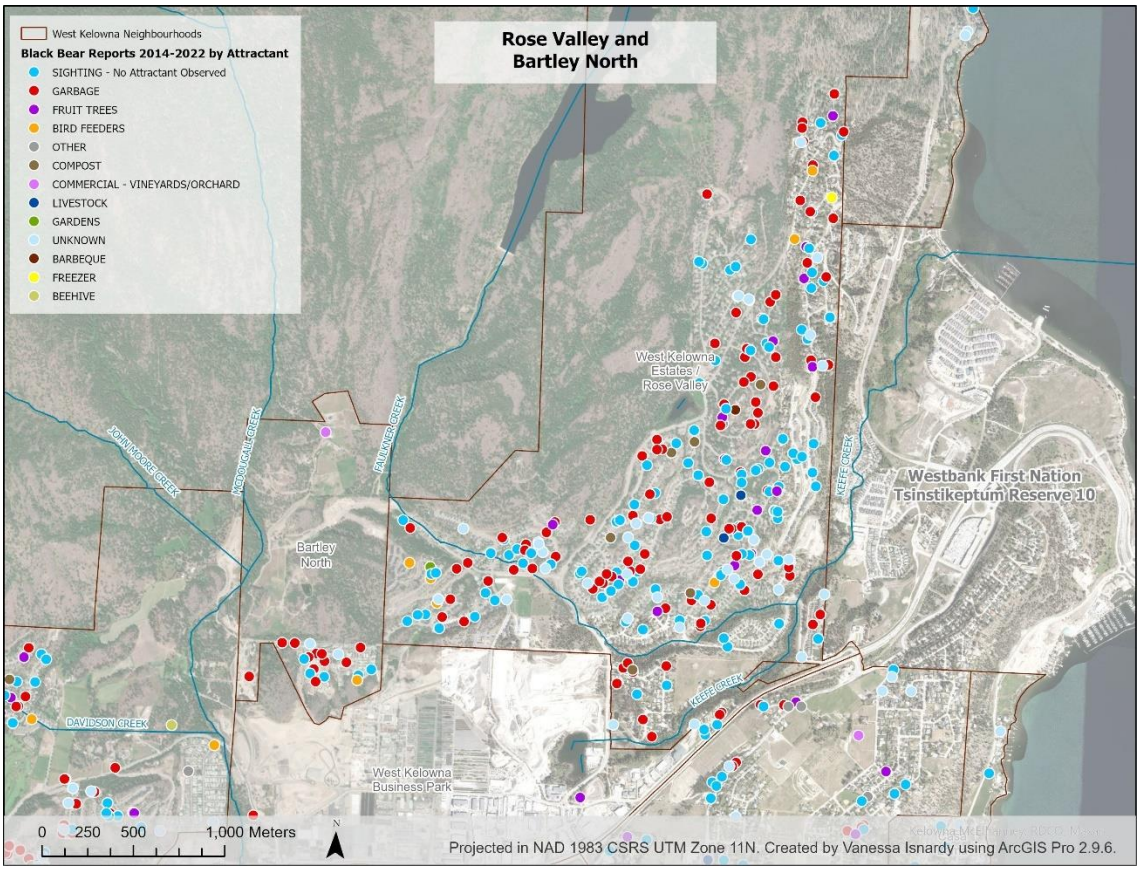


Figure 33. Black bear reports by attractant in the Rose Valle and Bartley North neighbourhoods from 2014 to 2023.

Bear travel corridors include Faulkner Creek and Keefe Creek. Faulkner Creek flows out of Rose Valley Lake and crosses West Kelowna Estates. Keefe Creek, which is connected to wetland complexes around Art Pond, connects to Faulkner Creek around Horizon Drive. Keefe Creek then continues through Westbank First Nation to Okanagan Lake. Where these two creeks meet is an RC4 zoned residential area that has generated several bear reports. This is likely a combination of the natural terrain funneling bears into the area and the lack of garages that facilitates access to unsecured garbage. The residences on Horizon Drive piloted a combination of certified bear-resistant and non-certified locking garbage carts which are further discussed under the RDCO Garbage Cart Pilot section.

This community has a mix of naturalized park spaces with dedicated walking trails and community parks with playgrounds. Mar Jok Elementary and Rose Valley Elementary are the two schools in the neighbourhood. Next to Mar Jok is the Marr temporary off-leash dog park bordered by Westlake Road, the West Kelowna Multi-Sport Centre, and the West Kelowna Business Park. The City's OCP predicts 949 dwelling units to be available for development in this neighbourhood by 2040.

The proximity to bear habitat, extensive green spaces, riparian areas and bear travel corridors, as well as the density of single-family residential homes, all contribute to the second-highest number of bear reports in the city from 2014-2023 (n=341). Garbage was the most reported attractant (n=114) followed by fruit trees (n=18), bird feeders (n=6) and compost (n=6).

Bartley North - High

This small area is primarily zoned Agricultural with one residential area zoned for Manufactured Homes (RMP) accessed by Lenz Road (Figure 33). While bear reports are low (n=26), garbage was associated with almost half (n=12). Many of these homes lack garages and are unable to store garbage carts securely. The high risk rating mostly pertains to this residential area.

Shannon Lake - High

The neighbourhood of Shannon Lake is directly adjacent to Smith Creek to the west and primarily zoned R1 (Figure 34). There are also a variety of zonings including A1 (Agricultural) and P1 (Parks and Open Spaces)(City of West Kelowna, 2022). Shannon Lake Regional Park borders the south end of the lake for which the neighbourhood is named. The shoreline to the northeast is bordered by a golf course and the rest is bordered by low density housing and one small area of agricultural. The Westside Residential Disposal and Recycling Centre is located within this neighbourhood along Asquith Road.

There are several naturalized parks spaces with dedicated walking trails as well as developed urban parks with playgrounds, sports fields, and dedicated cycling corridors. A well-developed community garden with mature fruit trees is located next to sports fields and a fenced dog park. Shannon Lake Elementary is the only school in the community. The OCP has identified a shared neighbourhood centre with Smith Creek to be developed. The number of dwelling units is expected to increase by 650 and accommodate 5% of the City's housing demand.

The combination of extensive green spaces and corridors, riparian areas around Shannon Lake, and the proximity to forested black bear habitat, all attract and facilitate the movements of bears. Along with access to unsecured attractants, this neighbourhood generates the highest numbers of bear reports (n=740) and the most reported attractants are garbage (n=263), fruit trees (n=40), bird feeders (n=11), commercial orchards/vineyards (n=8) and compost (n=8).

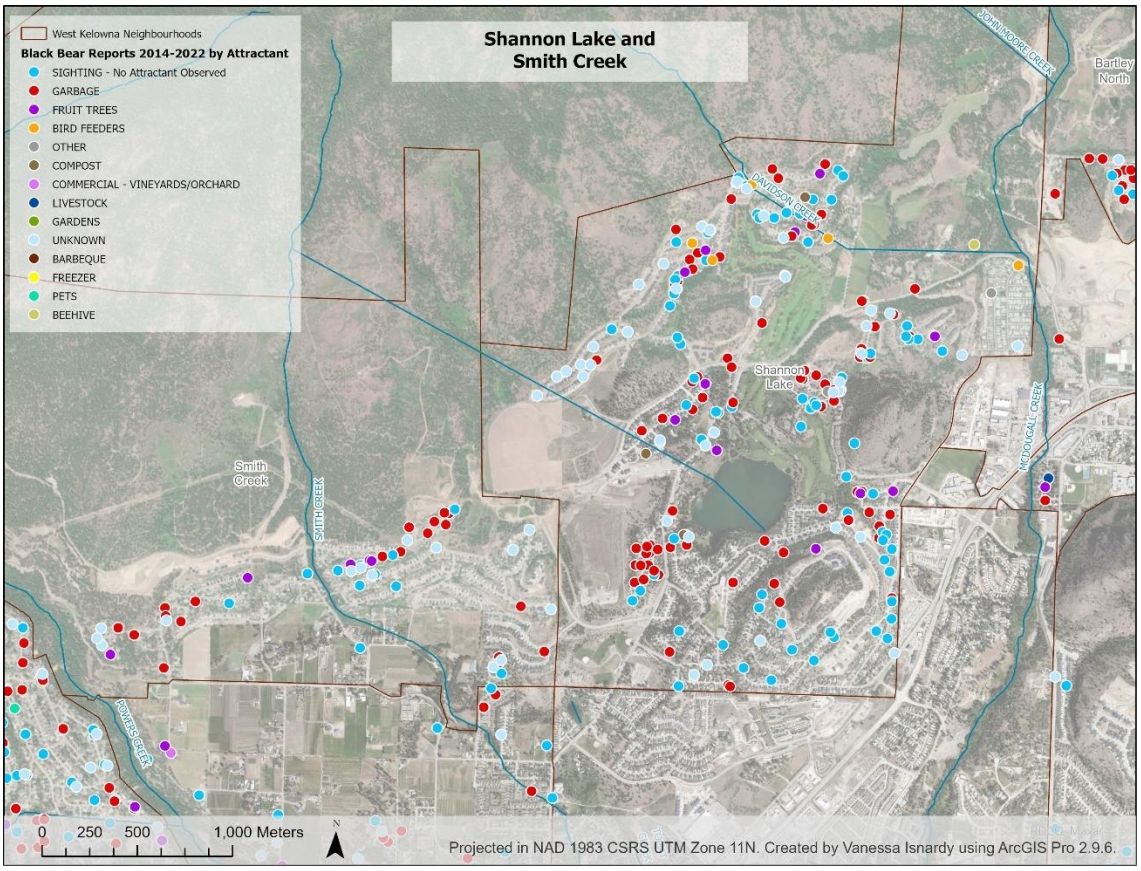


Figure 34. Black bear reports by attractant in the Shannon Lake and Smith Creek neighbourhoods from 2014 to 2023.

Smith Creek - High

Smith Creek is located between Glen Canyon Regional Park to the west and Shannon Lake to the east. Above the residential areas are large parcels zoned RU5 and F1 and below it is mostly zoned A1 (Figure 34). The community does not currently have any schools but does have several neighbourhood parks. There is an extensive network of trails above the residential area that is managed by Recreation Sites and Trails B.C.

In the current parcels zoned RU5, a Smith Creek Comprehensive Development Plan was presented to City council in 2020. This development, backing onto natural bear habitat and bordered by F1 zoning, would potentially add “683 single/two family units and 222 units of clustered and/or townhomes which are currently zoned RU5” (Protech Consulting, 2020). The increase in single-family detached homes will likely lead to increased bear attractants being available.

While bear reports are relatively low compared to other neighbourhoods (n=70), attractants are noted in 69% of the reports which is significantly higher than other neighbourhoods. Bears accessing garbage are identified in 75% of the reports. As this new community will likely be the first bears will encounter before venturing deeper into the community, it provides an opportunity to implement Bear Smart strategies into the planning process.

Glenrosa - High

Glenrosa is a neighbourhood at the most southwestern edge of the community and is bordered by the Forest Resource Zone (F1) to the north and west, Hwy 97 and Goats Peak-Gellatly to the southeast and Glen Canyon Regional Park and Powers Creek to the east (Figure 35). Glen Canyon Regional Park is a 95 ha forested park on either side of Powers Creek that flows into Okanagan Lake. Powers Creek is a fish-bearing stream that supports a modest return of spawning Kokanee salmon (*Oncorhynchus nerka*) returns as far as old dam in Glen Canyon (Kennedy, 2020; K. Alex, personal communication, June 20, 2023). It is unlikely that this modest return provides a significant source of food for bears. However, the regional park provides natural habitat and bears likely use Powers Creek as a travel corridor.

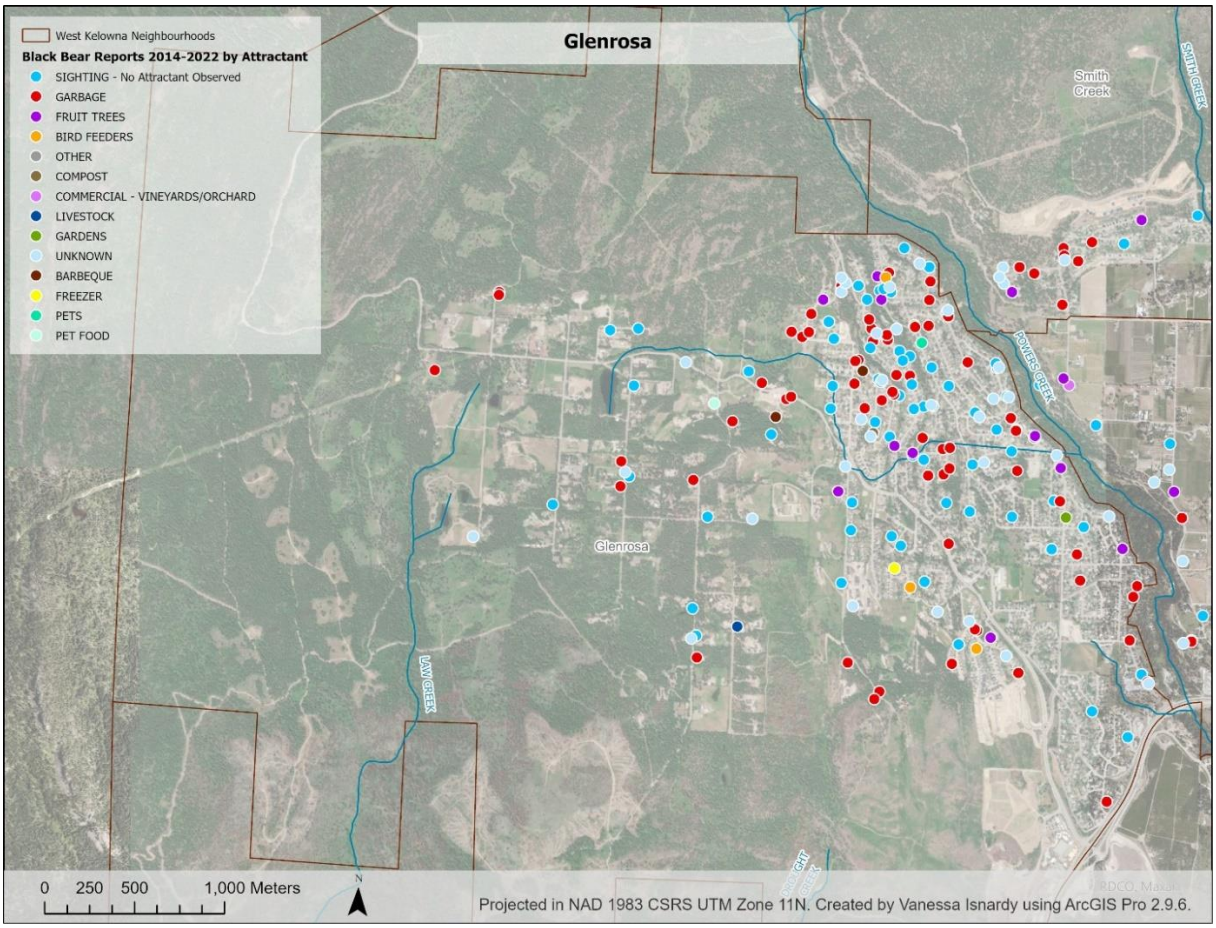


Figure 35. Black bear reports by attractant in Glenrosa from 2014 to 2023.

Glenrosa consists mostly of Rural Residential Large Parcel Zoning (RU4) to the west of Glenrosa Road and R1 to the east, all the way to Glen Canyon Regional Park. The are some parcels of A1 zoning and Industrial zoning (I3) at the southern end of the neighbourhood. According to the OCP, this neighbourhood is not expected to increase the number of dwelling units, however infilling and increased density is a possibility. There are four elementary schools, a community centre, and several neighbourhood parks. There are hiking trails within Glen Canyon Regional Park.

In Glenrosa, the majority of black reports were generated from the residential areas (R1) between Glenrosa Road and Glen Cayon Regional Park as well as the rural properties (RU4). As per interviews with the Conservation Officer Service, there are rural properties above the neighbourhood that have attracted bears as a result of unsecured garbage, beehives and livestock. Bears are known to travel frequently along Glen Canyon and the southwestern edge of the neighbourhood.

This neighbourhood generated 221 black bear reports from 2014 to 2023, and garbage (n=105), fruit trees (n=13), and bird feeders (n=5) were the most reported attractants. The high number of attractant-related bear report and proximity of single-family residences and elementary schools to bear habitat and travel corridors, all contribute to the high risk rating.

Goats Peak and Gellatly Village - Medium

This neighbourhood is at the most southwestern edge of the community and includes the 63 hectare Goats Peak Regional Park which conserves some of the shoreline for spawning Kokanee as well as the grasslands and open woodland (Figure 36). Powers Point Park, adjacent to the West Kelowna Yacht Club, provides some protection to the outlet of the salmon-bearing Powers Creek but the shoreline has also been highly altered (City of West Kelowna, 2011). The outlet of Powers Creek has been identified as the greatest habitat potential for fish and wildlife in the area.

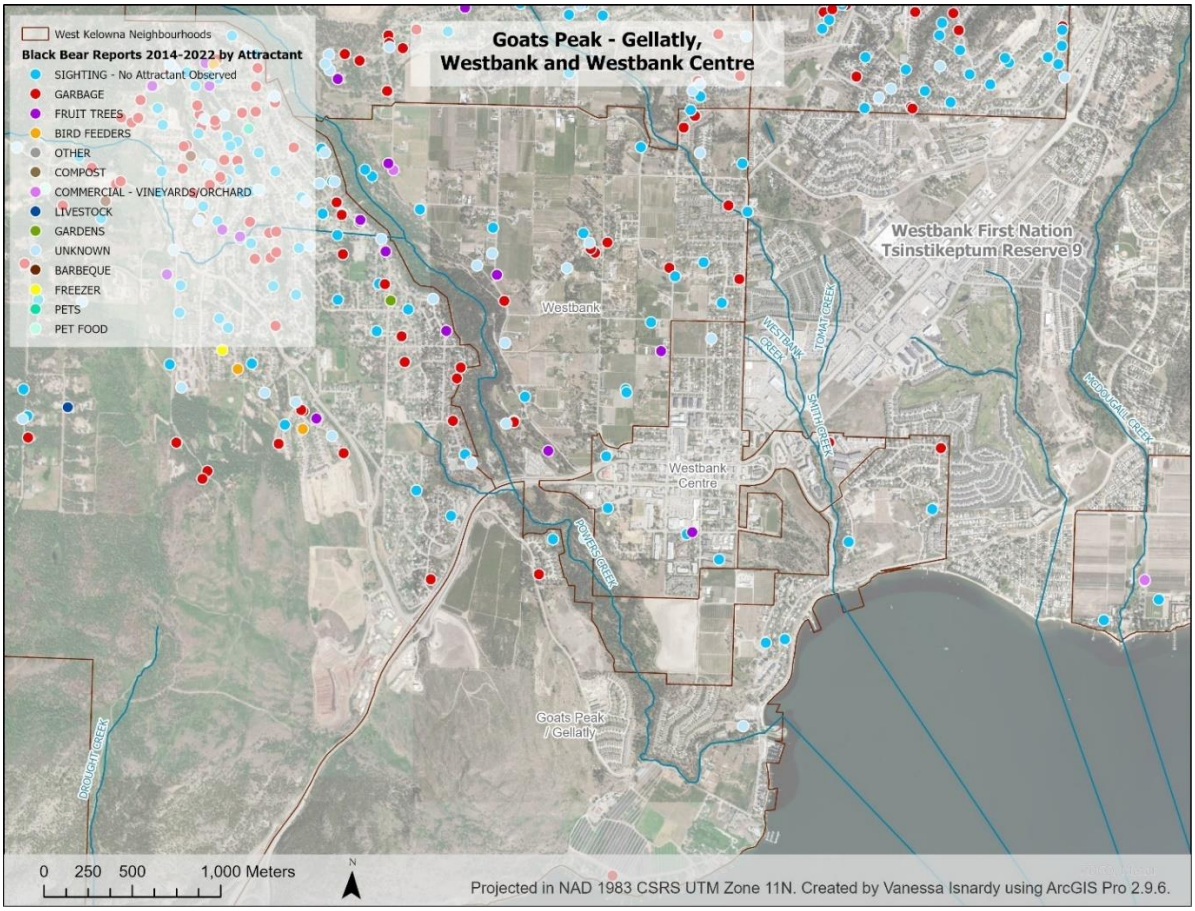


Figure 36. Black bear reports by attractant in the neighbourhoods of Goats Peak, Gellatly Village, Westbank and Westbank Centre from 2014 to 2023.

Smith Creek, which originates above the Smith Creek neighbourhood, meanders through Westbank and Westbank First Nation until it reaches Gellatly Bay. Historically it has supported spawning Kokanee salmon. Westbank Creek and Tomat Creek also flow into Smith Creek. Smith Creek has been highly modified and suffers from poor water quality. The outlet is located within a well-frequented waterfront dog park. Also along the waterfront is the 4 ha Gellatly Nut Farm Regional Park (Figure 37). It is a heritage park with several varieties of nut-producing trees. These nuts are collected and sold in early fall. Nuts are a strong attractant for bears, however there are no reports originating from this location. Deer often spend time here especially during fawning season.

This neighbourhood is a patchwork of zoning with upland areas consisting mostly of agriculture, and waterfront areas a mix of R1, several community parks, commercial areas and regional parks. Above the agricultural area, and on either side of Powers Creek, are some higher density residential areas zoned for Compact Single Detached Residential (RC4). The OCP predicts 20% of the City's dwellings (2,553) could be developed in this neighbourhood and includes the Goat's Peak Comprehensive Development Area.

Black bear reports remain low and are mostly generated from the R1 residential area along Glen Canyon Drive which backs onto Glen Canyon Regional Park. However, the planned growth for the area, along with the existing bear habitat and travel corridors, could lead to more human-bear interactions if attractants are not well managed in the future.

Figure 37. Gellatly Nut Farm Regional Park with many heritage, nut-producing trees (left). Dog owners should avoid the area when deer are raising their fawns to avoid conflicts and injuries to their pets (right).

Similar to the Smith Creek neighbourhood, the potential for increased residential housing may lead to increased unsecured attractants and human-bear interactions. As this neighbourhood grows, there will be opportunities to implement Bear Smart strategies and require bear-resistant infrastructure as part of the planning process.

Westbank and Westbank Centre - Medium

Westbank and Westbank Centre are adjacent to the neighbourhoods of Glenrosa to the west, Smith Creek to the north, Goats Peak/Gellatly to the south and Westbank First Nation to the east (Figure 38). Westbank is flanked by Glen Canyon Regional Park and Powers Creek to the west. Black bear reports are mostly generated from Westbank (n=71), and garbage (n=27) and fruit trees (n=7) are the most reported attractants. Reports in the highly urbanized Westbank Centre are low (n=8).

Most of Westbank is zoned Agriculture (A1) with commercial orchards and vineyards or rural residential. Westbank Centre is mostly developed as a commercial zone (C1) or Westbank Centre Compact Residential Zone (RC1), with Westbank Centre Park and the Johnson Bentley Memorial Aquatic Centre as the two largest park features. Westbank Centre Park backs on Powers Creek and Glen Canyon Regional Park, a bear travel corridor, with natural spaces and walking trails. There is a community garden located directly east of the park with mature fruit trees.

The City predicts the Westbank Urban Centre will accommodate 28% of the City's increase in dwelling units and they will consist primarily of apartments and townhomes (City of West Kelowna, 2023). This provides an opportunity to implement Bear Smart strategies into future development proposals.

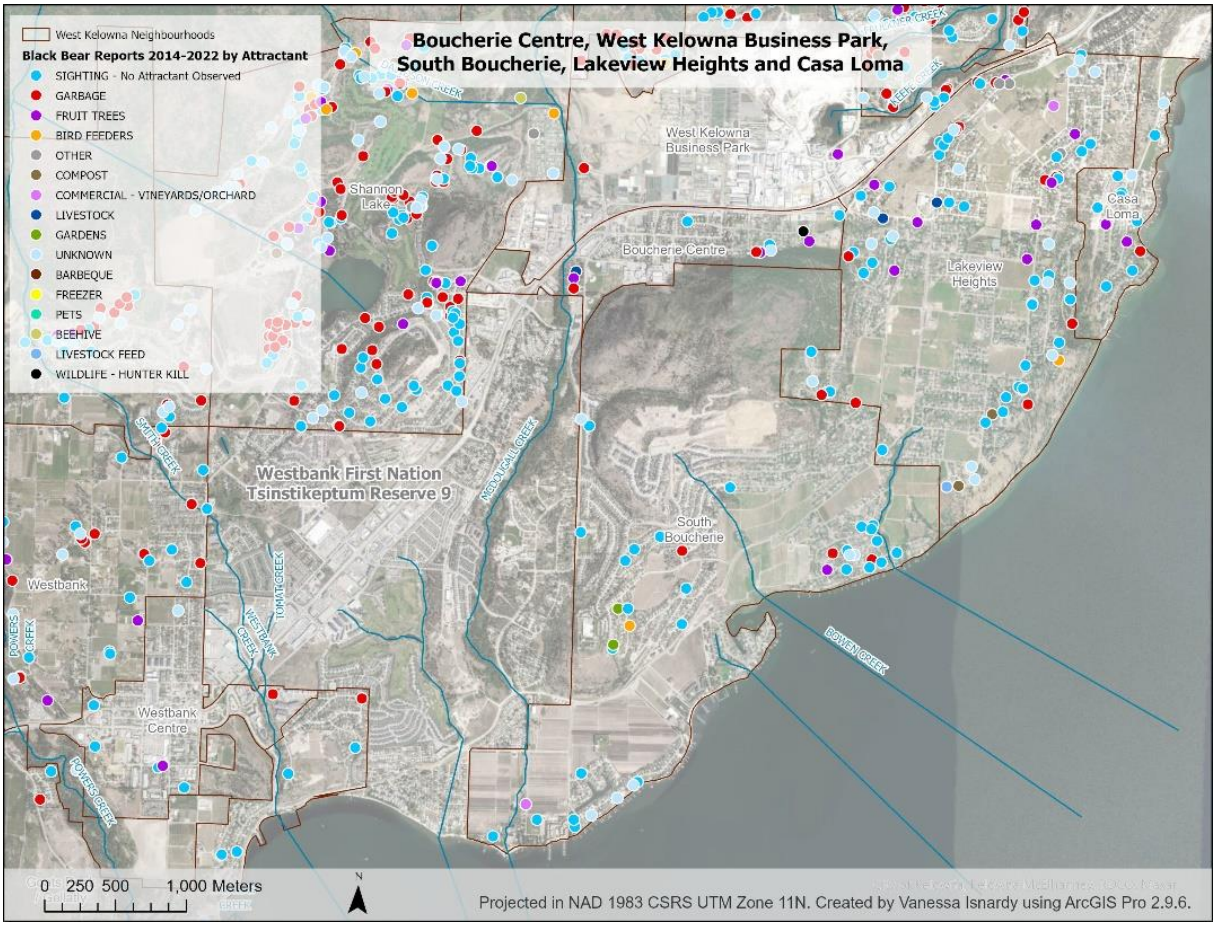


Figure 38. Black bear reports by attractant in the neighbourhoods of Boucherie Centre, South Bouchier, Lakeview Heights, Casa Loma and the West Kelowna Business Park from 2014 to 2023.

South Boucherie - Medium

South Boucherie is bordered by Boucherie Centre to the north, Lakeview Heights to the east, Westbank First Nation to the west and Lake Okanagan to the southeast (Figure 39). It features the 36 ha Mount Boucherie Regional Park with Mount Boucherie rising 416 m above Okanagan Lake to an elevation of 758 m above sea level. The rest of the neighbourhood is mostly zoned either R1 or A1 with agricultural areas, wineries, and single-family residential neighbourhoods. There are also pockets of resorts and several municipal parks. Marjorie Pritchard Park is the largest waterfront park (Figure 38). There is one school - Chief Tomat Elementary.

Figure 39. Signage at Marjorie Pritchard Park warning about bear sightings. Garbage receptacles at this park are not bear-resistant.

Notable in this community is McDougall Creek which flows from the Shannon Lake neighbourhood, through the Westbank First Nation, and empties into Okanagan Lake at the southwestern corner of the neighbourhood. All along this creek are protected riparian areas and mature trees that provide cover for bears and serve as a travel corridor. This area, zoned R1, was identified as an important Kokanee spawning area and wildlife corridor (City of West Kelowna, 2011). Another riparian buffer strip follows Bowen Creek and there have been several black bear reports from residents nearby.

This neighbourhood has generated 47 bear reports and 6 were related to garbage and 3 to fruit trees. This neighbourhood is assessed as medium risk as it backs onto Mount Boucherie Regional Park and McDougall Creek is a known bear travel corridor. Most notable attractants include commercial fruit production and unsecured garbage.

Boucherie Centre - Medium

This small neighbourhood is mostly wedged between Highway 97 to the north and Mount Boucherie to the south (Figure 38). There are three schools (Constable Neil Bruce Elementary, École Hudson Road Elementary, and Mount Boucherie Secondary), Mount Boucherie Community Centre and Arenas, and Mount Boucherie Sports Fields. All except for Constable Neil Bruce Elementary, back onto Mount Boucherie Regional Park. The City of West Kelowna's municipal hall is also located next to the community centre until it moves to its new location next the Johnson Bentley Aquatic Centre in Westbank on Old Okanagan Highway. The OCP predicts that this urban centre will accommodate 12% of the City's increase in dwelling units by 2040 and consist primarily of apartments and townhomes.

The number of black bear reports are relatively low (n=13) and are mostly generated from residential areas near McDougall Creek and homes backing onto Mount Boucherie. However, since many of the schools fields and City parks (e.g. Darroch Park) back onto Mount Boucherie, the risk of encountering bears and human-bear conflicts remains high.

Lakeview Heights - Medium

Lakeview Heights is bordered by Highway 97 to the northwest, the neighbourhood of South Boucherie to the west, Kalamoir Regional Park along Okanagan Lake to the south and the neighbourhood of Casa Loma to the east (Figure 38). Most of this neighbourhood is zoned either Single Detached Residential (R1) or Agricultural (A1) with a higher density CD zone on Olalla Road. There are a number of wineries in this area with pockets of residential areas and small community parks. The OCP predicts a potential for 281 dwelling units in the future. The residential areas located close to the regional parks and along Boucherie Road and Thacker Drive tend to generate most of the black bear reports (n=98). This makes it the fourth-highest ranking neighbourhood for black bear reports. Attractants most reported include garbage (n=22) and fruit trees (n=7). Any future residential developments can benefit from integrating Bear Smart strategies.

Casa Loma- Low

Casa Loma is a relatively small waterfront neighbourhood bordered by Lakeview Heights to the west and Casa Palmera - a naturalized area park (Figure 38). Most of the community is zoned R1 with well-established homes along with some agricultural areas (A1) and Rural Residential Large Parcels (RU4). Most of the community parks are located along the waterfront. This community is somewhat isolated geographically from adjacent neighbourhoods by steep slopes. However, bears are still able to access this neighbourhood and most of the black bear reports (n=18) have been generated from residential areas.

West Kelowna Business Park - Low

The West Kelowna Business Park is highly urbanized and bear reports are rare (n=6) from this region (Figure 38).

Official Community Plan

The City of West Kelowna adopted its OCP in September of 2023 and it provides policies and objectives to guide City staff and Council. As the community is expected to continue to grow, the policies establish a growth boundary and support infill housing and densification. The OCP policies directly related to supporting a Bear Smart Community are located under Section 3.5.3 Natural Hazards and Wildlife Conflicts. This section notes " the City is surrounded by natural spaces and includes many parks and natural wildlife corridors, it is expected that wildlife will be passing through our community and actions taken to prevent human-wildlife conflicts will lead to a more sustainable and respectful relationship with wildlife for the benefit of all." Further, the OCP identifies the following relevant objectives and policies:

- 3.5.3.1 Objectives – "1. Identify potential and existing natural hazards and avoid or mitigate the impacts on people, property, and the environment. 2. Raise awareness of human-wildlife conflicts through public education."
- 3.5.3.2 Policies – "Work with provincial partners and community stakeholders to monitor human- wildlife conflicts and develop management strategies."
- 3.5.4. Action Items – "Inventory, identify, and protect sensitive ecosystems and environmentally sensitive areas (ESAs), including wildlife corridors…"

West Kelowna has General Permit Guidelines that apply to All Development Permit Areas. Under section 4.2.6 Form and Character General Guidelines – All DPAs 1.(g)(*iii*) notes "Design garbage and recycling storage areas with consideration for animal-proofing."

Bylaws

The City of West Kelowna's Solid Waste Management Regulation Bylaw 2009 No.0065 outlines the regulations regarding the storage and disposal of solid waste in the community. Carts are required to be made accessible for collection between the hours of 7:00 am and 7:00 pm on the day of collection only. The bylaw does not address how the carts should be stored outside of collection times except to state they should be on the Owner's Residential Dwelling Premises and kept closed.

The City of West Kelowna does not have a wildlife attractant bylaw to address other attractants in residential areas such as backyard chickens, beehives, fruit and nut-producing trees, outdoor freezers, bird feeders, compost, barbeques etc.

For residents that do keep urban chickens or beehives, they are not allowed to install electric fencing to prevent access by bears as per Zoning Bylaw No.0265 Section 3.12 Fences which states "no fence in a Residential or Commercial Zone, except for the Service Commercial Zone (C4) shall contain barbed wire, razor wire, **electrified wire**, tarps, unfinished sheet metal or unfinished corrugated metal." The fine for building a non-compliant fence is $100 under MTI Bylaw No. 0095.

For comparison, the City of Kelowna's Solid Waste Management Bylaw No.10106 is similar but also includes an amendment Bylaw No. 12279 which specially addresses attractant management:

> *2.5.1 A person must not feed Dangerous Wildlife, and must not feed animals in a manner that is likely to attract Dangerous Wildlife. Every Owner or occupier of a Residential Dwelling Premise must ensure that:*
>
> *(a) any fruit or nuts from a tree, bush or shrub is maintained and stored in such a manner so as not to attract Dangerous Wildlife;*
>
> *(b) any bird feeder containing bird feed, suet or nectar is suspended on a cable or other device in such a manner that it is inaccessible to Dangerous Wildlife; and the area below any bird feeding devices or activity is kept free of accumulations of seeds and similar Animal Attractants;*
>
> *(c) any composting activity is carried out and any composting device or equipment is maintained in such a manner that it is inaccessible to Dangerous Wildlife;*
>
> *(d) barbecue equipment and tools that remain out of doors must be clean and free of residual food or grease;*
>
> *(e) any refrigerator, freezer, storage container or similar appliance, device or apparatus that contains animal attractants of any type, if placed or located outdoors, is located and equipped in such a manner that it is inaccessible to Dangerous Wildlife; and*
>
> *(f) any grease, antifreeze, paint or petroleum product is stored in such a manner that it is inaccessible to Dangerous Wildlife.*
>
> *(g) Except as permitted in this bylaw, a person must not store any refuse that is an Animal Attractant in such a manner that it is accessible to Dangerous Wildlife.*

Dangerous Wildlife are defined to be consistent with the B.C. Wildlife Act and include bear, cougar, wolf and coyote.

Kelowna also has Animal and Poultry Bylaw No. 5421-82. According to the Bylaw under section 2 (a) "*Except as outlined in this section*, *the keeping of animals and poultry other than household pets is prohibited in all Zones in the City. The keeping of animals and poultry, when permitted in the Zoning Bylaw, shall comply with the following restrictions:*

> *(i) In In the A1, A2, RR1, and RR2 zones, and all related subzones as defined in the Zoning Bylaw, where the lot is less than ½ acre (.20 ha.) in area – two (2) rabbits are permitted.*
> *(ii) In the A1, A2, RR1, and RR2 zones, and all related subzones as defined in the Zoning Bylaw, where the lot is more than ½ acre (.20 ha.) but less than 1 acre (.40 ha.) in area – ten (10) rabbits or ten (10) poultry or a combination thereof are permitted."*

Under Kelowna's MTI Bylaw No. 6550-89, the fine for not storing carts properly is $150 and the fines under the Animal and Poultry Bylaw are $100 per infraction.

The RDCO also has Animal Control Bylaw No. 880, 2000 which prohibits the keeping of livestock on parcels less than 400 m^2 and limits the number of small livestock to 5 on lots 400 m^2 to 2,500 m^2. Roosters remain prohibited on lots less than 1,500 m^2 but on lots 1,500 m^2 to 2,500 m^2 they need to be keep in sound-resistant buildings between 7:00 pm and 7:00 am.

The RDCO Responsible Dog Ownership Bylaw No.1343 is a consolidated bylaw that includes Bylaw No. 1385 that requires dogs to be always on a leash (maximum of 2 metres) in public spaces except in designated off-leash areas. Fines start at $150 for dogs "at large".

Implications of Bill 44

In November 2023, the Provincial government introduced and passed new housing legislation to support increased densities in cities. The introduced Bill 44 takes effect July 1, 2024. With this new legislation, "municipalities must review and update OCPs, every five years with public engagement to plan for enough homes for forecasted growth over the next 20 years (rather than five) and include policies that address a wider range of housing types (e.g., affordable housing, rental housing, housing for families, etc.)". This requires all local governments to initiate pro-active planning including updating OCPs, Housing Needs Reports (HNRs), and Zoning Bylaws. In communities with more than 5,000 people, local government zoning bylaws must be updated by June 30, 2024 as follows:

- All single-family residential zones must allow for one secondary suite or laneway home in all municipalities and regional district electoral areas
- Small-scale multi-unit housing (SSMU) must be allowed in municipalities greater than 5,000 people and within urban containment boundaries which range from 3 to 6 units depending on lot size and proximity to transit. These are minimum requirements and local governments can permit higher density.

Implications of higher density will directly affect the number of curbside carts required on each lot and space constraints may affect where people are able to store them. Updates to policies and zoning bylaws should reflect the City's current OCP "animal-proofing" policies and future intentions to become a Bear Smart Community.

Bylaw Enforcement/Education

The role of the bylaw department is primarily education as there are currently no fines associated with the improper storage of carts under the City of West Kelowna's Solid Waste Management Regulation Bylaw 2009 No.0065. Bylaw staff support the intent of the bylaw by issuing solid waste bylaw education letters. These include letters to specific addresses when they receive complaints of bears in garbage bins placed prior to 7:00 am on collection day, bears in garbage inside of property, bins left out on non-collection day, and bins set out prior to 7:00 am on collection day (Appendix III). The City also issues letters to all residents on a street where there have been multiple reports of carts being set out early (Appendix IV). Starting in 2021, the bylaw department collaborated with WildSafeBC to also send letters to all residents that WildSafeBC identified during their garbage tagging program (Appendix V).

While the bylaw education letters are triggered by a complaint, the WildSafeBC garbage tagging program takes a proactive approach by canvassing neighbourhoods the night before collection. As a result of this collaboration, the number of letters issued has substantially increased and there have been 691 letters sent by the City between 2019 and 2023 (Table 7).

Table 7. Letters sent to residents by the City of West Kelowna Bylaw Department.

Year	Complaint-Driven Letters Sent	WildSafeBC Bin Tagging Letters Sent	Total
2018	13		13
2019	11		11
2020	19		19
2021	28	168	196
2022	36	166	202
2023	75	175	250

The City's bylaw department also collaborates with WildSafeBC by installing signage in neighbourhoods with multiple sightings and reports.

EDUCATION

WildSafeBC

The City of West Kelowna has partnered with WildSafeBC since 2016 to provide wildlife and conflict education to residents. The program is managed by the British Columbia Conservation Foundation (BCCF), a registered not-for-profit and charity. The program began as Bear Aware in 1997 and later evolved to become WildSafeBC to support communities in addressing other wildlife conflict challenges. Every year, local communities apply for a Provincial grant administered by BCCF to bolster their own community funding to support the hiring of a local part-time coordinator. BCCF supports communities by recruiting and training staff to deliver consistent and effective education province-wide.

Program delivery typically consists of school education programs, booths at community events, presentations and workshops for adults and families, bear spray training, door-to-door outreach in areas experiencing wildlife activity, and placing education stickers on garbage set out the night before collection. All annual community reports are published on the WildSafeBC website under the Resources tab.

WildSafeBC's garbage tagging program is one of the most effective activities at changing human behaviours and reducing the amount of available garbage to bears. Garbage tagging consists of placing a highly visible and removable sticker on carts placed out the night before collection (Figure 40). In West Kelowna there are 5 distinct collection routes, and the WildSafeBC Community Coordinators try to canvass each route at least twice over the season. Addresses are noted so that those that repeat the behaviour can be identified.

Figure 40. WildSafeBC education sticker on a garbage can that has set out the night before collection.

The bin tagging program is highly effective in that it targets a specific behaviour and only a small percentage of people repeat the behaviour once they have been educated with the sticker. In 2021, 205 carts received education stickers (including a small number in Peachland). Of those, 13 addresses repeated the behaviour. In 2022, 223 bins received stickers and of those, only 8 bins received a sticker more than once. In 2023, 171 residents received stickers.

While the program is highly effective at addressing cart set out, it does not effectively address how carts are stored on private property between collection days. When carts are on private property, there are currently no bylaws preventing the carts from being stored outside. If bylaws were updated to require garbage carts to be certified bear-resistant, or stored indoors, it would fall onto the bylaw department to enforce these new requirements.

The WildSafeBC Program is also capacity-limited as there is only one part-time seasonal coordinator shared between West Kelowna, the RDCO and Peachland. The WildSafeBC Program is multifaceted and bin tagging is only one of several human-wildlife conflict reduction education activities taking place throughout the season.

In addition to education through the Bylaw department, the City also maintains a Bears and Wildlife landing page on its website: https://www.westkelownacity.ca/en/our-community/bearsandwildlife.aspx.

Fruit Gleaning and Education Programs

Okanagan Fruit Tree Project

The Okanagan Fruit Tree Project is a registered charity based out of Kelowna that grows, harvests and shares fresh produce while also sharing information about sustainable food systems. With the help of volunteers, they glean unused fruits, vegetables and/or nuts and redistribute to those in need in the community. By registering their tree, orchard or farm plot, owners can help prevent bears from accessing these high caloric rewards and becoming food conditioned. The program is oversubscribed and relies heavily on volunteers. However, they have indicated interest in partnering with WildSafeBC to prioritize areas experiencing higher bear interactions.

Okanagan-Kootenay Sterile Insect Release Program

The Okanagan-Kootenay Sterile Insect Release Program (SIR) began in 1992 to help control codling moth using safe and pesticide-free techniques and support the B.C. fruit industry. Along with coddling moth management, they also provide information to property owners on their legal responsibilities in controlling for pests that may affect nearby orchards. Many of their educational resources not only support homeowners in preventing the spread of diseases and pests, but they also provide best practices that keep trees healthy and well-pruned. Keeping trees manageable and well-picked is a key strategy in preventing conflicts with bears that also benefits the fruit industry.

BEAR SMART PROGRAM

Communities that have successfully implemented Bear Smart strategies have witnessed notable reductions in human-bear conflicts. An analysis of black bear reports, focusing on attractants, revealed that Bear Smart communities experienced approximately 60% fewer attractant-related incidents compared to non-Bear Smart communities between 2018 and 2021 (see Figure 41) (Frei, 2021).

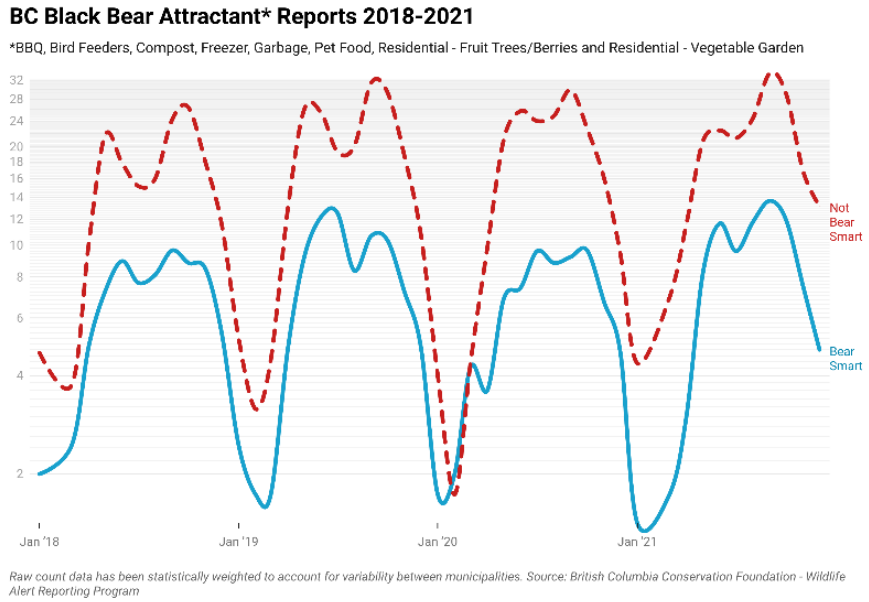


Figure 41. A comparison between Bear Smart and non-Bear Smart Community black bear attractant reports 2018-2021 (Frei, 2021).

Case Study - Naramata

In 2009, a BHA and human-bear conflict management plan were completed for the South-Okanagan and Similkameen (Peatt et al., 2009). The community of Naramata acted on this report and implemented Bear Smart strategies which led them to successfully applying and receiving Bear Smart Community recognition by the Province in 2014 which was renewed in 2019. Before becoming Bear Smart, Naramata had 6 to 7 bears lethally removed per year from 2006 to 2009 (Regional District Okanagan Similkameen, 2013). In 2009, Naramata implemented a Bear Aware Program (now known as WildSafeBC) and a curbside collection bylaw. From 2009 to 2013, only one bear was euthanized in the community because of its poor health.

The Bear Smart approach for every community is slightly variable but should begin with addressing sources of human-provided high caloric food rewards to bears and prioritizing high risk areas. In the short term this should include a multi-faceted approach that includes education, proactive enforcement of Bear Smart bylaws, and providing residents with access to bear-resistant infrastructure when they have few other options. Empirical studies have demonstrated that proactive enforcement (e.g., dispensing warnings or fines) is required to support education efforts (Baruch-Mordo et al., 2011). Residents in both northern and southern B.C. urban communities are more often in favour of using warnings and fines to discourage human behaviours that lead to human-bear conflicts rather than resorting to the lethal removal of bears (Booth et al., 2019). While people may have positive attitudes towards bears, this does not always result in the desired behaviours that may be deemed too inconvenient, impractical, cost prohibitive or perceived as unnecessary (Dietsch et al., 2013).

BEAR SMART PROGRESS

The City of West Kelowna has shown commitment to becoming Bear Smart by supporting the WildSafeBC Program, commissioning this BHA, and providing staff support from Bylaw, Parks, Planning and Communications. The City has also recognized the importance of reducing human-bear conflicts in the updated Official Community Plan. Assuming the WildSafeBC Program returns in 2024, and once City Council has received and accepted the BHA, West Kelowna will have completed two of the six Bear Smart Community criteria (Table 8).

Table 8. Bear Smart Community status criteria and progress for the City of West Kelowna.

Criteria	Progress
1. Prepare a bear hazard assessment of the community and surrounding area.	Completed March 2024 – Requires adoption by Council.
2. Prepare a human-bear conflict management plan.	To be completed.
3. Revise planning and decision-making documents.	In progress. BHA recommendations to be considered.
4. Implement a continuing education program.	The community has participated in the WildSafeBC program in 2016, 2018-2023.
5. Develop and maintain a bear-resistant solid waste management system.	To be completed
6. Implement "Bear Smart" bylaws.	To be completed

RECOMMENDATIONS

DEVELOP AND MAINTAIN A BEAR-RESISTANT SOLID WASTE MANAGEMENT SYSTEM

1. Replace all public garbage receptacles with IGBC certified bear-resistant models.

There are approximately 82 non-bear-resistant bear public garbage receptacles managed by the City of West Kelowna. The City should continue to replace them and prioritize areas assessed at higher risk (Figure 42; Appendix II). There are currently 6 high risk, 18 medium-high risk, 37 medium risk and 21 low risk receptacles. Bus stop receptacles should be monitored for access and damage by bears and discontinue or replace them with bear-resistant models if they are accessed.

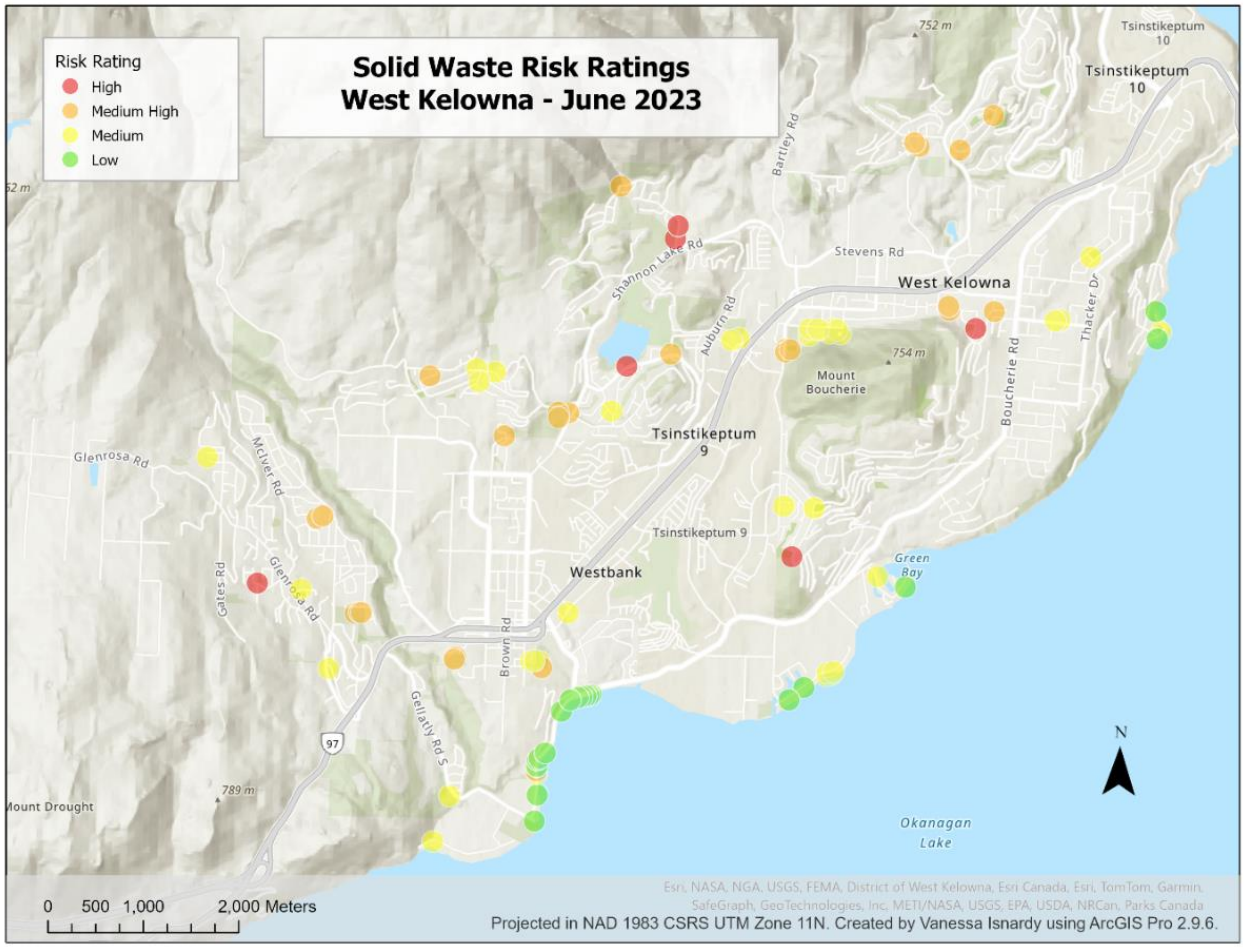


Figure 42. Locations of non-bear resistant public receptacles in West Kelowna.

2. Ensure dumpsters have metal lids in high risk areas.

Most dumpsters in the City have plastic lids. These lids should be metal, especially in high-risk neighbourhoods and areas such as Shannon Lake, Rose Valley, Glen Rosa, Smith Creek and Bartley North. This includes the open dumpster used by City of West Kelowna Parks in Kinsmen Park.

Dumpsters can be fitted with “Haul-All” style inset lids that make them easier to use (Figure 43). In areas with high conflicts, bear bars may be required. Consider educational decals as needed.

Figure 43. Bear-resistant dumpsters in Squamish (left) with educational decals (right).

3. Prevent black bear access to garbage at the RDCO-managed transfer stations.

Outside of operating hours, open garbage trailers need to be kept secure by using steel lids (Figure 44) or by repairing and reactivating the electric fence around the Westside Transfer Station. It is recommended that a bear-resistant dumpster be placed outside the gate at Traders Cove to prevent dumping of waste outside the closed gate. All garbage needs to be inaccessible to bears when the transfer stations are not open to the public.

Figure 44. Example of garbage trailers with metal tops that closed outside of public operating hours in Stewart, B.C.

4. Provide, or make accessible, IGBC-certified bear-resistant curbside carts to residents that do not have a reasonable or alternate means to store current carts indoors.

Unsecured residential garbage is the most reported attractant in the City and contributes directly to bear mortalities and public safety concerns. Many residents in West Kelowna do not have a garage or a suitable place to store garbage carts and 10% of the social survey respondents (n=55) indicated a need for bear-resistant carts. It is recommended that the RDCO re-visit the bear-resistant cart pilot program and consider models being used in many communities in B.C. (e.g., North Vancouver, Coquitlam, Maple Ridge, Castlegar, Ucluelet, Tofino, Port Alberni, and Squamish).

5. Implement a Bear Smart Food Waste Collection Program

With the RDCO's intention to move forward with a food waste collection program for the Central Okanagan, there is an opportunity to support local governments in becoming Bear Smart Communities, including West Kelowna, by addressing the primary source of reported conflicts. The diversion of food waste from being in garbage bags to unlined carts will have several implications. The current yard waste carts used by the RDCO are not bear-resistant and have a simple plastic lid without a latch. When stored outside, these are easily accessed by bears, rodents and other wildlife. Since these carts are quite large, keeping them clean will be difficult for residents. This will result in increased odours being produced and residents may decide to store them outdoors.

Since the RDCO uses an automated cart collection system, moving to smaller carts that can be washed and stored indoors may not be feasible. If the RDCO continues with the current 120L yard waste carts, it is recommended that these be exchanged for certified bear-resistant models. This approach has been implemented in many Bear Smart Communities and funding grants may be available to reduce the financial burden during the transition. It is recommended that local governments, the RDCO, and other partners take this opportunity to prevent bears from accessing organic waste.

Case Study – Alberni Clayoquot Regional District Three-Stream Collection Implementation

In 2020, the Alberni-Clayoquot Regional District received a $6 million grant from the Canada Community-Building Fund to introduce organics collection in the City of Port Alberni and the West Coast (Alberni-Clayoquot Regional District, 2023). While the carts are bear-resistant, they are still made of a material that a bear can chew through, given enough time and motivation. However, they are an important layer of defense, especially for households that have few alternatives for storing carts inside a bear-resistant structure.

A best practice is to keep these carts secure so that a bear cannot knock them over or drag them away. The ACRD partnered with WildSafeBC on the bear-resistant cart program rollout and developed several education resources including a video on how to keep the new carts secured.

DEVELOP, IMPLEMENT AND ENFORCE BEAR SMART AND/OR WILDLIFE ATTRACTANT BYLAWS

1. Update bylaws to include Bear Smart language.

Since the Bear Smart Community Program began, there have been many iterations of wildlife attractant or solid waste bylaws developed by municipalities and regional districts throughout B.C. A Wildlife Attractant Bylaw Toolkit was developed to assist communities in developing bylaws which are the most robust and effective (Serratus Wildlife Services, 2022). At minimum, the City should update the Waste Management Regulation Bylaw 2009 No.0065 to include language consistent with other recently updated bylaws in Bear Smart Communities such as the District of Squamish and the Squamish Lillooet Regional District. Key considerations to include are:

- Ensure bear-resistant containers are defined as being IGBC certified.
- Ensure bear-resistant enclosure designs are reviewed by those with experience in human-bear conflict mitigation (Appendix VI).
- Ensure the only options for storage of curbside carts between collection days are either inside a bear-resistant enclosure, a certified bear-resistant cart, or inside a building such as a garage.
- Ensure carts can only be set out during the day of collection and no earlier than 5:00 am.
- Ensure that bear-resistant carts stored outside are kept locked at all times and secured in such a way as to prevent them from being dragged off a person's property.
- Ensure commercial and multi-dwelling units use bear-resistant dumpsters that have metal lids.

It is recommended that the City consider implementing a stand-alone Wildlife Attractant Bylaw and follow best practices outlined in the Wildlife Attractant Bylaw Toolkit. Ideally, this bylaw should be consistent across all RDCO-serviced communities. A Wildlife Attractant Bylaw can also address other attractants besides solid waste that have been reported in West Kelowna such as outdoor freezers, compost, bird feeders, beehives, and fruit-producing shrubs and trees. Wildlife Attractant Bylaws also have the benefit of addressing other wildlife such as deer, coyotes, rodents and marmots.

Best practices include defining wildlife attractants as "any substance, material or animal, with or without an odour, which attracts or is likely to attract Wildlife; and without limitation includes refuse, recycling, food or other edible products, whether intended for humans, animals, or birds, grease, oil, antifreeze, paint, petroleum products, and compost other than grass clippings, leaves or branches."

In addition, the City should update Zoning Bylaw No.0265 Section 3.12 to allow the use of modern CSA/UL approved electric fences in all areas for preventing access to attractants by bears. This would include allowing electric fencing to be installed to protect fruit trees, chickens, beehives, and gardens, in all zonings including single-family residential. The updated bylaw should require that electric fences be installed and maintained in accordance with WildSafeBC Guidelines (Appendix VII).

Both chickens and beehives are strong attractants for bears (Figure 45). Once a bear access chickens from a chicken coop, they often go on to prey on other chickens in the area, resulting in multiple losses and damage. These bears are often killed as a result. Responses from the social science survey indicate that there are several chicken coops in the City and many owners are not aware that their chickens can attract bears into their neighbourhoods.

Figure 45. WildSafeBC education on how to prevent bears from accessing chicken coops safely and effectively.

If chickens and beehives are allowed in residential areas, the City of West Kelowna should develop its own urban chicken and beehive bylaws, permits and guidelines. This should include requiring that all chickens and beehives on residentially-zoned properties be protected by a modern CSA/UL approves electric fence designed to minimum standards developed by WildSafeBC and IGBC. Best practices include requiring residents to apply for a permit to keep urban chickens and beehives (District of North Vancouver, 2024). This requires the submission of coop and electric fence design prior to the permit being approved. Ideally, site inspections should take place before permit approval is granted. The bylaw should also require that all livestock food should also be kept in a bear-resistant structure or within the electric fence.

Commercial orchards, vineyards and apiaries within residential areas and in high risk neighbourhoods should also be required to utilize electric fencing to prevent access by bears using either seasonal or permanent electric fencing (Figure 46). Electric fencing can be easily installed on existing fencing.

Figure 46. Example of a permanent bee yard surrounded by electric fencing (credit: Grizzly Bear Solutions).

2. Implement fines and ensure fines are sufficient to encourage adoption of Bear Smart practices.

Fines are generally a last resort when other options have been progressively implemented, including education followed by warning letters. When resorting to fines, it should be considered that the person in non-compliance has been unreceptive to previous education efforts. Warning letters are often a good balance between education and fines. For example, several Bear Smart Communities in the Lower Mainland impose a $500 fine for not managing attractants including Maple Ridge, Squamish, District of North Vancouver.

3. Bylaw Implementation and Enforcement

The City should continue to collaborate with local partners, WildSafeBC, and the Conservation Officer Service in the development of Bear Smart bylaws and implementation strategies which could include:

- Development of a communication strategy to announce changes to bylaws and fines including a rollout period.
- Consideration of resources requirements and budget considerations for effective education and bylaw enforcement.
- Developing a more proactive bylaw enforcement approach after the rollout period and performing random audits, beginning with high risk areas.

REVISE PLANNING AND DECISION-MAKING DOCUMENTS

The current OCP could be strengthened to include policies and objectives that support a Bear Smart vision for the community. Existing policies can also be amended to include human-bear conflict mitigation measures. These could include:

1. Bear-Resistant Enclosures

West Kelowna has General Permit Guidelines that apply to All Development Permit Areas. Under section 4.2.6 Form and Character General Guidelines – All DPAs 1.(g)(*iii*) notes "Design garbage and recycling storage areas with consideration for animal-proofing." This guideline can be strengthened by further defining bear-resistant enclosure requirements. Enclosures for solid waste, organics and recycling should at minimum:

- Be of a sufficient size to accommodate the storage and removal of current and future solid waste, organics and recycling containers,
- Have a concrete foundation,
- Be completely enclosed with solid walls and a roof,
- Walls should be made of solid materials such as concrete,
- There should be two entrances, one with a self-closing personnel door and one for servicing,
- The doors should be made of heavy-duty commercial steel and gaps minimized,
- Meet all BC Building Code and accessibility requirements for persons with disabilities.

An example is provided in Appendix VI which is an excerpt of the Wildlife Attractant Bylaw Toolkit (Serratus Wildlife Services, 2022). For example, this solution has been successfully used in new developments in Whistler where there is no curbside collection. When these bear-resistant solid waste enclosures are combined with mailboxes and located at the entrance/exit of the development, it provides a convenient location for residents. It also makes it safer and more efficient for solid waste collection providers to service the neighbourhood.

At minimum, these guidelines should be applied to all new multi-family residential construction as well as mobile home parks and compact residential zoned areas. Any new commercial, industrial, or public facilities that will be constructed near riparian areas and wildlife travel corridors identified through OCP Action Item 3.5.4 and in this BHA should also follow these guidelines.

2. Landscaping Guidelines

These guidelines would require that all developments avoid using plants that are highly attractive to bears and consider the use drought-tolerant native plants. Plants to avoid include all fruit and nut-producing ornamental or domestic varieties as well as all native fruit-producing plants identified in Appendix I. Bear Smart Education

Since having an education program is one of the Bear Smart Community criteria, the OCP section 3.5.3.1.2 "Raise awareness of human-wildlife conflicts through public education" can be strengthened by requiring an ongoing bear/wildlife conflict education program that meets the standards required by the Bear Smart Community program.

3. Develop and Maintain a Bear/Wildlife Working Group

The OCP Section 3.5.3.2 can be strengthened by including in the policy to develop and maintain a Wildlife Working Group that meets on a regular basis. The role of the group would be to jointly monitor human-wildlife conflicts and develop management strategies that will inform the Human-Bear Conflict Management Plan.

4. Parks, Public Spaces and Trailheads

Overall, the City of West Kelowna's parks are well-maintained, and these efforts should continue. Attention should be focused on replacing garbage receptacles with bear-resistant models and ensuring any parks adjacent to riparian areas and bear travel corridors are well-brushed. Policies should be developed to ensure fruit and nut producing trees are never planted within a park primarily used for recreation and/or dog-walking.

CONTINUE BEAR SMART EDUCATION

1. West Kelowna has supported the WildSafeBC Program since 2018. The City of West Kelowna should continue to support a Bear Smart education program such as WildSafeBC and work with partners to ensure the position attracts and retains qualified talent. The City should explore options to further expand this position as they continue to work towards becoming Bear Smart.
2. Work with education partners such as WildSafeBC, the Okanagan Fruit Tree Project and Okanagan-Kootenay Sterile Insect Release Program to increase responsible fruit tree management on private property. Support the use of electric fencing as a safe and effective solution in protecting trees from being damaged by bears and preventing bear food conditioning and human habituation. Temporary mesh electric fences are ideal for small backyard fruit trees.
3. The City of West Kelowna should continue to maintain and update their Bears and Wildlife website page. As further bylaws and initiatives are implemented, they should link back to this main landing page.
4. The bylaw department should continue to collaborate with WildSafeBC, the Conservation Officer Service and other partners on effective strategies that lead to responsible attractant management and human-bear conflict reduction.
5. Signage could be improved at trailheads to use a combination of permanent and temporary messaging. Permanent signage would warn users they are entering an area where bear encounters are possible and precautions that should be taken. Temporary bear caution signage should only be used when there are confirmed reports of bear activity and there is a heightened risk to the public. Best practices are to include the dates when the bear activity was last reported. Examples are provided in Appendix VIII.
6. The City of West Kelowna should consider collaborating with the Conservation Officer Service to play a leading role in communicating wildlife information and safety announcements when warranted. The City is well-positioned to communicate this safety information quickly and efficiently. An example is the District of Squamish's work to proactively warn residents of bear activity through their contact lists to encourage residents to secure attractants or to warn residents of potential cougar, bear or coyote activity in areas that should be avoided.

PREPARE A HUMAN-BEAR CONFLICT MANAGEMENT PLAN

The next step to becoming a Bear Smart Community would be to develop a Human-Bear Conflict Management Plan (HBCMP). The goal of a Human-Bear Conflict Management Plan (HBCMP) is to address the potential risks and hazards identified in the BHA and develop a plan that will be effective in reducing human-bear conflicts. It is recommended that the HBCMP be developed through the establishment of a Human-Bear Conflict Working Group that can help inform the plan and explore potential challenges, barriers and opportunities. Members of the Working Group should include City of West Kelowna staff such as bylaw, planning and parks, a RDCO solid waste services representative, the Conservation Officer Service, and other partners such as WildSafeBC. The HBCMP should also consider the findings of the Westbank First Nation BHA and include participation of a Westbank First Nation representative.

For the plan to be successful it should be achievable and have clearly established goals, timelines, and include budgetary support and resource considerations. The recommended steps for developing a HBCMP include:

1. Identifying key agencies, groups, subject-matter experts, partners and internal staff that are needed to participate in the plan development.
2. Determine whether the process will be led by internal staff or a consultant.
3. Establish a Human-Bear Conflict Working Group, identify chair and schedule meetings.
4. Informed by the BHA, develop a list of goals and objectives to address the issues raised.
5. Prioritize actions, determine timelines for implementation and identify what individuals and organizations need to be involved.
6. Determine budgets and resources required for the proposed actions.
7. Present the draft plan to Council for review.

This plan should be adaptive in nature and updated on an annual basis. Given that unsecured human-provided sources of food, especially garbage, are a primary driver of human-bear conflicts, efforts should be focused around reducing and managing these attractants. It will require coordination with a variety of agencies, organizations and jurisdictions. Working together, the City of West Kelowna can reverse its trend in human-bear conflicts and become a community that is safer for both residents and bears.

APPENDIX I – BEAR FORAGE FOODS

Table 9. Natural forage food for bears by BEC Zones in the region.

		City of West Kelowna			RDCO					
Latin Name	Common Name	PPxh1	IDFxh1	IDFdk1	IDFdk2	ICHxm1	ICHmk1	MSdm2	ESSFdc2	ESSFxc2
Vaccinium scoparium	grouseberry			●	●		●	●	●	●
Equisetum arvense	common horsetail		●	●	●	◕	●	●	●	●
Oplopanax horridus	devil's club		◔		◑	●	●	●		
Ribes lacustre	black gooseberry		◕	◕	◕	●	◕	●	◕	◑
Vaccinium membranaceum	black huckleberry				◑	◑	●	◕	●	●
Valeriana sitchensis	Sitka valerian						◑	◕	●	●
Arctostaphylos uva-ursi	kinnikinnick	◔	◕	●	●	◕	◕	◕	◕	◑
Rubus pedatus	five-leaved bramble						◕	●	●	●
Athyrium filix-femina	lady fern		◑			●	◕	◕		
Cornus sericea	red-osier dogwood		◕	◕	●	◕	◕	◕		
Cornus canadensis	bunchberry		◑	◕	◕	◕	◕	◕	◕	◑
Lysichiton americanus	skunk cabbage					●	◕			
Amelanchier alnifolia	saskatoon	◕	◕	◑	◕	◕	◕	◑	◔	
Shepherdia canadensis	soopolallie		◑	◕	◕	◕	◕	◕	◑	◑
Rubus parviflorus	thimbleberry		◕		◕	◕	●	◕	◔	
Calamagrostis canadensis	bluejoint reedgrass			◑			●	◕	◑	◕
Lupinus arcticus	arctic lupine			◕	◕		◑	◕	◕	◕
Streptopus amplexifolius	clasping twistedstalk	◔	◔			◔	◕	◕	◕	◑
Senecio triangularis	arrow-leaved groundsel					◑	◕	◕	◕	◕
Aralia nudicaulis	wild sarsaparilla		◑			◕	◕			
Osmorhiza berteroi	mountain sweet-cicely		◑	◕	◑	◑	◕	◕	◑	◑
Lonicera involucrata	black twinberry			◑	◑	◔	◕	◕	◑	◕
Carex disperma	soft-leaved sedge		◑		◕	◕	◔	◔		
Heracleum maximum	cow-parsnip		◕				◔	◑	◔	
Rosa acicularis	prickly rose	◔	◑	◕	◕	◑	◑	◔		
Maianthemum racemosum	false Solomon's-seal		◑			◑	◑	◑	◔	
Caltha leptosepala	white mountain marsh-marigold						◔		◑	◕
Veratrum viride	Indian hellebore						◔	◑	◕	◕
Fragaria virginiana	wild strawberry	◔	◔	◑		◑	◑	◑	◔	◔
Maianthemum stellatum	star-flowered false Solomon's-seal	◑	◑		◑	◑	◑	◔		
Streptopus lanceolatus	rosy twistedstalk					◔	◑	◑	◑	◑
Viola glabella	stream violet		◔			◑	◑	◑	◔	
Vaccinium caespitosum	dwarf blueberry						◕		◔	◑
Prosartes hookeri	Hooker's fairybells					◑	◑	◑		
Prunus virginiana	choke cherry	◔	◕			◔				
Fragaria virginiana var. glauca	wild strawberry		◔	◑		◔	◔	◔	◑	◑
Viburnum edule	highbush-cranberry		◔			◑	◑	◑		
Petasites frigidus var. palmatus	palmate coltsfoot				◑	◑		◔		
Ribes hudsonianum	northern blackcurrant		◑		◑	◔				
Petasites frigidus	sweet coltsfoot					◑	◑			
Dryopteris expansa	spiny wood fern					◔	◑			
Poa pratensis	Kentucky bluegrass	◑	◑							
Vaccinium myrtillus	low bilberry							◑		
Chamerion angustifolium	fireweed						◔	◑	◔	◔
Rubus pubescens	dwarf red raspberry		◑				◔	◔		
Taraxacum officinale	common dandelion	◔	◑			◔				
Epilobium ciliatum	purple-leaved willowherb					◑			◔	
Rubus arcticus	nagoonberry						◑			
Sambucus racemosa	red elderberry		◑			◔	◑			
Lupinus arcticus ssp. subalpinus	arctic lupine								◑	
Osmorhiza purpurea	purple sweet-cicely									◑
Sorbus sitchensis	Sitka mountain-ash					◔	◔	◔	◔	◔
Urtica dioica	stinging nettle					◔	◑			
Pedicularis bracteosa	bracted lousewort								◑	
Corylus cornuta var. californica	beaked hazelnut		◑							
Carex rossii	Ross' sedge		◔					◔		
Sorbus scopulina	western mountain-ash						◔	◔		
Corylus cornuta	beaked hazelnut					◑				
Equisetum pratense	meadow horsetail						◔			
Carex rossii	Ross' sedge		◔					◔		
Rubus spectabilis	salmonberry							◔		
Trillium ovatum	western trillium						◔			
Fritillaria affinis var. affinis	chocolate lily					◔				
Lomatium dissectum	fern-leaved desert-parsley		◔							
Erythronium grandiflorum	yellow glacier lily					◔			◔	
Ribes bracteosum	stink currant							◔		
Rubus idaeus	red raspberry						◔			
Carex concinna	low northern sedge									◔
Angelica arguta	sharptooth angelica							◔		
Medicago sativa	alfalfa	◔								
Vaccinium ovalifolium	oval-leaved blueberry						◔			
Salix sitchensis	Sitka willow							◔		
Lomatium triternatum	nine-leaved desert-parsley	◔								
Allium cernuum	nodding onion	◔								
Carex utriculata	beaked sedge							◔		
Rosa woodsii	prairie rose					◔				

APPENDIX II – CITY OF WEST KELOWNA - NON-BEAR-RESISTANT CART SURVEY

Table 10. Inventory of non-bear resistant receptacles in public areas managed by the City of West Kelowna and the School District.

Qty	Code	Neighbourhood	Location Description	Facility Type	Longitude	Latitude	Risk Rating	2023	2024
1	GCOP	BouchérieCentre	City Hall	CommCentre	-119.58098258	49.85845106	Medium		
3	GBAOPEN	BouchérieCentre	City Hall	CommCentre	-119.58253069	49.85846622	Medium		
1	GMET	BouchérieCentre	Constable Neil Bruce School	School	-119.59570406	49.85766502	Medium		
1	GMET	BouchérieCentre	Constable Neil Bruce School	School	-119.59677160	49.85749885	Medium		
1	GBAOPEN	BouchérieCentre	Issler Park	Park	-119.54490836	49.86642728	Medium		
1	GBAOPEN	BouchérieCentre	Jim Lind Arena	CommCentre	-119.58138987	49.85863546	Medium		
1	GBAPL	BouchérieCentre	Jim Lind Arena	CommCentre	-119.58147830	49.85881333	Medium		
1	GBAPL	BouchérieCentre	Jim Lind Arena	CommCentre	-119.58202244	49.85885611	Medium		
1	GCOP	BouchérieCentre	Mount Boucherie Community Centre	Park	-119.54901246	49.86030353	Medium		
2	GBAOPEN	BouchérieCentre	Mount Boucherie Community Centre	Park	-119.54909864	49.86044241	Medium		
1	GMET	BouchérieCentre	Mount Boucherie Secondary School	School	-119.58547760	49.85818569	Medium		
2	GMET	BouchérieCentre	Mount Boucherie Secondary School	School	-119.58547329	49.85878983	Medium		
2	GMET	BouchérieCentre	Mount Boucherie Secondary School	School	-119.58428318	49.85878642	Medium		
1	GBAOPEN	BouchérieCentre	Darroch Park	Park	-119.58891627	49.85682029	MediumHigh		
1	GBAOPEN	BouchérieCentre	Darroch Park	Park	-119.58884525	49.85653975	MediumHigh		
2	GBAOPEN	BouchérieCentre	Darroch Park	Park	-119.58820174	49.85677248	MediumHigh		
1	GMET	BouchérieCentre	Ecole Hudson	School	-119.56519978	49.86100418	MediumHigh		
1	GMET	BouchérieCentre	Ecole Hudson	School	-119.56539373	49.86137435	MediumHigh		
1	GBAOPEN	CasaLoma	Casa Loma Beach	Park	-119.53488046	49.85896181	Low		
1	GBAOPEN	CasaLoma	Casa Loma Peak grassy area	Park	-119.53515154	49.86153622	Low		
2	GBAOPEN	CasaLoma	Dupuis Park with Playground	Park	-119.53436355	49.85960120	Medium		
1	GBAOPEN	Glenrosa	McIver Park	Park	-119.66451473	49.83309072	High	BRHID1	
1	GCONC	Glenrosa	Astoria Park	Park	-119.63557470	49.81372681	Medium		
1	GBAOPEN	Glenrosa	Glen Abbey Park	Park	-119.65817737	49.83263475	Medium		
1	GBAOPEN	Glenrosa	Stonegate Park	WKTrail	-119.67252202	49.84476102	Medium		
1	GBAOPEN	Glenrosa	Wildfire Commemorative Park	Park	-119.65374457	49.82528304	Medium		
1	GMET	Glenrosa	Ecole Glenrosa Elementary	School	-119.65019320	49.83056694	MediumHigh		
1	GMET	Glenrosa	Ecole Glenrosa Elementary	School	-119.64960118	49.83069674	MediumHigh		
1	GMET	Glenrosa	Ecole Glenrosa Elementary	School	-119.64929774	49.83066032	MediumHigh		

1	GOTHER	Glenrosa	Ecole Glenrosa Middle School	School	-119.65798814	49.83377102	MediumHigh		
1	GMET	Glenrosa	Glenrosa Elementary School	School	-119.65614242	49.83936701	MediumHigh		
1	GMET	Glenrosa	Glenrosa Elementary School	School	-119.65538929	49.83961747	MediumHigh		
1	GBAOPEN	GoatsGellatly	Gellatly Bay Recreation Corridor	Park	-119.61967864	49.82205171	Low		
1	GBAPL	GoatsGellatly	Dog Park	Dog	-119.61613631	49.82355717	Low		
1	GBAOPEN	GoatsGellatly	Dog Park	Dog	-119.61679848	49.82348525	Low		
1	GBAOPEN	GoatsGellatly	Dog Park	Dog	-119.61732901	49.82336908	Low		
1	GBAOPEN	GoatsGellatly	Dog Park	Dog	-119.61841733	49.82314964	Low		
1	GSO	GoatsGellatly	Gellatly Bay Recreation Corridor	Park	-119.62301695	49.81676658	Low		
1	GBAPL	GoatsGellatly	Gellatly Bay Recreation Corridor	Park	-119.62300124	49.81677968	Low		
1	GSO	GoatsGellatly	Gellatly Bay Recreation Corridor	Park	-119.62290872	49.81738579	Low		
1	GSO	GoatsGellatly	Gellatly Bay Recreation Corridor	Park	-119.62266752	49.81755190	Low		
1	GSO	GoatsGellatly	Gellatly Bay Recreation Corridor	Park	-119.62183701	49.81804332	Low		
1	GBAPL	GoatsGellatly	Gellatly Landing	Park	-119.62305110	49.81163395	Low		
3	GBAPL	GoatsGellatly	Marina Park	Park	-119.62280764	49.81423861	Low		
1	GSO	GoatsGellatly	Marina Park	Park	-119.62281553	49.81407827	Low		
1	GBAPL	GoatsGellatly	Pier	Park	-119.61966860	49.82204829	Low		
1	GBAPL	GoatsGellatly	Rotary Beach	Park	-119.61543735	49.82371513	Low		
1	GBAPL	GoatsGellatly	Rotary Beach	Park	-119.61574168	49.82362848	Low		
1	GBAPL	GoatsGellatly	Pebble Beach	Park	-119.63768042	49.80936993	Medium		
1	GSO	GoatsGellatly	Powers Point Park	Park	-119.62294550	49.81609812	Medium		
1	GBAOPEN	GoatsGellatly	Willow Beach	Park	-119.62299978	49.81634163	MediumHigh		
1	GBAOPEN	Lakeview	Paula Park	Park	-119.56135231	49.85938153	High		
2	GBAOPEN	Lakeview	Anders Park	Park	-119.54977773	49.86035119	Medium		
1	GBAOPEN	Lakeview	McPherson Park	Park	-119.55869360	49.86101728	MediumHigh		
2	GBAOPEN	ShannonLake	Shannon Lake Dog Park	Dog	-119.60516182	49.86805753	High		planned
2	GBAOPEN	ShannonLake	Shannon Springs Park	Park			High		planned
1	GBAOPEN	ShannonLake	Shannon Ridge Park	Park	-119.61193430	49.85470502	High		
1	GBAOPEN	ShannonLake	Shannon Woods Sports Field	Park	-119.60547058	49.86684948	High		
1	GSO	ShannonLake	Shannon Lake Tennis Courts	Park	-119.61394111	49.85040272	Medium		
1	GBAPL	ShannonLake	Carrot Bluffs Trailhead	WKTrail	-119.61371583	49.87158815	MediumHigh		
1	GBAOPEN	ShannonLake	Kinsmen Park	Park	-119.62016900	49.85012425	MediumHigh		
1	GBAOPEN	ShannonLake	Kinsmen Park	Park	-119.62164792	49.85011556	MediumHigh		
1	GBAOPEN	ShannonLake	Kinsmen Park Playground	Park	-119.62156454	49.84964544	MediumHigh		

1	GBAOPEN	ShannonLake	Natural Area in Centre of Neighbourhood	WKTrail			High		
1	GBAOPEN	ShannonLake	Shannon Ridge Drive TH	WKTrail	-119.60553279	49.85597706	MediumHigh		
1	GSO	SmithCreek	Powerline Walkway	WKTrail	-119.63330762	49.85277250	Medium		
1	GBAOPEN	SmithCreek	Wild Horse Drive	Dog	-119.63100967	49.85371968	Medium		
1	GBAOPEN	SmithCreek	Wild Horse Drive	WKTrail	-119.63369899	49.85398956	Medium		
1	GBAOPEN	SmithCreek	Broadview Park	Park	-119.62939192	49.84775194	MediumHigh		
1	GSO	SmithCreek	Whispering Hills Park	Park	-119.64051158	49.85314049	MediumHigh		
		SouthBoucherie	Cabernet Park	Park				BRHID1	
1	GBAOPEN	SouthBoucherie	Jonagold Park	Park	-119.58693892	49.83732074	High		
1	GBAOPEN	SouthBoucherie	Falcon Park	Park	-119.57031543	49.83484693	Low		
1	GBAPL	SouthBoucherie	Paddlewheeler Park	Park	-119.58664360	49.82385000	Low		
1	GBAOPEN	SouthBoucherie	Strenwheeler Park	Park	-119.58449147	49.82507333	Low		
1	GMET	SouthBoucherie	Chief Tomat School	School	-119.58814285	49.84208666	Medium		
1	GMET	SouthBoucherie	Chief Tomat School	School	-119.58836752	49.84203818	Medium		
1	GBAOPEN	SouthBoucherie	Marjorie Pritchard Park	Park	-119.58059447	49.82637467	Medium		
1	GBAOPEN	SouthBoucherie	Marjorie Pritchard Park	Park	-119.58132772	49.82621813	Medium		
1	GBAPL	SouthBoucherie	Marjorie Pritchard Park	Park	-119.58119909	49.82654227	Medium		
1	GBAPL	SouthBoucherie	Marjorie Prtichard park	Park	-119.58032563	49.82663344	Medium		
1	GBAOPEN	SouthBoucherie	Osprey Park	Park	-119.57437685	49.83575090	Medium		
1	GBAOPEN	SouthBoucherie	Vineyard Park	Park	-119.58395182	49.84193888	Medium		
1	GBAOPEN	WestbankCentre	Aquatic Centre	CommCentre	-119.62440723	49.82665736	Medium		
1	GBAOPEN	WestbankCentre	Aquatic Centre	CommCentre	-119.62388717	49.82669712	Medium		
1	GBAOPEN	WestbankCentre	Memorial Park	Park	-119.62309525	49.82664632	Medium		
1	GBAPL	WestbankCentre	Pond near Smith Creek	Park	-119.61917031	49.83132262	Medium		
1	GBAOPEN	WestbankCentre	Skateboard Park	Park	-119.62279802	49.82609539	MediumHigh		planned
1	GBAOPEN	WestbankCentre	Westbank Centre Park	Park	-119.63535218	49.82675795	MediumHigh		planned
1	GBAOPEN	WestbankCentre	Westbank Centre Park	Park	-119.63551479	49.82656423	MediumHigh		planned
1	GSO	WKEstatesRose	Mar Jok Elementary	School	-119.57113431	49.87661292	MediumHigh		
1	GBAOPEN	WKEstatesRose	Moonbeam Park	Park	-119.55979231	49.87947361	MediumHigh	BRIHID1	
1	GBAOPEN	WKEstatesRose	Sunview Park	Park	-119.56446507	49.87609317	MediumHigh		planned
1	GBAOPEN	WKEstatesRose	Mar Fee Park	Park				BRHID1	
1	GMET	WKEstatesRose	WestLake Community Centre	CommCentre	-119.57050468	49.87629445	MediumHigh		

APPENDIX III - WEST KELOWNA BYLAW LETTER – SINGLE RESIDENCE

City of West Kelowna
2760 Cameron Road, West Kelowna, British Columbia V1Z 2T6
Tel (778)797.1000 Fax (778)797.1001

File No.

DATE

Owner(s)/Occupier(s)
Street Address
West Kelowna, BC

Dear Owner(s)/Occupier(s),

Re: Waste Cart Placed at Curb That Can Attract Dangerous Wildlife – Street Address

A concern was brought forward to the City of West Kelowna Bylaw Department that you may be placing your waste and recycle bins out before collection day/time. On the non-collection days, all bins must be stored securely on your property. The City of West Kelowna's Solid Waste Management Regulation Bylaw No. 0065, 2009, Section 2.2.3 states:

> *"Unless exempted by the Director of Engineering for reasons of physical disability, all garbage, yard waste and recyclable carts shall be made readily accessible and with lids unlocked for emptying, between the hours of 7:00 a.m. and 7:00 p.m. on the day of collection only."*

On the non-collection days, garbage should be stored securely in a garage, shed, bear resistant enclosure or indoors. You should also be aware that it is an offence under the BC Wildlife Act to attract dangerous animals (bears, wolves, cougars and coyotes) with unsecured attractants. There are several reasons for placing bins out on the day of collection only and taking them in once they have been emptied:

1. limits wildlife concerns,
2. prevents unsightliness,
3. prevents traffic concerns,
4. reduces potential for waste to be blown out of the container littering neighbouring properties and right-of-ways.

We hope that by bringing this to your attention, you will adhere to the bylaws regarding solid waste management. Thank you for your co-operation regarding this matter. Please don't hesitate to contact Bylaw directly **@ 778-797-8810** should you have any questions or concerns in this regard.

Sincerely,

West Kelowna Bylaw Compliance & Enforcement Department

APPENDIX IV – CITY OF WEST KELOWNA BYLAW LETTER – SEVERAL RESIDENTS

City of West Kelowna
2760 Cameron Road, West Kelowna, British Columbia V1Z 2T6
Tel (778)797.1000 Fax (778)797.1001

File No. 12345

Date

Owner(s), Occupier(s)
Street address
West Kelowna, BC VXX XXX

Dear Owner,

Re: Waste and Recycle Bins

A concern was brought forward to the City of West Kelowna Bylaw Department regarding garbage and recycling bins along Rose Meadow Drive. To help protect our wildlife residents, and reduce attractants, we want to remind residents of the City of West Kelowna Solid Waste Management Regulation Bylaw No. 0065, 2009, Section 2.2.3, which states:

> *"Unless exempted by the Director of Engineering for reasons of physical disability, all garbage, yard waste and recyclable bins shall be made readily accessible and with lids unlocked for emptying, between the hours of 7:00 a.m. and 7:00 p.m. on the day of collection only".*

Garbage and recycling bins must be stored securely in a garage, shed, bear resistant enclosure or indoors on non-collection days. WildsafeBC has been alerted to the solid waste concerns for Rose Meadow Drive and will be monitoring the area in the coming months.

Wildlife Act Section 33.1 states:

> **"**(1) A person must not (a) intentionally feed or attempt to feed dangerous wildlife, or (b) provide, leave or place an attractant in, on or about any land or premises with the intent of attracting dangerous wildlife; (2) A person must not leave or place an attractant in, on or about any land or premises where there are or where there are likely to be people, in a manner in which the attractant could (a) attract dangerous wildlife to the land or premises, and (b) be accessible to dangerous wildlife".

Thank you for your co-operation. Please do not hesitate to contact us directly **@ 778-797-8810** should you have any questions in this regard.

Regards,

West Kelowna Bylaw Compliance and Enforcement Department

APPENDIX V – CITY OF WEST KELOWNA BYLAW LETTER – WILDSAFEBC BIN TAGGING

City of West Kelowna
2760 Cameron Road, West Kelowna, British Columbia V1Z 2T6
Tel (778)797.1000 Fax (778)797.1001

File No. 12345

October 12, 2023

Tenant(s)/Occupant(s)/Owner(s)
Address

Dear Tenant(s)/Occupants(s)/Owner(s):

Re: Waste Cart Placed at Curb That Can Attract Dangerous Wildlife

On the evening of July 12, 2023, during a garbage audit conducted by the WildSafeBC Community Coordinator in West Kelowna, garbage cart **(Bin #9999)** was observed unsecured or placed at the curb the night before. Sometimes it can be unclear to which address carts belong to if this Bin # is not yours please contact WildSafeBC at centralok@wildsafebc.com.

Garbage placed out early for collection can be an attractant for bears and other wildlife. To keep the bears and other dangerous animals in the wild, and the community safe, residents are asked to place bins at the curb on the day of collection only.

***District of West Kelowna's Solid Waste Management Regulation Bylaw No. 0065, 2009, Section 2.2.3* states:**

> "Unless exempted by the Director of Engineering for reasons of physical disability, all garbage, yard waste and recyclable carts shall be made readily accessible and with lids unlocked for emptying, **between the hours of 7:00 a.m. and 7:00 p.m. on the day of collection only**."

Unsecured and improper storage of carts is the #1 reason animals can access waste, damage carts, and increase the risk of human-wildlife conflict. WildsafeBC would like to remind all residents that it is an offence under the *BC Wildlife Act* to attract dangerous animals (bears, wolves, cougars and coyotes) with unsecured attractants.

> ***Wildlife Act Section 33.1 states:*** (1) A person must not (a) intentionally feed or attempt to feed dangerous wildlife, or (b) provide, leave or place an attractant in, on or about any land or premises with the intent of attracting dangerous wildlife; (2) A person must not leave or place an attractant in, on or about any land or premises where there are or where there are likely to be people, in a manner in which the attractant could (a) attract dangerous wildlife to the land or premises, and (b) be accessible to dangerous wildlife.

City of West Kelowna
2760 Cameron Road, West Kelowna, British Columbia V1Z 2T6
Tel (778)797.1000 Fax (778)797.1001

WildsafeBC recommends storing the carts within an enclosure. Carts that must be stored outside should have lids closed and secured on non-collection days, and the carts anchored with chain or cable locks to a base, such as a concrete block or fence post. This will prevent an adult bear from dragging the cart away. Store carts in well-lit areas and clean them regularly. Decrease odors and attractants by storing smelly food waste (i.e., fish and meat products) in the freezer before transferring to cart on collection day.

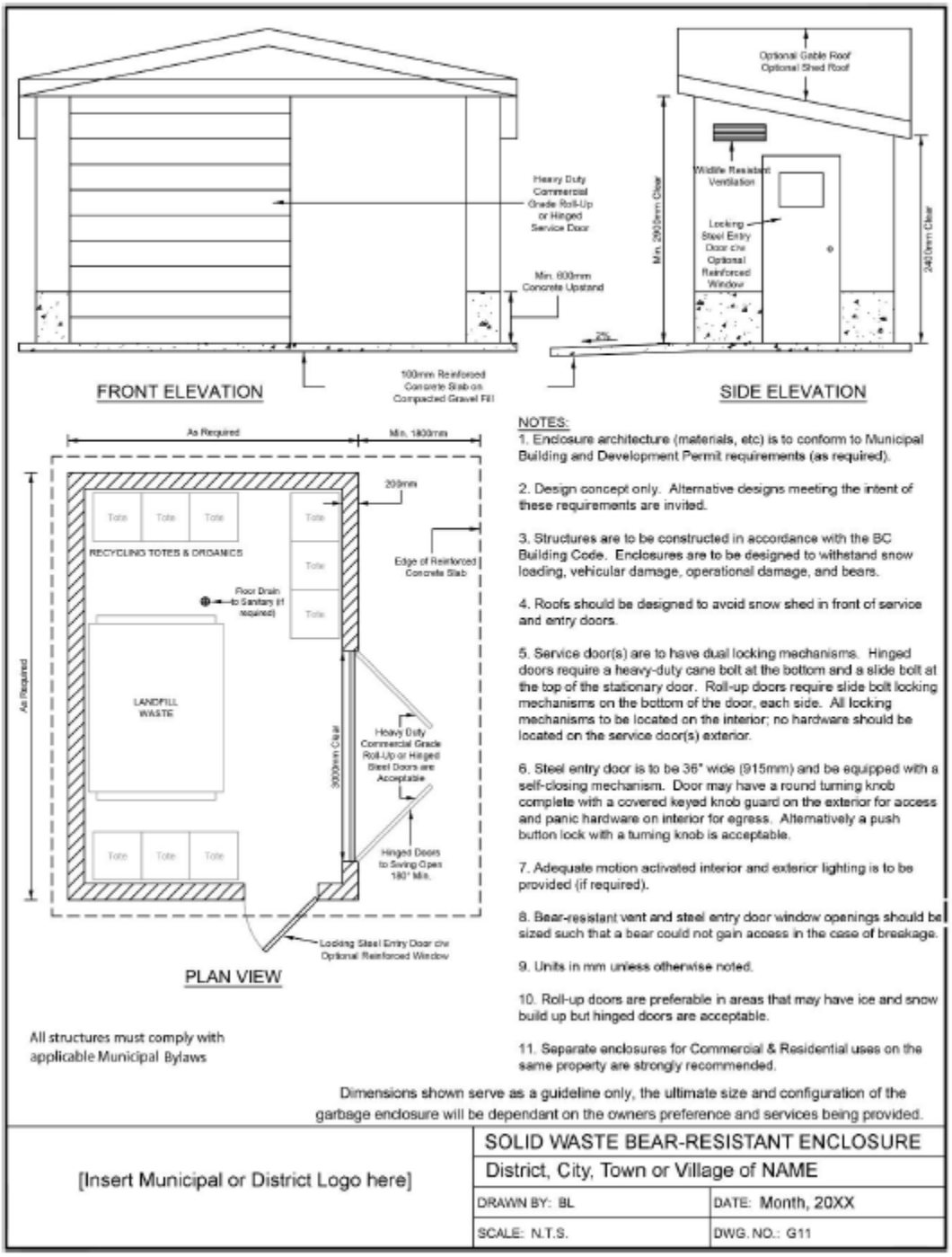
We hope that by bringing this to your attention, you will adhere to the City of West Kelowna Bylaws regarding solid waste management and take action to reduce the attractants for our wildlife neighbours. If your cart is observed at the curb the night before a second time or a bear is reported accessing your garbage, this information will be passed on to Conservation Officers who enforce the Wildlife Act.

Thank you for your co-operation in this regard. Please contact WildSafeBC at **centralok@wildsafebc.com** or **778-718-4257** should you have any questions or concerns.

Sincerely,

Bylaw Compliance and Enforcement Department
778-797-8810

Bear-Resistant Enclosure Specifications



NOTES:

1. Enclosure architecture (materials, etc) is to conform to Municipal Building and Development Permit requirements (as required).
2. Design concept only. Alternative designs meeting the intent of these requirements are invited.
3. Structures are to be constructed in accordance with the BC Building Code. Enclosures are to be designed to withstand snow loading, vehicular damage, operational damage, and bears.
4. Roofs should be designed to avoid snow shed in front of service and entry doors.
5. Service door(s) are to have dual locking mechanisms. Hinged doors require a heavy-duty cane bolt at the bottom and a slide bolt at the top of the stationary door. Roll-up doors require slide bolt locking mechanisms on the bottom of the door, each side. All locking mechanisms to be located on the interior; no hardware should be located on the service door(s) exterior.
6. Steel entry door is to be 36" wide (915mm) and be equipped with a self-closing mechanism. Door may have a round turning knob complete with a covered keyed knob guard on the exterior for access and panic hardware on interior for egress. Alternatively a push button lock with a turning knob is acceptable.
7. Adequate motion activated interior and exterior lighting is to be provided (if required).
8. Bear-resistant vent and steel entry door window openings should be sized such that a bear could not gain access in the case of breakage.
9. Units in mm unless otherwise noted.
10. Roll-up doors are preferable in areas that may have ice and snow build up but hinged doors are acceptable.
11. Separate enclosures for Commercial & Residential uses on the same property are strongly recommended.

Dimensions shown serve as a guideline only, the ultimate size and configuration of the garbage enclosure will be dependant on the owners preference and services being provided.

[Insert Municipal or District Logo here]	SOLID WASTE BEAR-RESISTANT ENCLOSURE	
	District, City, Town or Village of NAME	
	DRAWN BY: BL	DATE: Month, 20XX
	SCALE: N.T.S.	DWG. NO.: G11

Figure 47. Bear-resistant enclosure example (Serratus Wildlife Services, 2022).

Electric Fencing Considerations

The use of electric fences in urban areas requires some special consideration, but when properly constructed and maintained an electric fence is a safe and effective tool to keep predators and other potentially dangerous wildlife away from anthropogenic (human-related) food sources. Please note that in some instances, secondary exclusionary fencing may be required to keep out predators such as cougars or bobcats that can leap over electric fencing or smaller predators that may go through or under the fencing without touching a hot wire.

The use of electric fencing is only recommended when the attractant that the electric fence is protecting cannot be effectively dealt with in some other manner: e.g. if garbage can be removed from an area then that would be preferable to setting up an electric fence around the garbage.

It should be noted that having an electric fence in an urban setting will be less of a safety issue than having no electric fence and a bear or other predator accessing attractants in that setting.

There are many ways of constructing an electric fence and the choice of components ultimately depends upon a variety of factors. Please note that the suggestions given here are for small-scale electric fences designed to cover areas typically less than 20x20 meters, for larger applications, such as around garbage dumps or berry farms, other components and/or construction techniques may be required.

General considerations:

1. All fences must be constructed within the guidelines of municipal, regional, provincial or even federal regulations that may supersede the direction provided here.
2. Energizers and various components of the system must be installed and used as per the manufacturer's instructions.
3. Please note: It is the duty of the person installing the fence to ensure that all regulations regarding the deployment of an electric fence are being followed.

Fencing considerations: To create an effective predator electric fence designed to keep out grizzly bears, black bears, coyotes, and wolves the following points need to be considered:

1. Choice of energizer:
    a. Should be able to deliver a minimum of 6,500 volts throughout the system (e.g. at a point furthest from the energizer).
    b. Must have a rating of at least .75 joules. Upper limits can be set by appropriate authorities when developing regulations with regards to the deployment of electric fencing within your jurisdiction. Consideration should be given to the fact that too restrictive a range on output of the system could curtail the choice of units available.
    c. Must be CSA or ULC approved.

2. Fencing wire:
    a. Either smooth steel/aluminum wire no less than 16 gauge, or
    b. A poly braid wire with no fewer than 9 steel wires in the braid
    c. At no time should barbed wire be used as this poses a great risk should an animal or human become entangled in the wire.
3. Wires and placement:
    a. Because there are a variety of configurations for electric fences (e.g. all hot wires, alternating hot and ground wires, and electrified mesh – to name just a few) it is difficult to make hard and fast rules for the number and placement of wires.
    b. The general rule should be that the fence must be constructed in such a way that the predators (as noted above) cannot pass through the fence without simultaneously touching a hot wire and the ground (or a ground wire).
    c. For an all hot-wire fence the bottom wire should be no more than 25 cm. from the ground at any point along its length and the top wire should be no less than 1.20 meters from the ground and wire spacing should be no more than 25 cm apart.
4. Grounding: The grounding system (whether plate or rod) must be sufficient to complete the circuit throughout the length of the fence. If the dryness of the soil prevents the use of the ground as part of the circuit, grounding wires should be used instead of relying on the ground itself. Note: The bottom wire on any system should NOT be a ground wire (as this allows wildlife to dig under the fence, unimpeded).
5. Warning signs: Weather resistant signs stating the danger of electric shock need to clearly identify the fence and be visible at all points where people may contact the fence.
6. Fence construction:
    a. Fence wires must be taut enough to deliver the shock from the fence to the animal (sometimes through a thick insulating coat of hair) without such deflection as to render the fence ineffective. This may require fence posts to be braced at intervals to allow sufficient tension to be applied to the system.
    b. When constructed inside another fence (the perimeter fence) the electric fence needs to be a sufficient distance from the perimeter fence so that an animal cannot scale the perimeter fence and then cross over the electric fence without touching both a hotwire and the ground (or grounding wire).

c. When constructed within a perimeter fence, the electric fence should be such a distance that the perimeter fence cannot be pushed against the electric fence and thereby rendering it inoperable.

7. Maintenance:

a. Fences must be maintained in such a way as to ensure that plants and/or other materials do not touch the fence and in turn "ground out" the fence.

b. Fences should be checked periodically with an appropriate voltmeter to ensure the fence is working appropriately.

General Safety considerations

a. Call "One Call" ***1-800-474-6886*** before starting construction on your electric fence. This service will tell you what underground services that you must avoid when placing grounding rods or fence posts into the ground.

b. Do not construct electric fences within 75M of overhead electrical transmission lines (these are the large high-tension lines used for transmitting power from power generation sites to distribution sites). For fences within the 75M limit or on transmission right-of-ways please contact BC Hydro for their safety guidelines. Standard construction safety methods need to be exercised when working around household distribution lines (these are the lines that bring power from the distribution centers to a home).

c. Do not locate your grounding system in such a way as to encroach on existing grounding systems.

d. If you have neighbours nearby it is good practice to let them know about your planned construction of an electric fence. If they have pets that wander freely this will be a good reason for them to reconsider the practice. Children old enough to walk about without parental supervision should be old enough to be taught not to approach the electric fence.

Figure 48. Bear-in-Area signage posted by the City of West Kelowna (left) and WildSafeBC posters ideal for trailheads and kiosks (right).

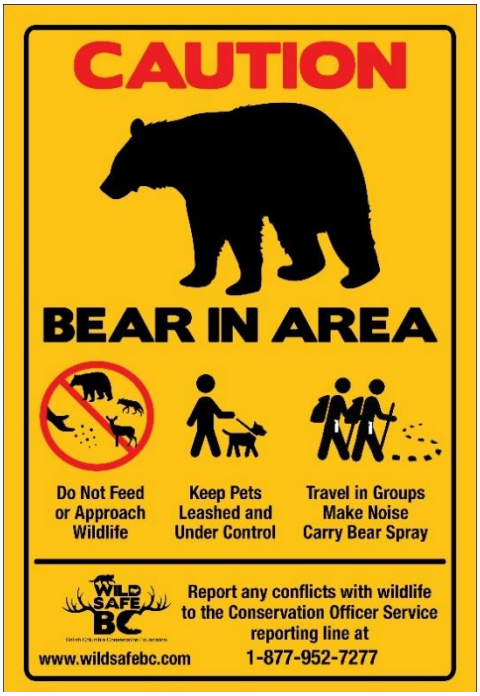


Figure 49. Attention grabbing signage in Port Moody (left) and WildSafeBC temporary signage for trails experiencing higher bear activity (right).

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