

Missoula Human-Bear Conflict Management Plan

Prepared for:

Missoula Board of County Commissioners, Missoula City Council and Mayor of
Missoula
Fall 2022

Prepared by:

The Missoula Bear Smart Working Group



Black bear in the Rattlesnake neighborhood on Missoula Avenue. Photo by Gwen Florio

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I. Background on Missoula and Bears¹

Bears are attracted to human foods and often drawn into areas inhabited by humans. These situations lead to conflicts which ultimately result in “problem bears”² being euthanized. This management plan is based on British Columbia’s Bear Smart Community Program, which was developed as a proactive response to increased numbers of conflicts between people and bears. The program has six key steps:

1. Complete a hazard assessment.
2. Prepare a human-bear conflict management plan.
3. Revise planning and decision-making documents.
4. Implement a continuing education program.
5. Develop and maintain a bear-resistant waste management system.
6. Implement Bear Smart policies and regulations.

A. History of Bear Conflicts in Missoula

Missoula has been actively engaged in proactive initiatives to reduce and prevent human-bear conflicts from as far back as the early 2000s. The greater Missoula area is home to black bears and increasingly to grizzly bears. Concerned about the sharp rise in conflicts, a group of Missoula citizens and conservation organizations along with Montana Fish, Wildlife, and Parks (MFWP) Region 2 and the Missoula-based sanitation company Republic Services (formerly Browning Ferris Industries, BFI) began working together to reduce the number of bear conflicts in the Missoula Valley. Many Missoula parks, some schools, and other agency administrative sites around the City and County received bear-resistant dumpsters and roll-out containers. Over time, more Missoula residents began formally voicing their concerns about the number of bears accessing residential attractants—especially garbage. In 2004, the first neighborhood group, Rattlesnake Bear Aware, was established in Missoula. This group eventually led to the creation of [Missoula Bears](#), an informational website (missoulabears.org) and Facebook page (www.facebook.com/missoulabears) for residents living with wildlife in and around Missoula. Residents began requesting that Missoula City officials address concerns around bears getting into garbage and place more bear-resistant garbage cans in parks and at City recreation sites. In 2006, after multiple meetings with local residents, nonprofits, and the local garbage service, the City of Missoula adopted Ordinance 3330 prohibiting the feeding of certain wildlife (including bears), with the goal of eventually containing all residential attractants, especially garbage, and reducing the number of bear conflicts and management actions. In 2008, a black bear research project was launched through the University of Montana. Then master’s student, now PhD Jerod Merkle started his graduate project “Human-Black Bear Interactions in Missoula, Montana.” Working closely with MFWP, Merkle analyzed 917 human-black bear conflicts between 2003 and 2008. During Merkle’s study, 10 female and 6 male black bears were trapped and outfitted with GPS radio collars that recorded more than 14,000 individual locations. By comparing known locations of human-black bear conflicts between 2003 and 2008 to random bear locations, Merkle produced a model that accurately predicted bear conflicts wherever residents lived close to

¹ Much of this background information is from “Bear Hazard Assessment for the Missoula Area,” available at missoulabears.org.

² See the glossary in the Missoula bear hazard assessment, missoulabears.org

forested patches and major rivers and streams and where housing densities were intermediate for the Missoula area.

B. Bear Conflict Regulations in Missoula

MFWP Region 2, Republic Services, and concerned citizens and groups approached the Missoula City Council to discuss amending the Missoula City garbage ordinance, creating a Bear Buffer Zone within the City of Missoula consisting of areas where bears were most likely to access garbage. In 2010, the Missoula City Council adopted a resolution creating a Missoula Bear Buffer Zone Working Group. Between 2010 and 2011, using data from Merkle's black bear study, records of human-bear conflicts, institutional knowledge from MFWP, and reports from drivers for the local garbage service, areas of high human-black bear conflicts were mapped within the Missoula City limits. In addition, preparations were made for delineation of the Missoula Bear Buffer Zone.

In 2016, Missoula modified Fencing Ordinance 3577 to allow electric fences to be used in the Bear Buffer Zone and other sites where conflicts occur. Residents were able to use electric fences around garbage storage facilities, orchards, gardens and chicken coops.

<https://www.ci.missoula.mt.us/DocumentCenter/View/36387/Ordinance-3577>

C. The Start of the Bear Smart Missoula Process

Having a Bear Buffer Zone has not stopped human-bear conflicts, and after receiving concerns about bear issues from the public, the mayor, Missoula City Council, and Missoula County Commissioners asked the Missoula Bear Buffer Zone Working Group to begin resolving the issue. In January 2022, the working group transformed into the Missoula Bear Smart Working Group (MBSWG). On February 8, 2022, the MBSWG met with the mayor, City council, and County Commissioners to discuss adopting a Missoula Bear Smart Community Program. Since then, the working group has produced a bear hazard assessment for Missoula and the surrounding area which is available at missoulabears.org (<http://missoulabears.org/bear-smart-missoula/>). The hazard assessment's primary findings were:

- Unsecured garbage is the primary cause of human-bear conflicts in the Missoula area, followed by birdfeeders in the summer, fruit trees in the fall, unsecured pet and livestock feed including backyard chicken coops, and unsecured human food such as frozen foods and meat in freezers.
- The areas of highest risk of human-bear conflicts are the Rattlesnake, Grant Creek, East Missoula and Milltown, Pattee Canyon, O'Brien Creek, and Big Flat.
- Bear conflicts are increasing as more people with little knowledge about bears and attractants move into bear habitat, and houses, gardens, and chicken coops are built where bears live and travel.
- Managing human-bear conflicts costs MFWP approximately \$50,000 per year. In addition, costs are associated with property damage, picking up scattered garbage, and human safety concerns as bears become habituated to humans and conditioned to seek human foods and spend more time in and around neighborhoods.

II. The Human-Bear Conflict Management Plan

This Human-Bear Conflict Management Plan has been written, along with the Missoula area bear hazard assessment, by members of the Missoula Bear Smart Working Group. This management plan is the next step towards making Missoula a Bear Smart Community.

A. Purpose of the Human-Bear Conflict Management Plan

The purpose of this plan is to develop effective strategies to minimize human-bear conflicts and increase public awareness of how to better coexist with bears.

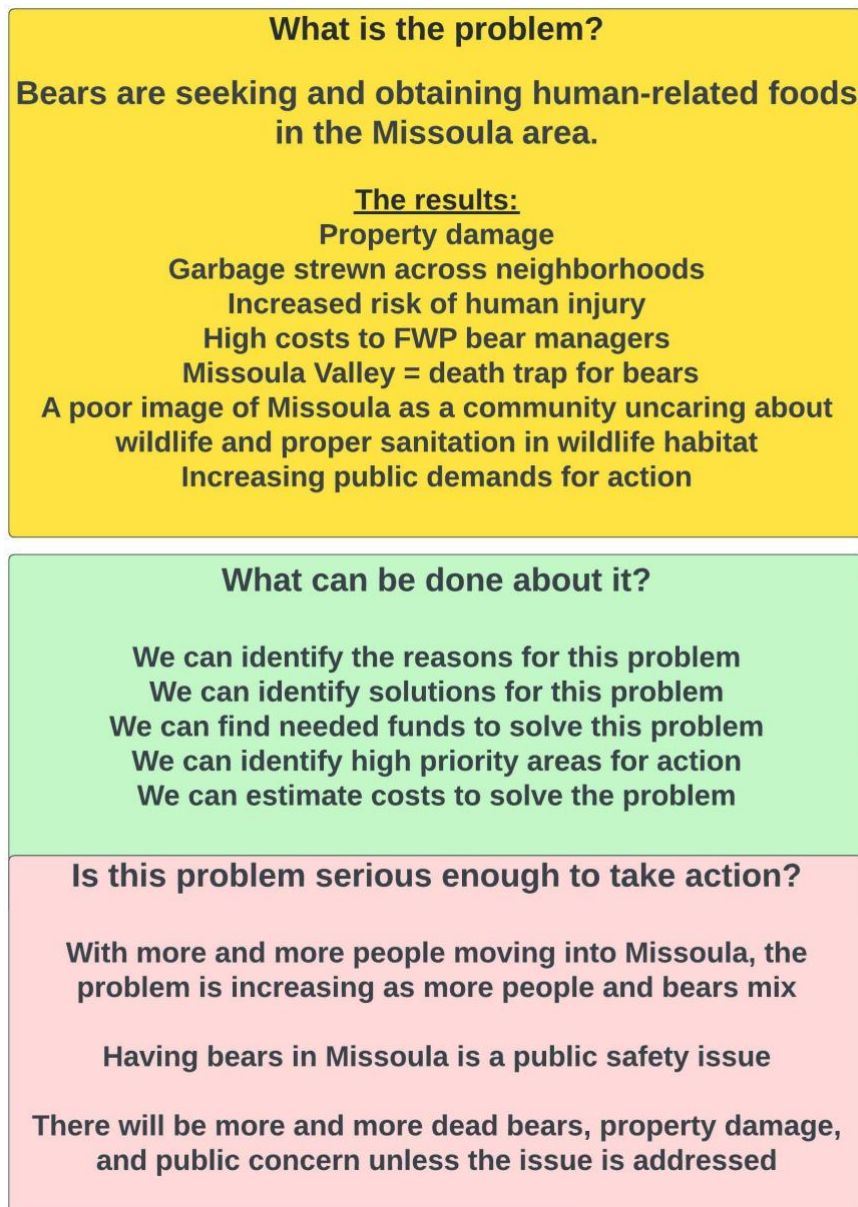


Figure 1. Statement of the problem, solutions, and why it's worth trying to solve the problem

B. Management Plan Objectives

1. Identify existing City and County policies and efforts related to human-bear conflict management.
2. Develop strategies to reduce the availability of bear attractants in the Missoula area that can be implemented through new or revised City and County policies, private-public partnerships, and collaborations between local organizations, businesses, communities, and local government.
3. Increase public awareness of how to minimize conflicts with bears.
4. Identify costs and prioritize actions for plan implementation.

C. Methods to Achieve Human-Bear Conflict Management Plan Objectives

1. Assess the status and effectiveness of past and current conflict reduction and prevention activities in the Missoula area, including public education, waste and attractant management, bylaws and enforcement, green space management, and development and land-use planning.
2. Recommend an implementation process for best management practices that will result in a significant reduction of human-bear conflicts in the Missoula area, increase safety for people, reduce property damage, and reduce the number of bears destroyed.
3. Recommend that the City and County draft and propose ordinances that require securing attractants from bears in the Missoula area.
4. Provide local City and County officials and residents and non-profit organizations with the information they need to implement a successful Bear Smart Community Program.
5. Suggest possible methods of outreach and education directed at minimizing bear-human conflicts.
6. Monitor the results of the application of Bear Smart efforts and modify approaches and techniques as necessary to achieve results.
7. Provide a foundation that will allow Missoula to become a Bear Smart Community.

This Human-Bear Conflict Management Plan follows Bear Smart Community Program guidelines developed in British Columbia, Canada. It describes priority actions to phase in starting in the first year of application. This time span allows City and County officials and the public to make the necessary changes to make Missoula a Bear Smart Community.

The process of making Missoula a Bear Smart Community is an adaptive management process (Figure 2) and requires continual monitoring, regulatory and non-regulatory actions, and revision of decisions based on monitoring results.

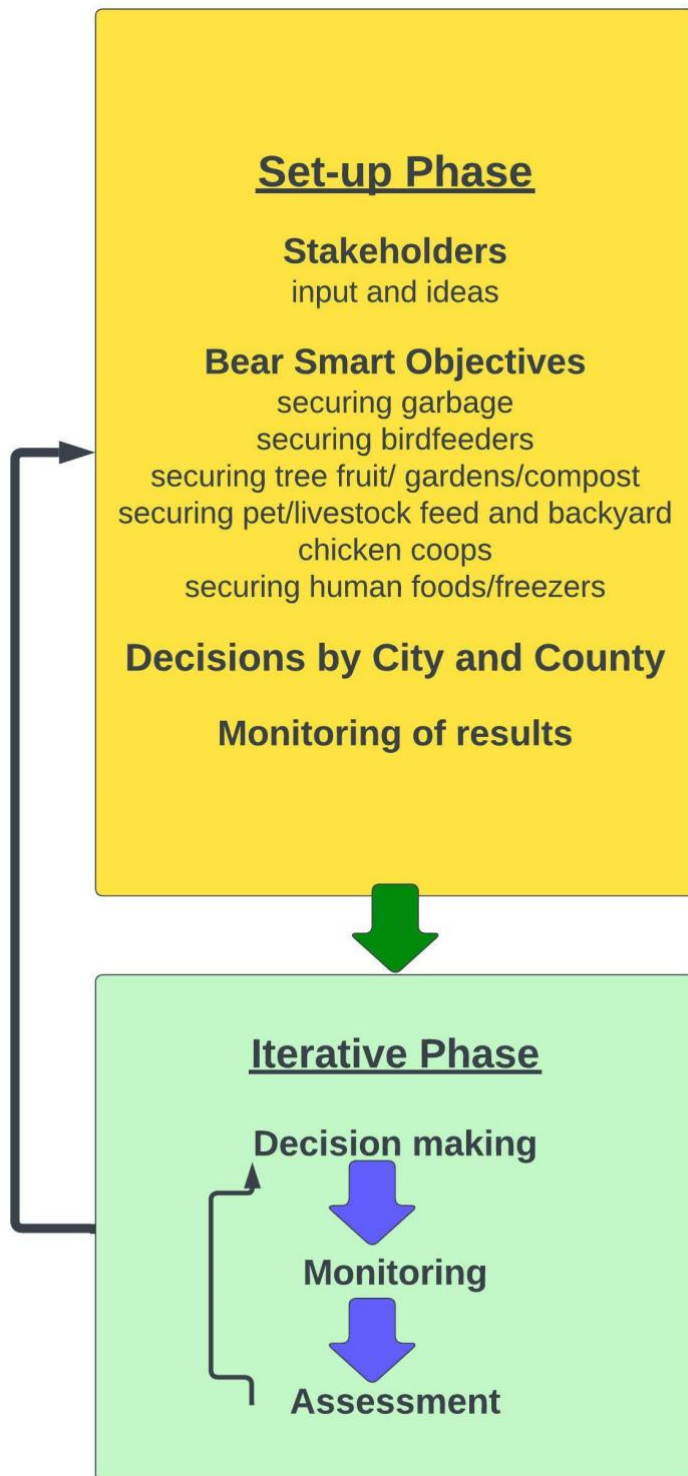


Figure 2. Adaptive management process. An iterative process involves repeating a series of steps until a desired outcome is achieved. Adapted from Williams (2011)³.

D. Recommended Process for Becoming a Bear Smart Community

³ Williams, B. K. 2011. Adaptive management of natural resources – framework and issues. Journal of Environmental Management 92:1346-1353.

Public support is essential to become a Bear Smart Community. It won't be possible to implement necessary changes to the existing situation (bears accessing human-related foods) without a change in public perceptions and support. One possibility for increasing public support is to create a shared community vision that enables safer coexistence with bears, including reduced property damage, fewer human-bear conflicts, and fewer management killings of bears. Such a community vision could be refined through consideration of a community vision statement (Figure 3).

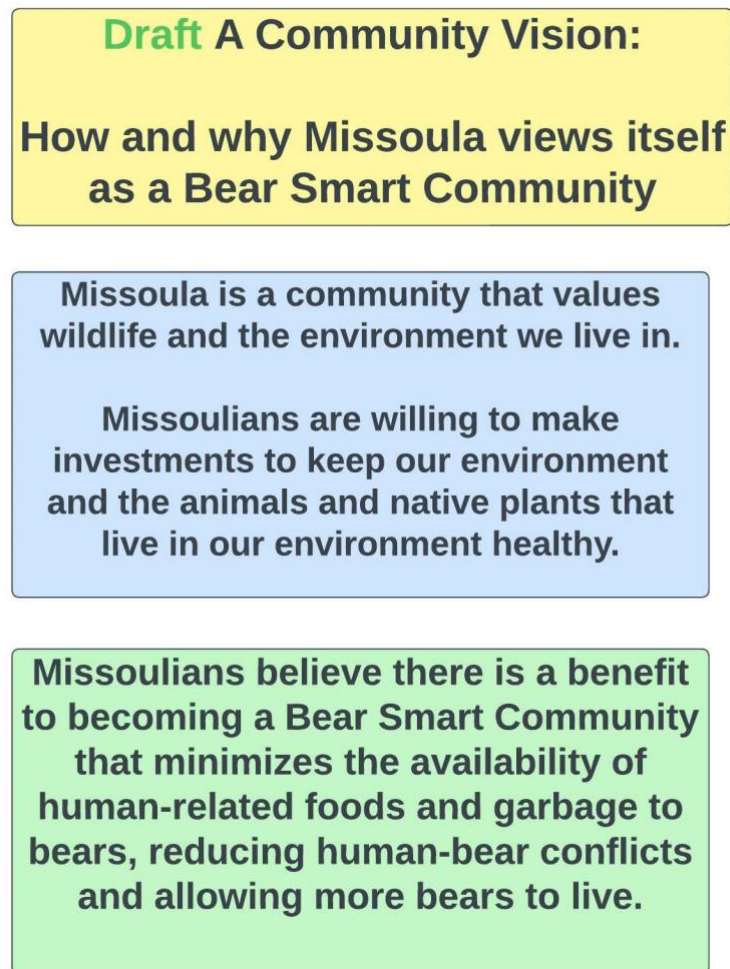


Figure 3. A draft of a possible community vision statement, which could be refined and informed through community input

The development of a community vision requires public understanding, input, and support of required Bear Smart Community Program measures.

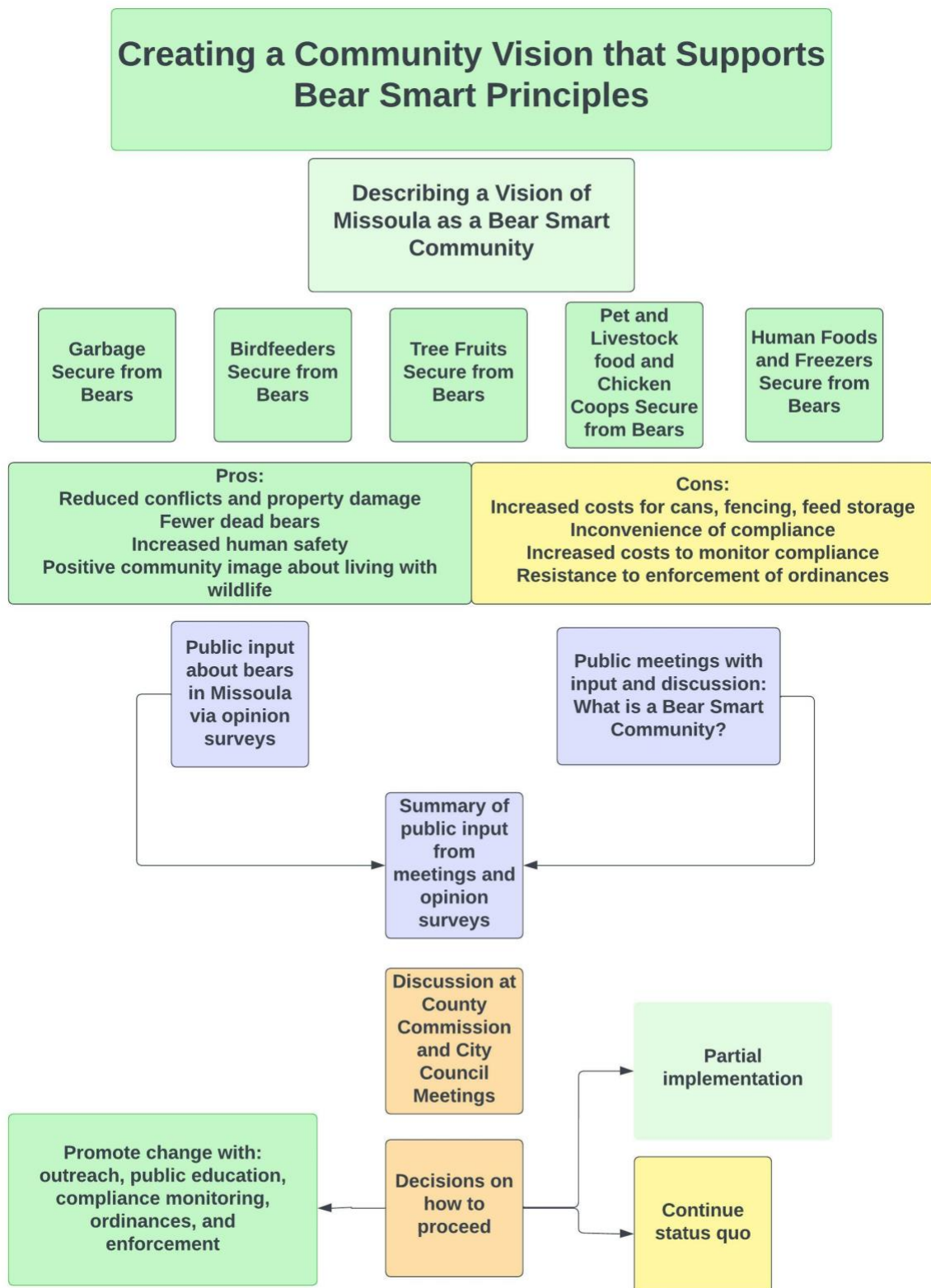


Figure 4. One possible path to creating a community vision

This initial Bear Conflict Management Plan is a working document that will evolve with experience and be refined and updated over time. The plan utilizes the Missoula

Bear Smart Working Group's expert and citizen perspectives on what is needed now, understanding that public engagement is a critical part of the process as individual recommendations are proposed for the City and County to implement. There may be a need for a Bear Smart Community Implementation Plan that details specifics of achieving Bear Smart status in Missoula. The need for such a plan will be determined by the public's response to this Conflict Management Plan and by decisions of the City and County governments. Over time, there should be regular monitoring reports and public meetings that describe measures of success and highlight ongoing problems and failures with compliance. This monitoring will allow understanding of what is needed for success and positively reinforce public perception when measures result in improvement. Such monitoring can inform implementation efforts, with adaptation as needed.

E. How Do We Address Concerns about Becoming a Bear Smart Community?

It will be important to be aware of and responsive to community concerns about moving Missoula toward Bear Smart Community status. Resistance to various aspects of the program is likely, particularly financial aspects of requiring bear-resistant garbage containers. The estimated additional cost would be between \$52.80/year (approximately \$1 per week) for individual-residence bear-resistant containers (Republic Services 2022). There may be other concerns as described in Figure 5, listed with some reasonable responses.

Possible Objections to Becoming Bear Smart

"Bear-resistant cans cost too much"

Bears in garbage are a human safety issue. Dead bears, ongoing bear management, cleaning up and ongoing property damage are the alternative costs.

"Disrupts our lifestyle/too difficult"

Being Bear Smart: benefits lifestyle, enhances coexistence with wildlife, fits Montana values, increases human safety, reduces inconvenience of bears in yards and on decks.

"You are exaggerating; not a big issue"

Human safety is a real issue. Dead bear numbers, garbage problems, property damage are all increasing. Grizzly bears are now here in the Missoula Valley.

"Someone's already taking care of it"

Moving and killing bears (FWP) is not a solution. It only treats the symptoms of human foods being available to bears.

Figure 5. Possible objections to proceeding with Bear Smart actions, and some responses

Table 1. Measures of success as annually measured and reported to the public. These results from monitoring information will be used to adapt management

actions (as per Figure 2), e.g., ordinance wording, public compliance, outreach and education, public support for Bear Smart actions, and revisions to the process as necessary. It may be that in poor natural-food years for bears, complaints and conflicts increase above and beyond those during a “normal” bear-food year.

Measurement Metrics	Measure of Success	Measure of Failure
Bear complaints from the public	Fewer than last year	More than last year
Number of bears captured/removed	Fewer than last year	More than last year
Number of dead bears	Fewer than last year	More than last year
Garbage containers accessed	Fewer than last year	More than last year
Birdfeeder damage	Fewer than last year	More than last year
Bears eating tree fruit	Fewer than last year	More than last year
Bears eating pet/livestock food	Fewer than last year	More than last year
Bears damaging buildings	Fewer than last year	More than last year

Table 2. Cost comparison for implementing a Bear Smart Missoula program

Management Action	Cost status quo ⁴	Cost Bear Smart Missoula ⁴	Cost difference ⁴
Bear-resistant carts per household ⁵	\$111.50/quarter	\$124.70/quarter \$52.80/year extra (Republic Services 2022)	\$13.20/quarter more (Approximately \$1/week more)
Phone complaints about bears ⁶	500/year in Missoula Valley	Fewer	Fewer calls
Dead bears	4 management kills/year 4 vehicle kills in town/year	Fewer Fewer	Fewer dead bears
Relocated bears	9 trapped and relocated/year	Fewer	Fewer bears trapped/relocated
FWP management costs	\$50,000/year	Reduced to perhaps \$20,000/year	Perhaps \$30,000 less
Property damage	More each year	Less each year	Less
Cleaning up garbage	More each year	Less each year	Less
Electric fencing for chickens, birdfeeders, fruit trees, gardens	Costs include property damage, dead chickens, broken fruit tree branches, lost gardens, etc.	Estimated \$500 for an electric fence around a small garden, apiary, chicken coop, or small orchard. Estimated \$2,000-5,000 for electric fencing entire yard or livestock pen.	More
Personnel for compliance monitoring	None	Cost for paid position or shared costs with NGO volunteers.	More

III. Best Management Practices for Reducing Attractants

⁴ These costs are as of 2022. Please contact your waste hauling company for any updates on costs for bear-resistant containers.

⁵ These are 2022 costs for bear-resistant garbage carts from Republic Services.

⁶ Average 2003-2021

While the Missoula community has already been working for years to secure human-related attractants from bears, data collected by FWP regarding human-bear conflicts (Figure 6) shows that these efforts still need improvement. Strong commitment to this objective by both City and County governments is also needed. Figure 7 summarizes all the key issues that should be addressed and their relationships to each other.

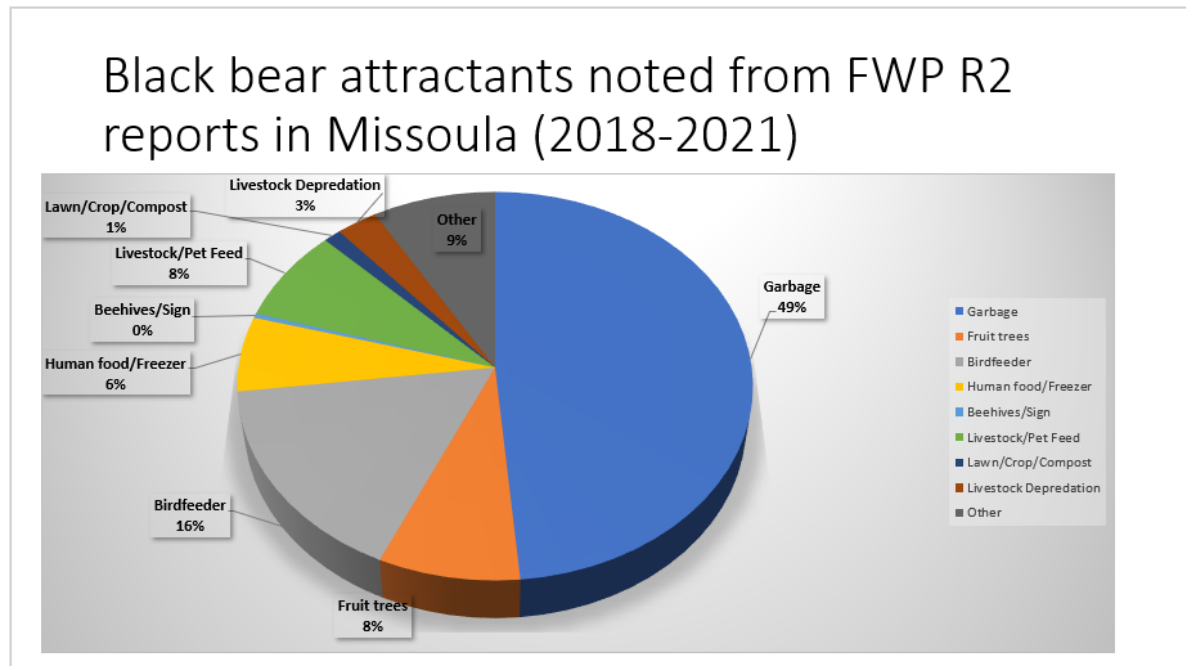


Figure 6. Sources of human-bear conflict reports to MT FWP in the Missoula Valley area, 2018-2021.

Below are specific best management practices that should be implemented to begin to successfully secure human-related attractants from bears and achieve Bear Smart Community status for Missoula.

A. Garbage/Compost

Garbage and compost are the most frequent cause of human-bear conflict in the Missoula area. More than 49% of reported conflicts involve bears accessing garbage or human food waste. The most effective solution to this problem is to increase the use of bear-resistant containers or garbage/compost enclosures or containment structures, particularly in high-risk areas such as the Rattlesnake, Grant Creek, O'Brien Creek, and Pattee Canyon. If bear-resistant containers and garbage enclosures were used by all residents in high-risk areas, human-bear conflicts would decrease by approximately 50%.

As of 2022, bear-resistant garbage containers are available from both Republic Services and Grizzly Disposal. The current additional cost for a bear-resistant Kodiak cart (certified as bear-resistant by the Interagency Grizzly Bear Committee) is \$52.80/year from Republic Services⁷ above the cost of the standard non-bear-resistant blue carts. For larger amounts of garbage, Republic Services has bear-resistant 2- and 3-square-yard dumpsters available for dumpster customers at no additional cost. There is also the option of leasing a large roll-off

⁷ There are currently two waste hauling companies in the Missoula area—Republic Services and Grizzly Disposal. Please contact your waste hauler for current costs for bear-resistant containers in your area.

dumpster with a bear-resistant crank lid for up to ten tons of garbage. In addition, a variety of bear-resistant garbage racks, enclosures, and containment structures designed or approved by MFWP and Republic Services have been built in the Missoula area. For more information, see Appendix B.

The City and County could take several approaches to managing the accessibility of human food waste to bears. These approaches would be a simultaneous combination of education and regulation related to keeping garbage from bears. Education would focus on the importance of each resident taking necessary actions and also on how bear-resistant enclosures and garbage containers work. Regulation might require the use of bear-resistant containers or bear-resistant racks and enclosures in the Bear Buffer Zone. Together these measures would vastly reduce garbage and food waste as bear attractants. Another approach could include financial incentives to purchase bear-resistant containers or build garbage enclosures in the high-risk areas, although the details and feasibility of such incentives and where funding would come from are not yet known.

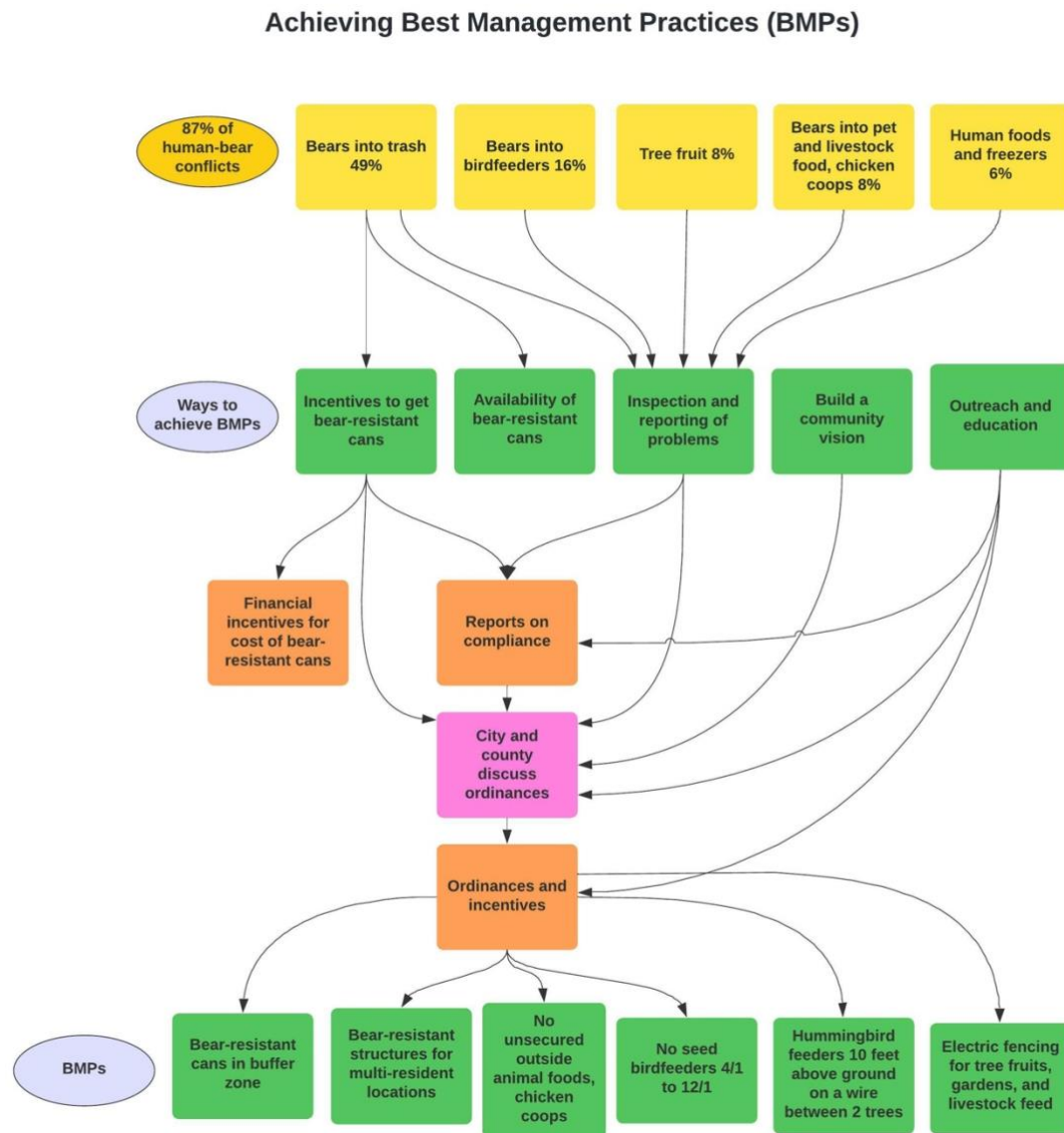


Figure 7. Possible ways to achieve best management practices to reduce human-bear conflicts in the Missoula area. Effectively addressing the five issues in yellow would address 87% of the issues that cause human-bear conflicts in the Missoula area.

Best management practices regarding garbage/compost in high-risk areas and the buffer zone:

- Implement the most effective bear-resistant waste management system possible, tailored to Missoula. All food waste, especially garbage and compost, should be considered a bear attractant. The goal is to prevent bears from accessing these wastes and becoming food-conditioned.
- Revise boundary of current Bear Buffer Zone to include areas identified in the hazard assessment as high-risk, as well as adjacent areas (see recommendation of revised buffer zone area in Figure 8).

- Post signs at the Bear Buffer Zone boundary to increase awareness of the designation.
- Focus on achieving a high level of use of bear-resistant containers and containment structures in the areas of highest risk as identified in the hazard assessment. This requires educating the public on use, adopting appropriate regulations, monitoring compliance, giving feedback to residents about noncompliance, and enforcement by appropriate City and County offices.
- Evaluate and propose City and County ordinances and rules requiring bear-resistant containers or containment structures in the revised buffer zone. Consider requirements that waste management companies cannot use or rent out non-bear-resistant containers in the revised buffer zone after a certain date. Implement ordinances and standards that will lead to a high level of compliance with measures to make garbage and compost unavailable to bears.
- Implement a monitoring schedule to check high-risk areas for compliant storage of garbage, compost, and other attractants. Specific, appropriate City/County employees would be responsible for the monitoring and for addressing noncompliance. Officers would contact each noncompliant resident directly and determine if noncompliance was inadvertent, accidental, or intentional due to lack of interest or resistance. Appropriate measures for intentional noncompliance would include a written warning followed by a fine for repeated offenses.
- Implement a regular maintenance schedule for all waste management equipment and infrastructure with a clear description of who is responsible for which activities, when. Waste management companies renting out bear-resistant containers are responsible for container maintenance. When residents own bear-resistant containers, they are responsible for maintenance. Homeowners or companies that manage rental properties are responsible for maintaining bear-resistant structures around waste containers.

B. Birdfeeders

The second most common (16%) attractant that results in human-bear conflicts is birdfeeders. Birdfeeders can be seed feeders, suet feeders, or hummingbird feeders. All types of birdfeeders can be significant attractants to bears and other wildlife. Seed or suet feeders are unnecessary during spring, summer, and early fall as there are sufficient natural foods for birds outside the winter season. Seed and suet feeders cannot be effectively secured from bears by hanging them high as attractant seeds and suet fall onto the ground below no matter how high the feeder is. Even empty feeders can attract bears if the animals have received food rewards at birdfeeders in the past. The only way seed and suet feeders can be used (outside of hibernation time) without risking feeding bears is to enclose both feeders and the ground beneath them with electric fencing.

Hummingbird feeders should be secured from bears by suspending feeders more than 10 feet above the ground on a wire between two trees. It is best to not have hummingbird feeders near buildings. If people insist on having a bird-feeding station when bears are out of the den, then all seed and suet feeders should be contained with electric fencing.

Even though feeding and salting for wildlife is illegal in Montana, the practices are common throughout the Missoula area and continue to be a major issue. The City of Missoula has a

wildlife feeding ordinance that should be adopted for the entire Missoula Bear Smart Community Program focus area. In addition, specific language on feeding turkeys⁸ is needed. At this time, in Montana, feeding wildlife is illegal, but state law does not prohibit feeding birds. Since turkeys are considered birds, people who feed wildlife use this loophole to continue feeding deer, elk, and bears.

Best management practices regarding birdfeeders in high-risk areas and the buffer zone:

- Consult and partner with Montana Audubon, Montana Natural History Center, bird experts, and neighborhood groups to create social media, mailings, news releases, media focus via TV, and newspaper stories directed at all residents in high-risk areas stating that birdfeeders should be removed April 1 to December 1. Birdfeeders attract bears and will result in their unnecessary death.
- Promote alternatives to attract birds but not bears, such as bird baths or birdhouses.
- Find ways to educate the public that: 1) birds do not need to be fed April 1 to December 1 because there are sufficient natural foods available; 2) seed and suet feeders are responsible for 16% of the bear complaints in the Missoula area, and many of these bears will have to be killed because they learned to seek birdfeeders; 3) concentrating birds artificially at feeders during warm months increases the risk of bird diseases; 4) bird seed also attracts deer, skunks, racoons and other wildlife; and 5) by putting out seed and suet feeders during non-hibernation times, residents are luring in bears, creating danger to the public and indirectly killing these bears. This is unnecessary and irresponsible.
- Contact stores selling bird seed and suet and ask that they either stop selling bird feed and suet between April 1 and December 1 or that they place prominent signs by the foods stating that, between April 1 and December 1, feeding birds often results in dead bears in the Missoula area.
- Anyone who wants to continue feeding birds should be encouraged to place electric fence⁹ around bird feeding stations.
- Conduct education and outreach about hummingbird feeders. Feeders must be hung over 10 feet high and more than 4 feet from buildings or trees on a wire between two trees. Social media along with written materials for individual residents can be used to distribute this information, including diagrams of how to hang feeders. Disincentives for noncompliance can include a written warning for the first offense followed by fines for repeated offenses.¹⁰
- Contact stores that sell salt blocks, deer blocks, and other feed especially for wildlife and discuss the issues. Ask if they would be willing to stop selling

⁸ The existing law on feeding turkeys is:

[https://leg.mt.gov/bills/mca/title_0870/chapter_0060/part_0020/section_0160/0870-0060-0020-0160.html#:~:text=\(2\)%20A%20person%20may%20provide,in%2045%2D8%2D111](https://leg.mt.gov/bills/mca/title_0870/chapter_0060/part_0020/section_0160/0870-0060-0020-0160.html#:~:text=(2)%20A%20person%20may%20provide,in%2045%2D8%2D111)

⁹ Section 12.31.070(D) of the municipal code limits when electric fencing can be used, including that it cannot be used along any dividing line between parcels of land.

¹⁰ This might require a regulation change. Currently there is a prohibition against feeding wildlife with an exemption for properly hung birdfeeders (MMC 6.07.1220). A properly hung birdfeeder is only accessible to birds and squirrels. Currently Animal Control does not consider the mounds of seed beneath feeders as feeding wildlife.

these products and if they would inform customers with signs that feeding wildlife in Montana is illegal. It is next to impossible to prevent wildlife from accessing mineral supplements, salt blocks, and molasses-based supplement at agricultural sites unless the areas are surrounded by electric fence.

- Revise City ordinances as necessary to reduce human-bear conflicts resulting from birdfeeders.
- Encourage the state legislature to make feeding wild turkeys illegal. Have City and County officials send letters about this to legislators.

C. Livestock and Pet Food

Livestock and pet foods, including backyard chicken coops and chicken feed, cause 8% of human-bear conflicts in the Missoula area. A major source of problems is horse cake blocks and “Crystal Lyx” containing molasses. Bears will on occasion enter fenced compounds to feed on molasses supplements, and when horses or stock are heavily fed pellets and grain, bears eat the horse dung. This type of attractant is difficult to secure unless the entire area where horses are is surrounded by electric fencing. All grain and bags of pelleted horse feed should be stored in locked buildings or in steel locking drums or metal truck boxes. If stored loose in bags in buildings, they are still a significant attractant and can result in bears tearing into the buildings. Electric fencing on or around grain storage buildings and bins is an effective deterrent.

Dog/cat food is an attractant when dogs and cats are fed outside. Such foods are detectable at long distances by bears who are even attracted by empty dog dishes left on decks, porches, or around buildings.

Best management practices regarding livestock and pet foods and backyard chicken coops in high-risk areas and the buffer zone:

- Pelleted livestock and horse feed should be fed only in amounts that can be completely consumed at one time. Avoid filling food containers so that such foods are available overnight.
- Buildings, barns, and sheds containing pelleted livestock feed as well as backyard chicken coops should be secured from bears by strong shed walls such as 2” x 4” or 6” walls and doors. Because bears dig through walls and tear off shed doors, electric fencing is the optimum security for chicken coops and buildings containing large amounts of pelleted feed.
- Pets should not be fed outside, and pet foods should be stored inside the house. If that’s not possible, store in an attached garage in a strong metal truck box with a locking lid. Never leave full dishes of pet food outside.
- Pet and livestock owners should be aware that squirrels and mice will often pack off and store exposed dog food, birdseed, and livestock feed in walls, crawl spaces, and rooves of outbuildings and under or in nooks, pipes, and objects in yards, making these attractive to bears.
- Implement these best practices through education and outreach. Use one-on-one education, social media, and disincentives for noncompliance such as written warnings and fines for repeated offenses. Promote reporting of animal feeding outside (such as feeding feral cats) via missoulabears.org so that people who feed wild animals can be contacted, warned, and fined if necessary.

D. Tree Fruit/Gardens

Tree fruit is a potent attractant to bears once these fruits begin to ripen in late summer and the fall. They are responsible for 8% of human-bear conflicts in the Missoula area. Apples, common in Missoula, are particularly attractive to bears. Initially, bears seek tree fruits that falls on the ground, but when these diminish, bears avidly climb into fruit trees, breaking branches as they seek ripe fruit. The period of fruit availability is long, extending from late summer into early winter. This period coincides with the time of hyperphagia in bears, when they consume high amounts of calories before winter hibernation.

Best management practices regarding tree fruits/gardens in high-risk areas and the buffer zone:

- Unsecured tree fruits in high-risk areas and the Bear Buffer Zone are likely to attract bears. Crabapples and other ornamental fruit-bearing trees such as mountain ash are extremely difficult to pick and are not recommended for planting. Instead, homeowners can consider a variety of ornamental flower-bearing trees that do not bear fruit. Also, fruit trees can be sprayed with hormones so they do not bear fruit.
- Property owners with fruit trees must take steps to reduce bear attraction, including regularly picking fruit, gleaning fruit on the ground, or securing the yard or orchard with well-designed and maintained electric fence. Detailed descriptions of design and installation of electric fencing are available in Appendix A. Noncompliance would result in a warning followed by a fine if necessary.
- For property owners unable to pick their own fruit trees, several groups including the [Great Bear Foundation](#) have free programs for picking unused fruit to remove it from bear habitat. However, these programs have limited resources. It is important that residents take personal responsibility and action by picking and removing fruit from their trees when possible. Taking down fruit trees and replacing them with non-fruiting trees (see above) is another option.
- Implement these best practices through education, outreach, and public policy, such as including “Living with Wildlife” requirements in covenants for new subdivisions.
- Consider the use of regulation and enforcement for noncompliance, if outreach and education do not reduce the prevalence of bear incidents related to fruit trees.

E. Human Foods in Freezers

Frozen human foods stored in freezers outside or in sheds or garages can attract bears. Bears can smell these foods inside the freezer. In the Missoula area, 8% of human-bear conflicts involve freezers in places that bears can access. Once bears learn this behavior, some will repeatedly break into garages and homes in search of freezers. Frozen meat is of particular interest.

Best management practices regarding human foods in freezers in high-risk areas and the buffer zone:

- It is not possible to store human foods, particularly meat, in freezers outside or in unsecured buildings without attracting bears. The best place to maintain freezers is inside homes or secure buildings with strong doors and walls. Metal freezers outside buildings can be electrified and, if needed, electric fence can be retrofitted for porches to prevent access by bears. Freezers that fail and contain thawed or

rotten meat and other items are an intense attractant to bears who will go to great lengths to get it. Such situations require immediate efforts to remove the thawed food and damaged freezer before bears arrive at the site.

- Implement these best practices through education, outreach, and enforcement of wildlife feeding ordinances and laws. Missoula has a wildlife feeding ordinance, but Missoula County does not. The County should consider implementing wildlife feeding prohibitions.

F. Other Attractants

Other bear attractants include unclean barbecues, berry-producing shrubs, and more. Every one of these items can cause human-bear conflicts. As the Bear Smart Missoula Program proceeds, we can adaptively address ongoing issues with outreach, education, and refined techniques. This should be implemented via education, outreach, and if necessary, enforcement and ordinance changes.

IV. Ongoing Needs and Actions to Enhance the Success of Making Missoula a Bear Smart Community

Here is a list of best management practices necessary to move Missoula toward becoming a Bear Smart Community. This is not a complete list, and it is likely that additional items will be identified in the future.

- Endorse the Missoula Bear Smart Working Group as an advisory group to inform City and County officials.
- Propose revisions to the Missoula Municipal Code and the Missoula City-County Health Code to address the use of bear-resistant garbage containers and enclosures in the revised Bear Buffer Zone.
- Review other current regulations and, if needed, propose changes to address other bear attractants (Table 3, below).
- Review enforcement protocols and resources to determine if they can adequately promote compliance with regulations.
- Recommend that residents in high-risk areas and the buffer zone purchase bear spray and learn how to use it. Workshops on bear spray use are available from [Be Bear Aware Campaign](#) and from MFWP.
- Put a primary link to comprehensive Bear Smart information and practices in a prominent location on the Missoula City and County web home pages, so information is easier to find. Include links to local contacts and organizations like Missoula Bears, Great Bear Foundation, Missoula Conservation District, and FWP's bear information pages.
- Share Bear Smart Missoula information with realtors so they can promote Missoula as a Bear Smart Community. Since realtors are often the first contacts for new residents, they should be aware of the Bear Smart Missoula program and how homeowners can become Bear Smart.
- Incorporate Bear Smart principles in new building permits and subdivision approvals in high-risk areas and the buffer zone.

- Develop an outreach and education team that develops and produces consistent and accurate materials for outreach and education. This could be part of the responsibilities of the Missoula Bear Smart Working Group. Consistent messaging is important. Enhance and engage in outreach and education at every opportunity including at schools, businesses, civic organizations, clubs, University of Montana, etc. Education will need to be ongoing, adaptive, relevant, and accessible for people to use and listen to it.
- Apply for official Bear Smart status if possible, and proudly advertise Missoula as a Bear Smart Community with signs along the roads entering town and at the airport. Incorporate this message into all City and County materials, outreach, websites, and public events.
- Apply adaptive management (Figures 2 and 7) to the application of Bear Smart principles. Use monitoring results to adapt and refine management efforts and decisions, enforcement, objectives review, and response to new issues and concerns.
- Develop quarterly reporting by 911 and MFWP of reports and complaints concerning bears, with complaints broken into categories and causes. Reports would be fed into the adaptive management framework to improve compliance and to highlight issues and problem areas for further attention. Press releases could be developed on quarterly results—number of complaints, reason for complaints, and response to complaints. The entire quarterly report database would be available at missoulabears.org.
- Develop a monitoring system to assess compliance with Bear Smart principles of using bear-resistant garbage cans and securing attractants like tree fruit and pet food. Examples might include the number of times and locations where bears got into garbage, and the causes. This compliance monitoring system could be implemented by contractors or by NGO partners and managed and funded by City/County governments. Results would be reported annually and fed into an adaptive management framework (see Figures 2 and 7) to improve compliance and highlight problem areas for further attention.
- Post “Bear in Area” signs in high-use human areas such as near schools, on trails, and in parks, as evidenced by bear presence. Close areas when appropriate. Responsibilities for posting and removing these signs should be established with written agreements.
- Encourage the waste management companies to repair and or replace damaged bear-resistant carts and larger bear-resistant dumpsters.
- Always encourage the public to be Bear Smart and practice best stewardship. Also, make people aware that some bears will have to be removed for management reasons. On occasion, bears can exhibit aggressive or predatory behaviors that result in their removal. And there will always be individual bears, especially if they are food-conditioned, that seek out garbage, enhancing their efforts by breaking into bear-resistant containers, enclosures, buildings, and even houses to access contained human foods. This type of behavior can be dangerous and is not acceptable. Such bears will be removed.

Table 3. Suggested ordinances and rule changes for implementing a Bear Smart Missoula program

Bear-resistant garbage containers or bear-resistant storage structures required in bear buffer zone.

Revise Bear Buffer Zone boundary.
Bird feeding other than hummingbirds prohibited April 1 to December 1 in buffer zone.
Hummingbird feeders required to be suspended 10 ft up and 4 feet away from buildings/tree trunks in buffer zone.
Electric fencing recommended for gardens, fruit trees, chicken coops, rabbit hutches, and compost bins in buffer zone.

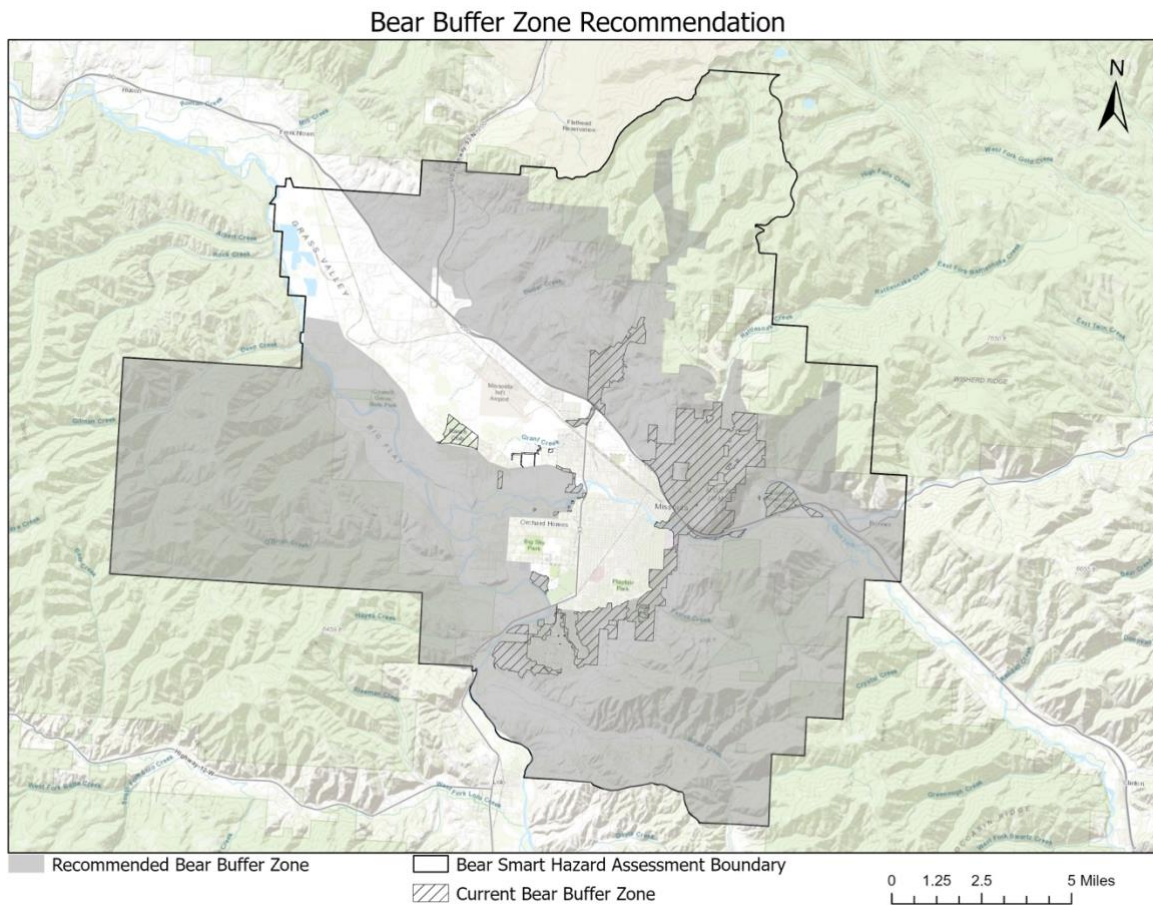


Figure 8. Buffer zone within which garbage and other bear attractants must be secured from bears, Missoula

Table 4. Implementation actions for bear management practices

Attractant	Recommended Action	Timeframe	Partners
A. Garbage/compost management in high-risk areas and the buffer zone	Revise Bear Buffer Zone boundary	Immediate	City-County Health Dept.
	Post signs at Bear Buffer Zone boundary	Immediate	City-County Health Dept.
	City & County ordinances and rules requiring bear-resistant containers/containment structures in identified areas	Immediate	City-County Health Dept.
	Monitoring for compliance with regulations	Ongoing	City-County Health Dept., Bear Smart Missoula Working Group
	Maintenance of bear-resistant containers/containment structures	Ongoing	Waste Management Co., Resident
	Educating the public on new regulations	Ongoing	City-County Health Dept., Neighborhood Groups, NGOs
B. Birdfeeders	Educating the public on removing birdfeeders from April 1-December 1	Ongoing	MT Audubon, MT Natural History Center, Neighborhood Groups
	Promoting birdbaths or birdhouses as alternatives	Ongoing	
	Working with stores selling bird seed and suet to distribute information on removing feeders from April 1-Dec. 1	Ongoing	
	Educating public on hummingbird-feeder best practices	Ongoing	
	Revision of City ordinances regarding birdfeeders as attractants	Short-term	
	Seeking legislative changes to make feeding wild turkeys illegal	Mid-term	
C. Livestock and Pet Food	Encouraging best practices for storing livestock and pet food securely through outreach and education	Ongoing	
D. Tree Fruit/Gardens	Encourage planting of non-fruit bearing ornamental trees within the Bear Buffer Zone	Ongoing	City of Missoula, local nurseries
	Encourage best practices for reducing conflicts related to fruit trees	Ongoing	Great Bear Foundation, neighborhood groups

	Require "Living with Wildlife" covenants for new subdivisions including electric fencing for fruit trees and gardens	Short-term	City of Missoula and Missoula County
E. Human Foods and Freezers	Encourage best practices through outreach and education	Ongoing	

V. Conclusions about the Bear Smart Missoula Process

The Bear Smart Missoula process is based on adaptive management that involves implementing this initial Bear Conflict Management Plan. This document is a working document and process, and it should evolve over time with experience. Decisions toward meeting objectives, reporting of monitored results, and a public process for decision making should be ongoing with revisions or refinements of this document as appropriate (Figure 2). It is important to act now to address the human-bear conflict issues in Missoula. This document and its recommendations are a place to start to eventually make Missoula a Bear Smart Community. Success in this effort will require an evolving combination of City and County actions, ongoing public education, and continued public support.

Members of the Missoula Bear Smart Working Group

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Kali Becher—Open Lands Project Manager, Missoula County Community and Planning Services

Elissa Chott and Heather Leach—Great Bear Foundation

Erin Edge—Defenders of Wildlife

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Bert Lindler—North Hills Elk, Bear and Weed Volunteer

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Chris Servheen—Co-chair, IUCN North American Bears Expert Team and Board Chair, Montana Wildlife Federation

Shannon Therriault—Environmental Health Director, Missoula City-County Health Department

Radley Watkins—Resource Conservationist, Missoula Conservation District

Appendix A

Design and Specifications for Electric Fencing to Secure Yards and Attractants from Bears

Montana Fish Wildlife and Parks “Deterring Bears with Electric Fence--a Beginners Guide:
[mfwpp_electric-fencing-guide_v4.0.pdf \(mt.gov\)](#)

Living With Wildlife Electric Fencing to Deter Predators:
[Resource Guides | Living with Wildlife Foundation \(lwwf.org\)](#)

In addition, there are multiple YouTube links to excellent videos on how to erect electric fence:
[How To Electric Fence for Bears - Bing video](#)

[Defenders: A Day in the Life - Electric Fencing for Bears... with a Bear! - Bing video](#)
<https://vimeo.com/631000796?ref=fb-share&fbclid=IwAR2aUraJnqUO1O02e2tNkT4w0xjvf5VqwcluztyPVeztmoLIUaeBFWsc1NA>

[How to make an electric “unwelcome mat” for bears](#)
[Electric unwelcome mat](#)

Appendix B

Design, Specifications, and Types of Bear-resistant Carts and Large Multi-residence or Commercial Dumpsters

[Living With Predators Refuse Guide:](#)

IGBC Bear-resistant Products List:
[ax2239ad.aw \(igbconline.org\)](#)



Bear-Resistant Residential Trash Containers

The containers listed have been tested through the Interagency Grizzly Bear Committee Bear-Resistant Products Testing Program and have passed the live bear test. *The Living with Wildlife Foundation in no way recommends or endorses any particular brand, manufacturer or model of bear-resistant residential trash container. Remember to check with your local trash hauler to make sure that the container you choose is compatible with their hauling equipment.*

 <p>BearSaver Ontario, CA 91761 800-851-3887 www.bearsaver.com</p>	 <p>The Growler Can * 4006 Bermuda Grove Place Longwood, FL 32779 407-519-0766 www.thegrowlercan.com <i>* IGBC certified but list not yet updated</i></p>
 <p>Kodiak Products Northland Products, Inc. 2608 Spitfire Lane Prescott, AZ 86301 928-636-9298 www.kodiak-products.com Fully-automated 65 & 95 gallon carts</p>	 <p>Rehrig Pacific * 4010 East 26th Street Los Angeles, CA 90058 323-262-5145 www.rehrigpacific.com/product/95-gallon-fully-automated-bear-resistant-rvc <i>*Available only in large quantities</i></p>
 <p>Rollins Machinery Ltd 21869 56th Ave., Langley, BC V2Y 2M9 800.665.9060 or 604.533.0048 www.rollinsmachinery.ca (65 gallon bin only)</p>	 <p>Toter Inc. P.O. Box 5338 Statesville, NC 28687 1-800-424-0422 or 704-872-8171 www.toter.com</p>
	 <p>UnBearAble Bins Box 1313 Bragg Creek Alberta, Canada T0L 0K0 403-609-2242 www.unbearablebins.com (95 gallon bin only)</p>

Rev. March 2018

Some examples of bear-resistant garbage enclosures

























Appendix C

Examples of Garbage Storage Ordinances and Fines in Colorado

Table 4. Community-established fines in Colorado communities aimed at reducing human-bear conflicts

COMMUNITY	FIRST VIOLATION	SECOND VIOLATION	THIRD VIOLATION
Ouray	Warning	\$300	\$300 and/or jail
Minturn	Warning	\$150-\$250	\$250 to \$1000
Steamboat Springs	Warning	\$350	Up to \$1000
Palmer Lake	\$50	\$75	\$100
Mancos	\$50	\$150	Summons
Telluride	\$50	\$250	Summons
Snowmass Village	\$50	\$250	Summons
Durango	\$100	\$200	\$200
Crested Butte	\$100	\$200	\$300 to \$1000
Winter Park	\$100	\$200	Summons
Carbondale	\$100	\$250	\$500
Aspen	\$250	\$500	Up to \$999
Boulder	\$250	\$500	\$1000
Lake City	Up to \$300	Same	Same
Vail	Up to \$999	Same	Same
Estes Park	Up to \$2650	Same	Same
COUNTIES			
Eagle	\$100	\$200	\$500
La Plata	\$200	\$300	\$500
Pitkin	\$350	\$500	Up to \$1000
Larimer	Up to \$2650	Same	Same

Local Bear and Trash Ordinances

The County and City ordinances are both complaint-driven, meaning they require residents to report bear and trash incidents to law enforcement agencies to be effective. Both ordinances basically read the same. You are asked to store your trash in a manner that makes it unavailable to bears and other wildlife. If bears get into your trash, and you have received a Notice of Violation, you are required to:

- Store trash in a secure structure or bear-resistant trash container
- Abide by time of placement schedules for putting trash container out for collection

LA PLATA COUNTY


The La Plata County Board of Commissioners adopted a Bear-Resistant Trash Container Ordinance in 2008. The ordinance is enforced by the La Plata County Sheriff's Department, and fines range from \$200 to \$500. County residents are asked to report incidents of bears getting into trash by calling **Central Dispatch**.

CITY OF DURANGO

The City of Durango adopted a City Wildlife Ordinance in 2010 and amended it in 2013 to include the requirement that trash containers not be placed out prior to 6 A.M. on the morning of collection. Warnings for first violations were replaced by a \$100 fine in 2017. City residents are asked to report bear and trash incidents by calling City Code Enforcement.

Appendix D

Bear Smart Tips from Durango, Colorado

BE A GOOD NEIGHBOR AND BE BEAR SMART!	
<h3>Be Bear Smart</h3> <p>Black bears have an extraordinary sense of smell and can be attracted to many things at your home, bringing bears right to your doorstep. Having bears around increases both the risk of damage to your property and the odds of something unfortunate happening. Wildlife officers often have little choice in dealing with “nuisance” animals that we help create. Please don’t let your trash, bird feeders or chickens kill a bear.</p>	
<ul style="list-style-type: none"> ● Keep trash in a bear-resistant trash container or secure structure. Set out the morning of collection only. Occasionally clean container with bleach and water. ● It’s best to remove bird feeders from March thru November. At least, make them inaccessible to bears, bring in at night and clean up fallen seed. ● Keep bear-accessible windows and doors closed and locked. Replace lever-style door handles with round knobs. ● Never leave food or beverages in vehicles and keep doors and windows closed and locked. ● Store grain, bird seed, pet food in a bear-resistant container or secure structure. ● Electric fencing is highly effective for county residents in protecting fruit trees, chickens, bees, livestock, gardens and more. ● Feed pets indoors. 	<ul style="list-style-type: none"> ● Empty grease trap and clean outdoor grill after use. ● Harvest fruit before it ripens and remove fallen fruit from the ground. Find someone to harvest excess fruit. ● Think green when composting. Do not add meat, dairy, kitchen scraps, rind, fruit or vegetables. ● Do not allow bears to become comfortable being at your home or property.
	<p>Report Bear and Trash Incidents Central Dispatch: 970-385-2900</p> <p>Report Problematic Bears Colorado Parks & Wildlife: 970-247-0855 or 911</p> <p>Report Bear Sightings & Incidents Colorado Parks & Wildlife: 970-247-0855 Bear Smart Durango: www.bearsmartdurango.org</p>
<p>Learn more about best practices in being Bear Smart at: www.bearsmartdurango.org</p>	<p>Bear Smart Durango 970-749-4262 bp@frontier.net bearsmartdurango.org</p>
	

Appendix E

Resources: Bears in Urban Environments

These links to scientific papers provide background on human-bear conflicts, bear biology in and around humans and human settlements, and the tools available to address and reduce human-bear conflicts in urban environments.

- [Socially learned foraging behavior in wild black bears, *Ursus americanus*](#)
- [Trans fatty acids provide evidence of anthropogenic feeding by black bears](#)
- [Human-Black Bear Interactions in Missoula, Montana](#)
- [The Carrot or the Stick? Evaluation of Education and Enforcement as Management Tools for Human-Wildlife Conflicts](#)
- [A retrospective evaluation of the effectiveness of aversive conditioning on grizzly bears...](#)
- X [link don't work] [Does Aversive Conditioning Reduce Human-Bear Conflict?](#)
- [Bear reintroductions: Lessons and challenges](#)
- [A Tool Box Half Full: How Social Science can Help Solve Human-Wildlife Conflict](#)