

Polfus, J.L. Literature review and synthesis on the effects of residential development on ungulate winter range in the Rocky Mountain West. Report prepared for Montana Fish, Wildlife & Parks. Helena, MT. Draws from over 80 sources. Accessed on January 3, 2012, at: <http://fwp.mt.gov/fishAndWildlife/habitat/wildlife/publications/>.

U.S. Fish and Wildlife Service. Website on hunting. Accessed January 6, 2012, at: <http://www.fws.gov/hunting/>.

Vore, J. 2012. Big game winter range: Recommendations for subdivision development in Montana: Justification and rationale. Professional paper, Montana Fish, Wildlife and Parks. Helena, MT. Draws from over 75 sources.

Wyoming Game and Fish Department. January 1994. Guidelines for reducing damage from big game animals. Habitat Extension Bulletin No. 58. Accessed January 6, 2012, at: <http://wgfd.wyo.gov/web2011/wildlife-1000616.aspx>.



Appendix C.4. Human/Bear Conflicts

This section contains information about the recommended subdivision design standard for addressing human/bear conflicts. The recommendation pertains to both grizzly and black bears.

Habitat Descriptions and Locations

Grizzly and black bear habitat requirements and distribution information are described below.

Grizzly Bear

Grizzly Bear Habitat Requirements

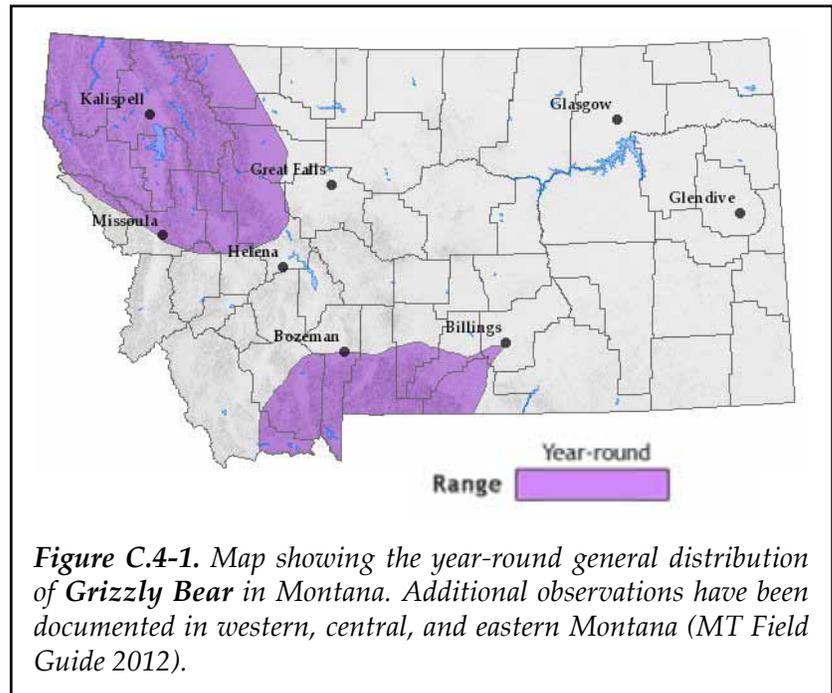
In Montana, grizzly bears primarily use meadows, seeps, riparian zones, mixed shrub fields, closed timber, open timber, sidehill parks, snow chutes, and alpine slab-rock habitats. Habitat use is highly variable between areas, seasons, local populations, and individuals. Grizzlies have a large vegetative component (more than half) to their diet, but also feed on carrion, fish, large and small mammals, insects, fruit, grasses, bark, roots, mushrooms, and (where available) garbage, birdseed, fruit trees, pet and livestock feed, agricultural crops, and many other human-related food sources. They often cache food and guard it. Annual home ranges in the Swan Mountains in Montana averaged almost 200 square miles for males and about 50 square miles for females; adult home ranges were larger than those for subadults (MT Field Guide 2012; Jonkel, FWP 2012).

Grizzly Bear Locations in Montana

Grizzly bear distribution in Montana is primarily within, but not limited to, three recovery zones: the Yellowstone area in northwest Wyoming, eastern Idaho, and southwest Montana; the Northern Continental Divide Ecosystem of north-central Montana; and the Cabinet-Yaak

area of northwest Montana and northern Idaho (USFWS 2010) (see Figure C.4-1).

Grizzly bears sometimes travel long distances. They do not actually migrate, although they often exhibit discrete elevational movements from spring to fall, following seasonal food availability. They are generally at lower elevations in spring and higher elevations in midsummer and winter (MT Field Guide 2012).



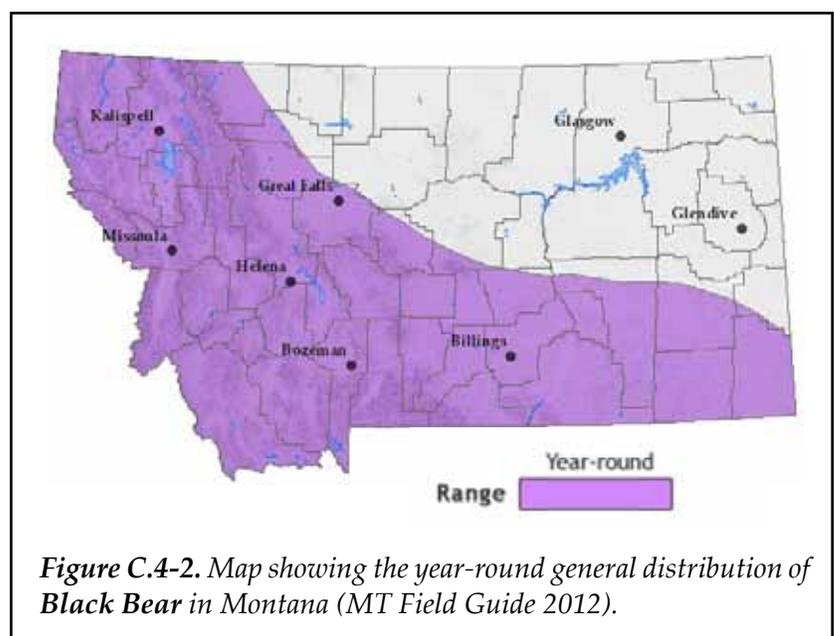
Black Bear

Black Bear Habitat Requirements

Although black bears in Montana prefer habitat similar to grizzly bears, they are more prone to occupying closed canopy areas. Black bears inhabit dense forests, riparian areas, open slopes, or avalanche chutes during spring green-up. Habitat use is tied to seasonal food availability and plant life cycles: Bears forage in dry mountain meadows in early spring; snow slides, stream bottoms, and wet meadows in early and midsummer; and berry and whitebark pine areas in fall. These bears are known to eat grasses, sedges, berries, fruits, inner bark of trees, insects, honey, eggs, carrion, rodents, occasional ungulates (especially young), and (where available) garbage, birdseed, fruit trees, pet and livestock feed, agricultural crops, and many other human-related food sources. (MT Field Guide 2012; Jonkel, FWP 2012).

Black Bear Locations in Montana

Black bears are widespread in Montana. They occupy forests and riparian areas in the western third and the southern part of the state (See Figure C.4-2). Black bears are nonmigratory, but they sometimes exhibit long-distance movements.



Objectives of Recommended Design Standard

- ▶ Minimize the potential for dangerous encounters between humans and bears.
- ▶ Maintain grizzly bear and black bear populations.

Conservation Status

Grizzly bears are classified as a Tier I species by Montana Fish, Wildlife & Parks (Greatest Conservation Need; MCFWCS 2005); Listed Threatened species by the U.S. Fish and Wildlife Service under the Endangered Species Act; threatened species by the U.S. Forest Service; Montana Species of Concern rank of S2/S3 by the Montana Natural Heritage Program (at risk because of very limited and/or potentially declining population numbers, range, and/or habitat; MT Field Guide 2012); and “sensitive species” by the Bureau of Land Management (MT Field Guide 2012).

Black bears are classified as a Tier III species by Montana Fish, Wildlife & Parks (Lower Conservation Need, MCFWCS 2005); and a Montana Species of Concern rank of S5 by the Montana Natural Heritage Program (not vulnerable in most of its range, MT Field Guide 2012).

Impacts from Development

Development and recreational use of bear habitat cause bear/human conflicts and unnatural bear behaviors such as human food conditioning and habituation. Human-habituated and human food-conditioned bears are more likely to come into conflict with people due to their increased proximity to, and associated lack of wariness around, people. Such bears are regarded as nuisances and/or threats to public safety, and are therefore at greater risk of removal or being killed. They also have an increased vulnerability to hunters, poachers, and motor-vehicle accidents (Bears and People: Bear-Human Conflict 2001).

Bears take advantage of whatever food is available in their home range. They are attracted by sights, sounds, memories, and particular smells—and they can learn to associate residential sites with garbage, fruit trees, or other human-related food sources. If they are rewarded with an easy meal, they learn very quickly to repeat behaviors and will start frequenting residential areas. This is especially true with garbage (Bear Aware 2010; Jonkel, FWP 2012). Merkle (2011) studied human-bear interactions (HBIs) in Missoula, Montana, during 2003–2008 and found that nearly half of total HBIs (453 out of 917) were due to anthropogenic attractants. Garbage was responsible for two-thirds (284) of the attractant-related interactions.

Wild bears normally have a fear of people. If they are allowed to forage for food near humans, they can quickly become habituated to human presence and become bolder in their actions. Human encounters with both black bears and grizzlies often lead to humans feeling threatened. Although aggression toward people and human injury is rare,



Photo credit: Bear Aware 2010

incidents may occur during a surprise encounter, the protection of cubs, a defense of a food cache, or when bears have become accustomed to obtaining food associated with humans. Once a bear learns to forage near people, it is usually too late to discourage the bear. And because wildlife enforcement protocol requires that bears that pose a threat to people be destroyed, too often “*a fed bear becomes a dead bear*” (Bear Aware 2010).

Recommended Standard _____

This standard pertains to any subdivision located in an area of high or potentially high human/bear conflict: Provide adequate bear-resistant facilities for garbage collection. FWP has recommended specifications for such facilities (see p. C-60), and the local FWP bear management specialist is encouraged to work with the subdivider to install an effective facility.

Substantial Evidence for the Human/Bear Conflicts Recommendation _____

The human/bear conflicts standard is based on a large volume of scientific research calling for garbage storage practices that prevent grizzly and black bears from accessing human food sources. This section offers the rationale and substantial evidence supporting the recommended standard, including pertinent scientific studies and professional biologist opinions.

- Given that development and recreational use in bear habitat have been identified as the causes of bear-human conflict, preventing and/or reducing conflict necessarily means managing human activity and behavior (Bears and People: Bear-Human Conflict 2001).
- Montana state law prohibits people from purposefully using food and garbage to attract bears and other animals. The law recognizes that supplemental feed attractants can result in an artificial concentration of bears and other animals that “. . . may potentially contribute to the transmission of disease or that constitutes a threat to public safety” (87-6-216(c), MCA).
- The 2010–2014 Strategic Plan of the Interagency Grizzly Bear Committee (IGBC) identifies a set of grizzly bear recovery goals, which state that (1) the public understands the need to properly store bear attractants; and (2) all landowners carry out consistent, effective food and garbage storage practices. The IGBC has developed recommendations for bear-resistant solid waste containers and site fencing, in order to help prevent bear-human conflict over food.
- The solution to preventing bear-human conflict is to keep garbage and other human-provided food sources away from bears. Humans can live near bears without conflict, if the humans are required to secure food and garbage, and if this requirement is enforced. “From our long-term dataset with collared bears in the Lake Tahoe Basin, we documented on multiple occasions that once entire homeowner associations and neighborhoods installed bear-resistant garbage containers, bears ended up leaving those areas for regions that were not ‘bear-proofed’ . . . The provision of bear-resistant containers at private residences, businesses, and public lands was the single most effective management tool for reducing conflicts between bears and people in our study site. We have had similar observations in the Adirondacks, Yosemite, and New Mexico” (Beckmann et al. 2008).

- During 2008, within the Greater Yellowstone Ecosystem, 80 percent of all grizzly bear conflicts on private land were associated with garbage, grain, birdseed, and property damage. Property damage conflicts are most often associated with anthropogenic (unnatural) foods and bears having previously received unsecured food rewards. Keeping unnatural foods properly secured is crucial to minimizing bear/human conflicts (Gunther et al. 2008).
- In its subdivision review comments, FWP routinely suggests “Living With Wildlife” covenants encouraging landowners in bear country to contain or remove all attractants such as stored grain, pet food, birdseed, livestock feed, and garbage (FWP 2008). FWP recommends the use of bear-resistant garbage containers that are kept indoors or in some other secured area, including behind electric fencing. Frequently, such recommendations are incorporated into homeowner association covenants that are recorded along with a subdivision final plat. However, it is a well-known fact in the land use planning community that covenants are inconsistently implemented and enforced. FWP biologists regularly observe poor residential garbage management practices, and as a result, every year they must relocate or remove food-conditioned bears (Jonkel, FWP 2009–2010).
- “Successful management of human-bear interactions involves a combination of strategies. The best solution by far is to reduce or eliminate the availability of anthropogenic food sources” (Beckmann et al. 2004; Spencer et al. 2007). “. . . Education alone isn’t enough. Regulations that require the use of bear-resistant containers must be in place to significantly reduce food-raiding incidents” (Beckmann 2009).

References

- Bear Aware. 2010. British Columbia Conservation Foundation website. Accessed January 9, 2012, at: <http://www.bearaware.bc.ca/>.
- Bears and People: Bear-Human Conflict website. 2000. Whyte Museum of the Canadian Rockies. Accessed January 9, 2012, at: <http://www.whyte.org/bears/conflict.html>. Site lists multiple scientific references provided by the Wind River Bear Institute.
- Beckmann, Jon P. 2009. Bears will be bears: Conserving black bears by altering human behavior. *The Wildlife Professional*, Winter 2009. The Wildlife Society, Bethesda, MD. Vol. 3, No. 4: 50–52. Accessed January 9, 2012, at: <http://www.wildlifeprofessional-digital.org/wildlifeprofessional/2009winter?pg=52#pg52>.
- Beckmann, J.P., L. Karasin, C. Costello, S. Matthews, and Z. Smith. 2008. Coexisting with black bears: Perspectives from four case studies across North America. Wildlife Conservation Society Working Paper No. 33. March 2008. New York: Wildlife Conservation Society. Accessed January 9, 2012, at: <http://www.wcsnorthamerica.org/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=5485&PortalId=37&DownloadMethod=attachment>.
- Gunther, K.A., B. Aber, M.T. Brusino, S.L. Cain, K. Frey, M.A. Haroldson, and C.C. Schwartz. Grizzly bear-human conflicts in the Greater Yellowstone Ecosystem 2008. Pp. 40–42 in C.C. Schwartz and M.A. Haroldson, eds. Yellowstone grizzly bear investigations: Annual report of the Interagency

Grizzly Bear Study Team, 2008. U.S. Geological Survey, Bozeman, MT. Accessed January 9, 2012, at: http://www.nrmc.usgs.gov/files/norock/products/IGBST/2008report_11_17_2011.pdf.

Interagency Grizzly Bear Committee. 2010. Interagency Grizzly Bear Committee Five Year Plan 2010-2014, February 2010. Accessed January 9, 2012, at: <http://www.igbconline.org/html/5yearplan.html>.

Merkle, J.A., P.R. Krausman, N.J. Decesare, J.J. Jonkel. 2011. Predicting spatial distribution of human-black bear interactions in urban areas. *Journal of Wildlife Management* 75(5):1121–27. © 2011 The Wildlife Society.

Montana Code Annotated. 2012. 87-6-216(c), Unlawful supplemental feeding. Accessed January 12, 2012, at: <http://data.opi.mt.gov/bills/mca/87/6/87-6-216.htm>.

Montana Field Guide. 2012. Montana Natural Heritage Program and Montana Fish, Wildlife & Parks:

- Grizzly Bear—*Ursus arctos*. Accessed January 9, 2012, at: http://fieldguide.mt.gov/detail_AMAJB01020.aspx.
- Black Bear—*Ursus americanus*. Accessed January 9, 2012, at: http://fieldguide.mt.gov/detail_AMAJB01010.aspx.

Montana's Comprehensive Fish and Wildlife Conservation Strategy. 2005. Montana Fish, Wildlife & Parks, Helena, MT. 658 pp. Accessed January 9, 2012, at: <http://fwp.mt.gov/fishAndWildlife/conservationInAction/>.

Montana Fish, Wildlife & Parks.

- Region 2 (Missoula area) suggested covenants for new subdivisions. 2008. Available from FWP land use planning specialist.
- Personal communication with Jamie Jonkel, FWP bear management specialist in Region 2. 2009–2010 and 2012.

Spencer, R.D., R.A. Beausoleil, D.A. Martorello. How agencies respond to human-black bear conflicts: A survey of wildlife agencies in North America. *Ursus* 18 (2):217–29 (2007). Article from Washington Department of Fish and Wildlife, Olympia, WA.

U.S. Fish and Wildlife Service. 2010. Mountain-Prairie Region: Endangered Species Program: Grizzly Bear Recovery website. Accessed January 9, 2012, at: <http://www.fws.gov/mountain-prairie/species/mammals/grizzly/index.htm>.

Specifications for Adequate Bear-Resistant Garbage Collection Facilities in Subdivisions⁵

Options include:

1. Garbage is stored inside a centralized bear-resistant enclosure.
Examples of bear-resistant enclosures include: (A) a structure that has a roof and sides that a bear cannot get into; or (B) a garbage collection site with perimeter electric fencing.



Figure C.4-3. Illustrations of (A)-type Bear-Resistant Enclosures



Figure C.4-4. Illustrations of (B)-type Bear-Resistant Enclosures

⁵ Specifications outlined by FWP bear management specialists and assembled by FWP land use planning specialist, 2012.

Examples of adequate electric fencing include:⁶

- Six-foot-high chain link fencing with three lines of barbed wire at the top (making it closer to seven to eight feet high), and flush (or buried) in the ground with one or two hotwires on the outside (chain link is the ground); or,
 - A single electric fence with a minimum of five electrical lines (three hot, two ground—alternating hot/ground), appropriately spaced to prevent animals from going under or climbing over them.
 - The fence charger with at least a full joule of output with solar-powered charger or direct current charger.
 - Electricity to be on during nighttime hours with gates closed.
 - Gatekeeper to open/close access gates and to turn on/off electricity.
2. Garbage is stored inside bear-resistant containers at a centralized location. Each container must be fully enclosed, with a lid approved by the Interagency Grizzly Bear Committee (IGBC)⁷ or approved by FWP. The lid of each container must have a latching mechanism or other device of sufficient design and strength to prevent access of the contents by bears.
 3. Optimal arrangement: Garbage is stored inside bear-resistant containers at a centralized location, either (a) with adequate perimeter electric fencing or (b) inside a bear-resistant structure.
 4. Other waste management options may be considered in consultation with the local FWP bear management specialist.

⁶ For further information, see “Bears and Electric Fencing: A starter’s guide for using electric fencing to deter bears,” written by Kim Annis, FWP Bear Management Specialist. Accessed January 9, 2012, at: <http://fwp.mt.gov/fwpDoc.html?id=48893>.

⁷ Contact the Living with Wildlife Foundation (LWWF) for a listing of IGBC-tested products. Accessed January 9, 2012, at: http://www.lwwf.org/bear_resistant_product_test_results.htm. Additional information is available at: http://www.lwwf.org/Living%20with%20Predators_resource_guides.htm.