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October 22, 2020

Larry Carpenter, Chair
Washington Fish and Wildlife Commission
P.O. Box 43200
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Kelly Susewind, Director
Washington Department of Fish and Wildlife
P.O. Box 43200
Olympia, WA 98504-3200

*Submitted via email to wildthing@dfw.wa.gov; commission@dfw.wa.gov*

**Re: Spring black bear (*Ursus americanus*) permits for 2021**

Dear Chairman Carpenter and Director Susewind:

On behalf of the Humane Society of the United States and our supporters in Washington, I submit the following comments on Washington Department of Fish and Wildlife's ("WDFW") proposed rule on the spring black bear hunting season for 2021. For the reasons detailed herein, we oppose springtime bear hunts in Washington and the proposed expanded hunting season dates in Kitsap, Mason, Bear River, and Long Beach hunting areas, which would open up bear hunting a month and a half earlier merely to simplify regulations.

Spring hunts put females at risk, orphan cubs, and occur when bears are physically distressed after months of starvation. Bears are highly sentient and should not be harassed by hunters, particularly during the fragile time when females with cubs are emerging from their dens. Furthermore, most Americans do not want wildlife cruelly treated, and most want black bears protected.[1] According to a 2019 survey conducted by the National Shooting Sports Foundation, the majority of Americans (60%) oppose springtime bear hunting, including 64% of Westerners. Only 15% of Westerners support springtime bear hunting.[2]

For further information regarding our position, please see the attached appendix, which includes a comprehensive analysis as to why springtime bear hunting is exceedingly cruel, unnecessary, and goes against the best available science. I urge the Washington Fish and Wildlife Commission not to approve the proposed rule and, instead, to prohibit the recreational hunting of black bears during the spring. Thank you for your consideration.

Sincerely,

Dan Paul
Senior State Director, Washington
The Humane Society of the United States

[1] Kelly A. George et al., "Changes in attitudes toward animals in the United States from 1978 to 2014," *Biological Conservation* 201 (9// 2016). See Map 18 in Manfredo; M. J. Manfredo et al., America's Wildlife Values: The Social Context of Wildlife Management in the U.S., (Fort Collins, Colorado: Colorado State University, Department of Natural Resources, 2018).
[2] National Shooting Sports Foundation and Responsive Management, Americans Attitudes Toward Hunting, Fishing, Sport Shooting and Trapping 2019, (Harrisonburg, VA 2019).

## Appendix

### 1. Springtime bear hunts are cruel and should be abandoned

Springtime black bear hunts are plagued with problems. Despite WDFW's best intentions, hunters kill nursing mothers, which orphans cubs, leaving them to suffer from starvation, predation, or exposure.[3] In two studies cited by Hristienko and McDonald (2007), who studied the effects of spring hunting on bears, only 40% of orphaned cubs survived until hibernation—which means that the other 60% died.[4] Cubs depend upon their mothers for survival for up to two years.

Springtime bear hunting occurs when cubs are just a few months old and still nursing, or when yearling cubs are living as part of a family group that consists of siblings and their mother.[5] Black bear cubs are usually born between December and February, and generally emerge from hibernation with their mothers between April and May, depending upon latitude and food availability.[6] Cubs are weaned approximately seven months after their birth, usually between July and September.[7]

Spring hunts also occur when bears are physically stressed from months of fasting and literally in a state of starvation, and are especially vulnerable to "harassment" by hunters when in this "declining physical condition."[8] And while Washington permits springtime hunts purportedly to forestall tree damage, these hunts may also damage roads, cause siltation in streams, and harm vulnerable ungulate and other wildlife populations.[9]

Mother bears provision for and protect their cubs until they are 16 to 17 months old,[10] or even longer if they have not had sufficient food. Family break-up typically occurs between May and July after the cubs' second winter, when females begin to come into estrus.[11]

Some researchers assert that mothers with cubs of the year can be spared from a spring hunt, because nursing mothers are the last demographic of the black bear population to emerge in springtime, after all the other sex and age classes of bears.[12] But Colorado Division of Wildlife bear researcher Tom Beck (now retired), along with a

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[3] Thomas D. Beck et al., "Sociological and ethical considerations of black bear hunting," *Proceedings of the Western Black Bear Workshop* 5 (1995).
[4] "Ursus americanus," *USDA-Forest Service Rocky Mountain Research Station-Fire Sciences Laboratory* http://www.fs.fed.us/database/feis/animals/mammal/uram/all.html (2007).
[5] Hank Hristienko and Jr. McDonald, John E., "Going in the 21st century: a perspective on trends and controversies in the management of the black bear," *Ursus* 18, no. 1 (2007).
[6] Ulev, "Ursus americanus."; Julie A. Miller et al., "The late-denning activities of the American black bear in Utah," *Ursus* 27, no. 2 (2017).
[7] Ulev, "Ursus americanus." citing Gill and Beck 1990, Jonkel and Cowan 1971
[8] Beck et al., "Sociological and ethical considerations of black bear hunting.", p. 123
[9] Beck et al., "Sociological and ethical considerations of black bear hunting."
[10] D. J. Lee and M. R. Vaughan, "Black bear family breakup in Western Virginia," *Northeastern Naturalist* 11, no. 2 (2004); Lynn L. Rogers, "Effects of food supply and kinship on social behavior, movements, and population growth of black bears in northeastern Minnesota," *Wildlife Monographs, The Wildlife Society* 51, no. 97 (1987); R. L. Mazur, "Does aversive conditioning reduce human-black bear conflict?," *Journal of Wildlife Management* 74, no. 1 (Jan 2010).
[11] Lee and Vaughan, "Black bear family breakup in Western Virginia."; Rogers, "Effects of food supply and kinship on social behavior, movements, and population growth of black bears in northeastern Minnesota."; M. Elfstrom et al., "Ultimate and proximate mechanisms underlying the occurrence of bears close to human settlements: review and management implications," *Mammal Review* 44, no. 1 (Jan 2014).
[12] e.g., H. Hristienko et al., "Using reproductive data to model American black bear cub orphaning in Manitoba due to spring harvest of females," *Ursus* 15, no. 1 (2004); G.B. Kolenosky and S.M. Strathearn, "Winter denning of black bears in east-central Ontario,"

cohort of five other Western states wildlife managers, has warned that even as most studies indicate males emerge from dens earlier than females, that time differential is nominal.[13] Beck et al. (1995) write:

> Data from Colorado clearly demonstrate that most bears are killed in the last two weeks of the spring season, regardless of the ending date . . . The [spring bear hunt] regulation looks good on paper but is very difficult to implement in the field because of bear behavior.[14]

Miller et al. (2017) found no distinction between time of den emergence among cohorts of bears (lone females, females with cubs of the year, females with yearlings and yearling cubs).[15] In other words, the spring bear hunt seasons do not protect nursing females. The assertion that a spring season will close early enough to protect nursing females is confounded by other researchers' data and the fact that Planet Earth is warming and den emergence has shifted (discussion infra):

- Johnson et al. (2018) found that black bears birthing cubs entered the den earlier and exited later *as did older age bears*, while females with yearling cubs exited earlier to maximize foraging opportunities.[16]
- A 2017 study in Utah found that black bears at the same elevations had different den departure dates because the land was more productive in one area, and females were in better body condition.[17]
- In Washington, Gaines (2003) found that the time when males and females emerged from the den largely overlapped. Males emerged between April 4 and May 7 and females emerged between April 9 and May 22.[18]
- In an Alaska study, Schwartz et al. (1987) found "no significant difference" between the average den-emergence dates for their study bears.[19]
- Beckmann and Berger (2003) found that while adult males exited dens before other sex and age classes in March to early April, adult females with cubs exited last, starting in early April, and into May. But as this study indicates, the chronology of den emergence times often overlaps between sex and age classes of bears.[20]
- Bears in northern New Mexico entered and left their dens at different times depending on their sex. But this was not the case for bears in the southern region, whose denning chronology was the same for both sexes.[21]
- Baldwin and Bender (2010), in their study of bears in Rocky Mountain National Park, stated that males "typically" emerged before females.[22]

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*International Conference on Bear Research and Management* 7 (1987); Hristienko and McDonald, "Going in the 21st century: a perspective on trends and controversies in the management of the black bear."; Miller et al., "The late-denning activities of the American black bear in Utah."

[13] Beck et al., "Sociological and ethical considerations of black bear hunting."

[14] "Sociological and ethical considerations of black bear hunting.", p. 122

[15] Miller et al., "The late-denning activities of the American black bear in Utah."

[16] H. E. Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts," Article, *Journal of Applied Ecology* 55, no. 2 (Mar 2018).

[17] Miller et al., "The late-denning activities of the American black bear in Utah."

[18] William L. Gaines, "Black bear, *Ursus americanus*, denning chronology and den site selection in the northeastern Cascades of Washington," *Canadian Field-Natur.* 117 (2003).

[19] "Denning ecology of three black bear populations in Alaska," *International Conference on Bear Research and Management* 7 (1987).

[20] "Rapid ecological and behavioural changes in carnivores: the responses of black bears (*Ursus americanus*) to altered food," *Journal of Zoology* 261 (Oct 2003).

[21] R. M. Inman et al., "Denning chronology and design of effective bear management units," *Journal of Wildlife Management* 71, no. 5 (Jul 2007).

[22] R. A. Baldwin and L. C. Bender, "Denning chronology of black bears in eastern Rocky Mountain National Park, Colorado," *Western North American Naturalist* 70, no. 1 (Apr 2010).

For all of these reasons, cubs cannot be protected by WDFW's seasonal-hunting closures that purport to end when females with cubs of the year emerge from the den, and the matter is complicated even more with the climate crisis which is substantially shifting the known periods when bears hibernate.

**2. Springtime bear hunting is unethical and damaging to the environment**

Killing nursing mother black bears is an issue of enormous social and ethical concern. Beck et al. (1995) write: "This is no way to prevent this [the killing of nursing females] from happening in a spring season, either through hunter education or timing of [the] season."[23] They add that this is because females forage "at great distances from their cubs."[24] Even when states prohibit the take of nursing females, hunters still kill them unintentionally.[25]

Hunters have difficulties determining the sex of bears.[26] And even the most knowledgeable and experienced hunters are not always patient while shooting bears.[27] Bear researchers themselves have difficulties sexing bears, even at short distances.[28] Selectivity is less important to some hunters than successfully shooting a bear, regardless of the bear's sex or age.[29]

As mentioned previously, bears experience "significant physiological stress" during the spring because the available food supply is neither sufficient for bears to maintain body weight, nor for replacing the loss of nutrients following months of hibernation.[30] Because of this, and because bears are lethargic for the first few weeks after they emerge from the den, bears make easy targets for hunters.[31] A springtime hunt subjects bears to the unnecessary and unfair stress of being chased and killed while they are in poor physical shape—a hunt that would be unthinkable for other big game species such as ungulates.[32]

Killing nursing bears is a black eye for hunters and for hunting itself.[33] The springtime bear hunt calls into question the concept of "fair chase," which hunters often profess to be the cornerstone of hunting ethics.[34] Bear hunters' presence also stress other species of wildlife who are also in poor physical shape after months of scarce food after winter.[35]

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[23] "Sociological and ethical considerations of black bear hunting.", p. 123
[24] Beck et al., "Sociological and ethical considerations of black bear hunting.", p. 123
[25] Beck et al., "Sociological and ethical considerations of black bear hunting."
[26] M. E. Obbard et al., "Suspended baits: Can they help hunters distinguish male from female American black bears?," *Ursus* 19, no. 1 (2008); K. H. Inman and M. R. Vaughan, "Hunter effort and success rates of hunting bears with hounds in Virginia," *Ursus* 13 (2002); Beck et al., "Sociological and ethical considerations of black bear hunting."
[27] Obbard et al., "Suspended baits: Can they help hunters distinguish male from female American black bears?."
[28] Beck et al., "Sociological and ethical considerations of black bear hunting."
[29] JA Litvaitis and DM Kane, "Relationship of hunting technique and hunter selectivity to composition of black bear harvest," *Wildlife Society Bulletin* 22 (1994); Beck et al., "Sociological and ethical considerations of black bear hunting."
[30] Beck et al., "Sociological and ethical considerations of black bear hunting.", p. 124
[31] Hristienko and McDonald, "Going in the 21st century: a perspective on trends and controversies in the management of the black bear."; Rogers, "Effects of food supply and kinship on social behavior, movements, and population growth of black bears in northeastern Minnesota."
[32] Beck et al., "Sociological and ethical considerations of black bear hunting."
[33] Beck et al., "Sociological and ethical considerations of black bear hunting."
[34] J. Posewitz, *Beyond Fair Chase: The Ethic and Tradition of Hunting* (Helena, Montana: Falcon Press, 1994); C. A. Loker and D. J. Decker, "Colorado black bear hunting referendum: What was behind the vote?," *Wildlife Society Bulletin* 23, no. 3 (Fal 1995); George et al., "Changes in attitudes toward animals in the United States from 1978 to 2014."; Manfredo et al., Short America's Wildlife Values: The Social Context of Wildlife Management in the U.S.
[35] Beck et al., "Sociological and ethical considerations of black bear hunting."

**3. Intelligent and familial black bears are susceptible to overkill**

Large-bodied carnivores such as black bears are sparsely populated across vast areas. Bears invest in few offspring, provide extended parental care to their young, have a tendency towards infanticide, and limit reproduction. In light of these biological factors, bears rely on social stability to maintain resiliency.[36]

Because of erratic weather events resulting from the climate crisis, including late-season frosts and droughts, natural foods are increasingly unavailable to bears. And in one study area of a heavily-monitored bear population in Colorado, the female bear population declined by 57 percent because of human-caused mortalities from vehicle collisions, recreational hunting and predator control—that *would not* have been detected by wildlife managers alone without the study in place.[37]

For all of these reasons, it makes no sense to hunt black bears, especially at such high levels. Bears are capable of self-regulating their own numbers.[38] Moreover, black bears are highly sentient and have the largest brain size of any carnivore, and spend prolonged periods raising and nurturing their young.[39] Bears know when they are hunted, and change their behaviors. This can have detrimental effects, particularly when they should be concentrating on feeding to survive but instead must hide from hunters.[40]

Females reach breeding age when they are between four and six years old.[41] An average female bear produces two cubs in her first litter, and she will give birth to an average of three cubs in successive litters. Bears have extended intervals between litters, averaging two to three years between them, but those intervals may be longer if there are droughts or other stochastic weather events.[42] Thus, bears have a slow reproductive potential,[43] and are highly susceptible to overkill.[44]

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[36] J. L. Weaver, P. C. Paquet, and L. F. Ruggiero, "Resilience and conservation of large carnivores in the Rocky Mountains," *Conservation Biology* 10, no. 4 (Aug 1996); A. D. Wallach et al., "What is an apex predator?," *Oikos* 124, no. 11 (Nov 2015).
[37] Jared S. Laufenberg et al., "Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface," *Biological Conservation* 224 (2018/08/01/ 2018).
[38] Wallach et al., "What is an apex predator?."
[39] Black bears are highly sentient. *See e.g.,* John L. Gittleman, "Carnivore Life History Patterns: Allometric, Phylogenetic, and Ecological Associations," 127, no. 6 (1986); T. E. Reimchen and M. A. Spoljaric, "Right paw foraging bias in wild black bear (Ursus americanus kermodei)," *Laterality: Asymmetries of Body, Brain and Cognition* 16, no. 4 (2011/07/01 2011); Jennifer Vonk, Stephanie E. Jett, and Kelly W. Mosteller, "Concept formation in American black bears, Ursus americanus," *Animal Behaviour* 84, no. 4 (2012/10/01/ 2012); Jennifer Vonk and Michael J. Beran, "Bears 'count' too: quantity estimation and comparison in black bears, Ursus americanus," *Animal Behaviour* 84, no. 1 (2012/07/01/ 2012); Rachel Mazur and Victoria Seher, "Socially learned foraging behaviour in wild black bears, Ursus americanus," *Animal Behaviour* 75, no. 4 (2008/04/01/ 2008); M. Cattet et al., "An evaluation of long-term capture effects in ursids: Implications for wildlife welfare and research," Article, *Journal of Mammalogy* 89, no. 4 (Aug 2008).
[40] A. Ordiz et al., "Do bears know they are being hunted?," *Biological Conservation* 152 (Aug 2012).
[41] D. L. Garshelis and H. Hristienko, "State and provincial estimates of American black bear numbers versus assessments of population trend," *Ursus* 17, no. 1 (2006); C. M. Costello et al., "A Study of Black Bear Ecology in New Mexico with Models for Population Dynamics and Habitat Suitability: Final Report: Federal Aid in Wildlife Restoration Project W-131-R.," *New Mexico Department of Game and Fish* (2001).
[42] Craig McLaughlin, "Black bear assessment and strategic plan," *Maine Department of Inland Fisheries and Wildlife* (1999); S. Dobey et al., "Ecology of Florida black bears in the Okefenokee-Osceola ecosystem," *Wildlife Monographs*, no. 158 (Jan 2005). Garshelis and Hristienko, "State and provincial estimates of American black bear numbers versus assessments of population trend."
[43] Dobey et al., "Ecology of Florida black bears in the Okefenokee-Osceola ecosystem."
[44] Garshelis and Hristienko, "State and provincial estimates of American black bear numbers versus assessments of population trend."

Welfelt et al. (2019) in their study of Washington bears found bear densities range widely by region, but that managers had overestimated the population of bears in western Washington—including cubs—by 50 percent.[45] They also found that human density negatively correlates with bear density—even in prime bear habitats—again leading the wildlife agency to overestimate the bear population.[46] Black bears can sustain only light losses to their population from all causes, and in an amount between six and ten percent of their population.[47]

In another Washington study, biologists used methods of capture-recapture and collected hair samples to test bears' DNA (to discover emigrating and immigrating animals), then compared the two areas in order to evaluate black bear survival. In both areas, despite agency predictions that the bear population was growing, the researchers found that it was not. They found that the "maximum sustainable hunter harvest" was indicated by the "intrinsic growth rate of 6-10% [which] was exceeded in both areas."[48] To emphasize, a total safe offtake amount for black bears, including hunting, predator control, poaching, roadkill and other, is likely only six to ten percent of the entire subpopulation because of the risk to the female component of the population.[49]

In a heavily monitored bear population, WDFW bear biologists reported that *approximately 20 percent* of their study bears were killed by poachers and even more died from wounding losses—who also went unaccounted by hunters.[50] Research finds that allowing the regulated culling of a species invariably induces and increases the numbers of animals killed by poachers.[51]

Human persecution of bears, such as through recreational hunting or predator control, is "super-additive," meaning that kill rates exceed naturally-occurring mortalities.[52] This is because predator control agents and hunters kill adult breeding animals, which disrupts animals' social structure and leads to indirect effects such as increased infanticide by incoming subadult male bears, resulting in decreased recruitment of young.[53] In sum, Washington must factor poaching and wounding loss metrics and total known mortalities into any reasonable quota.

**4. The climate crisis necessitates a new look at privileging non-lethal approaches over killing**

Wildlife management agencies often wrongly presume that an increase in human conflicts is a result of a growing bear population, but bears may simply be modifying their behaviors in response to urgent environmental circumstances—such as a lack of food.[54] Unless they are intensively studying a bear population, agencies do a poor

[45] Lindsay Welfelt, Richard Beausoleil, and Robert Wielgus, "Factors Associated with black bear density and implications for management," *The Journal of Wildlife Management* (08/25 2019).
[46] Welfelt, Beausoleil, and Wielgus, "Factors Associated with black bear density and implications for management."
[47] Lindsay Suzanne Welfelt, "Black bear population dynamics in the North Cascades" (Doctor of Philosophy Dissertation, Washington State University, 2018), https://search.proquest.com/openview/ec18d4337882347c86cd2eeb2a69ebd0/1.pdf?pq-origsite=gscholar&cbl=18750&diss=y.
[48] Welfelt, "Black bear population dynamics in the North Cascades," 38.
[49] Welfelt, "Black bear population dynamics in the North Cascades."
[50] G. M. Koehler and D. J. Pierce, "Survival, cause-specific mortality, sex, and ages of American black bears in Washington state, USA," *Ursus* 16, no. 2 (2005).
[51] Guillaume Chapron and Adrian Treves, "Blood does not buy goodwill: allowing culling increases poaching of a large carnivore," *Proceedings of the Royal Society of London B: Biological Sciences* 283, no. 1830 (2016-05-11 00:00:00 2016).
[52] Vucetich et al. 2005, Creel and Rotella 2010, Creel et al. 2015, Darimont et al. 2015.
[53] Wielgus and Bunnell 1995, Creel and Rotella 2010, Wielgus et al. 2013, Ausband et al. 2015, Darimont et al. 2015, Elbroch et al. 2017a, Leclerc et al. 2017.
[54] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."; H. E. Johnson et al., "Shifting perceptions of risk and reward: Dynamic selection for human development by black bears in the western United States," *Biological Conservation* 187 (Jul 2015); M. E. Obbard et al., "Relationships among food availability, harvest, and human-bear conflict at landscape scales in Ontario, Canada," *Ursus* 25, no. 2 (2014).

job of assessing the total mortality that bears sustain, and may increase quotas when they should be decreasing them.[55] Bears may not be occupying available habitat because of human presence in it, or they may be unevenly distributed across that state's particular black bear habitat.[56]

As Johnson et al. (2018) and others suggest, because North American habitats are altered by human development and changed by the climate crisis, wildlife managers must adapt and work to reduce human-bear conflicts, rather than rely upon lethal removals.[57] The problems associated with a warming climate and bears coming into contact with an expanding human population are problematic. When bears must live alongside humans, their chances for survival decrease dramatically because of vehicle collisions and agency actions.[58] Large native carnivores face extinction,[59] and it is incumbent upon wildlife agencies to conserve rather than over-exploit them. Expanded human development into bear habitats during the climate crisis exacerbates bear mortalities, and then agencies react by increasing hunting quotas, when they should be reducing overall black bear mortalities.[60]

The time bears spend in the den is tied to air temperature and food availability (both natural and anthropogenic foods).[61] Researchers have found that the warmer the temperatures and the more food that is available, the longer the time bears will spend active as they maximize their opportunities to forage.[62] With a warming climate, black bears reduce their hibernation times and increase their active times, and in coming years, human-bear conflicts will likely become more pronounced. This will result in greater black bear mortalities, including from hunters and agency removals, and in greater black bear population declines.[63]

Again, black bear biologists warn that managers must limit recreational black bear killing to reduce total mortality, especially during years of poor natural food production, which is readily predicted by weather events.[64]

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[55] Laufenberg et al., "Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface."; Welfelt, Beausoleil, and Wielgus, "Factors Associated with black bear density and implications for management."
[56] Welfelt, Beausoleil, and Wielgus, "Factors Associated with black bear density and implications for management."
[57] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."; D. L. Lewis et al., "Modeling black bear population dynamics in a human-dominated stochastic environment," Article, *Ecological Modelling* 294 (Dec 2014).
[58] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."; Johnson et al., "Shifting perceptions of risk and reward: Dynamic selection for human development by black bears in the western United States."; Beckmann and Berger, "Rapid ecological and behavioural changes in carnivores: the responses of black bears (*Ursus americanus*) to altered food."
[59] J. A. Estes et al., "Trophic Downgrading of Planet Earth," *Science* 333, no. 6040 (Jul 2011); Chris T. Darimont et al., "The unique ecology of human predators," *Science* 349, no. 6250 (2015); William J. Ripple et al., "Extinction risk is most acute for the world's largest and smallest vertebrates," *Proceedings of the National Academy of Sciences* 114, no. 40 (October 3, 2017 2017); Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), "Nature's Dangerous Decline 'Unprecedented' Species Extinction Rates 'Accelerating': Current global response insufficient. 'Transformative changes' needed to restore and protect nature; Opposition from vested interests can be overcome for public good. Most comprehensive assessment of its kind; 1,000,000 species threatened with extinction," news release, May 6, 2019, 2019.
[60] Laufenberg et al., "Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface."
[61] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."
[62] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."
[63] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."; Johnson et al., "Shifting perceptions of risk and reward: Dynamic selection for human development by black bears in the western United States."; Lewis et al., "Modeling black bear population dynamics in a human-dominated stochastic environment."
[64] Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."

To emphasize, the total annual mortality that a black bear population can sustain is between only six and ten percent of the population; more than that is simply super additive mortality.[65] Female bears rarely migrate—they prefer to live near their natal areas, and this compounds the harms from hunting and other sources of mortality that affect black bear populations.[66] The loss of females reduces a bear population's ability to bounce back as they are the key to sustaining the population.[67]

**5. WDFW cannot hunt its way out of human-bear conflicts**

While agencies and policymakers claim that opening or extending bear hunts will result in fewer human-bear conflicts ("HBC") and prevent bears expanding into urban areas where they may cause problems,[68] studies show that bear hunting will reduce conflicts only in cases where the bear population is reduced below sustainable levels.[69] Obbard et al. (2014) write:

> We found no significant correlations between harvest and subsequent HBC human-bear conflicts. Although it may be intuitive to assume that harvesting more bears should reduce HBC, empirical support for this assumption is lacking despite considerable research (Garshelis 1989, Treves and Karanth 2003, Huygens et al. 2004, Tavss 2005, Treves 2009, Howe et al. 2010, Treves et al. 2010).[70]

Research clearly demonstrates that black bear hunting simply does not reduce HBC. Pienaar et al. (2015) write:

> Members of the public are likely to believe that bear management and alteration of bear behavior are the solution to human-bear conflicts. They tend to favor trapping and relocating bears, opening a bear hunting season, and improving habitat . . . . In contrast, wildlife management agencies recognize that both lethal and non-lethal management of bears tend to be costly, time consuming, and difficult to implement in urban locations. Agencies also understand that these measures are ineffective in addressing root causes of human-bear conflicts, such as increased development of habitat, diverse public attitudes about bear management, and human food conditioning of bears (Peine 2001, Gore et al. 2006, Agree and Miller 2009, Don Carlos et al. 2009, Lowery et al. 2012).[71]

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[65] Welfelt, "Black bear population dynamics in the North Cascades."
[66] Laufenberg et al., "Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface."
[67] Laufenberg et al., "Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface."
[68] Hank Hristienko and Jr. McDonald, John E., "Going in the 21st Century: A Perspective on Trends and Controversies in the Management of the Black Bear " *Ursus* 18, no. 1 (2007); A. Treves, K. J. Kapp, and D. M. MacFarland, "American Black Bear Nuisance Complaints and Hunter Take," *Ursus* 21, no. 1 (2010).
[69] M. E. Obbard et al., "Relationships among Food Availability, Harvest, and Human-Bear Conflict at Landscape Scales in Ontario, Canada," *Ursus* 25, no. 2 (2014); E. J. Howe et al., "Do Public Complaints Reflect Trends in Human-Bear Conflict?" *Ursus* 21, no. 2 (2010).
[70] Obbard et al., Relationships among Food Availability, Harvest, and Human-Bear Conflict at Landscape Scales in Ontario, Canada."
[71] Elizabeth F. Pienaar, David Telesco, and Sarah Barrett, "Understanding People's Willingness to Implement Measures to Manage Human-Bear Conflict in Florida," *Journal of Wildlife Management* 79, no. 5 (2015)., p. 798.

Bear hunts do not reduce conflicts because hunters generally remove non-problem bears from the population; that is, the individuals not involved in nuisance behaviors.[72] Instead, hunters attempt to target large, male bears to acquire an impressive trophy,[73] but those are not the bears living near humans.[74]

Food availability plays a large role in the presence of bears in urban areas and human food sources are the root cause of human-bear conflicts. In a study of Colorado bears, researchers found that black bears who came to Aspen to prevent their starvation because of a native food failure subsequently reversed their behaviors and returned to the wilds when their native foods were again available.[75] Johnson et al. (2015), in their study of bears in Tahoe, Durango and Aspen, found that bears consistently changed their food-foraging behaviors, based upon food availability. In these cities, bears used human foods as a subsidy rather than a staple. They argue that bears who are labeled "nuisance" might not be "problem" bears all of the time. They also suggest that people need to make human foods less available to bears, especially in food-poor years.[76]

In short, despite claims that once bears have eaten food in urban areas that they are forever tainted, studies show that bears will leave these areas once natural foods are again available.[77] Bears weigh energy budgets and their safety when making decisions about where to forage.[78]

While some indicate that urban areas serve as a refuge for bears when there are food failures, Aspen, Colorado was not a refuge but an "ecological and evolutionary trap." Because adult females were removed by agency personnel in Aspen, it became a black bear population sink.[79] In their synthesis article, Elfstrom et al. (2014) suggest that some bears, particularly females with cubs and subadults, use urban areas as a calculated trade-off to avoid death from despotic larger bears.[80] Urban areas are an unsustainable bear sink because so many breeding females are removed in food-poor years.[81]

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[75] S. Baruch-Mordo et al., "Stochasticity in Natural Forage Production Affects Use of Urban Areas by Black Bears: Implications to Management of Human-Bear Conflicts," *Plos One* 9, no. 1 (Jan 2014), e85122.

[76] Johnson et al., "Shifting perceptions of risk and reward: Dynamic selection for human development by black bears in the western United States."

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[79] Baruch-Mordo et al., "Stochasticity in Natural Forage Production Affects Use of Urban Areas by Black Bears: Implications to Management of Human-Bear Conflicts," 8.

[80] Elfstrom et al., "Ultimate and proximate mechanisms underlying the occurrence of bears close to human settlements: review and management implications."; Marcus Elfström et al., "Does despotic behavior or food search explain the occurrence of problem brown bears in Europe?," *The Journal of Wildlife Management* 78, no. 5 (2014).

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**6. Solutions to alleviate human-bear conflicts must be multi-faceted for success**

A host of biologists and social scientists suggest that "bear aware" campaigns must focus on the benefits to society as a result of maintaining healthy bear populations, along with co-existence education.[82] Tolerance for bears increases when residents learn the benefits of bears and have positive interactions with them, whereas intolerance stems from elevated risk perceptions and negative interactions.[83]

Biologists Barrett et al. (2014) emphasized that in working with homeowners and others, an "all-or-none approach" in neighborhoods was necessary to prevent negative human-bear encounters. That is, everyone in the neighborhood, without exception, had to use bear-resistant trash cans and prevent attracting bears with other food sources. Barrett et al. (2014) write:

> Proactive measures (e.g. securing trash, electrical fencing, education) dealing with human behavior are much more efficient than reactive methods (e.g., aversive conditioning, relocation, euthanasia) in reducing human-bear incidents because changing or managing human behavior is more likely to provide longer-term solutions than managing a wildlife species alone (Baruch-Mordo et al. 2009).[84]

Studies from Colorado find the same. Everyone must work in concert. That involves providing bear resistant trash cans to residents, educating them, and enforcing the law against scofflaws.[85] We applaud Washington's very successful Karelian bear dog program, which brings great goodwill to the WDFW.[86]

Bear conflict mitigation for livestock growers involves employing commonsense, non-lethal solutions across entire landscapes, such as using the right kind of electric fencing around calving and lambing pens, boneyards, stored animal feed and around crops. Other strategies include using bear-proof trash receptacles and creating secured dumps in rural communities. And perhaps most importantly, cleaning up calving areas and making boneyards inaccessible to native carnivores.[87] And for campers, in Yosemite National Park, Breck et al. (2007) used radio collars to trip remote alarms to keep bears successfully out of campgrounds.[88]

Temporary diversionary feeding may even be feasible given inevitable food shortages because of the climate crisis. Garshelis et al. (2017) and Elfstrom et al. (2014) have found that diversionary feeding of starving bears is an effective tool for reducing and preventing human-bear conflicts. Those foods must be supplied outside of a conflict

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[84] M. A. Barrett et al., "Testing Bear-Resistant Trash Cans in Residential Areas of Florida," Article, *Southeastern Naturalist* 13, no. 1 (Mar 2014)., p. 36.

[85] Heather Johnson et al., "Assessing Ecological and Social Outcomes of a Bear-Proofing Experiment," *The Journal of Wildlife Management* (10/01 2018).

[86] Washington Department of Fish and Wildlife, "Karelian Bear Dog Program," *https://wdfw.wa.gov/enforcement/kbd/cash.html; https://www.inlander.com/spokane/meet-washington-states-karelian-bear-dogs/Slideshow/2772624* (2018).

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[88] S. W. Breck et al., "An automated system for detecting and reporting trespassing bears in Yosemite National Park," *Ursus* 18, no. 2 (2007).; Oscar C. Huygens and Hidetake Hayashi, "Using electric fences to reduce Asiatic black bear depredation in Nagano Prefecture, Central Japan," *Wildlife Society Bulletin* 27, no. 4 (1999).

area, inside a bear's home range, and cannot be associated with people.[89] Managers should supply foods that are similar to natural foods such as fruits and nuts, but avoid long-term feeding, which can grow the population.[90]

While food is the root cause of most negative human-bear interactions, Herrero et al. (2011) write: "Each year, millions of interactions between people and black bears occur without any injury to a person, although by 2 years of age most black bears have the physical capacity to kill a person."[91]

**7. Black bears are an important umbrella species and are ecological actors who increase biodiversity**

Black bears are important in maintaining the ecological systems in their forests. They disperse seeds across vast distances—even more seeds than birds[92]—open up canopies, and amend soils through their various behaviors. Black bears eat fruits and deposit them across long distances (and mice assist by removing the seeds from bear feces, where they would otherwise mildew, and cache them in soil where some will grow).[93] Bears cause small-scale ecological disturbance to the canopy that allows sun to filter to the forest floor, which creates greater biological diversity.[94] Bears break logs while grubbing, which helps the decomposition process and facilitates the return of nutrients to the soil. In one study, researchers found that black bears were the dominant species moving salmon from streams into riparian zones. Bears ate about half of the salmon, leaving remnants that contributed to greater tree ring growth. They also found higher plant growth along the riparian areas where bear trails existed and where bears' urine deposit was high.[95]

[89] D. L. Garshelis et al., "Is diversionary feeding an effective tool for reducing human-bear conflicts? Case studies from North America and Europe," Article, *Ursus* 28, no. 1 (2017); Elfstrom et al., "Ultimate and proximate mechanisms underlying the occurrence of bears close to human settlements: review and management implications."
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[93] M. S. Enders and S. B. Vander Wall, "Black bears Ursus americanus are effective seed dispersers, with a little help from their friends," *Oikos* 121, no. 4 (Apr 2012).
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[95] T. E. Reimchen and C. H. Fox, "Fine-scale spatiotemporal influences of salmon on growth and nitrogen signatures of Sitka spruce tree rings," *Bmc Ecology* 13 (Oct 2013), 38.

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