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September 19, 2019

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

Re: Spring black bear (*Ursus americanus*) permits for 2019-2020

Dear Chairman Carpenter and Director Susewind:

On behalf of the Humane Society of the United States and our supporters in Washington, we submit the following comments on Washington Department of Fish and Wildlife's (WDFW's) Proposed Rule on the spring black bear hunting season for 2020. Fig. 1. We oppose the proposed increases because of the risk of killing even more female bears with newborn and dependent yearling young. According to multiple bear biologists, spring hunts put females at risk, and also orphan cubs and occur when bears are physically distressed after months of starvation; hunting vulnerable bears is not only cruel, it is not in keeping with Washingtonians' values.

1. Springtime bear hunts are cruel and should be abandoned

Springtime black bear hunts are problem plagued. Despite WDFW's best intentions, hunters kill nursing mothers, which orphans cubs leaving them to suffer from starvation, predation, or exposure.¹ Also, spring hunts occur when bears are physically stressed from months of not eating—when they are literally in a starving state. In springtime, bears are in “declining physical condition” and are especially vulnerable to hunter “harassment,”² which Washington permits to forestall tree damage. Springtime hunting may cause damage to roads, including causing siltation in streams, or harm to vulnerable ungulate and other wildlife populations.³ Most Americans do not want wildlife cruelly treated, and most want black bears protected, and surprisingly, even if they have attacked someone.⁴

¹ Personal communication. April 28, 2014. Gary M. Koehler, retired bear biologist with Washington Department of Fish and Wildlife and Keefover. Thomas D. Beck et al., “Sociological and ethical considerations of black bear hunting,” *Proceedings of the Western Black Bear Workshop* 5 (1995).

² Beck et al., “Sociological and ethical considerations of black bear hunting,” p. 123

³ Beck et al., “Sociological and ethical considerations of black bear hunting.”

⁴ Kelly A. George et al., “Changes in attitudes toward animals in the United States from 1978 to 2014,” *Biological Conservation* 201 (9//2016), <http://www.sciencedirect.com/science/article/pii/S0006320716302774>. 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).

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—that means that the other 60% died.⁵ Cubs depend upon their mothers for survival for up to two years.

Fig. 1
WDFW's proposed spring bear hunt increases

GMU	Former	Proposed	Increase
154	15	18	3
162	15	18	3
169	45	60	15
172	15	24	9
175	15	18	3
178	0	5	5
Total	105	143	38

Black bear cubs, usually born during the months between December and February, generally emerge from hibernation with their mothers in the months of April and May depending upon latitude and food availability.⁶ Yet, WDFW proposes to allow even more hunters to spring hunt bears in several GMUs (Fig. 1.) starting April 15.

Bears enter and leave the den because of several variabilities including their reproductive status (bears with cubs denned 10 days longer while mothers with yearlings denned 10 day less), age (older bears denned longer), the amount of natural food availability and winter temperatures (with increases in air temperature, bears denned several days less).⁷ The time bears spend in the den is tied to air temperature and food availability (both natural and anthropogenic subsidies).⁸ Study authors found that with warmer the temperatures, or if food is available, the longer the time bears will spend active as they maximize their opportunities to forage.⁹

Springtime bear hunting occurs when cubs are a handful of months old and still nursing, or yearling cubs are living as part of a family group that consists of siblings and their mother.¹⁰ Cubs are weaned approximately seven months after their birth, usually between July and September.¹¹

⁵ "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).

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), <https://doi.org/10.2192/URSU-D-15-00035.1>.

⁷ 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), <https://doi.org/10.1111/1365-2664.13021>, <Go to ISI>://WOS:000424881800020.

⁸ Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."

⁹ Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."

¹⁰ 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).

¹¹ Ulev, "Ursus americanus." citing Gill and Beck 1990, Jonkel and Cowan 1971

Mother bears provision for and protect their cubs until they are 16 to 17 months old,¹² 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.¹³

Some researchers assert that mothers with cubs of the year can be spared from the 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.¹⁴ Colorado Division of Wildlife bear researcher Tom Beck (now retired), along with a cohort of five other Western states wildlife managers warned, however, that even as most studies indicate that males emerge earlier than females from dens, that the time differential is nominal.¹⁵ 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.¹⁶

Miller et al. (2017) found no distinction between time of den emergence between cohorts of bears (lone females; females with cubs of the year, females with yearlings and yearling cubs).¹⁷ 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.¹⁸
- A 2017 study of Utah black bears at different study sites found that bears at the same elevations had different den departure dates because in one area, the land was more productive, and females were in better body condition.¹⁹

¹² D. J. Lee and M. R. Vaughan, "Black bear family breakup in Western Virginia," *Northeastern Naturalist* 11, no. 2 (2004), [https://doi.org/10.1656/1092-6194\(2004\)011\[0111:bbfbiw\]2.0.co;2](https://doi.org/10.1656/1092-6194(2004)011[0111:bbfbiw]2.0.co;2), <Go to ISI>://WOS:000223086100001; 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), <https://doi.org/10.2193/2008-163>, <Go to ISI>://WOS:000273218700007.

¹³ 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), <https://doi.org/10.1111/j.1365-2907.2012.00223.x>, <Go to ISI>://WOS:000327796800002.

¹⁴ 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), [https://doi.org/10.2192/1537-6176\(2004\)015<0023:urdtma>2.0.co;2](https://doi.org/10.2192/1537-6176(2004)015<0023:urdtma>2.0.co;2), <Go to ISI>://WOS:000227982300003; G.B. Kolenosky and S.M. Strathearn, "Winter denning of black bears in east-central Ontario," *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."

¹⁵ Beck et al., "Sociological and ethical considerations of black bear hunting."

¹⁶ "Sociological and ethical considerations of black bear hunting," p. 122

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

¹⁸ Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."

¹⁹ Miller et al., "The late-denning activities of the American black bear in Utah."



- In a Washington study, 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 22.²⁰
- In an Alaskan study, Schwartz et al. (1987) found “no significant difference” between the average den-emergence dates for their study bears.²¹
- 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, also starting in early April, and on into May. But as this study indicates, and as is probably the norm: the chronology of den emergence times overlaps between sex and age classes of bears.²²
- Bears in northern New Mexico entered and left their dens at different times depending on their sex, but not so for bears in the southern part of the state, whose denning chronology was the same for both sexes.²³
- Baldwin and Bender (2010), in their study of bears in Rocky Mountain National Park, stated that males “typically” emerged before females.²⁴

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 trophy bear hunting is unethical and damaging to the environment

Killing nursing mother black bears is an enormous social and ethical issue. 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.”²⁵ They add that is because females forage “at great distances from their cubs.”²⁶ Even when states prohibit the take of nursing females, hunters still kill them unintentionally.²⁷

²⁰ William L. Gaines, “Black bear, *Ursus americanus*, denning chronology and den site selection in the northeastern Cascades of Washington,” *Canadian Field-Natur.* 117 (2003).

²¹ “Denning ecology of three black bear populations in Alaska,” *International Conference on Bear Research and Management* 7 (1987).

²² “Rapid ecological and behavioural changes in carnivores: the responses of black bears (*Ursus americanus*) to altered food,” *Journal of Zoology* 261 (Oct 2003), <https://doi.org/10.1017/s0952836903004126>, <Go to ISI>://WOS:000186327700010.

²³ R. M. Inman et al., “Denning chronology and design of effective bear management units,” *Journal of Wildlife Management* 71, no. 5 (Jul 2007), <https://doi.org/10.2193/2006-252>, <Go to ISI>://WOS:000248027800012.

²⁴ 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), <https://doi.org/10.3398/064.070.0106>, <Go to ISI>://WOS:000277604500006.

²⁵ “Sociological and ethical considerations of black bear hunting,” p. 123

²⁶ Beck et al., “Sociological and ethical considerations of black bear hunting,” p. 123

²⁷ Beck et al., “Sociological and ethical considerations of black bear hunting.”

Hunters have difficulties determining the sex of bears.²⁸ Hunters are not always patient while shooting bears, including the most knowledgeable and experienced hunters.²⁹ Bear researchers themselves have difficulties sexing bears, even at short distances.³⁰ Selectivity is less important to some hunters than shooting a bear, regardless of their sex or age.³¹

In springtime, bears experience “significant physiological stress” 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.³² Bears are lethargic for the first few weeks after they emerge from the den, and because vegetation is sparse in springtime, bears make easy targets for hunters.³³ A springtime hunt would subject bears to the stress of being chased and harassed while they are in poor physical shape—a hunt that would be unthinkable for other big game species such as ungulates.³⁴

Killing nursing bears taints hunters and hunting itself.³⁵ The springtime-bear hunt calls into question the ethics of “fair chase,” which hunters often profess to be the cornerstone of hunting ethics.³⁶ Finally, spring hunts occur during the time of the year when roads are muddy from snowmelt. Travel on the roads by bear hunters contributes to road damage and siltation in streams, which can harm fish and amphibian habitats. Bear hunters’ presence also stress other species of wildlife who are also in poor physical shape after months of scarce food after winter.³⁷

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 bears limit reproduction. In light of these biological factors, they rely on social stability to maintain resiliency.³⁸

Because of erratic weather events from the climate crisis including late season frosts or droughts, natural foods are increasingly unavailable to bears, and in one study area of a heavily monitored bear population in Colorado, 57

²⁸ M. E. Obbard et al., “Suspended baits: Can they help hunters distinguish male from female American black bears?,” *Ursus* 19, no. 1 (2008), [https://doi.org/10.2192/1537-6176\(2008\)19\[33:sbcthh\]2.0.co;2](https://doi.org/10.2192/1537-6176(2008)19[33:sbcthh]2.0.co;2), <Go to ISI>://WOS:000256333100004; K. H. Inman and M. R. Vaughan, “Hunter effort and success rates of hunting bears with hounds in Virginia,” *Ursus* 13 (2002), <Go to ISI>://WOS:000229925700022; Beck et al., “Sociological and ethical considerations of black bear hunting.”

²⁹ Obbard et al., “Suspended baits: Can they help hunters distinguish male from female American black bears?.”

³⁰ Beck et al., “Sociological and ethical considerations of black bear hunting.”

³¹ 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.”

³² Beck et al., “Sociological and ethical considerations of black bear hunting,” p. 124

³³ 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.”

³⁴ Beck et al., “Sociological and ethical considerations of black bear hunting.”

³⁵ Beck et al., “Sociological and ethical considerations of black bear hunting.”

³⁶ J. Posewitz, *Beyond Fair Chase: The Ethic and Tradition of Hunting* (Helena, Montana: Falcon Press, 1994); Loker and Decker, “Colorado black bear hunting referendum: What was behind the vote?.”; 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.*

³⁷ Beck et al., “Sociological and ethical considerations of black bear hunting.”

³⁸ 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), <Go to ISI>://A1996VC10300014; A. D. Wallach et al., “What is an apex predator?,” *Oikos* 124, no. 11 (Nov 2015), <https://doi.org/10.1111/oik.01977>, <Go to ISI>://WOS:000363866900005.

percent of females declined because of human-caused mortalities from vehicle collisions, trophy hunting and predator control—that *would not* have been detected by wildlife managers alone without the study in place.³⁹

For all of these reasons, it makes no sense to hunt black bears and especially at such high levels. Bears are capable of self-regulation.⁴⁰ Moreover, highly sentient, black bears have the largest brain size of any carnivore, and they spend prolonged periods raising and nurturing young.⁴¹ Bears know when they are hunted, and change behaviors, particularly when they need to concentrate on feeding to survive; instead they have to hide from hunters.⁴²

Late to mature, females do not reach breeding age until they are between 4 and 6 years old.⁴³ An average female produces two cubs in her first litter, and she will give birth to an average of three cubs in successive litters. Bears have, however, extended intervals between litters, averaging two to three years between them, but more if there are droughts or other stochastic weather events.⁴⁴ Thus, bears have a slow reproductive potential,⁴⁵ and are highly susceptible to overkill.⁴⁶

Welfelt et al. (2019) in their study of Washington bears found bear densities range widely by region, but managers had over-estimated the population of bears in western Washington—including cubs—by 50 percent.⁴⁷ They also found that human density negatively correlates with bear density—even in prime bear habitats—again leading the

³⁹ 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), <https://doi.org/https://doi.org/10.1016/j.biocon.2018.05.004>, <http://www.sciencedirect.com/science/article/pii/S0006320717317093>.

⁴⁰ Wallach et al., "What is an apex predator?."

⁴¹ Black bears are highly sentient. See e.g., John L. Gittleman, "Carnivore Life History Patterns: Allometric, Phylogenetic, and Ecological Associations," 127, no. 6 (1986), <https://doi.org/10.1086/284523>, <https://www.journals.uchicago.edu/doi/abs/10.1086/284523>; 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), <https://doi.org/10.1080/1357650X.2010.485202>, <https://doi.org/10.1080/1357650X.2010.485202>; 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), <https://doi.org/https://doi.org/10.1016/j.anbehav.2012.07.020>, <http://www.sciencedirect.com/science/article/pii/S0003347212003284>; 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), <https://doi.org/https://doi.org/10.1016/j.anbehav.2012.05.001>, <http://www.sciencedirect.com/science/article/pii/S0003347212002126>; Rachel Mazur and Victoria Seher, "Socially learned foraging behaviour in wild black bears, *Ursus americanus*," *Animal Behaviour* 75, no. 4 (2008/04/01/ 2008), <https://doi.org/https://doi.org/10.1016/j.anbehav.2007.10.027>, <http://www.sciencedirect.com/science/article/pii/S0003347208000213>; 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), <https://doi.org/10.1644/08-mamm-a-095.1>, <Go to ISI>://WOS:000258765000019.

⁴² A. Ordiz et al., "Do bears know they are being hunted?," *Biological Conservation* 152 (Aug 2012), <https://doi.org/10.1016/j.biocon.2012.04.006>, <Go to ISI>://WOS:000307088200003.

⁴³ 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), <Go to ISI>://WOS:000237130100001; 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).

⁴⁴ 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), <Go to ISI>://WOS:000228658000001. Garshelis and Hristienko, "State and provincial estimates of American black bear numbers versus assessments of population trend."

⁴⁵ Dobey et al., "Ecology of Florida black bears in the Okefenokee-Osceola ecosystem."

⁴⁶ Garshelis and Hristienko, "State and provincial estimates of American black bear numbers versus assessments of population trend."

⁴⁷ Welfelt, Beausoleil, and Wielgus, "Factors Associated with black bear density and implications for management."

wildlife agency to overestimate the bear population.⁴⁸ Black bears can only sustain light losses to their population from all causes, and in an amount between six and ten percent of their population.⁴⁹

In another Washington study, where biologists used methods of capture-recapture and also collected hair samples to test bears' DNA (to discover emigrating and immigrating animals), authors compared the two areas in order to evaluate black bear survival. In both areas, despite agency predictions that the bear population was growing, it was not. Authors found that the "maximum sustainable hunter harvest" was indicated by the "intrinsic growth rate of 6-10% [which] was exceeded in both areas."⁵⁰ To emphasize, a total safe offtake amount, including hunting, predator control, poaching, roadkill and other, for black bears is likely only six to ten percent of the entire subpopulation because of the risk to the female component of the population.⁵¹

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.⁵² Allowing a cull of a species invariably induces and increases the numbers of animals killed by poachers.⁵³

Human persecution of bears such as through trophy hunting and or predator control, is "super-additive," meaning that kill rates exceed naturally-occurring mortalities.⁵⁴ This is because predator control agents and trophy 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.⁵⁵

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—a lack of food.⁵⁶ Unless intensively studying a bear population, agencies poorly assess the total

⁴⁸ Welfelt, Beausoleil, and Wielgus, "Factors Associated with black bear density and implications for management."

⁴⁹ 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>.

⁵⁰ Welfelt, "Black bear population dynamics in the North Cascades," 38.

⁵¹ Welfelt, "Black bear population dynamics in the North Cascades."

⁵² 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), [https://doi.org/10.2192/1537-6176\(2005\)016\[0157:scmsaa\]2.0.co;2](https://doi.org/10.2192/1537-6176(2005)016[0157:scmsaa]2.0.co;2), <Go to ISI>://WOS:000233680300002.

⁵³ 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), <https://doi.org/10.1098/rspb.2015.2939>, <http://rspb.royalsocietypublishing.org/content/royprsb/283/1830/20152939.full.pdf>.

⁵⁴ Vucetich et al. 2005, Creel and Rotella 2010, Creel et al. 2015, Darimont et al. 2015.

⁵⁵ 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.

⁵⁶ 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), <https://doi.org/10.1111/1365-2664.13021>, <Go to ISI>://WOS:000424881800020; 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), <https://doi.org/10.1016/j.biocon.2015.04.014>, <Go to ISI>://WOS:000357234100019; M. E. Obbard et al., "Relationships among food

mortality that bears sustain, and may increase quotas when they should be decreasing them.⁵⁷ Despite available habitat, bears may not be in them because of human presence, or they are unevenly distributed across that state's particular black bear habitat.⁵⁸

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.⁵⁹ The problems associated with a warming climate and bears coming into contact with an expanding human population is problematic. When bears must live alongside humans, their chances for survival decrease dramatically because of vehicle collisions and agency actions.⁶⁰ Large native carnivores face extinction⁶¹—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 trophy hunting quotas, when they should be reducing overall black bear mortalities.⁶²

The time bears spend in the den is tied to air temperature and food availability (both natural and anthropogenic foods).⁶³ Study authors found that the warmer the temperatures and the more food is available, the longer the time bears will spend active as they maximize their opportunities to forage.⁶⁴ 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 resulting in greater black bear mortalities, including from hunters and agency removals,

availability, harvest, and human-bear conflict at landscape scales in Ontario, Canada," *Ursus* 25, no. 2 (2014), <https://doi.org/10.2192/ursus-d-13-00018.1>, <Go to ISI>://WOS:000347670000002.

⁵⁷ 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."

⁵⁸ Welfelt, Beausoleil, and Wielgus, "Factors Associated with black bear density and implications for management."

⁵⁹ 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), <https://doi.org/10.1016/j.ecolmodel.2014.08.021>, <Go to ISI>://WOS:000345821100006.

⁶⁰ 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."; J. P. Beckmann and J. Berger, "Rapid ecological and behavioural changes in carnivores: the responses of black bears (*Ursus americanus*) to altered food," *Journal of Zoology* 261 (Oct 2003), <https://doi.org/10.1017/s0952836903004126>, <Go to ISI>://WOS:000186327700010.

⁶¹ J. A. Estes et al., "Trophic Downgrading of Planet Earth," *Science* 333, no. 6040 (Jul 2011), <https://doi.org/10.1126/science.1205106>, <Go to ISI>://WOS:000292732000031; 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), <https://doi.org/10.1073/pnas.1702078114>, <http://www.pnas.org/content/114/40/10678.abstract>; 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."

⁶² Laufenberg et al., "Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface."

⁶³ Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."

⁶⁴ Johnson et al., "Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts."



resulting in greater black bear population declines.⁶⁵

Again, black bear biologists warn that managers must limit recreational black bear killing to reduce total mortality, and especially during years of poor natural food production, which is readily predicted by weather events.⁶⁶

To emphasize, the total annual mortality that a black bear population can sustain is only between six and ten percent of the population; more than that is simply super additive mortality.⁶⁷ Female bears rarely migrate—they prefer to live near their natal areas, and this compounds the harms from trophy hunting and other sources of mortality that affect black bear populations.⁶⁸ The loss of females reduces a bear population's ability to bounce back as they are the key to sustaining the population.⁶⁹

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

Agencies believe that hunting bears will reduce conflicts with humans. Yet, nine separate studies demonstrate that hunting bears will not resolve human-bear conflicts (“HBC”) unless a bear population is reduced to an unsustainable level. While policymakers claim that opening or extending bear trophy hunts will result in fewer bears expanding into urban areas where they may cause problems,⁷⁰ studies show that bear hunting will only reduce conflicts in cases where the bear population is reduced below sustainable levels.⁷¹ 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).⁷²

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

⁶⁵ 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.”

⁶⁶ Johnson et al., “Human development and climate affect hibernation in a large carnivore with implications for human-carnivore conflicts.”

⁶⁷ Welfelt, “Black bear population dynamics in the North Cascades.”

⁶⁸ Laufenberg et al., “Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface.”

⁶⁹ Laufenberg et al., “Compounding effects of human development and a natural food shortage on a black bear population along a human development-wildland interface.”

⁷⁰ 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).

⁷¹ 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).

⁷² Obbard et al., Relationships among Food Availability, Harvest, and Human-Bear Conflict at Landscape Scales in Ontario, Canada.”

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).⁷³

Bear hunts do not reduce conflicts because trophy hunters generally remove non-problem bears from the population; that is, the individuals not involved in nuisance behaviors.⁷⁴ Instead, hunters attempt to target large, male bears to acquire an impressive trophy,⁷⁵ but those bears are not the ones living near humans.⁷⁶

a. Food availability plays a large role in the presence of bears in urban areas; human food sources are the root cause of human-bear conflicts

In their study of Aspen, Colorado bears, Baruch-Mordo et al. (2014) 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.⁷⁷ Johnson et al. (2015), in their study of bears in three cities, 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 poor food years.⁷⁸ 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**.⁷⁹ Bears weigh energy budgets and their safety when making decisions about where to forage.⁸⁰

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.⁸¹ In their synthesis article, Elfstrom et al. (2014) suggest that some

⁷³ 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.

⁷⁴ A. Treves, K. J. Kapp, and D. M. MacFarland, “American black bear nuisance complaints and hunter take,” *Ursus* 21, no. 1 (2010), <https://doi.org/10.2192/09gr012.1>, <Go to ISI>://WOS:000277602700004; M. Elfström et al., “Ultimate and proximate mechanisms underlying the occurrence of bears close to human settlements: review and management implications,” *Mamm Rev.* 44 (2014), <https://doi.org/10.1111/j.1365-2907.2012.00223.x>, <http://dx.doi.org/10.1111/j.1365-2907.2012.00223.x>.

⁷⁵ Darimont, Coddington, and Hawkes, “Why men trophy hunt.”; Darimont et al., “The unique ecology of human predators.”

⁷⁶ Elfstrom et al., “Ultimate and proximate mechanisms underlying the occurrence of bears close to human settlements: review and management implications.”

⁷⁷ 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, <https://doi.org/10.1371/journal.pone.0085122>, <Go to ISI>://WOS:000329862500218.

⁷⁸ Johnson et al., “Shifting perceptions of risk and reward: Dynamic selection for human development by black bears in the western United States.”

⁷⁹ J. S. Lewis et al., “Interspecific interactions between wild felids vary across scales and levels of urbanization,” Article, *Ecology and Evolution* 5, no. 24 (Dec 2015), <https://doi.org/10.1002/ece3.1812>, <Go to ISI>://WOS:000368136600018; Baruch-Mordo et al., “Stochasticity in Natural Forage Production Affects Use of Urban Areas by Black Bears: Implications to Management of Human-Bear Conflicts.”

⁸⁰ Lewis et al., “Interspecific interactions between wild felids vary across scales and levels of urbanization.”; Baruch-Mordo et al., “Stochasticity in Natural Forage Production Affects Use of Urban Areas by Black Bears: Implications to Management of Human-Bear Conflicts.”

⁸¹ 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.

bears, particularly females with cubs and subadults, use urban areas as a calculated trade-off to avoid death from despotic larger bears.⁸² Urban areas are an unsustainable bear sink because so many breeding females are removed in food-poor years.⁸³

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.⁸⁴ Tolerance for bears increases when residents learn the benefits of bears and have positive interactions with them, whereas intolerance stems from elevated risk perceptions, negative interactions and a greater trust in wildlife managers, dominionistic values and age.⁸⁵

Florida state 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 needed to properly use bear-resistant trashcans 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).⁸⁶

Studies from Colorado find the same. Everyone must work in concert. That involves providing bear resistant trash cans to residents, educating them and using law enforcement against scofflaws.⁸⁷ We applaud Washington’s very successful Karelian bear dog program, which brings great goodwill to the WDFW.⁸⁸

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,

⁸² 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), <https://doi.org/10.1111/j.1365-2907.2012.00223.x>, <Go to ISI>://WOS:000327796800002; 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), <https://doi.org/10.1002/jwmg.727>, <http://dx.doi.org/10.1002/jwmg.727>.

⁸³ Baruch-Mordo et al., “Stochasticity in Natural Forage Production Affects Use of Urban Areas by Black Bears: Implications to Management of Human-Bear Conflicts.”

⁸⁴ Slagle et al., “Building tolerance for bears: A communications experiment.”; Bruskotter Jeremy T. and Wilson Robyn S., “Determining Where the Wild Things will be: Using Psychological Theory to Find Tolerance for Large Carnivores,” *Conservation Letters* 7, no. 3 (2014), <https://doi.org/doi:10.1111/conl.12072>, <https://onlinelibrary.wiley.com/doi/abs/10.1111/conl.12072>; Stacy A. Lischka et al., “Understanding and managing human tolerance for a large carnivore in a residential system,” *Biological Conservation* 238 (2019/10/01/2019), <https://doi.org/https://doi.org/10.1016/j.biocon.2019.07.034>, <http://www.sciencedirect.com/science/article/pii/S0006320718316276>.

⁸⁵ Lischka et al., “Understanding and managing human tolerance for a large carnivore in a residential system.”

⁸⁶ M. A. Barrett et al., “Testing Bear-Resistant Trash Cans in Residential Areas of Florida,” Article, *Southeastern Naturalist* 13, no. 1 (Mar 2014), <https://doi.org/10.1656/058.013.0102>, <Go to ISI>://WOS:000333891100005., p. 36.

⁸⁷ Heather Johnson et al., “Assessing Ecological and Social Outcomes of a Bear-Proofing Experiment,” *The Journal of Wildlife Management* (10/01 2018), <https://doi.org/10.1002/jwmg.21472>.

⁸⁸ 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).

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.⁸⁹ **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.⁹⁰

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 area, inside a bear's home range, and the food cannot be associated with people.⁹¹ 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.⁹²

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."⁹³

7. Black bears are an important umbrella species and 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,⁹⁴ 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).⁹⁵ Bears cause small-scale ecological disturbance to the canopy that allows sun to filter to the forest floor, which creates greater biological diversity.⁹⁶ 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 which 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.⁹⁷

⁸⁹ S. M. Wilson, E. H. Bradley, and G. A. Neudecker, "Learning to live with wolves: community-based conservation in the Blackfoot Valley of Montana," Article, *Human-Wildlife Interactions* 11, no. 3 (Win 2017), <Go to ISI>://WOS:000422844800010.

⁹⁰ S. W. Breck et al., "An automated system for detecting and reporting trespassing bears in Yosemite National Park," *Ursus* 18, no. 2 (2007), [https://doi.org/10.2192/1537-6176\(2007\)18\[230:aasfda\]2.0.co;2](https://doi.org/10.2192/1537-6176(2007)18[230:aasfda]2.0.co;2), <Go to ISI>://WOS:000251772900010. 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).

⁹¹ 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), <https://doi.org/10.2192/ursu-d-16-00019.1>, <Go to ISI>://WOS:000409564500004; Elfstrom et al., "Ultimate and proximate mechanisms underlying the occurrence of bears close to human settlements: review and management implications."

⁹² Garshelis et al., "Is diversionary feeding an effective tool for reducing human-bear conflicts? Case studies from North America and Europe."

⁹³ S. Herrero et al., "Fatal Attacks by American Black Bear on People: 1900-2009," *Journal of Wildlife Management* 75, no. 3 (Apr 2011): 599, <https://doi.org/10.1002/jwmg.72>, <Go to ISI>://WOS:000291007800015.

⁹⁴ Harrer and Levi, "The primacy of bears as seed dispersers in salmon-bearing ecosystems."

⁹⁵ Enders and Vander Wall, "Black bears *Ursus americanus* are effective seed dispersers, with a little help from their friends."

⁹⁶ Takahashi and Takahashi, "Spatial distribution and size of small canopy gaps created by Japanese black bears: estimating gap size using dropped branch measurements."

⁹⁷ 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, <https://doi.org/10.1186/1472-6785-13-38>, <Go to ISI>://WOS:000325284000001.



8. Conclusion

WDFW cannot kill its way out of human-bear conflicts—to do so would mean black bear extirpation.⁹⁸ As Stringham (2013) suggests, agencies' policies for black bears and mountain lions are often too rigid and simplistic to conform with modern societal values that prioritize humaneness and conservation over wanton killing.⁹⁹ For instance, he suggests that agencies should not kill bears unless they are a true public safety hazard—and not because someone felt frightened when they saw one.¹⁰⁰

WDFW must appreciate the massive contributions bears make to conserving the biological diversity of their forest ecosystems. They are highly sentient and deserving of their intrinsic rights to live and not be harassed by trophy hunters – particularly during the fragile time when females with cubs are emerging from their dens. We ask WDFW to reject the proposed rule and instead completely prohibit springtime bear hunting in Washington. We are grateful for Washington's ground-breaking Karelian bear dog program, which is envied by other states.

If you need access to any of the studies cited herein, please contact me at the email address below.

Sincerely,

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⁹⁸ E. J. Howe et al., "Do public complaints reflect trends in human-bear conflict?," *Ursus* 21, no. 2 (2010), <https://doi.org/10.2192/09gr013.1>, <Go to ISI>://WOS:000284520900001; Obbard et al., "Relationships among food availability, harvest, and human-bear conflict at landscape scales in Ontario, Canada."

⁹⁹ Stephen R. Stringham, "Managing risk from bears and other potentially lethal wildlife: predictability, accountability, and liability," *Human-Wildlife Interactions* 7, no. 1 (2013).

¹⁰⁰ Stringham, "Managing risk from bears and other potentially lethal wildlife: predictability, accountability, and liability."

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