September 5, 2025

Via: SEPADesk2@dfw.wa.gov; GameManagementPlan@publicinput.com; commission@dfw.wa.gov

Dear Commissioners, Director Susewind, Ms. Wood, and WDFW staff:

Washington Wildlife First submits these comments regarding the unlawful Determination of Nonsignificance (DNS) made by the Washington Department of Fish and Wildlife (WDFW or the Department) for its 2025 draft Game Management Plan (Plan). These comments incorporate by reference the Plan comments and supporting documents submitted by (1) Washington Wildlife First, Kettle Range Conservation Group, Northwest Animal Rights Network, Western Watersheds Project, Martha Hall, Rachel Haymon, and Alison Anderson; (2) Patrick Kelly of Western Watersheds; (3) Martha Hall; and (4) Rachel Haymon, Liz Carr and Martha Hall. Supporting documents for those comments and this letter can be found at: https://www.dropbox.com/scl/fo/z9tmartzcyvdqjljfrmko/AIoQwGlE5MCI_mYCz3t5-GY?rlkey=gqla2k0pp22wmnfo82dfcdmtg&st=1anx90x4&dl=0.

The above-listed comments explain at length the Plan's failure to provide any meaningful review or assessment of its environmental impacts, including the impacts on the wildlife the Department is obligated to "preserve, protect, and perpetuate." *See* RCW 77.04.012. They also explore the Plan's probable significant environmental impacts on dozens of species, including species the State Wildlife Action Plan has labeled "Species of Greatest Conservation Need," such as bighorn sheep, American badgers, and Harlequin ducks; and vulnerable species especially sensitive to climate change and habitat fragmentation, including mountain goats, moose, elk, and waterfowl. As discussed in these comments, the Plan fails to explore environmental impacts beyond deeply flawed and unreliable estimates of population abundance and distribution, including impacts to social structure and behavior, ecological dynamics and ecosystem function, and human–wildlife relationships. In addition, it fails to look at the indirect environmental impacts of the policies it espouses, such as the nitrate contamination caused by the Bob Oke Game Farm, which produces the pheasants for WDFW's pheasant release program.[1]

Our comments specific to the WDFW's DNS will be brief, because the DNS only offers only a conclusory statement that the Plan will not have a "probable significant adverse impact on the environment." Indeed, it offers no rationale whatsoever for how the Department concluded that there is no "probable significant adverse impact" from a sweeping plan that will impact the environment throughout the state, the interests of millions of Washingtonians, and all of Washington's game species, including species that the Department itself has noted are Priority Species, Species of Greatest Conservation Need, and vulnerable and declining species especially sensitive to ongoing habitat degradation and accelerating climate change. Nor does the DNS explain why WDFW has determined that this particular version of the Game Management Plan will have less of an environmental impact than all the prior iterations that it

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[1] *See* Reubenking, D. (2025). Centralia mayor, councilors call for closure of WDFW-operated game farm, Nitrate contamination: Council expresses frustration with agency's lack of urgency. *The Chronicle,* August 27, 2025.

concluded *would have* a "probable significant adverse impact on the environment," and for which it completed an Environmental Impact Statement or a Supplemental Environmental Impact Statement.[2]

Nor does the SEPA Checklist completed by the Department provide any visibility into the surprising conclusion that the Plan is not likely to have a significant environmental impact. Indeed, it acknowledges that "WDFW may undertake specific projects or actions under the guidance of this GMP" and that it will "guide the development of hunting seasons." Beyond those admissions, the Checklist is devoid of meaningful content or details, other than repeatedly stating the purpose of the Plan, as if that is a substitute for actual disclosure and analysis of its probable impacts.

Rather, the Checklist seems to disclaim any responsibility for evaluating the impacts of the Plan. First, it states that projects that use the plan as guidance will undergo their own environmental review, "as required," ignoring the fact that the annual setting of hunting seasons is exempt from SEPA review. The proper time to review the impact of those hunting seasons is now, through a SEPA review of the Plan. Second, it states that the Plan is "not intended to govern the development of a series of connected actions," despite the fact that the Plan's purpose is to do exactly that, by guiding WDFW in setting hunting seasons and other policies related to game species.

In sum, this DNS is laughably deficient. It woefully fails to meet even the prima facie requirements for SEPA compliance and is a textbook example of an "arbitrary and capricious" agency action that could not withstand any meaningful judicial review.

Sincerely,

Claire Loebs Davis
President and Executive Director
Washington Wildlife First

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[2] *See, e.g.*, WA Dep't of Fish and Wildlife, FINAL Supplemental Environmental Impact Statement for the 2015-2021 Game Management Plan (2014), *Department of Fish and Wildlife*, Olympia, WA.; WA Dep't of Fish and Wildlife, Final Supplemental Environmental Impact Statement for the 2009-2015 Game Management Plan (2008), *Department of Fish and Wildlife*, Olympia, WA.; WA Dep't of Fish and Wildlife, Final Environmental Impact Statement for the Game Management Plan (July 2003-June 2009), *Department of Fish and Wildlife*, Olympia, WA.

September 5, 2025

Via: GameManagementPlan@publicinput.com; commission@dfw.wa.gov

Re: Comments on 2025 Draft Game Management Plan

Dear Commissioners, Director Susewind, and WDFW staff:

On behalf of Washington Wildlife First, Kettle Range Conservation Group, Northwest Animal Rights Network, Western Watersheds Project, Martha Hall, Rachel Haymon, and Alison Anderson, please accept these comments on the 2025 draft Game Management Plan (Plan) proposed by the Washington Department of Fish and Wildlife (WDFW or the Department). In addition to the comments below, we incorporate by reference all comments and supporting documents submitted by Patrick Kelly of Western Watersheds Project; Martha Hall; and Rachel Haymon, Liz Carr, and Martha Hall. Copies of studies and other documents referenced in these comments, and the comments of Martha Hall, can be found at https://www.dropbox.com/scl/fo/z9tmartzcyvdqjljfrmko/AIoQwGlE5MCI_mYCz3t5-GY?rlkey=gqla2k0pp22wmnfo82dfcdmtg&st=1anx90x4&dl=0, and should be incorporated into the record for this decision.

I. Executive Summary

The Plan fails to fulfill WDFW's statutory duty to "preserve, protect, perpetuate, and manage" Washington's wild species. RCW 77.04.012. The Plan lacks or defers decision-critical elements (adequate data, numeric triggers, monitoring standards, disease and genetic safeguards, habitat and climate integration); is devoid of transparent or enforceable protocols and compliance mechanisms; and prioritizes hunting and trapping without adequate scientific justification, ethical review, or a means of judging the environmental impact of its provisions. Instead, the Plan allows wide discretion for management decisions that have little or no scientific basis and which pose a significant risk of impairing wildlife populations and causing other ecological, environmental, and public health harms. Indeed, WDFW has not even attempted to evaluate the Plan's likely impacts on wildlife and the environment, nor does it provide the data and scientific basis from which it could do so.

These comments explore the following principal and systemic deficiencies of the Plan that render it insufficient to satisfy WDFW's mandate and risk significant environmental harms, including potentially devastating impacts on a number of hunted and trapped species.

1. **Transparency.** The Plan lacks transparency on how management objectives are identified and what values and stakeholder preferences are considered and prioritized.

2. **Data and monitoring**. The Plan largely relies on confounded, limited, and low-quality data and fails to describe a meaningful system of monitoring its impacts.

3. **Disease surveillance and outbreak response.** The Plan does not include operational surveillance targets, prevalence/action thresholds, and quarantine/translocation suspension rules for high-risk species.

4. **Genetics and connectivity**. The Plan does not require reference to effective population size assessments or connectivity analyses, or the use of genetic safeguards prior to "harvest" or translocation.

5. **Habitat and climate**. The Plan fails to account for habitat capacity and climate vulnerability in population estimates and forecasts, and does not include habitat-linked "harvest" rules or decision triggers.

6. **Consideration of impacts.** The Plan considers only a narrow scope of environmental impacts, failing to look at any impacts beyond those to the abundance and distribution of wildlife.

7. **Misuse of adaptive management.** The Plan pays lip service to "adaptive management," but fails to include key aspects for meaningful adaptive management, including defined monitoring/evaluation cycles, timelines, decision authority, and public reporting.

8. **Reliance on unproven models.** The Plan relies on quantitative models which cannot be objectively assessed, because they are not disclosed, unpublished, lack peer review, and/or do not disclose their data or methods.

9. **Integration with agency science and risk assessment**. The Plan fails to integrate the science and risk assessments contained in other WDFW documents, including the State Wildlife Action Plan (SWAP), the annual Game Status and Trends Reports (Status and trends), and other risk analyses.

10. **Enforcement and compliance mechanisms.** The Plan lacks enforcement mechanisms for "mandatory" actions and incentives and outreach to improve voluntary compliance.

These failings are pervasive across species chapters, and, in many cases, WDFW cannot point to binding decision rules or monitoring standards that would allow it to correct for such deficiencies and bound environmental impacts. Therefore, the Plan does not meet WDFW's statutory mandate and, by allowing unchecked irreversible actions, violates the Department's public-trust obligation to protect wildlife for all Washingtonians.

II. WDFW's Duties under Statute and Public Trust Doctrine

WDFW, Director Kelly Susewind, and the Fish and Wildlife Commission (Commission) must operate within the boundaries set by the Washington state legislature and in accordance with their responsibilities under the Public Trust Doctrine.

State law incorporates principles of the Public Trust Doctrine. *See, e.g.*, RCW 77.04.012 ("wildlife, fish, and shellfish are the property of the state"), *Ctr. for Biological Diversity v. Dep't of Fish & Wildlife*, 14 Wn. App. 2d 945, 986 (2020) (Washington holds wildlife "in trust for the benefit of all residents"). WDFW's statutory mandate provides that the chief responsibility of the Commission, the Director, and the Department is to "preserve, protect, perpetuate, and manage" the state's wildlife, while their secondary duty is to "conserve" wildlife "in a manner that does not impair the resource." RCW 77.04.012. While the commission is authorized to allow the "taking" of wildlife, that authority is limited by the

instruction that it may only do so "at times or places, or in manners or quantities, as in the judgment of the commission does not impair the supply of these resources." *Id.*

The Department, the Director, and the Commission are thus bound to act as stewards of wildlife on behalf of *all* Washingtonians, and obligated to manage wildlife in a manner that safeguards long-term population health, genetic viability, ecosystem function, and equitable public use**. The Plan must be understood and evaluated in light of this core duty.** WDFW's plans, strategies, rules, and management decisions may not focus solely on hunters, trappers, and the value of their "experiences"; they must first and foremost protect wildlife for present and future generations.

This obligation to the public trust is also captured in key elements of WDFW's 25-Year Strategic Plan (2020-2045) (Strategic Plan),[1] which recognizes WDFW's obligation to "manage our public resources for both consumptive and non-consumptive uses in a manner that serves existing and future generations." In the Strategic Plan, the Commission expresses its hope that, going forward, "every person in the state will believe that we are working on their behalf." The Commissioners further "envision a system of stewardship guided by sound science, strong partnerships, and active listening that will result in abundant fish, wildlife, and resilient lands now and into the future."

Similarly, Director Susewind commits in the Strategic Plan to serving both "our traditional customers," in apparent reference to hunters and anglers, as well as the "6.2 million residents who do not hunt and fish [who] also expect us to protect and recover imperiled species and habitats and ensure that fish and wildlife are provided sound stewardship." He thus describes the Strategic Plan as a "path of mutual benefits," based on "[c]onservation, increased public engagement and transparency, science, and operational excellence." The Strategic Plan references, in turn, Policy 5004, the Department's Conservation Initiative and Guiding Principles,[2] which sets forth a vision to "Ensure Washington's fish, wildlife, and the ecosystems they depend on are conserved for the benefit of future generations."

As incorporated into Washington law and policy, the public trust duty has the following direct implications for the Plan:[3]

- *Transparency and accountability:* Because the Department exercises public authority and manages resources held in trust for all citizens, its decision-making must be transparent, auditable, and subject to public review. This encompasses an obligation to publish data, model inputs, decision rules, and enforcement/compliance metrics so that independent experts and the public can verify the Department's conclusions. Moreover, the Department must transparently explain and justify how it uses public resources, how it weighs different public values and translates them to management objectives, and how it ensures that its practices do not cause unnecessary suffering or ecological harm.

- *Best available science:* The Department must ground its decisions and processes in the best available scientific information, transparently disclose its data, limits, and assumptions, and explain how scientific uncertainty is incorporated into management processes and outcomes.

- *Precautionary protection in the face of uncertainty:* Where there is material uncertainty about population status, disease risk, genetic viability, social disruption, habitat capacity, climate

vulnerability, or other factors impacting populations, the Department must adopt precautionary measures (e.g., moratoria, reduced "harvest", suspension of releases, conservative default rules) pending the collection of sufficient data to justify less restrictive approaches. The precautionary approach is not merely a policy preference; it flows from the public trust duty to avoid irreversible harm to the public's interest in healthy wildlife populations.

The following comments evaluate the Plan's deficiencies against these fundamental obligations. Where the Plan fails to meet these framing requirements (e.g., by lacking critical information, deferring critical operational rules, failing to publish data or decision logic, or not specifying precautionary measures), the Plan cannot be deemed to meet WDFW's statutory mandate.

III. Significant Plan Deficiencies.

Below, we expand each of the significant deficiencies we identified within the Plan, explaining (1) the nature of the deficiency; (2) specific concrete examples from the Draft GMP showing how the deficiency appears in the Plan; and (3) why it prevents the Plan from fulfilling WDFW's statutory mandate to preserve, protect, perpetuate, and manage wildlife.

1. <u>Transparency.</u>

The Plan repeatedly presents management objectives (e.g., harvest levels, permit allocations, and "opportunity" objectives) without explaining how those objectives were chosen, what social values and ecological factors were weighed, or how competing public interests are "balanced". That opacity matters because the Department is the public trustee for Washington's wildlife and must show how it translates the statutory mandate to "preserve, protect, perpetuate, and manage" wildlife into concrete, evidence-based decision rules—especially when evaluating the variety of risks associated with human-caused mortality.

The Plan provides aspirational goals and suggests that it engages in some "balancing" of values and risks, but provides no transparent process for deciding which values take priority when they conflict (for example, hunter satisfaction vs. species conservation or non-consumptive public use), nor does it commit to objective, auditable criteria for settling trade-offs. Many species chapters include both (a) objectives to maintain or expand hunting opportunity and (b) separate objectives to "maintain and promote" non-hunting values (e.g., viewing, photography). Yet the Plan lacks any mechanism for evaluating conflicts between those objectives, and generally defaults to promoting hunting opportunity for the few, rather than protection.

This general default to providing hunting opportunity raises serious ethical concerns over whose interests the Department is prioritizing and how this aligns with its public trust duties. According to a 2022 survey,[4] just 4% of the Washington public aged 16 and older participates in hunting, lower that the national average. However, statistics compiled by the U.S. Fish and Wildlife Service indicate Washington had only 164,261 hunting license holders in 2025,[5] a mere 2% of the state's population of 7.958 million. The 2022 survey also indicated that 71% of Washingtonians participate in wildlife watching, higher than the national average.

Moreover, research in Washington and the U.S. has documented an increased endorsement of "mutualist" values towards wildlife (i.e., seeing wildlife as part of one's social community and deserving of rights like humans) and a decline in values emphasizing "domination" (i.e., treating wildlife as a resource used solely for human benefit).[6] The Colorado State University study also highlights a concerning gap in wildlife value orientations between Washingtonians and the Department: mutualists compose 38% of the public, but only 17% of Department employees, while traditionalists compose 28% of the public, but 48% of employees. Those differences in values drive real differences in priorities and management, evident in the Plan.[7] Finally, values do not just drive management recommendations, but science itself, through the questions that are asked, the data that is considered, and how it is interpreted.[8] Nowhere is this recognized or corrected for in the plan through a transparent decision-making process.

To the contrary, as discussed in comments submitted by Martha Hall,[9] WDFW excluded nearly all "the public" from the writing of this Plan, while giving hunters a privileged seat at the table to provide input throughout the process. The 96-98% of the public that does not hunt did not see the Plan until it was released for comments on July 7, 2025, at which point we were given first one month, then two, to review and provide comments. By contrast, the members of two WDFW advisory groups that contain only hunters, the Game Management Advisory Council and the Waterfowl Advisory Council, were given drafts to read, an opportunity to provide comments, and the chance to meet with staff to discuss the Plan in 2022, 2023, and 2024. Nothing could convey more clearly the message that, despite its statutory mandate and the empty promises in its Strategic Plan, WDFW still views hunters and anglers as its only real "customers," and has little concern or respect for the viewpoints of the rest of the public.

The overt bias is pervasive throughout the Plan, which consistently prioritizes hunting "opportunity" over wildlife protection:

- *Bighorn sheep:* This chapter illustrates how the lack of an explicit values-weighting rule creates real biological risk. The chapter recognizes that contact with domestic sheep and goats is the primary disease threat and that preventing contact is "the most effective" measure, yet it does not translate that science into clear, binding policies (buffer zones, seasonal grazing restrictions, mandatory domestic-herd management conditions, or automatic conservative hunting limits where domestic contact risk is high). As a result, permit allocation and hunting (including permits intended to reduce herd abundance) may proceed in places and at times that increase disease exposure or remove individuals important for genetic and cultural resilience, effectively pitting recreational objectives against disease prevention without a transparent, auditable prioritization.[10]

- *Mountain goats (and small isolated herds):* The Plan applies generic hunting guidelines (e.g., permit thresholds) without documenting how objectives are weighed when risks increase, or an empirical evaluation of the short and long-term population-level trade-offs between hunting and not for recovery purposes, such as long-term genetic persistence thresholds. This lack of clarity hides critical normative choices: whether the Department will treat protection as the default for small, isolated herds or instead treat recreational opportunity as the default management use.[11]

- *R3 (Recruit/Retain/Reactivate) emphasis:* The Plan explicitly foregrounds the Department's R3 strategy as a programmatic objective that shapes funding, staffing, and on-the-ground choices (recruitment, retention, and "quality" hunt promotion), yet it provides no transparent framework

showing how those hunting-promotion goals are weighed against the Department's statutory duty to "preserve, protect, perpetuate, and manage" wildlife or against non-consumptive public values; as a result, R3 creates a programmatic bias toward expanding consumptive opportunity (and diverting resources to recruitment) for a select few without documented trade-off analysis with broad public preferences, or analyses showing that R3 investments actually deliver conservation returns. Absent such evaluations, R3 (and release programs, see below) overtly privilege one set of users (hunters) and one set of values (consumptive recreation) over a variety of broader public values, including long-term conservation, animal well-being, and human-wildlife coexistence.

- *Pheasant-release programs:* The Plan and Status & Trends document continue large-scale pheasant release programs (tens of thousands of birds annually) as an "R3" tool, and released birds are currently counted in harvest estimates; because releases are not separately accounted for and many western-WA release sites are acknowledged as biologically unsuitable, these programs both (a) confound harvest-based monitoring (masking potential declines in wild populations) and (b) raise predictable and serious animal-welfare and ecological concerns (high post-release mortality, potential disease and predator-prey effects).

- *Large carnivores (cougars/bears):* The Plan discusses both consumptive management and public-safety/conflict responses, but it contains no clear framework for how the Department weighs desires for recreational hunting against evidence that hunting mortality can (a) disrupt their social structure, (b) increase human-wildlife conflict in some circumstances, (c) reduce opportunities for wildlife viewing/appreciation, and (d) go against cultural values (opposing recreational hunting) that many Washingtonians hold.

- *Hunter-centered objectives vs. public trusteeship:* Several chapters emphasize permit structures, hunter satisfaction, and allocation rules without stating that wildlife are a shared public trust resource or describing how non-hunter public preferences (wildlife watching, intrinsic values, animal welfare) are incorporated into any evaluation or development of objectives. This absence of an explicit public-trust framing and a transparent values-weighting process risks defaulting to the preferences of a narrow constituency (i.e., hunters/trappers) when setting objectives.

- *Lack of explicit prioritization when science is uncertain:* The Plan repeatedly acknowledges data gaps (monitoring shortfalls, uncertain trends) but does not publish how values are to be prioritized when data inadequacies increase risk. For example, even where the plan recognizes habitat loss, climate vulnerability, disease risk, or low effective population sizes, it fails to state whether precaution (e.g., reduced permits, moratoria on releases or hunts) will take precedence over recreational objectives in data-poor contexts.

This lack of transparency and a formal decision-weighting framework is harmful for several reasons:

- *It hides normative choices:* Decisions about whether to prioritize "opportunity" or "protection" are inherently value judgments; they should be explicit, defensible, and open to public scrutiny.[12] The Plan's silence effectively hands those choices to managers without public justification.

- *It undermines precaution.* When monitoring and population data are weak or uncertain (a pervasive problem documented across many chapters; see next deficiency below), the public-trust duty and basic conservation ethics require that protective values be given greater weight rather than lesser.[13] Without an explicit rule to do so, the plan may allow hunting or recruitment programs to proceed by default even when the evidence base is inadequate.

- *It violates WDFW's responsibilities under statute and the Public Trust Doctrine and the promises made in its Strategic Plan:* By excluding the general public from the development of the Plan while giving hunters a privileged seat at the table while it was drafted; failing to transparently acknowledge its bias toward hunting interests; and refusing to disclose how it weighed or evaluated competing values, WDFW violated its statutory mandate and its responsibilities as a public trustee, and betrayed the promises it made in its Strategic Plan.

Overall, the plan's framing and priorities reveal a consistent, underlying bias toward expanding hunting and recruitment (i.e., the "R3" strategy), including the use of certain species and programs primarily to recruit and retain hunters (e.g., pheasants and other small game). The Plan and its supporting documents operationalize that R3 emphasis without explaining how those social-promotion objectives are reconciled with conservation and precaution for any wildlife populations, let alone particularly vulnerable ones (e.g., mountain goats, bighorn sheep, harlequin ducks). That emphasis is not merely rhetorical; it is values-based, biased in favor of a minority of the public, and manifests as programmatic choices (e.g., lack of protocols, weak data, recreational hunts, release programs, outreach to hunting/trapping associations) while the plan offers little transparency on how the ecological or ethical consequences of those choices were considered and, particularly, if the agency's mandate to protect is effectively being prioritized over narrower values, such as recreational opportunity.

2. **Data and Monitoring.**

Monitoring is the backbone of responsible wildlife policy. When the Department permits hunting, trapping, translocations, or releases, it makes choices that can harm local populations and the ecosystems those populations depend on. The Plan repeatedly presents monitoring as central to decision-making, but it does not disclose the clear metrics, rules, data checks, or fallback actions needed to turn monitoring into reliable information to base policy on. In practice, for many species, this means the Department cannot confidently tell the difference between real population changes and artifacts of how, or how well, low-quality data were reported or collected. That uncertainty matters because it can lead to decisions that harm wildlife rather than protect them.

Across chapters, the Plan relies heavily on four weak or easily-confounded data sources: hunter-reported "harvest" data, voluntary online reporting and tooth submissions, program counts tied to release programs (e.g., pheasant releases), and occasional aerial or camera surveys. However, the Plan fails to clarify: (1) how much data is enough; (2) how each stream is integrated into decision-making; (3) how it will correct or re-baseline series when survey methods change, (4) what it will do when mandatory reporting is not happening in practice, (5) what automatic, conservative actions managers must take when the data are not fit for decision use, and (6) how current policy reflects that precautionary approach, given the evident data limitations, even when combining different data sources. These are rules every monitoring program needs

and are particularly important when considering allowing negative impacts such as human-caused mortality.

The monitoring shortfalls are not abstract or isolated. They show up repeatedly across species and produce systematic risks:

- *"Mandatory" reporting that is not enforced/penalized:* For black bears, WDFW reports that hunter online reporting is only about 56% and that mandatory tooth submission is under 25%, yet the Plan only promises to work to improve compliance and to assess mandatory inspection feasibility without setting numeric targets, timelines, or enforceable steps. This leaves the age/sex data and wounding-loss inputs that feed reconstruction models consistently incomplete, yet the Plan does not discuss these data limitations, their bias, or their implications for protecting the health of the bear population.

- *Release programs mask wild population trends:* Pheasant management is a clear example of how program design can mask wild population status. The 2024 Status & Trend report shows that 40,290 pheasants were released in western Washington in 2023 and that harvest estimates explicitly include both released and wild birds. Because released and wild birds are not separated in reporting, harvest-based indices can give a false impression of stability while wild-grown populations may be declining.

- *Survey and survey-method changes with no re-baselining rules:* Survey methods have changed in ways that make time-series comparisons ambiguous (e.g., 2022 online survey redesign, suspension of some surveys). The Plan notes the new data are more accurate but also that they are not directly comparable to older series. The Plan does not publish a re-baselining method or correction factors, leaving the public uncertain about how to interpret increases or declines across the recent change point. Other species demonstrate the same pattern of fragile inference. Trapper reporting rates for furbearers averaged about 51% for the last decade and the Program recently changed reporting modes — allegedly improving completeness but making new and old series non-comparable unless corrective methods are applied.

- *No clear thresholds for when data are "good enough" to act:* The Plan does not publish minimum reporting rates, minimum sample sizes, or precision (confidence) criteria that define when an index is fit for regulatory use, for any species. Several chapters strive to expand hunting or releases without providing any information on the data and quality thresholds needed to justify those actions (e.g., small game/furbearer and resident game birds).

- *No transparent methods for accounting unreported/removal mortality:* The Plan notes tribal hunting, and industrial conflict kills, wounding loss, and other human-caused mortality, but does not require integrated consideration of that data, nor does it require conservative corrections where such data is inexistent or underreported. This may severely underestimate total human-caused mortality used to set "harvest" levels, potentially potting populations at risk of overexploitation.

- *No automatic conservative rules when data are weak:* There is no explicit rule, for any species, that reduces allowable take or pauses actions when monitoring quality falls below acceptable

levels (for example: "if mandatory reporting < X% or confidence intervals exceed Y, then reduce quotas by Z% or close the unit until data improve"). Without such rules, hunting and trapping proceeds even when evidence is poor, as is the case with many furbearer and resident game bird species, many of which lack any "bag" limits.

If total human-caused mortality is underestimated because removals are missing, unreported, or uncorrected, quotas and other lethal actions authorized by the Department will be set on an incomplete, underestimated mortality accounting. That is especially dangerous in small, isolated, or disease-vulnerable populations where even a few additional removals can erode recruitment, reduce effective population size (Ne), and compromise genetic health. The peer-reviewed literature confirms the concerns: harvest indices and voluntary reports can be informative only when their biases are measured and corrected, and models relying on incomplete inputs produce unreliable outcomes. In practice, therefore, weak monitoring plus incomplete mortality accounting converts scientific uncertainty into predictable population harm.

These facts are important because the peer-reviewed literature is clear about the limits and risks of the very indices the Plan relies on. Studies show that hunter reporting rates vary over time and place and that assuming they are constant introduces bias;[14] volunteer or self-selected surveys are prone to selection bias;[15] harvest indices can be useful but only if validated against independent data and corrected when methods change or when releases affect supply; and age/sex-selective "harvest" alters how well harvest counts reflect true abundance.[16] In short: "harvest" data and voluntary reports can be informative, but only when their limits are measured, corrected, and used within transparent rules.

Below, we list more cross-species examples showing the problem is systemic:

- *Black bear:* Tribal hunting is acknowledged but excluded from some totals; online reporting is low; tooth submissions are low; and no enforceable correction or conservative adjustment is provided, undermining bear population reconstructions and quota setting.

- *Mountain goats*: The chapter relies on coarse, irregular surveys yet proposes harvest rules that require accurate age/sex data and continuous monitoring to be defensible. Small errors in estimating adult-female mortality can have large demographic effects, survey methods (and associated disturbance) can bias detection, and survival/detectability vary with weather, so the Plan needs minimum precision standards, standardized/re-baselined survey methods, and automatic corrective actions when data quality (or climate-linked conditions) change.[17]

- *Bighorn sheep:* The Plan discusses removals, disease risk, and unquantified contact with domestic sheep, but does not integrate into herd-level mortality accounting/forecasting, or paired with operational and precautionary outbreak/prevention triggers.

- *Cougar:* Counting rules have changed (e.g., count all human-caused, independent-aged mortality toward quotas), but operational procedures to reconcile external removals (tribal, industrial, agency) with closures and real-time caps are absent.

- *Furbearers / small game (bobcat, river otter, beaver):* The Plan lacks demographic data for population, trapper reporting rates are low (~51%, 2013-2022), many species are trapped or taken

without "bag" limits, and the Plan lacks spatially explicit accounting to prevent local overexploitation.

- *Moose, elk, pronghorn:* Several chapters lack unit-level harvest thresholds and do not integrate non-hunt removals or set outbreak/removal triggers that would prevent incremental over-mortality.

- *Deer:* The Status & Trends data (Fig. 1, p.3) show approximately a one-third reduction in the statewide number of deer killed over the last decade, with 13 of 18 deer populations showing declines; a pattern that could reflect true population loss, reduced hunter effort/reporting, or both. The Department has not empirically tested those hypotheses or re-baselined its indices, so the cause of the decline is ambiguous and decisions based on these data lack the transparency and accountability required for reliable management.

When data are weak or biased, the Department must act conservatively: reduce quotas, close hunting units, protect sensitive age/sex classes, suspend releases, or pause translocations until monitoring and evidence meet clear standards. The Plan contains no consistent, automatic rule that says when such conservative measures must be implemented. That failure undermines the Department's duty to preserve, protect, perpetuate, and manage hunted and trapped wildlife, because it cannot show that its decisions will be based on reliable evidence or that it will act as a cautious trustee when the evidence is weak or nonexistent. For the Department to meet its statutory and public-trust responsibilities, the Plan must convert data collection and monitoring into a decision-quality system with published standards, enforceable compliance, transparent corrections for confounding factors, and automatic precautionary actions when data are insufficient or low-quality.

3. **Disease surveillance and outbreak response.**

The Plan repeatedly acknowledges that disease (especially respiratory disease in bighorn sheep and other pathogens in small, isolated populations) is one of the gravest short-term risks to long-term population persistence. Yet the Plan stops at general statements of intent and does not provide the operational, step-by-step protocols managers need to prevent, detect, and respond to outbreaks. It does not explain what specific evidence will trigger which immediate management actions, who has authority to act, or how actions will be financed and implemented in the field.

Diseases can kill many animals quickly and permanently alter population trajectories. For species with small herd sizes or isolated groups (e.g., bighorn sheep, some mountain goat herds), a single outbreak can erase years of stability or growth, and reduce genetic viability. Managers must therefore have clear, pre-defined decision thresholds and response plans, so that they can act swiftly when early warning signs appear, because delay may mean the difference between a contained incident and long-term collapse.

How this deficiency appears in the documents:

- *Bighorn sheep*: The chapter recognizes that keeping bighorn herds separate from domestic sheep and removing chronic carriers are the most effective prevention tools, but it provides no operational buffer distances (e.g., minimum separation from domestic grazing), no defined quarantine or testing protocol for translocations, and no explicit outbreak decision tree describing

who stops hunts or translocations and on what evidence. The text emphasizes prevention, but leaves response and triggers unspecified. Nor does the plan identify or require use of available, tested decision-support tools that estimate the probability and rate of contact between wild bighorn herds and domestic sheep—information that directly maps to disease transmission risk and hence to concrete prevention actions.[18]

- *Mountain goats:* The chapter mentions disease risks in passing, but offers no standard surveillance sample sizes, no timetable for routine testing, and no criteria that would immediately suspend hunts or translocations when risk, prevalence, or transmission exceed defined values.[19]

If managers rely on discretionary, ad-hoc responses rather than a documented surveillance and outbreak plan, the Department won't respond, coordinate with landowners, or effectively take advantage of opportunities to prevent spread (movement restrictions, grazing adjustments, emergency closures). For bighorn sheep, that can mean a single, avoidable contact event with domestic sheep leading to a respiratory epizootic that extirpates an entire herd.

Disease can rapidly undo conservation gains. The Department's duty to preserve and protect wildlife requires pre-defined prevention and response measures that are clear, enforceable, and resourced. Without them, the Department cannot show the Plan will prevent impairment of vulnerable herds or meet its public-trust responsibilities.

4. <u>Genetics and connectivity.</u>

The Plan acknowledges population counts in many places, but it pays far less attention to genetic health, connectivity between groups, and effective population size (Ne)—the number of breeding individuals that actually determine a population's capacity to survive, adapt, and recover. Census counts (i.e., the number of animals observed) can be misleading: a group with a reasonable total count can still have too few breeders, poor genetic diversity, or be isolated from other groups in ways that make it vulnerable to inbreeding, disease, or environmental change. The Plan does not require the genetic checks, connectivity analyses, or Ne-based safeguards that managers need to avoid causing long-term harm when allowing hunting/trapping, other human-caused mortality, or translocations.

Genetics and connectivity are central to whether a local population can persist. Small, isolated groups can lose genetic diversity, suffer inbreeding, and be less able to recover from disease, fire, or climate shocks. Removing a few adults from such groups can have outsized, long-term impacts. The Department's mandate to "preserve, protect, perpetuate, and manage" wildlife requires that any decisions explicitly consider genetic health and connectivity, not just raw counts. Two examples illustrate how this deficiency impacts the Plan:

- *Mountain goats:* Populations are often composed of small, isolated groups. The Plan refers to census thresholds (e.g., N≥100 guidance used for permitting), but it does not require effective-population (Ne) analyses or connectivity checks before opening special hunts or authorizing translocations. That omission risks allowing take in herds that cannot withstand even small additional mortality.[20]

- *Bighorn sheep:* Herds are similarly fragmented, and their long-term viability is threatened by disease and isolation. The Plan does not set operational genetic criteria (minimum Ne, measures of gene flow) or require genetic compatibility testing for translocations, leaving genetic risks unaddressed.

Overall, the Plan lacks clear, practical rules for genetic risk. For any small or isolated herd, the Department should require an estimate of effective population size (Ne), current measures of genetic diversity, and evidence of whether the group exchanges breeders with neighbors—because Ne, not just surveys, determines genetic health. The Plan should adopt reasonable precautionary targets (for example, short-term Ne≥100 and long term Ne≥1000, as suggested by Frankham et al. (2014)) and apply conservative protections (reduced quotas, moratoria, or female protections) whenever genetic risk is suspected and while sampling and analysis are completed.[21] Finally, harvests and translocations must be conditioned on up-to-date genetic and connectivity data. If those data are not available, automatic conservative limits should apply until assessments show the action will not impair population health.

Counting animals is not the same as conserving them. The Department must manage for long-term viability, which requires protecting genetic diversity and maintaining connectivity. Without operational genetic safeguards, the GMP permits decisions that could irreversibly reduce evolutionary potential, increase disease vulnerability, and make recovery much harder. Explicit, enforceable genetics and connectivity rules are therefore essential for the Plan to meet WDFW's duty to preserve and perpetuate wildlife.

5. Habitat and climate.

The Plan repeatedly recognizes that current habitat condition and climate change shape the future of Washington's wildlife, but it stops short of turning that recognition into operational policy. It describes the need to consider habitat and climate trends, but it does not specify which habitat indicators will be tracked, how often they will be measured, how suitable habitat will be mapped or quantified, or how changes in habitat quantity/quality or climate would alter hunting/trapping, release, or restoration decisions. In short, the Plan treats habitat and climate as background context rather than as binding management inputs: without mapped carrying-capacity estimates, measurable habitat indicators, explicit habitat connectivity tests, and climate-triggered decision rules, the Department cannot reliably ensure that hunting/trapping and other interventions will not impair populations as conditions change.

Managing hunted and trapped wildlife is not just about counting animals; it's about sustaining the places and processes those animals need to thrive. If habitat condition, quantity, or connectivity is changing, or if climate is shifting when and where habitat is usable, then "harvest" and other direct-use decisions must be made with those realities explicitly considered. A plan that lists habitat goals but gives no measurable habitat indicators, no mapping of suitable habitat vs. population distribution, no estimate of changing carrying capacity, no timeline for habitat monitoring, and no rule that links habitat trend thresholds to management (for example: reduce hunting/trapping, suspend releases due to unsuitable habitat, or prioritize restoration) cannot show it will "preserve, protect, perpetuate, and manage" wildlife as required.

Below are species-specific examples showing this gap in the Plan:

- *Harlequin duck/sea ducks*: The 2024 Status & Trends report documents that harlequin ducks have been closed to harvest because the harvest rate exceeded the species' 5% threshold under the Department's Sea Duck Harvest Strategy. That closure shows the Department can and does use population indices to take action when thresholds are breached. But the Plan does not explain how habitat trends (shoreline condition, prey availability, disturbance) will be measured or used to prevent further declines or to prioritize habitat work where it matters.

- *Mountain goats*: Mountain-goat chapters acknowledge life-history limits (late maturity, low reproductive rate) and note habitat threats (alpine meadow loss, conifer encroachment), but they do not supply mapped estimates of suitable habitat per herd, carrying-capacity calculations, or climate-linked trigger rules (e.g., what winter severity, forage loss, or snowline shift would reduce allowable take). The Status & Trends report does include operational harvest rules for some goat units (e.g., an initial estimated population ≥100 to allow harvest and design targets such as ≤4% adult removal), showing some quantitative practice exists, but those operational rules are not incorporated into the Plan as habitat- or climate-conditioned decision rules, and genetic/connectivity considerations and habitat-capacity tests are absent from the chapter. That disconnect is dangerous for small, isolated herds that may already be near effective-population-size or connectivity thresholds.[22]

- *Moose*: The chapter on moose do not contain numeric population objectives or action triggers; while habitat capacity and climate change are recognized as risks, but are not operationalized. Without habitat/capacity/climate analysis, hunting or other human-caused mortality risks impairing small or localized populations.

- *Elk*: The chapters on elk acknowledge habitat loss and climate impacts, but the Plan does not provide any quantitative threat assessments, mapping, or adaptive harvest/habitat rules.

- *Mule deer and Columbian black-tailed deer:* Chapters on deer note habitat fragmentation and climate challenges but provide no spatial analyses, habitat-trend metrics, or adaptive hunting rules tied to habitat condition or climate vulnerability.

- *Bighorn sheep:* The Plan states prevention of domestic contact is critical, yet there are no buffer-zone distances, grazing/seasonal closure protocols, or habitat-based triggers to reduce overlap. That omission leaves habitat-use and grazing-policy questions unanswered where disease and habitat overlap are the greatest risks.

- *Waterfowl* (broadly)*:* The Department collects breeding and winter indices (Status & Trends) but the Plan fails to define which habitat indicators (wetland acres, water availability, functional wetland indices) will be monitored, what trend thresholds trigger habitat actions, or how outputs will be translated into habitat planning.

If habitat loss/degradation or climate change is driving present or future declines, continuing to authorize hunting/trapping will only compound those declines instead of addressing their root causes. Small or isolated populations (e.g., many mountain-goat groups, some bighorn herds, and some moose or elk subunits), are particularly vulnerable to the combined effects of habitat loss and added human-caused

mortality; without mapped habitat capacity and connectivity checks, the Department cannot reliably conclude more hunting is sustainable in the long-term. And because climate change is shifting where and when habitat is suitable, a plan that fails to tie climate indicators to hunting/trapping or restoration triggers invites management surprises (sudden winter die-offs, range shifts, or rapid recruitment failures) that the Plan is not equipped to prevent or respond to.

6. <u>Consideration of Impacts.</u>

The Plan treats population abundance and broad distribution as the primary, and often the only, measures of species' health. But real conservation and responsible wildlife protection demand a broader perspective. It is well-evidenced that killing, trapping, translocations, and releases can negatively impact animals' well-being (exposure/injury when trapped, orphaned young), social structure and behavior (loss of experienced adults, intraspecific strife), ecological dynamics and ecosystem function (predator-prey dynamics, bear movement patterns, beaver hydrology, nutrient/seed flows), and human–wildlife relationships (conflict reduction, wildlife viewing), even when headcounts or harvest indices appear stable. The Plan rarely acknowledges these other impacts,[23] and therefore lacks any process for how WDFW will measure, manage, and limit them. That narrow focus matters: many of the Plan's regulatory choices (quotas, season openings, releases, or translocations) can have large local impacts and should be justified not only by raw counts but by evidence that the actions will not compromise genetic health, social stability, ecosystem processes, or coexistence with people.

This is a substantive deficiency for a number of reasons:

- Biological and social effects beyond abundance can drive long-term population viability, social structure, and overall population health; e.g., loss of experienced adults can reduce juvenile survival, change movement patterns; removing established males or social leaders can increase conflict. The Plan does not require managers to assess or avoid such outcomes before permitting hunting/trapping.

- Small, isolated, or demographically fragile populations (mountain goats, some bighorn herds, certain moose or goat subunits) are especially vulnerable to genetic erosion, Allee effects, and social disruption; the Plan does not adopt operational tests or buffers for those risks.

- Ecological roles and indirect effects (e.g., predators' role in distributing prey and shaping vegetation/herbivore behavior; beavers' role in hydrology) are mostly absent from the Plan's impact analysis, so management can unintentionally damage habitat and species that depend on hunted/trapped species, such as beavers (as ecosystem engineers) or showshoe hares (as prey).

- Social/ethical impacts (orphaned young, loss of viewing experiences, conflicts between hunters and non-hunters, increased human-wildlife conflict) are noted but not operationalized; no indicators, no triggers, and no decision framework for balancing uses.

Below are some examples of species for which the Department fails to consider impacts beyond abundance, and what is missing for each:

- *Mountain goats:* The chapter on mountain goats lacks consideration of the genetic/effective-population (Ne) ; social/demographic vulnerability (small herd Allee effects); herd-specific imapcts and precaution for very small counts (examples where hunts occur at ~100 adult individuals, despite Ne concerns). These omissions may create substantial risk for small, isolated goat groups.[24]

- *Bighorn sheep:* This chapter lacks explicit prevention protocols and operational disease-response rules (separation from domestic sheep, outbreak triggers, depopulation/partial removal criteria), genetic connectivity/Ne assessments, and evaluation of how permit allocation (e.g., removing older males) affects genetic and cultural transmission. Because bighorn are disease-vulnerable and small, failing to assess these factors is a critical gap.

- *Cougars/black bears:* These chapters lack any assessment of impacts on social structure, welfare, behavior, ecological role, and human-wildlife interactions for both cougars[25] and bears[26] plus operational methods to weigh hunting against such non-consumptive values. The Plan mentions some topics but does not translate them into mitigation or decision rules.

- *Bobcats and river otters:* The discussions of these species lacks demographic/vital-rate data, population objectives, or measures of impacts beyond harvest (e.g., effects on predator–prey balances, trap bycatch, welfare), yet these species are hunted/trapped. The Plan lists them but provides no triggers or thresholds tied to their ecological roles.

- *Beavers:* The evaluation of beavers[27] and badgers[28] lacks protective buffer rules where beaver restoration or their ecosystem services are a priority, and an assessment of how trapping affects landscape/ecological processes. These are obvious examples where impacts beyond abundance (e.g., diverse habitat and water quality) are central, given the number of ecological processes and species that benefit.

- *Small game / furbearers (general):* This chapter fails to explore demographic/vital rates and distributional "harvest" data; many small game/furbearers lack "bag" limits and rely on low/comparable reporting. Therefore, the Plan does not assess whether hunting/trapping harms predator-prey dynamics, keystone functions, or local populations (e.g., beavers, river otters, badgers, bobcats snowshoe hares).

- *Pheasant release programs:* The Plan lacks any environmental assessment of release impacts (predator responses, disease transmission, altered predator behavior, impacts on native birds, or animal welfare considerations). Those omissions may hide substantial welfare and ecosystem effects, especially in eastern Washington, where the Department acknowledges habitat is unsuitable.

- *Harlequin ducks (and other climate-vulnerable waterfowl):* The waterfowl discussion ignores explicit habitat capacity and climate-sensitivity integration; link between habitat trends and harvest triggers, especially for species vulnerable to changing sea/coastal environments.

- *Moose, elk, pronghorn, and other ungulates:* Across ungulate chapters, the Plan repeatedly leaves out the numeric objectives, genetic/connectivity checks, outbreak response rules, and data-quality

thresholds needed to distinguish true population change from monitoring noise. For small or isolated populations (mountain goats, many bighorn herds, some moose subunits, pronghorn), those omissions make any claim that hunting will be "sustainable" speculative, because managers lack the operational triggers and precautionary buffers to prevent impairment.

Because the Plan does not identify these non-abundance impacts, it cannot show that its proposed actions will "preserve, protect, perpetuate, and manage" wildlife across the state. For most species, the Department lacks the information and rules needed to avoid or reduce harms that aren't captured by crude headcounts. That narrow scope also prevents meaningful public review: the public cannot judge whether the Plan's actions will have unacceptable ecological or social consequences if those consequences are not described or measured.

7. <u>Misuse of adaptive management.</u>

Adaptive management is mentioned repeatedly in the Plan, but it is treated as a buzzword rather than a practical framework to guide policy. The Plan discusses "adaptive" approaches, learning, and future adjustments, yet it fails to provide a simple, operational, and decision-making structure that translates those words into predictable, enforceable outcomes. The Plan should include a compact, unambiguous process that ties monitoring to decision and action: who watches what, what numeric or observable signal triggers action, what exact action follows, timeline for implementation, and how the agency evaluates whether that action worked.

Adaptive management without structure is not just ineffective; it is dangerous. If monitoring only informs a discretionary conversation instead of providing metrics for when to act and automatically or predictably triggering protective actions when the Department detects a risk, then the Plan leaves populations exposed until someone decides whether the data requires action and whether to take it, and that delay can be costly or irreversible. For species with fast dynamics or small, isolated herds (e.g., mountain goats, bighorn sheep), the difference between automatic precaution and a delayed discretionary response can be population collapse. The Plan currently uses adaptive language throughout its chapters, but does not show the monitor→trigger→action→evaluate loop in practice.

Concrete examples that show the current gap:

- The Plan refers to adaptive management across chapters but by and large[29] provides no worked examples of an actual trigger and action, its timeline, and who will rapidly implement them. That creates ambiguity about whether a weak or lagging response is acceptable.

- For species with disease risk (bighorn sheep) or small subpopulation concerns (mountain goats), the Plan notes monitoring and potential interventions, but does not pair precise thresholds (e.g., of demographic parameters or population declines) with guaranteed responses, so identification of a problem does not automatically produce a protective intervention.

To add to the lack of structure, the Plan's monitoring deficiencies identified above[30] are not separate from adaptive management, but central to it. Adaptive systems require reliable, timely, and interpretable data. As discussed above, the Plan instead often relies on confounded, low-quality, or incomplete data inputs

(harvest indices, low mandatory reporting/submission rates, irregular survey designs, and incomplete accounting of mortality) without minimum precision standards, re-baselining procedures, or enforcement mechanisms. As a result:

- *Triggers become unreliable:* The Plans thresholds tied to abundance, trend, or mortality cannot be assessed with confidence with low-quality or incomplete data (such as "harvest" indices), low reporting rates (as with bear tooth submissions), or when release programs inflate "harvest" numbers.

- *Response timing is uncertain:* Without pre-determined metrics, authorities, timelines, and rapid surveillance capacity, the Department cannot guarantee the rapid actions adaptive management requires (e.g., rapid outbreak responses or immediate "harvest" suspensions).

- *Actions may be misdirected:* Models and quota formulas run on weak data risk permitting harmful human-caused mortality and an increased hazard of disease transmission.

These monitoring weaknesses demonstrate why simply invoking adaptive management without hard commitments on data quality, trigger definitions, and timelines cannot preclude impairment of wildlife populations.

Adaptive management should be based on robust data, shorten the time between detection and protection, and make decisions predictable and auditable. Right now, the Plan promises the agency will learn and adapt, but without establishing why or when it will act, describing a process, or facilitating a structure to evaluate whether this learning will take place. That is not sufficient to meet WDFW's duty to preserve and protect wildlife. A concise adaptive framework with clear triggers, authority, timelines, and reporting would turn "adaptation" from a buzzword into a transparent, accountable tool that actually prevents impairment.

8. <u>Reliance on unproven models.</u>

The Plan and supporting documents repeatedly rely on quantitative models (population reconstructions, integrated population models, intrinsic-growth functions) to set "harvest" guidance, quotas, and unit rule, but the Plan generally fails to publish model descriptions, data inputs, parameter values, code, diagnostic outputs, uncertainty bounds, sensitivity analyses, or records of independent peer review. The Plan alludes to models frequently, but provides few citations or technical summaries that would permit independent evaluation; in practice, the public is asked to trust the Department rather than to review model evidence.

Below are specific examples from the Plan:

- *Frequent references to "models" without documentation*: The Plan uses the term "model" (or related forms) 26 times on 17 pages, yet references are provided in only three of those cases. This leaves reviewers unable to judge whether the models are peer-reviewed, appropriate to the management unit, or robust to realistic alternative assumptions. That pattern (frequent invocation of models without accessible documentation) converts models from reproducible science into unverified expert opinion and effectively asks the public to accept management conclusions without evidence of model validity, predictive performance, or suitability for local decision-

making. This is not technical quibbling: it is a fundamental transparency failure that affects the Plan and many modeled decisions the Plan relies upon.

- *Quota guidance without sensitivity tests:* The Plan cites "harvest"-guidance percentages and female-based rules for several species (e.g., cougar guidance and female intrinsic-growth approaches) without publishing sensitivity analyses that demonstrate how recommended "harvest" changes if reporting completeness, unaccounted removals, or sightability corrections differ from assumed values. That omission hides whether quotas are conservative or overly optimistic under plausible error.

- *Connectivity and unit-level delineations not operationalized:* The Plan reports that unit delineations and quota rules (e.g., for bears and cougars) were informed by genetics, terrain, and connectivity, but it fails to publish and explain the connectivity metrics, genetic-distance thresholds, or the numeric rules that translate those products into harvest constraints. Status & Trends contains some of the technical work, but the Plan does not provide the reproducible crosswalk that shows how research was converted into management rules, and how conflicting considerations (e.g., risk of population decline given uncertainty vs. recreational opportunity) were weighed in the process.

Models are the bridge from science to management. If model inputs, assumptions, and uncertainty are hidden, then quotas, closures, translocations, and other irreversible actions rest on a black box of discretion. Hidden or undocumented models enable fragile assumptions (for example, assumed reporting rates, static and generalized wounding-loss values, or assumed connectivity thresholds) to drive decisions without revealing how outcomes change when those assumptions are altered. That lack of transparency prevents independent verification, precludes meaningful peer review, undermines public trust, and frustrates WDFW's duty as trustee to manage wildlife openly and accountably.

9. <u>Integration with agency science and risk assessment.</u>

The Plan cites other WDFW's plans and reports (State Wildlife Action Plan, Status & Trends reports, disease guidance, and other technical analyses) but fails to convert those authoritative documents into an auditable, unit-level risk framework that ties (un)identified threats (disease, habitat loss, genetic isolation, unaccounted mortality, climate vulnerability) to mandatory management responses (e.g., immediate closures, moratoria, conservative quota reductions, enhanced monitoring, or suspension of translocations/releases). In practice, the Plan references other agency documents without showing how those plans and science contribute to a holistic risk assessment and impact "harvest" rules.

If science and conservation plans are not hardwired to management rules, the Department can treat conservation priorities as advisory rather than binding. That allows dangerous delays (or inaction) when time-critical responses are needed (disease outbreaks, abrupt habitat loss, sudden declines). It also deprives stakeholders and reviewers of an auditable trail showing which science drove each management decision and why. For species and units with small populations, high disease vulnerability, or limited habitat (mountain goats, bighorn, some ungulate subunits), this governance failure creates a real risk of population impairment.

Concrete examples illustrating the deficiency:

- *SWAP and Status & Trends cited but not operationalized:* The Plan repeatedly references these documents but does not publish a mechanism or process that (a) identifies which SWAP priorities and Status & Trends findings apply to each species or management unit and (b) shows how that science alters permit/quota defaults (e.g., when SWAP identifies a species/unit as priority for conservation, "harvest" increases should be prohibited).

- *BBMU / CDAU crosswalk missing:* Unit delineations (e.g., BBMUs, CDAUs) are said to be informed by habitat, genetics, and connectivity, but the Plan does not publish the operative crosswalk or the numeric rules that convert habitat capacity, Ne/connectivity, or disease risk into allowable "harvest" or closure thresholds. Without that link, the path from science → rule → action is not traceable.

- *Disease monitoring not tied to mandatory action:* Status and Trends reports document disease testing and surveillance (e.g., Movi testing for bighorns), yet the Plan lacks epidemiological thresholds (prevalence or transmission levels) that would trigger automatic responses, such as "harvest" or translocation suspension, or temporary closures. The Plan therefore fails to make disease science operational.

- *No unit-level risk matrices or if→then rules:* The Plan does not require per-unit risk assessments that combine likelihood and consequence of threats (disease, habitat loss/degradation, genetic isolation, human-caused mortality) into a published risk tier tied to mandatory responses (e.g., high risk → lower quotas or moratorium). This absence appears across ungulate, carnivore, and furbearer chapters.

WDFW's SWAP, Status and Trends reports, and related science identify where and why species and habitats are at risk. A credible Plan must be the operational instrument that integrates those scientific findings and converts them into clear, enforceable actions at the scale where impacts occur. Without their formal integration into "harvest" decision-making, managers retain unbounded discretion to consider science while continuing discretionary actions that may impair populations. That gap undermines the Department's duty to manage wildlife as a public trust and precludes a transparent record any independent reviewer could use to evaluate whether the agency will avoid or minimize harm.

10. <u>Enforcement and compliance mechanisms.</u>

The Plan repeatedly labels key monitoring actions as "mandatory" (hunter reporting, tooth/jaw submission, harvest sealing) and notes enforcement responsibilities, but it contains no operational enforcement program: no WDFW Wildlife Enforcement Program (WEP) summary (staffing/coverage), no strategic enforcement plan or performance benchmarks, no clear penalties or prosecution metrics, no routine public reporting of enforcement outcomes, and no concrete inspection or penalty protocols to make "mandatory" measures effective. The Plan also lacks incentives, outreach, and education measures designed to improve voluntary compliance.

Data sources that underpin "harvest" limits and population reconstructions ("harvest" reports, tooth-age samples, trapper seals) can only be relied upon if compliance is credible. "Mandatory" rules without enforcement are essentially voluntary; this undermines the reliability of age/sex and "harvest" data, prevents accurate mortality accounting, and allows managers to set quotas on an incomplete record. For small, disease-vulnerable, or isolated populations, this directly increases the likelihood that liberal quotas will be based on undercounted human-caused mortality or biased indices. The public trust duty and the Plan's stated reliance on monitoring require that mandatory reporting be enforceable, auditable, and backed by strict and measurable penalties for the illegal use of the public trust.

Concrete examples of lack of compliance or enforcement mechanisms:

- *Low compliance with "mandatory" reporting and no enforcement pathway:* The Plan notes online black bear hunter reporting rates of ~56% and mandatory tooth submission rates below 25%, yet it only promises to "work to improve" reporting and to "assess" inspection feasibility without numeric targets, timelines, inspection protocols, or penalties for noncompliance. Given the Plan's reliance on already low-quality harvest indices for most species, that kind of data gap leaves crucial age/sex data and wounding-loss estimates systematically incomplete.

- *No clear penalties, deterrents, or prosecution metrics:* The Plan does not state what sanctions apply for failing to report or submit samples, how often penalties are applied, or the Department's prosecution success rates—all necessary to assess to what extent "mandatory" rules deter noncompliance, and how to improve them.

- *No public reporting of enforcement outcomes:* There is no commitment to publish annual enforcement metrics (inspections conducted, citations issued, convictions, fines collected, repeat-offender statistics), which prevents the public from auditing whether enforcement is effective or equitable.

- *Insufficient incentives, outreach, and education to improve compliance:* The Plan mentions outreach but contains no concrete programs (incentives for timely reporting, targeted outreach to under-reporting groups, mandatory education/compliance tied to licensing) that could raise voluntary compliance to usable levels.

When enforcement is weak or opaque, modeled population reconstructions and quota decisions will be based on biased or incomplete inputs (underreported "harvests", missing age/sex structure data, unknown wounding loss). That systemic undercounting can result in liberal quotas in units with unquantified human-caused mortality, pushing vulnerable populations toward impairment. A wildlife plan that relies on monitoring and compliance must also document how the monitoring is enforced and validated; otherwise, the informational foundation of the Plan is incomplete and unreliable.

IV. Conclusion

The Plan utterly fails the Department's core duty to preserve, protect, and perpetuate Washington's wildlife. At its root, the Plan lacks a transparent, accountable explanation of management objectives/priorities and whose values guide decisions. That institutional opacity manifests in the Plan as

the Department's effective privileging of hunters and trappers over the public trust, and produces or contributes to every other deficiency in the document. The Plan authorizes irreversible actions ("harvest", translocations, large-scale releases, and program expansions) without decision-quality data, unit-level triggers, disease and genetic safeguards, habitat- and climate-informed limits, transparent models, or enforceable compliance mechanisms, all for the sake of providing hunting/trapping opportunity. These are not mere technical omissions; they are an abdication of the Department's statutory and public-trust responsibilities. Alarmingly, the Plan contains no enforceable accountability framework—no timelines, measurable performance metrics, independent audits, or regular public reporting that would allow the public to verify compliance or hold the Department to account. Without clear, binding accountability mechanisms, the Department retains unfettered discretion to continue practices that imperil wildlife.

The Department is permitting the real possibility of harm through local extirpations, loss of genetic diversity, cascading declines in ecosystem function, increased human–wildlife conflict, and the permanent loss of wild lives that many Washingtonians (certainly more than the 2% of hunters/trappers) consider part of their social community and have an interest in protecting. This Plan, as drafted, shifts irrecoverable risk onto wildlife, the broad public, and future generations, and cannot stand.

Sincerely,

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Washington Wildlife First

ENDNOTES

[1] Washington Dep't of Fish and Wildlife (2020). 25-Year Strategic Plan (2020-2045), A Path to an Improved Era for Fish, Wildlife, and People, *Washington Department of Fish and Wildlife*, Olympia, WA.

[2] Washington Dep't of Fish and Wildlife (2013). The Department's Conservation Initiative and Guiding Principles, *Washington Department of Fish and Wildlife*, Olympia, WA.

[3] *See, e.g.,* Treves, A., Chapron, G., López-Bao, J. V, Shoemaker, C., Goeckner, A. R., & Bruskotter, J. T. (2015). Predators and the public trust. *Biological Reviews,* 92(1), 248–270.

[4] Van Deynze, B. (2024). Fishing, Hunting, and Wildlife-Associated Recreation in Washington: Participation and Expenditures in 2022. *Washington Department of Fish and Wildlife*, Olympia, WA.

[5] The 2% figure includes licenses held by out-of-state residents. *See* U.S. Fish & Wildlife Service and Wildlife & Sport Fish Restoration (2005). Hunting Licenses, Holders, and Costs by Apportionment Year (Washington), Table A, License Holders and Related Costs 1959-2025, available at: https://us-east-1.quicksight.aws.amazon.com/sn/accounts/329180516311/dashboards/48b2aa9c-43a9-4ea6-887e-5465bd70140b?directory_alias=tracs-quicksight.

[6] *See* Manfredo, M. J., Teel, T. L., Berl, R. E. W., Bruskotter, J. T., & Kitayama, S. (2021). Social value shift in favour of biodiversity conservation in the United States. *Nature Sustainability*, 4(4), 323–330; and, Manfredo, M. J., Sullivan, L., Don Carlos, A. W., Dietsch, A. M., Teel, T. L., Bright, A. D., & Bruskotter, J. (2018). America's Wildlife Values: The Social Context of Wildlife Management in the U.S. National Report from research project entitled "America's Wildlife Values". Fort Collins, CO: *Colorado State University, Department of Human Dimensions of Natural Resources*.

[7] *See* Karns, G. R., Heeren, A., Toman, E. L., Wilson, R. S., Szarek, H. K., & Bruskotter, J. T. (2018). Should Grizzly Bears Be Hunted or Protected? Social and Organizational Affiliations Influence Scientific Judgments. *Canadian Wildlife Biology & Management*, 7(1), 18–30, for empirical evidence of agency affiliation driving grizzly bear listing recommendations (agency experts were 7.3 times more likely to recommend delisting grizzlies).

[8] *See* Schrader-Frechette, K. S., and McCoy, E. D. (1994). How the tail wags the dog: how value judgments determine ecological science. *Environmental Values* 3, 107–120; and, Lynn, W. S. (2006). Between science and ethics: what science and the scientific method can and cannot contribute to conservation and sustainability. In *Gaining Ground: In Pursuit of Ecological Sustainability*, ed D. Lavigne (Limerick: University of Limerick), 191–205.

[9] Hall, M. (2025). Commission: Who is the Public? Submitted as a comment to the draft Plan.

[10] *See also* comments on the bighorn sheep chapter submitted by Patrick Kelly (Western Watersheds Project).

[11] *See* Appendix A for a comprehensive review of the deficiencies identified in that chapter and related scientific literature.

[12] *See* Treves, A., Paquet, P. C., Artelle, K. A., Cornman, A. M., Krofel, M., & Darimont, C. T. (2021). Transparency About Values and Assertions of Fact in Natural Resource Management. *Frontiers in Conservation Science*, 2(May).

[13] *See* Treves et al. (2021).

[14] *See* Rosenberry, C. S., Diefenbach, D. R., & Wallingford, B. D. (2004). Reporting-Rate Variability and Precision of White-Tailed Deer Harvest Estimates in Pennsylvania. *Journal of Wildlife Management*, 68(4), 860–869.

[15] *See* Aubry, P., Guillemain, M., & Sorrenti, M. (2020). Increasing the trust in hunting bag statistics: why random selection of hunters is so important. *Ecological Indicators*, 117(October 2019), 106522.

[16] Rosenberry et al. (2004) noted that reported harvests were poor predictors of actual antlered deer harvests. Leclerc, M., Van De Walle, J., Zedrosser, A., Swenson, J. E., & Pelletier, F. (2016). Can hunting data be used to estimate unbiased population parameters? A case study on brown bears. *Biology Letters*, 12(6), 10–13, found that hunting records underestimated declines in bear mass. Ranta, E., Lindström, J., Lindén, H. and Helle, P. (2008). How reliable are harvesting data for analyses of spatio-temporal population dynamics?. *Oikos*, 117: 1461-1468, found that "harvest" data for brown bears had higher variability (coefficient of variation 60–70%) than census data (coefficient of variation 30–50%) and often led to different conclusions about population dynamics. Popescu, V. D., Artelle, K. A., Pop, M. I., Manolache, S., & Rozylowicz, L. (2016). Assessing biological realism of wildlife population estimates in data-poor systems. *Journal of Applied Ecology*, 53(4), 1248–1259, documented biologically implausible population growth rates in management data, especially for high-revenue species, with reported growth rates exceeding published estimates in 32% of cases for brown bear, with the difference being positively correlated with hunting.

[17] *See* Appendix A for a deeper discussion of this chapter, along with scientific literature.

[18] For example, the U.S. Geological Survey's *Bighorn Sheep Risk of Contact Tool* (RoCT) (available at https://www.usgs.gov/data/bighorn-sheep-risk-contact-tool) is an operational GIS/modeling application used by land managers to combine telemetry, core-herd home ranges, habitat suitability, and active domestic allotments to estimate contact probability and contact rates and to simulate likely disease outcomes; see. The GMP contains no requirement to run equivalent analyses or to use those outputs as triggers for management actions such as grazing closures, translocation suspensions, or hunting moratoria.

[19] *See* Appendix A for a deeper discussion of this chapter, along with scientific literature.

[20] *See* Appendix A for a deeper discussion of this chapter, along with scientific literature.

[21] In small, isolated herds, disease impacts also magnify genetic risks associated with low effective size. Frankham, R., Bradshaw, C. J. A., & Brook, B. W. (2014). Genetics in conservation management: Revised recommendations for the 50/500 rules, Red List criteria and population viability analyses. *Biological Conservation, 170*, 56–63, show that populations with low effective populations (Ne) (Ne $\leq$ 100 over five generations; Ne $\leq$ 1000 in perpetuity) face elevated extinction risk from inbreeding and drift, making pre-agreed triggers and rapid responses essential safeguards rather than optional procedures.

[22] *See* Appendix A for a deeper discussion of this chapter, along with scientific literature.

[23] With some notable exceptions for well-researched species, such as bighorn sheep and cougars. However, even those species lack any concrete, transparent, and auditable integration of those concerns into management actions.

[24] *See* Appendix A for a deeper discussion of this chapter, along with scientific literature.

[25] On impacts on cougar social structure, welfare, and behavior, *see* Elbroch, L. M., & Quigley, H. (2012). Observations of wild cougar (Puma concolor) kittens with live prey: Implications for learning and survival. *The Canadian Field-Naturalist, 126*, 333–335, for evidence that orphaning removes critical learning support and lowers survival prospects because kittens learn hunting skills from mothers; Choate, D. M., Wolfe, M. L., & Robb, L. A. (2006). Evaluation of cougar population estimators in Utah. *Wildlife Society Bulletin, 34*(3), 782–799, also supports the point that orphaned kittens often die from exposure/malnutrition, underscoring welfare costs of both social disruption and killing females; Beausoleil, R. A., Koehler, G. M., Maletzke, B. T., Kertson, B. N., & Wielgus, R. B. (2013). Research to regulation: Cougar social behavior as a guide for management. *Wildlife Society Bulletin, 37*(3), 680–688 supports that high-human caused mortality disrupts social stability, elevating risks like infanticide and conflicts; Maletzke, B. T., et al. (2014). Effects of hunting on cougar spatial organization. *Ecology and Evolution, 4*, 2178–2185 shows hunting induces continuous male turnover and prolonged spatial instability; supports links to infanticide and lower kitten survival when adult males are frequently replaced; Cooley, H. S., Wielgus, R. B., Koehler, G. M., & Maletzke, B. (2009). Does hunting regulate cougar populations? A test of the compensatory mortality hypothesis. *Ecology, 90*(10), 2913–2921 suggest heavy hunting reduced kitten survival, female population growth, and induced a younger overall age structure; finally, Wultsch, C., Zeller, K. A., Welfelt, L. S., & Beausoleil, R. A. (2023). Genetic diversity, gene flow, and source-sink dynamics of cougars in the Pacific Northwest. *Conservation Genetics*, 24(6), 793–806, supports arguments that persistent, localized high mortality degrades connectivity and genetic health, and how the Olympic Peninsula population is particularly susceptible given limited emigration from other regions. On ecosystem function and indirect effects, *see* Barry, J. M., et al. (2019). Pumas as ecosystem engineers: carcass provisioning influences beetle assemblages. *Oecologia, 191*, 111–122, and Elbroch, L. M., et al. (2017). Vertebrate diversity benefiting from cougar-generated carrion. *Proceedings of the Royal Society B, 284*, 20162323 show cougar kills subsidize detritivores/scavengers (e.g., beetles) and vertebrate biodiversity at carcasses, highlighting cougars as ecosystem engineers; *see* Krumm, C. E., et al. (2010). Mountain lions prey selectively on prion-infected mule deer. *Biology Letters, 6*, 209–211; Wild, M. A., et al. (2011). The role of predation in disease control: A comparison of selective and nonselective removal on prion disease dynamics in deer. *Journal of Wildlife Diseases, 47*(1), 78–93; Baune, C., et al. (2021). Reduction of chronic wasting disease prion seeding activity following digestion by mountain lions. *mSphere, 6*(6), e00703-21; and Brandell, E. E., et al. (2022). Interaction between age-specific predation and chronic disease in the Greater Yellowstone Ecosystem. *Journal of Animal Ecology, 91*(7), 1373–1384 for evidence that mountain lions can contribute to mitigating the prevalence and spread of chronic wasting disease. On human-cougar interactions, *see* Gilbert, S. L., et al. (2016). Socioeconomic benefits of large carnivore recolonization through reduced wildlife–vehicle collisions. *Conservation Letters, 10*, 431–439 shows cougars contributing to reduced deer densities and deer vehicle collisions, preventing tens of thousands of human injuries, over a hundred fatalities and billions of dollars in avoided costs; meanwhile, Laundré, J. W., & Papouchis, C. (2020). The elephant in the room: What can we learn from California regarding the use of sport hunting of pumas as a management tool? *PLOS ONE, 15*(2), e0224638 finds sport hunting does not reduce human–puma conflicts and can worsen them, rejecting hunting for conflict reduction; Peebles, K. A., Wielgus, R. B., Maletzke, B. T., & Swanson, M. E. (2013). Effects of remedial sport hunting on cougar complaints and livestock depredations.

PLOS ONE, 8(11), e79713 found that, in WA, higher cougar hunting one year predicts *more* complaints/conflicts the next year; both Teichman, K. J., Cristescu, B., & Darimont, C. T. (2016). Hunting as a management tool? Cougar–human conflict is positively related to trophy hunting. *BMC Ecology, 16*, 44 and Dellinger, J. A., Macon, D. K., Rudd, J. L., Clifford, D. L., & Torres, S. G. (2021). Temporal trends and drivers of mountain lion depredation in California, USA. *Human–Wildlife Interactions, 15*(1), 1–16 support their findings and strengthen the case for lower quotas and emphasis on non-lethals.

[26] On impacts on bear social structure, welfare, and behavior, see: Stillfried, M., Belant, J. L., Svoboda, N. J., Beyer, D. E., & Kramer-Schadt, S. (2015). When top predators become prey: Black bears alter movement behaviour in response to hunting pressure. *Behavioural Processes*, 120, 30–39, for evidence that black bears' movement response to avoid hunters leads to increased risk of vehicle collisions (affecting bear and human welfare); Kilham, B., & Spotila, J. R. (2022). Matrilinear hierarchy in the American black bear (Ursus americanus). *Integrative Zoology*, 17, 139–155 provides evidence that evidence that intact social groups buffer young and reduce harm, suggesting removing experienced adults risks dependent-young losses and social support failures; Ordiz, A., Bischof, R., & Swenson, J. E. (2013). Saving large carnivores, but losing the apex predator? *Biological Conservation, 168*, 128–133, reviews the impact of hunting on bear social disturbance, including altered daily foraging and resting routines, and after encounters, and how hunting can impact their behavior, population dynamics, and life histories, including reducing the qualities that define their ecological roles (see also Frank, S. C., Ordiz, A., Gosselin, J., Hertel, A., Kindberg, J., Leclerc, M., Pelletier, F., Steyaert, S. M. J. G., Støen, O. G., Van De Walle, J., Zedrosser, A., & Swenson, J. E. (2017). Indirect effects of bear hunting: A review from Scandinavia. *Ursus*, 28(2), 150–164; for brown bears, both Swenson, J. E., Sandegren, F., Söderberg, A., et al. (1997). Infanticide caused by hunting of male bears. *Nature, 386*, 450–451, and Gosselin, J., Zedrosser, A., Swenson, J. E., & Pelletier, F. (2015). The relative importance of direct and indirect effects of hunting mortality on the population dynamics of brown bears. *Proceedings of the Royal Society B, 282*, 20141897, note increases in sexually selected infanticide, known to occur in black bears, increases when established adults are removed, so that liberal male hunting can elevate cub mortality and depress recruitment. On human-bear interactions, see: Northrup, J. M., Newton, E., Potter, D., Howe, E., Inglis, J., Pond, B., & Obbard, M. E. (2023). Experimental test of the efficacy of hunting for controlling human – wildlife conflict. *The Journal of Wildlife Management.* October 2022, found that "presumably sustainable harvest was ineffective at reducing human–bear interactions and incidents in the near- term and might have increased both" and that natural food availability is a primary driver of human-wildlife conflict; Obbard, M. E., et al. (2014). Relationships among food availability, harvest, and human–bear conflict at landscape scales in Ontario, Canada. *Ursus, 25*(2), 98–110, also supports focusing on securing attractants and other non-lethal measures, rather than lethal interventions; Pretis, F., Hicks, J., Ghimire, P., Enns, S. W., & Gulati, S. (2024). Do Lethal Control Interventions Reduce Human-Wildlife Conflict ? Evidence from Black Bears in British Columbia. 1–44. https://doi.org/Pretis, F., Hicks, J., Ghimire, P., and Wray Enns, S., & Gulati, S. (2024) Do Lethal Control Interventions Reduce Human-Wildlife Conflict? Evidence from Black Bears in British Columbia. Available at SSRN: https://ssrn.com/abstract=4951764 or http://dx.doi.org/10.2139/ssrn.4951764, notes that human-black bear conflict is driven primarily by conditions mediated by humans rather than problematic animals, and casts doubt on the use of killing to reduce conflicts long-term.

[27] Beavers can increase water storage and reduce stream temperatures in Washington headwater; see Dittbrenner, B. J., Schilling, J. W., Torgersen, C. E., & Lawler, J. J. (2022). Relocated beaver can increase water storage and decrease stream temperature in headwater streams. *Ecosphere, 13*(7), 1–17. More broadly, Beavers are keystone hydrologic engineers whose dams and canals slow, spread, and store water, raise groundwater tables, reconnect floodplains, and trap wood and sediment to create deep, complex wetlands. These processes (i) support agriculture by boosting late-season baseflows so irrigation and livestock watering remain reliable—especially in drought years; (ii) support communities by reducing climate-disturbance impacts, buffering drought, moderating flood peaks, and creating green, wet fire refugia; (iii) support salmon recovery by supplying cool, deep summer refuges, woody cover, off-channel rearing areas, and ice-resistant overwintering pools that young salmon need to survive heat and cold; (iv) support endangered and threatened riparian/aquatic species (e.g., leopard frogs, western pond turtles, bull trout) through persistent wetland habitat; (v) support overall biodiversity by increasing habitat heterogeneity and productivity across riparian corridors; and (vi) support other hunted and fished species (cold-water sport fish, ungulates, carnivores, waterfowl, upland game birds) by improving forage, thermal/escape cover, and food-web energy. See Scamardo, J. E., Marshall, S., & Wohl, E. (2022). Estimating widespread beaver dam loss: Habitat decline and surface storage loss at a regional scale. *Ecosphere, 13*(3), 1–17; Pollock, M. M., Beechie, T. J., Wheaton, J. M., Jordan, C. E., Bouwes, N., Weber, N., & Volk, C. (2014). Using beaver dams to restore incised stream ecosystems. *BioScience, 64*(4), 279–290; Nash, C. S., Grant, G. E., Charnley, S., Dunham, jason B., Gosnell, H., Hausner, M. B., Pilliod, D. S., & Taylor, J. D. (2021). Great Expectations: Deconstructing the Process Pathways Underlying Beaver-Related Restoration. *BioScience*, 71(3), 249–267; Brazier, R. E., Puttock, A., Graham, H. A., Auster, R. E., Davies, K. H., & Brown, C. M. L. (2021). Beaver: Nature's ecosystem engineers. *Wiley Interdisciplinary Reviews: Water*, 8(1), 1–29; and, Jordan, C. E., & Fairfax, E. (2022). Beaver: The North American freshwater climate action plan. *Wiley Interdisciplinary Reviews: Water*, *March*, 1–13. Unlimited "harvest"

removes these ecosystem engineers from watersheds, which reduces baseflows and thermal refugia, degrades salmonid habitat, shrinks riparian and wetland extent, erodes biodiversity, undermines recovery of listed species, diminishes downstream hunting and angling opportunity, and weakens community resilience to drought, wildfire, and flooding.

[28] Likewise, the plan does not translate the ecosystem engineering of American badgers into management safeguards. Badger mounds/burrows restructure soils and create subterranean "burrow webs" used by many vertebrates (including species of concern, such as burrowing owl and pygmy rabbit). "Harvest" and conflict removals that ignore these functions risk degrading shrub-steppe ecological integrity, yet the chapter sets no habitat-function targets or take ceilings conditioned on ecosystem-service metrics. See Eldridge, D. J. (2004). Mounds of the American badger (Taxidea taxus): Significant features of north American shrub-steppe ecosystems. *Journal of Mammalogy*, 85(6), 1060–1067; Eldridge, D. J., & Whitford, W. G. (2009). Badger (Taxidea taxus) disturbances increase soil heterogeneity in a degraded shrub-steppe ecosystem. *Journal of Arid Environments*, 73(1), 66–73; and, Andersen, M. L., Bennett, D. E., & Holbrook, J. D. (2021). Burrow webs: Clawing the surface of interactions with burrows excavated by American badgers. *Ecology and Evolution*, 11(17), 11559–11568.

[29] With some exceptions, such as for population declines in ungulates that meet at-risk criteria and waterfowl management (required to adhere to the national Adaptive Harvest Management guidelines), most species lack timelines and responsibility for implementation.

[30] *See* the "Data and monitoring" section above.

Appendix A. Mountain goats: a case study showing cumulative deficiencies undermining wildlife protection

This case study shows that the mountain goat chapter manifests every deficiency identified in our general comments, and that those deficiencies interact in ways that systematically undercut precaution for a slow-growing, disturbance and climate-sensitive alpine specialist. The chapter relies on permissive thresholds keyed to raw census counts, mixes populations, and repeatedly cites foundational studies while omitting their core cautions. Taken together, opaque goal-setting, weak monitoring standards, missing disease and genetic safeguards, unmodeled climate risk, a narrow impact lens, non-operational "adaptive" language, unpublished assumptions, poor integration with agency science, and absent enforcement; these choices compound to bias decisions toward maintaining hunting opportunity while normalizing unmanaged uncertainty for small, often isolated herds.

Lack of transparency on how management objectives are identified, and what values and stakeholder preferences are considered and prioritized
The chapter prioritizes trophy opportunity once a total count reaches a fixed threshold, but it does not disclose how risk to adult females (the vital rate to which population growth is most sensitive) was weighed against that opportunity, even though Hamel et al. (2006) demonstrate that mountain goat growth hinges on adult-female survival and that small or declining herds warrant exceptional caution.[1] Likewise, the plan imports "harvest" heuristics from Rice & Gay (2010) while obscuring the study's central point that even "allowable" rates carry a substantial probability of decline, which means any decision to accept that risk reflects an unspoken value choice rather than neutral science.[2] Because goats exhibit strong site fidelity that can become maladaptive as conditions change, objectives should transparently privilege precaution; Merkle et al. (2022) show how fidelity can become a trap in changing environments,[3] and White et al. (2024) synthesize climate mechanisms now known to affect goats that must be weighed in objective-setting.[4]

Data & monitoring: overreliance on confounded, limited, and low-quality data; absence of minimum precision, re-baselining, or corrective protocols
The chapter leans on coarse tallies and irregular survey designs while proposing "harvest" rules that, per Rice & Gay (2010), require accurate age/sex structure and ongoing monitoring to be even conditionally defensible; applying those heuristics to imprecise or pooled counts violates the paper's prerequisites.[5] Hamel et al. (2006) show that small errors in estimating adult-female mortality drive outsized demographic consequences, underscoring the need for minimum

[1] Hamel, S., Côté, S. D., Smith, K. G., & Festa-Bianchet, M. (2006). Population dynamics and harvest potential of mountain goat herds in Alberta. *Journal of Wildlife Management, 70*(4), 1044–1053.
[2] Rice, C. G., & Gay, D. (2010). Effects of mountain goat harvest on historic and contemporary populations. *Northwestern Naturalist, 91*(1), 40–57.
[3] Merkle, J. A., Abrahms, B., Armstrong, J. B., Sawyer, H., Costa, D. P., & Chalfoun, A. D. (2022). Site fidelity as a maladaptive behavior in the Anthropocene. *Frontiers in Ecology and the Environment, 20*(3), 156–164.
[4] White, K. S., Cadsand, B., Côté, S. D., et al. (2024). Mountain sentinels in a changing world: Review and conservation implications of weather and climate effects on mountain goats (*Oreamnos americanus*). *Global Ecology and Conservation, 57*, January 2025, e003364.
[5] See Rice & Gay (2010).

precision standards and automatic corrective actions when data quality slips.[6] Because helicopter and related disturbance measurably alter goat behavior, survey methods themselves can bias detection and must be standardized or re-baselined when methods or disturbance regimes change, as Côté et al. (2013) demonstrate.[7] Survival and detectability also vary with weather, so without explicit re-baselining rules for climate-linked shifts, managers risk misreading trend signals; White et al. document survival differences tied to climate.[6]

<u>Disease surveillance & outbreak response: missing operational surveillance targets, prevalence/action thresholds, and quarantine/translocation suspension rules for high-risk species</u>
Although disease is acknowledged, the chapter lacks predefined surveillance intensity, prevalence thresholds, and automatic suspensions for hunts or movements—gaps that matter because added mortality in already sensitive populations rapidly erodes growth, as shown by Hamel et al. (2006).[8] In small, isolated herds, disease impacts also magnify genetic risks associated with low effective size; Frankham et al. (2014) show that populations with low effective populations (Ne) (Ne $\leq$ 100 over five generations; Ne $\leq$ 1000 in perpetuity) face elevated extinction risk from inbreeding and drift, making pre-agreed triggers and rapid responses essential safeguards rather than optional procedures.[9]

<u>Genetics & connectivity: failure to require effective population size (Ne) assessments, connectivity analyses, or genetic safeguards prior to harvest or translocation</u>
By gating hunting on census size (N) rather than effective population size (Ne), the chapter confuses numeric abundance with genetic security. Frankham et al. (2014) provide modern benchmarks; roughly Ne $\approx$ 100 for short-term inbreeding avoidance (over five generations) and $\approx$ 1000 for long-term adaptability, showing that a herd near ~100 animals can still be genetically unsafe.[10] Because gene flow among Washington and southern British Columbia herds is constrained by landscape barriers, Parks et al. (2015) document limited connectivity and Parks (2013) shows fragmented genetic structure within Washington, managers should therefore condition "harvest" and translocation on Ne checks and connectivity analyses.[11] Absent those safeguards, policy choices risk ratcheting Ne downward.[12]

<u>Habitat & climate integration: failure to incorporate habitat capacity and climate vulnerability into estimates, forecasts, or decision triggers</u>
The chapter does not translate current knowledge of climate mechanisms into concrete thresholds or survey rules, even though White et al. (2024) synthesize multiple pathways (e.g., heat stress, altered snowpack, forage shifts, and changing predator interactions) through which warming

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[6] See Hamel et al. (2006).

[7] Côté, S. D., Hamel, S., St-Louis, A., & Mainguy, J. (2013). Do mountain goats habituate to helicopter disturbance? *Journal of Wildlife Management, 77*(6), 1244–1248.

[8] See Hamel et al. (2006).

[9] Frankham, R., Bradshaw, C. J. A., & Brook, B. W. (2014). Genetics in conservation management: Revised recommendations for the 50/500 rules, Red List criteria and population viability analyses. *Biological Conservation, 170*, 56–63.

[10] See Frankham et al. (2014).

[11] See Parks, L. C., Wallin, D. O., Cushman, S. A., & McRae, B. H. (2015). Landscape-level analysis of mountain goat population connectivity in Washington and southern British Columbia. *Conservation Genetics, 16*(5), 1195–1207; and Parks, L. C. (2013). *Mountain goat genetic diversity and population connectivity in Washington and Southern British Columbia* (Master's thesis). Western Washington University.

[12] See Frankham et al. (2014) and Parks et al. (2015).

affects goats and outline corresponding management implications.[13] Survival varies with age, sex, and climatic conditions, which means targets and monitoring need climate-conditioned adjustments rather than static thresholds; White et al. (2011) document this climate–survival linkage.[14] And because strong fidelity can hold goats to deteriorating habitats, precautionary pauses and habitat-contingent triggers should be built in rather than left to discretion, as Merkle et al. (2022) argue.[15]

Narrow scope of impacts considered; beyond abundance and distribution
The plan treats abundance as sufficient evidence of limited harm, but Hamel et al. (2006) show that even small increases in female mortality sharply reduce growth, so nanny take, orphaning risk, and wounding loss must be explicitly counted and constrained.[16] Rice & Gay (2010) demonstrate that when recovery is desired, any harvest reduces the probability of increase, which implies sex ratio, age structure, and behavioral effects are integral to impact accounting rather than peripheral concerns.[17] Disturbance itself is a biologically meaningful impact: goats show strong behavioral responses to helicopter activity, so the absence of enforceable buffers and timing rules externalizes costs to animals and biases demographic outcomes.[18] These disturbance effects also interact with climatic stressors summarized by White et al. (2024), compounding risk.[19]

Adaptive management: aspirational language without defined monitoring/evaluation cycles, timelines, decision authority, or public reporting
The chapter invokes adaptive management but omits the operational mechanics—fixed monitoring cycles, precision targets, if→then triggers, timelines, and decision authority—required to turn information into action. This is at odds with Rice & Gay (2010), whose heuristics only make sense within a tight feedback loop between monitoring and "harvest".[20] Hamel et al. (2006) identify clear demographic signals, especially adult-female survival, that should trigger immediate management change, and White et al. (2024) list climate mechanisms that warrant predefined, time-bound responses; without codified triggers, "adaptive" becomes discretionary rather than responsive.[21] Genetic trigger points are likewise needed: Frankham et al. (2014) justify Ne-based warnings that should automatically constrain "harvest" or prompt connectivity measures.[22]

Transparency and models: unpublished models/inputs; no public data portal; no peer review or sensitivity analyses
When the Department leans on model-like rules (e.g., "harvest" percentages tied to male composition), it must publish inputs, assumptions, and sensitivity analyses. Rice & Gay (2010)

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[13] See White et al. (2024).
[14] White, K. S., Pendleton, G. W., Crowley, D., & Griese, H. (2011). Mountain goat survival in coastal Alaska: Effects of age, sex, and climate. *Journal of Wildlife Management, 75*(8), 1731–1744.
[15] See Merkle et al. (2022).
[16] See Hamel et al. (2006).
[17] See Rice & Gay (2010).
[18] See Côté (1996) and Côté et al. (2013).
[19] See White et al. (2024).
[20] See Rice & Gay (2010).
[21] See Hamel et al. (2006) and White et al. (2024).
[22] See Frankham et al. (2014).

attach explicit uncertainties to their guidance, and using their results without transparent inputs defeats their intent.[23] Hamel et al. (2006) emphasize herd-specific dynamics, so models that aggregate units or hide parameter choices obscure the very heterogeneity managers must respect.[24] Because landscape connectivity constrains demography and environmental covariates measurably affect goats, omitting these from model structures or sensitivity testing biases outcomes toward overconfident and liberal "harvest" allowances, as shown by Parks et al. (2015) and White et al. (2024) respectively.[25]

<u>Integration with agency science & structured risk assessment</u>
Rather than converting agency science and recent literature into a formal, unit-level risk matrix that ties likelihood and consequence to automatic responses, the chapter repeats generalities while maintaining permissive defaults. Yet the spatial-genetic evidence in Parks et al. (2015) provides the inputs to rank isolation risk, White et al. (2024) offer a catalog of climate stressors and actionable implications, and Frankham et al. (2014) supply genetic thresholds that belong alongside numeric abundance; combined with the ecological-trap mechanism described by Merkle et al. (2022), these sources point to a structured framework that would elevate risk tiers for small, isolated, warming-exposed herds and trigger conservative management automatically.[26]

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[23] See Rice & Gay (2010).
[24] See Hamel et al. (2006).
[25] See Parks et al. (2015) and White et al. (2024).
[26] See Merkle et al. (2022), White et al. (2024), Frankham et al. (2014), and Parks et al. (2015).