

Public Lands Reimagined: Bettering the Relationship between Wildlife and Recreation across Washington State

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Abstract

The effects of recreation on wildlife behavior, fitness, and species populations is a growing conservation concern. Conservation Northwest and Home Range Wildlife Research produced a report to synthesize research focused on the effects of year-round, terrestrial motorized and non-motorized recreational activities on terrestrial mammal and bird species. The report finds that recreation can negatively impact wildlife in multiple ways depending on the interaction of numerous variables, including wildlife species, habitat type, and recreational activity. The report also highlights information that is needed to better support wildlife populations and outdoor recreation activities across Washington: identify wildlife-recreation overlap, measure thresholds at which varying levels of recreation affect wildlife populations, protect critical spatial and temporal refugia from recreation, and implementing management actions to mitigate recreation impacts.

Visits (millions) to national forests

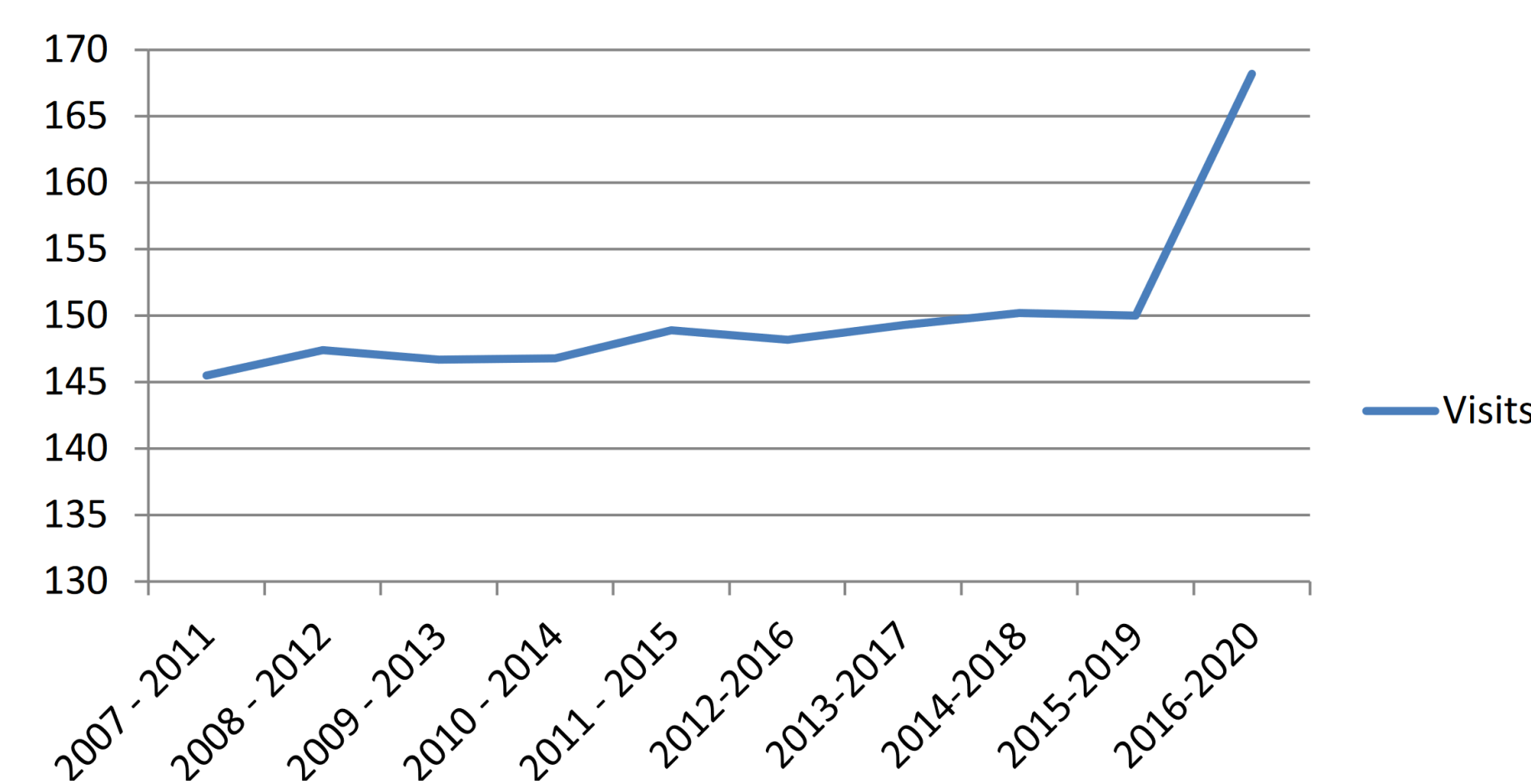
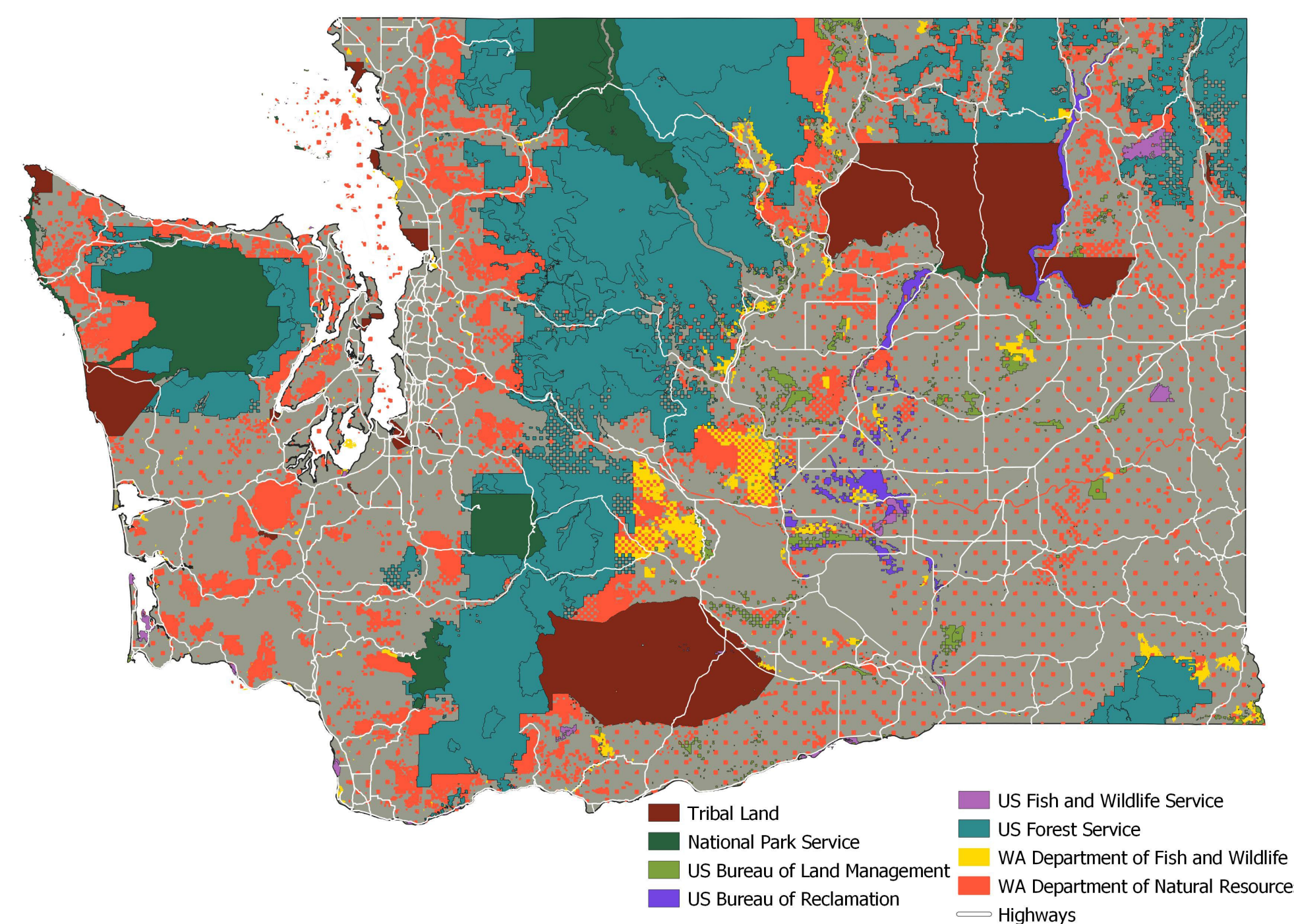


Figure 1. Recreation across United States Forest Service public land has been steadily increasing over the last two decades, with a big increase observed in recent years due to the COVID-19 pandemic. Data from the National Visitor Use Monitoring Report, 2020.

Introduction

Washington State has the second largest population in the West with 7.7 million people and growing. Participation in outdoor recreation activities has dramatically increased over recent decades (Figure 1). Washington holds myriad unique ecoregions, diverse wildlife communities, and remarkable opportunities for recreation; features that highlight the importance of a holistic understanding of the connections between wildlife and recreation.

Figure 2. The state of Washington land ownership and management stretches across 19 million acres of public land and 6 million acres of Tribal land. Washington holds appealing opportunities for a growing number of outdoor recreationists and boasts a remarkable set of ecosystems, including temperature rainforest, glaciated alpine, and high desert biomes.



Methods

A search was conducted on the Web of Science Core Collection using the Boolean search string “wildlife AND recreation” to identify relevant literature. Due to the amount of literature available for a given species, the scope was narrowed to a subset of species of interest (Table 1), which resulted in inclusion of 66 papers from the list of papers for full review. Using a snowball technique, an additional 50+ scientific articles related to the impacts of recreation on the species of interest was reviewed and included in the report.

Table 1. Global (IUCN), federal, and state conservation statuses for species included in this report.

LC – Least Concern
NT – Near Threatened
TH – Threatened
VU – Vulnerable
EN – Endangered
UR – Under Review
UC – Under Consideration
SGCN – Species of Greatest Conservation Need
PS – Priority Species

Least concern ■
Moderate concern ■
High concern ■
Extreme concern ■

	IUCN Status	US Status	WA Status
Bighorn sheep	LC		SGCN
Caribou	VU	EN	EN
Elk	LC		
Mountain goat	LC		PS
Mule deer	LC		PS
Black bear	LC		
Canada lynx	LC	TH	EN
Grizzly bear	LC	TH	EN
Mountain lion	LC		
Wolf	LC	UR	EN
Wolverine	LC	UC	SGCN
Bald eagle	LC		SGCN
Golden eagle	LC		SGCN, PS
Marbled murrelet	EN	TH	EN
Sage grouse	NT		EN

Results

Wildlife responses to recreation were abundantly negative, though few studies relate these responses to the species fitness, abundance, or distribution of wildlife populations. The following broad scale wildlife-recreation trends and patterns were collected:

- Animals tend to have stronger responses to less **predictable** forms of recreation.
- **Reproductive status** is important; pregnant females and young tend to be more vulnerable.
- **Season** is important; responses may differ between summer and winter.
- Habitat **generalists** are less vulnerable than habitat **specialists**.
- Wildlife species capable of **behavioral plasticity** may adjust activity temporally to avoid recreation.
- As the **intensity** of recreation increases, so does the impact to wildlife.
- **Non-motorized** recreation is more disturbing to most wildlife than **motorized** activities. However, motorists can cover more ground, thus increasing the geographic extent of their impact.

Discussion

Based on the literature, key areas were identified where conservation practitioners can focus management and policy efforts in Washington to better wildlife and recreation coexistence:

- 1. Identify wildlife-recreation overlap in Washington**
 - Map and model Washington’s recreation footprint with species ranges to identify overlap and priority areas to focus management strategy.
- 2. Measure recreation intensity and frequency**
 - Prioritize data collection to quantify timing, frequency, magnitude, predictability, locations, and areas of recreation influence.
 - Pair recreation intensity levels with species-specific thresholds of tolerance on a local scale.
- 3. Protect spatial and temporal refugia**
 - Protect critical habitats that serve as spatial refugia from recreational development—especially for wide-ranging umbrella species that are sensitive to disturbance.
 - Carefully plan any recreational development to concentrate impacts to lower-quality habitats for vulnerable species and consolidate trail networks to minimize habitat fragmentation and the spatial footprint.
 - Reduce road densities through wildland areas by decommissioning select roads and limiting the construction of new roads.
 - Maintain temporal refugia for species that can adjust their behavior to avoid peak periods of recreational use, such as nighttime closures of high-use trail networks.
 - Seasonally close or restrict off-road and off-trail use in important reproductive or over-wintering areas to limit disturbance to species during vulnerable seasons and life history phases.
- 4. Implement management actions**
 - Use literature and mapping as baselines to guide adaptable management strategies in situations where limited data is available.

Conclusion

Wildlife face myriad human-induced challenges and outdoor recreation impacts are a piece of a larger conservation puzzle. While recreation is not the only reason behind species’ declines, even a small amount of range overlap with recreation in important habitats and during sensitive periods may prove detrimental for animals especially sensitive to human disturbance.

Recent increases in outdoor recreation participation highlight an urgent and immediate need to both better understand and mitigate recreational impacts on wildlife. Conservation practitioners should carefully consider potential recreation impacts on threatened and endangered species, while also closely monitoring and protecting all sensitive species from increasing recreation.

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References

All content and literature cited is listed in the report produced by Home Range Wildlife Research and Conservation Northwest: *Recreation and Wildlife in Washington: Considerations for Conservation*.

To read the literature report and see all cited literature, scan this QR code:

