2023 WASHINGTON ACTION PLAN
For
Implementation of Department of the Interior Secretarial Order 3362:
"Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors"

Introduction

Secretarial Order 3362

Secretarial Order 3362 (Appendix A) directs appropriate bureaus (US Fish and Wildlife Service [USFWS], National Park Service [NPS], and Bureau of Land Management [BLM]) within the Department of the Interior (DOI) to work in close partnership with the State of Washington to enhance and improve the quality of big-game winter range and migration corridor habitat on Federal lands under the management jurisdiction of the DOI in a way that recognizes state authority to conserve and manage big-game species and respects private property rights. Through scientific endeavors and land management actions, wildlife such as Rocky Mountain Elk (elk; *Cervus canadensis*), Mule Deer (deer; *Odocoileus hemionus*), Pronghorn Antelope (pronghorn; *Antilocapra americana*), and a host of other species will benefit.

Conditions in the broader landscape may influence the function of migration corridors and sustainability of big game populations. Such conditions may include habitat fragmentation, land use patterns, resource management, or urbanization. The United States Department of Agriculture (USDA), through the USDA Forest Service (USFS) and USDA Natural Resource Conservation Service (NRCS), will collaborate with DOI, the states, and other natural resource managers across the broader landscape when developing an all-lands approach to research, planning, and management, for ecological resources, to include migration corridors in a manner that promotes the welfare and populations of elk, deer, and pronghorn, as well as the ecological integrity of terrestrial ecosystems in the plan area.

Washington State Management Context

Most of the major statewide problems affecting Washington's wildlife and biodiversity are the direct or indirect result of human influence on the state's habitat base (WDFW 2015). Sustained human population growth, constant invasion of non-native plant and animal species across the landscape, forest conservation and management practices, conversion of shrub-steppe and grassland habitat to agriculture, disease and pathogens, inadequate data on wildlife, and climate change are all major influencing factors affecting wildlife that were identified in Washington's State Wildlife Action Plan (WDFW 2015).

When the original iteration of this Action Plan was written, Washington's population was approximately 7.4 million. Since then, the state's population has grown by more than 500,000 and is projected to add 2 million more people by 2050 (WSOFM 2023). This growth will exacerbate threats to wildlife habitat, including human encroachment from agriculture (Donald

and Evans 2006), residential development and urban sprawl (Johnson et. al 2018, Radeloff et. al 2005, Wyckoff et. al 2018), roadway expansion (Coe et. al 2015, Johnson 2001, Simpson et. al 2016), and natural resource extraction (Hennings and Soll 2012, Lendrum et. al 2013, Sawyer et. al 2017). Approximately 57% of Washington's nearly 43 million acres of land is in private ownership while public land management is a mixture of DOI or Forest Service (~28% land area, Appendix B) and state or municipal agencies (~15% of land area; RCO 2014). Consequently, large scale habitat conservation will require diverse partnerships to address the numerous and growing threats to elk, deer, and pronghorn habitat.

Timber harvest produces early seral forest stands that supply important forage resources for deer and elk, among other species, and are therefore important components of high-quality deer and elk habitat. Washington's Forest Practices Act (FPA) requires private, county, and state forest managers to follow environmental guidelines when managing forests. The FPA attempts to maintain environmental integrity (e.g., imperiled species conservation) while supporting an active timber industry. In some instances, then, the FPA guidelines may limit or restrict forestry practices (e.g., in old or old growth stands) and preclude early seral habitat production via stand-level timber harvest. However, site-specific alternative forest management practices (e.g., prescribed fire, selective thinning) may be considered. An increase in early seral forested habitat, however accomplished, improves both understory habitat components (e.g., forage, cover) and reduces the intensity and severity of wildfire, which has a large-scale impact on wildlife habitat, especially mule deer winter range. Development of collaborative post-wildfire restoration plans for federal, state, and private land in high-priority areas would provide a path to reduce recovery time of critical migratory and winter habitats after a large wildfire event. These plans would aid in establishing resilient landscapes that are less susceptible to environmental stressors and more likely to support deer, elk, and pronghorn populations.

Washington's SO3362 Action Plan

In this and previous SO3362 Action Plans, WDFW prioritized research and habitat activities focused on mule deer. While stressors on elk and pronghorn warrant additional resources, these species in Washington are either stable, increasing, or, in the case of pronghorn, recently reestablished and exist in small populations and geographic scales (WDFW 2022). While common in Washington, some mule deer populations have exhibited declines largely attributed to habitat loss or environmental stressors (WDFW 2022). For example, human population growth, has increased land conversion on current mule deer winter range and unprecedented wildfires have reduced forage and cover on winter ranges and migratory corridors.

Mule deer inhabit much of eastern Washington from the arid but heavily cultivated shrub-steppe of the Columbia Plateau to high alpine meadows of the eastern Cascades and the oak-dominated canyons of the east Columbia Gorge in southcentral Washington. Accordingly, WDFW recognizes seven Mule Deer Management Zones (MDMZs; Figure 1) that represent distinct

ecoregions within the state (Omernik 1987, WDFW 2016). Knowledge of mule deer movement and habitat use in each MDMZ is incomplete, though recent efforts by WDFW and its partners have filled in knowledge gaps since the original Action Plan (*circa* 2018).

In 2018, research funded by DOI in association with SO3362 prioritized the East Cascades MDMZ, which includes the Kittitas (also known as Wenatchee) and Chelan mule deer sub-herds. In 2019, DOI funding was allocated to research the East Columbia Gorge MDMZ mule deer herd. In addition, WDFW has funded research for the East Cascades MDMZ Methow mule deer sub-herd and the Okanogan mule deer sub-herd. While the above efforts have collected high-resolution movement data suitable for robust spatial analyses (e.g., Brownian bridge models; Sawyer et. al 2009) to identify important corridors and stopover locations, substantial work remains to delineate movement patterns of other sub-herds in the three Priority MDMZ, and throughout the state, which requires additional funding beyond what WDFW can support at present. Filling these data gaps would allow WDFW to 1) identify key land management collaborators, 2) prioritize work to develop and implement data-driven responses to current and emerging mule deer habitat conservation and restoration needs, and 3) communicate to the public and other stakeholders the importance of conserving these landscapes and ecosystems for the perpetuation and sustainable management of mule deer in Washington State.

This Action Plan iteration prioritizes three of the seven MDMZs: East Cascades, East Columbia Gorge, and Columbia Plateau. These continue to be the highest priority for improving habitat quality in mule deer winter range and migration corridors, as well as for future research delineating migration corridors, winter range, and stop-over areas. In the sections below, we describe each of these MDMZs and identify major threats and our highest priority actions for habitat quality improvements within them. Across MDMZs, we highlight notable accomplishments by WDFW and our partners towards those actions identified that have occurred within the last four years. Finally, we identify ongoing research and data needs across MDMZs and summarize the work that WDFW has done since our last Action Plan iteration to meet these needs.

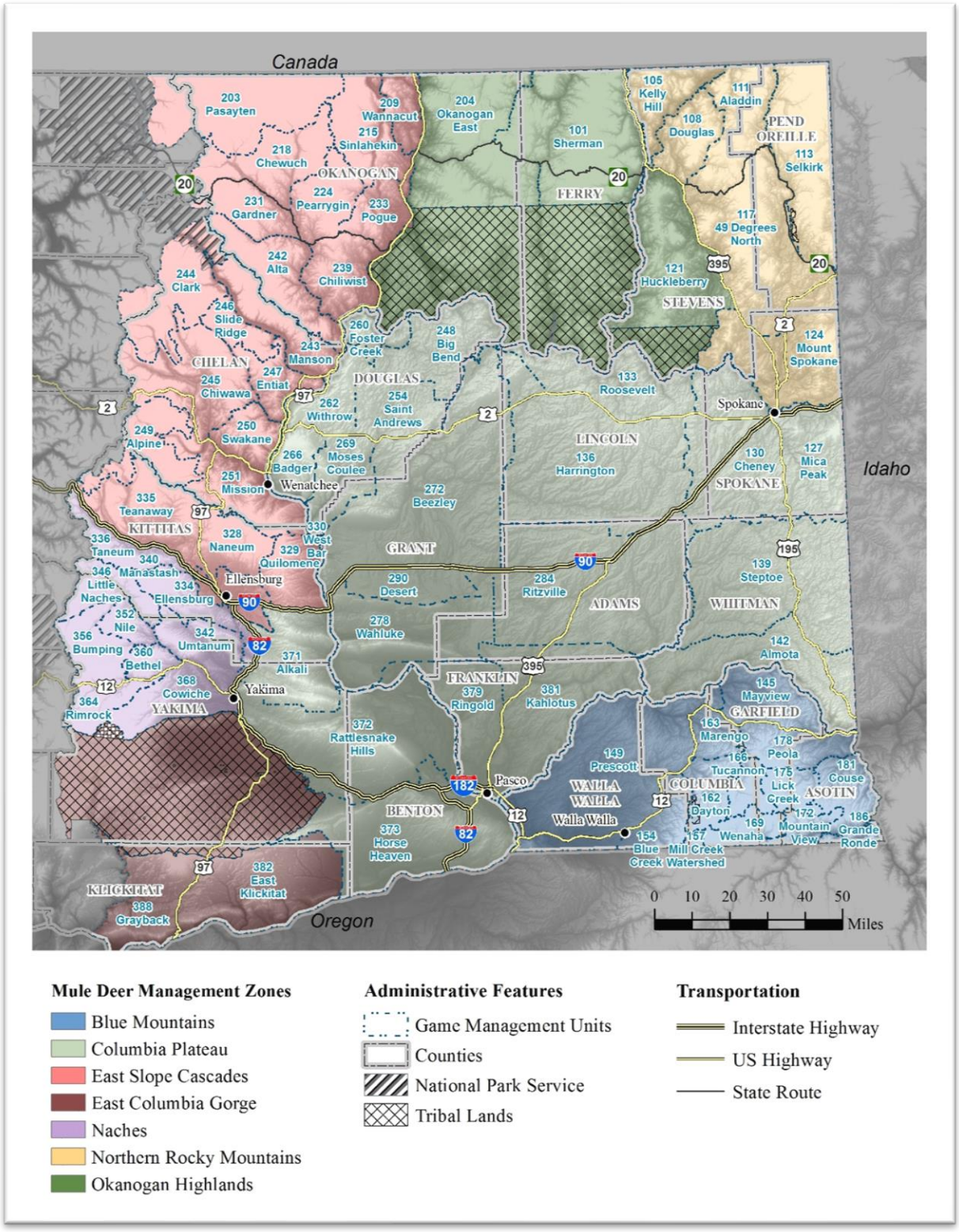

Figure 1. Ecoregion-based Mule Deer Management Zones (WDFW 2016).

East Slope Cascades

Description

The East Slope Cascades MDMZ contains the state's largest migratory mule deer herd (an estimated 47,000 animals) which has experienced general population declines during the last two decades (WDFW 2022). This MDMZ is comprised largely of public lands, including the Okanogan-Wenatchee National Forest, North Cascades National Park; state lands owned by the Washington Department of Natural Resources (WDNR), WDFW, and Washington State Parks; and private lands (Figure 2). Major vegetative types here include shrub steppe, mixed shrub and grassland, mixed-age coniferous forests, and alpine meadows (Figure 3). These drier habitats east of the Cascade Crest are prone to wildfire (Figure 3). Land uses include managed timber, orchards, livestock grazing, residential, and renewable energy development.

East Slope Cascades MDMZ is comprised of four general sub herds, from north to south they are the Methow, Okanogan, Chelan, and Kittitas (also known as Wenatchee). In 2018, SO3362 research funding prioritized collaring Kittitas (also known as Wenatchee) and Chelan mule deer sub-herds. In total, 142 collars were deployed and important corridors and stopover areas within those corridors were delineated. (Figure 4 & Figure 5, Kauffman et al. 2022). In addition, WDFW has, independent of SO3362 funding, funded research for the Methow and Okanogan mule deer sub-herds. From 2018-2020, 128 collars were deployed in the Methow Valley to assess migratory patterns and identify winter range, summer range and important stopover areas of the Methow subherd (Figure 6, Kauffman et al. 2022). An additional 17 collars were deployed here in 2022. In 2023, WDFW deployed 51 GPS collars in Okanogan Highlands.

These data identify the importance of stopover or migratory corridors within the Okanogan-Wenatchee National Forest along the Chicwaukum Mounts and Entiat Mountains for the Chelan subherd, and those areas north of Kittitas Valley and South of Highway 2, including the Wenatchee Mountains, Table Mountain, Teanaway Ridge, Cle Elum Ridge, Sasse Ridge, Iron Mountain, Tronsen Ridge and Kachess Ridge for the Kittitas subherd. Collection and analysis of movement data is ongoing. Forthcoming results will be used to identify important winter habitat and migratory corridors for subherds in this zone.

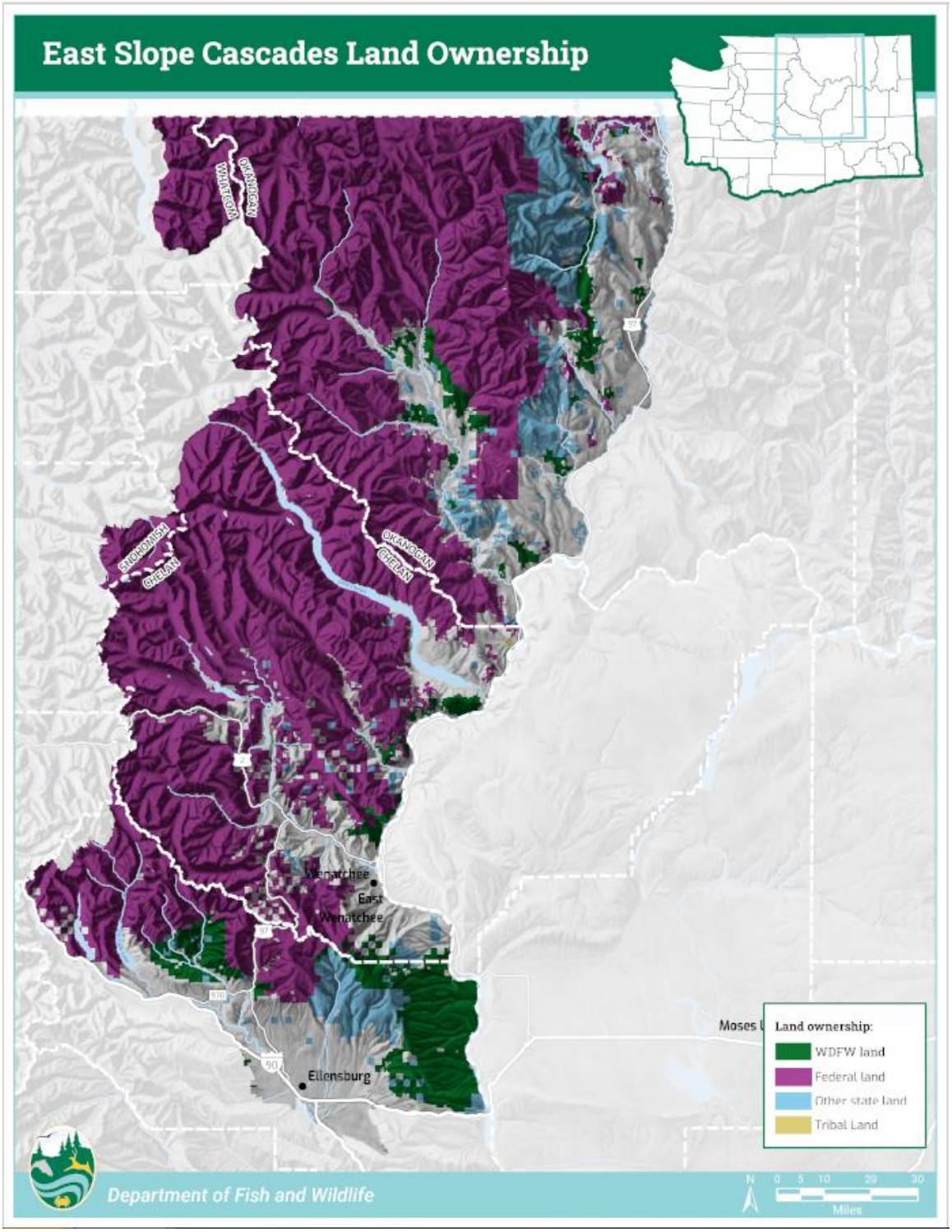

Figure 2. Land ownership in the East Slope Cascades MDMZ.

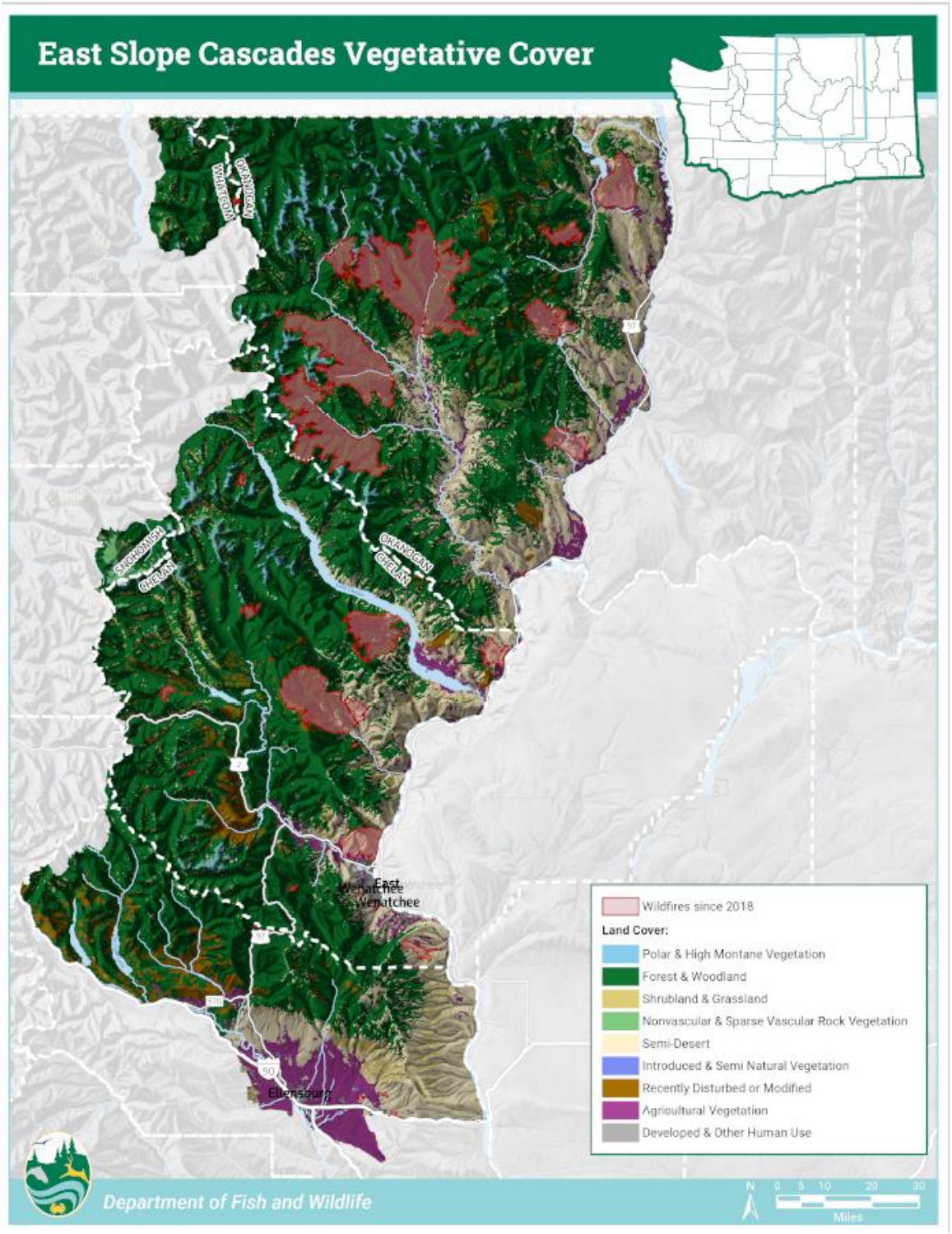

Figure 3. Vegetative cover and recent wildfire perimeters in the East Slope Cascades MDMZ.

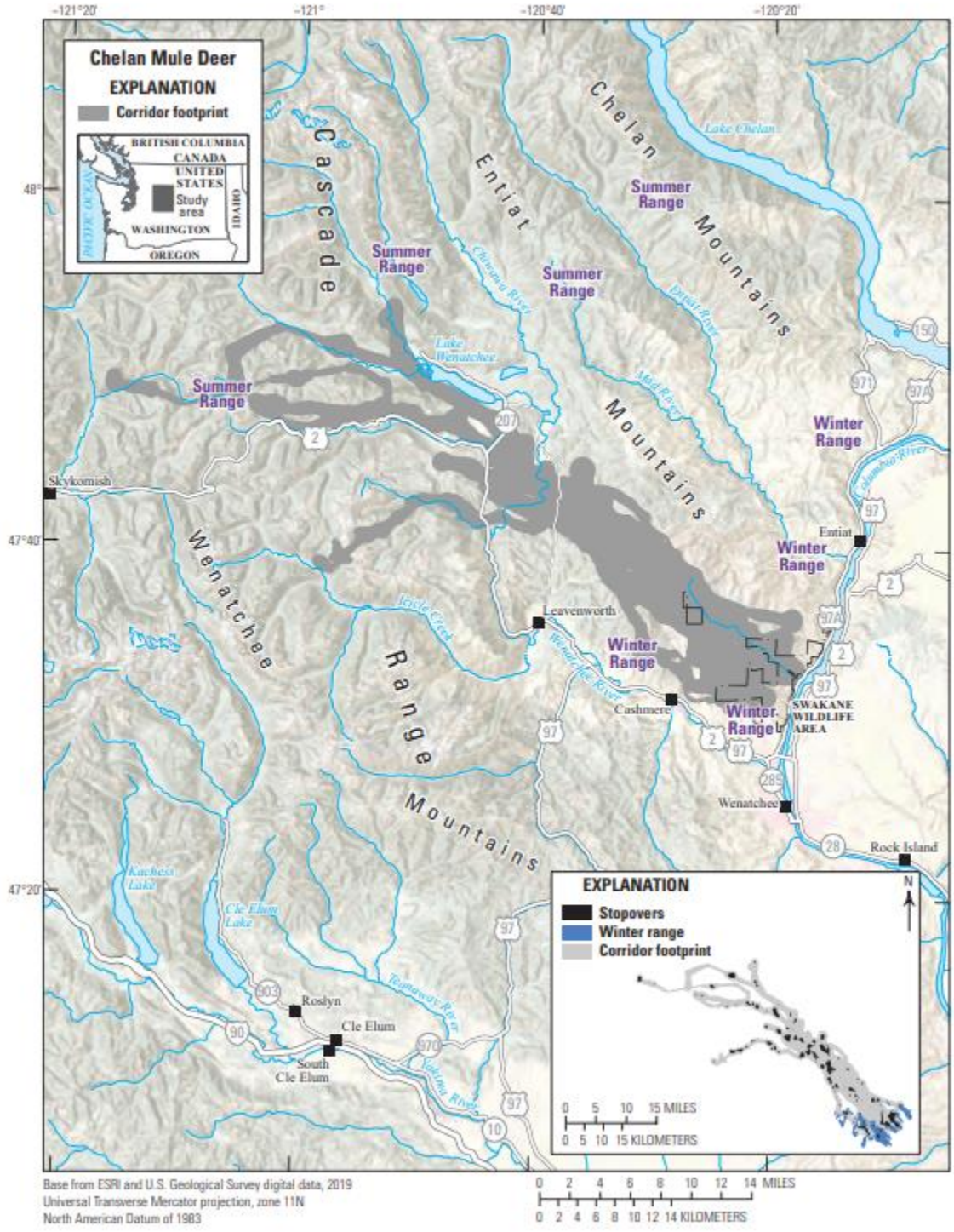

Figure 4. Map showing migration corridor footprints, stopovers, and winter ranges of the Chelan mule deer herd published in Ungulate migrations of the western United States, Volume 3.

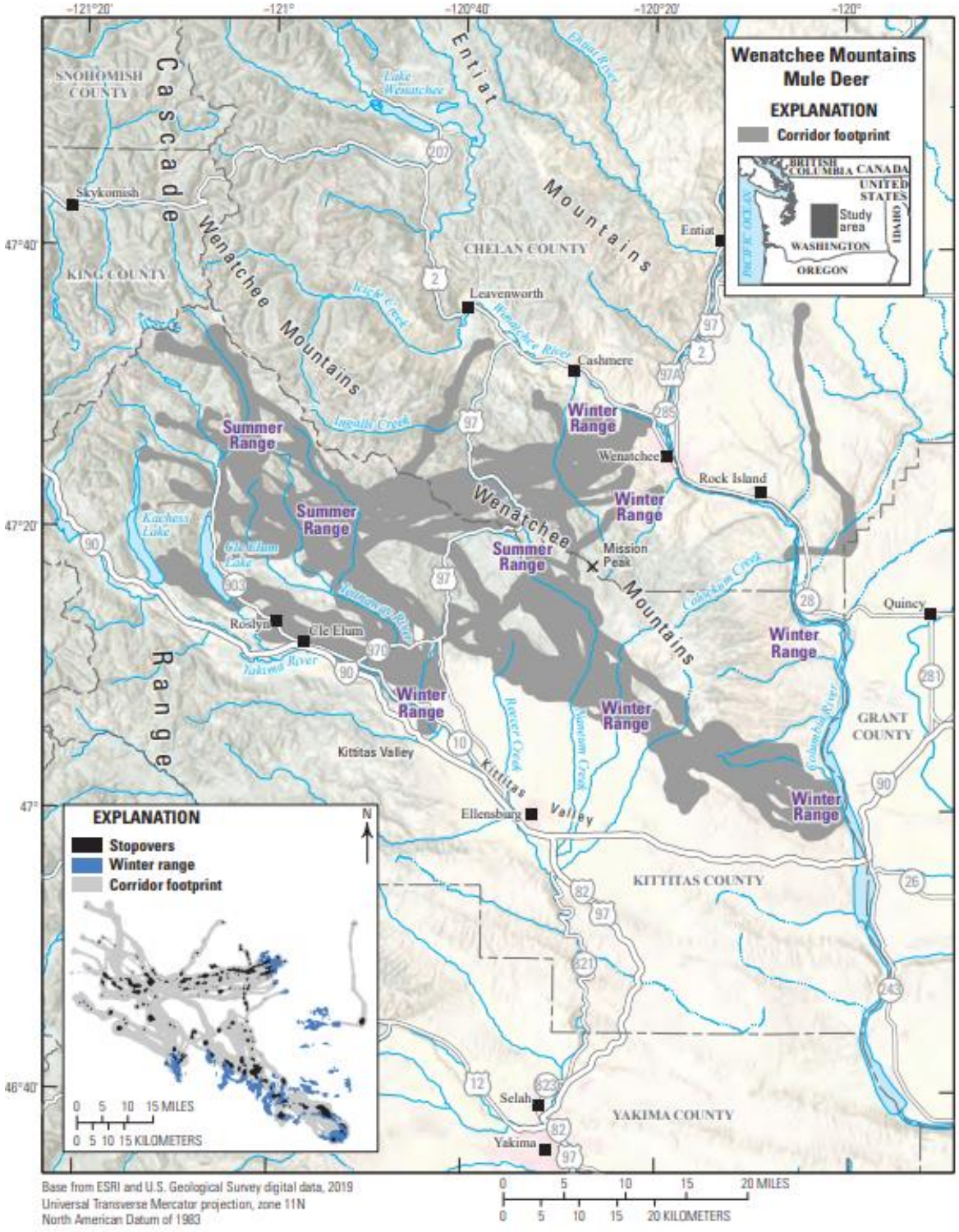

Figure 5. Map showing migration corridor footprints, stopovers, and winter ranges of the Wenatchee Mountains (also known as Kittitas) mule deer herd published in Ungulate migrations of the western United States, Volume 3.

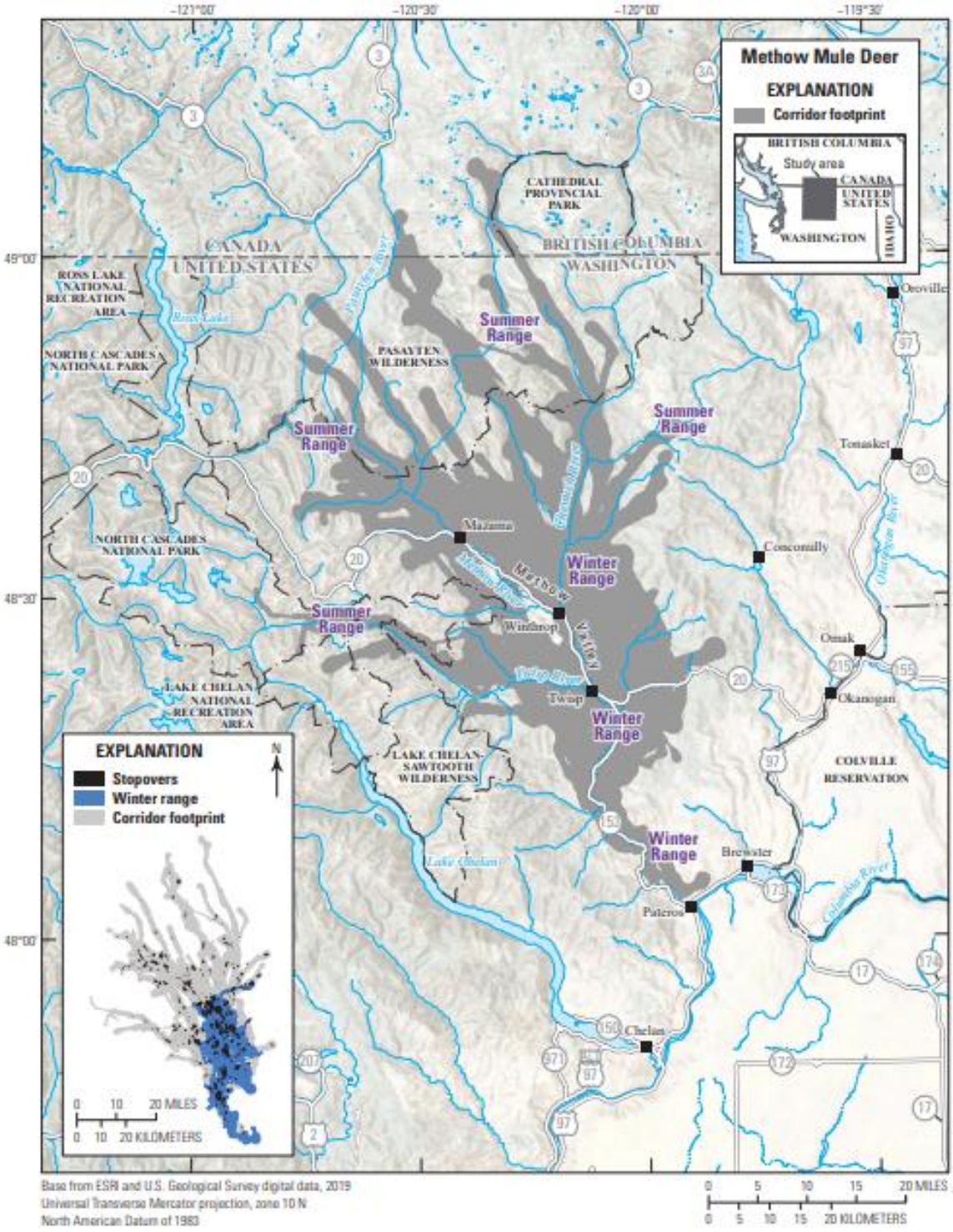

Figure 6. Migration corridors, stopovers, and winter ranges of the Methow mule deer herd published in Ungulate migrations of the western United States, Volume 2.

Threats and Actions

Habitat loss. In the East Cascades, habitat is prone to conversion to several human uses. Residential development is particularly high around Wenatchee and Ellensburg, and wind and solar developments are being proposed in Kittitas County in the southern portion of the zone, and outside of Wenatchee. Ongoing mining activity is proposed for the Methow Valley watershed (northwest in the zone) in a high-use migration corridor. Finally, wildfires are increasingly common throughout this zone resulting in localized habitat loss especially where fires are severe.

Habitat degradation. Where wildfires are not severe, habitat recovery may occur naturally, but wildfire usually results in intrusion of invasive weeds in mule deer wintering areas. Livestock grazing may further hinder natural recovery depending on stocking rates and prescriptions, and fencing erected to manage grazing creates movement barriers to ungulates and other wildlife. Climate-related extreme weather conditions (e.g., drought, low winter snowpack) result in reduced overall nutritional carrying capacity of the landscape and reduced body condition of mule deer during critical seasonal transition periods. These effects are compounded by past management practices that have left forested habitats ecologically unhealthy and of minimal use to mule deer. Currently, much of Washington's mid-elevation forests used by mule deer during the spring and fall are comprised of mostly closed-canopy, over-stocked stands of mixed conifer species with little understory vegetation. Finally, this zone is increasingly subject to growing use and distribution of motorized and non-motorized off-road vehicles which decreases habitat quality via disturbance to wintering mule deer.

Mortality. As human population density increases, we see greater mule deer mortality due to vehicle collisions. There are very high deer-vehicle collision rates along certain highways in this zone. There are no known mortality factors implicated in limiting populations in this zone and cause-specific mortality information was not collected in association with migratory corridor and stopover mapping efforts.

Action	Threat-cause Addressed							
	Climate change	Energy development	Human disturbance	Mining	Past management practices	Residential development	Vehicle collision	Wildfire
Acquisition projects focusing on improving and/or preserving important winter and migration habitat.		X				X		
Delineate important movement corridors and stopover locations of subherds in the central and southern portions of the zone to support empirically-based decisions regarding prioritization of habitat conservation needs.		X				X		
Develop conservation easements focusing on improving and/or preserving important winter and migration habitat on private lands.		X				X		
Develop cooperative agreements within the scope of the Good Neighbor Authority to implement habitat projects.					X			X
Explicit federal support for global reduction in greenhouse gas emissions	X							
Funding and other support for installation of overpasses, underpasses, and other crossing structures in areas with the greatest need to reduce collisions and provide safe passage to mule deer and other wildlife during migration.							X	
Identification of important seasonal crossing areas.							X	
Monitor current and future research results from studies investigating potential influences to mule deer habitats and populations related to construction and operation of wind and solar energy farms.		X				X		
Noxious weed control, and planting of native shrubs on state and federal lands								X
Prescribed burning, forest thinning, noxious weed control, and planting of native shrubs to improve winter range and migratory corridors on federal lands					X			X
Prioritize actions that protect climate refugia and buffer changes to migratory corridors driven by climate (e.g., forest thinning to reduce tree mortality due to crowding and increased competition for water during droughts)	X							
Protection of the migration area through adoption of a proposed mineral withdrawal in the Methow Watershed				X				
Support for and enforcement of regulations to prevent disturbance of mule deer while on winter range			X					
Work with landowners, developers, and grazing producers to replace hard fencing with wildlife-friendly options, including virtual fence.		x				x		x
Work with landowners and grazing producers to adjust grazing practices post-wildfire to promote habitat recovery.								x

East Columbia Gorge

Description

In south-central Washington (Figure 1), the East Columbia Gorge MDMZ is unique in the state because of the transitional nature of both the habitat (Cascade Crest down to the Columbia River Gorge) and the deer (phenotypic characteristics of both mule and black-tailed deer) that inhabit the area. Population trends based on long-term harvest estimates indicate an overall decline and managers have begun reducing harvest opportunity in response (WDFW 2023).

Major public lands within the MDMZ includes the United State Forest Service's Columbia River Gorge National Scenic Area, BLM lands, and state lands owned by WDFW (Figure 7), whereas more than 50 percent of the MDMZ is within the Yakama Nation. The balance of ownership in the MDMZ is predominantly private lands. Important vegetative types (Figure 8) include shrubsteppe and other shrub communities comprised of bitterbrush, snowberry, *Ceanothus* spp., poison oak, and buckwheat; grasslands; forest communities with dense over-story cover dominated by either ponderosa pine or Douglas fir; Alpine meadows; and oak forest (Figure 8). This MDMZ includes the largest remaining oak (*Quercus garryana*) forests in Washington, home to several Species of Greatest Conservation Need (WDFW 2015). Many of the deer in this zone winter in lower elevations, typically preferring habitat with a strong oak component. Land uses across the MDMZ include irrigated crop production and dryland farming, timber production, cattle grazing, and rural residential development.

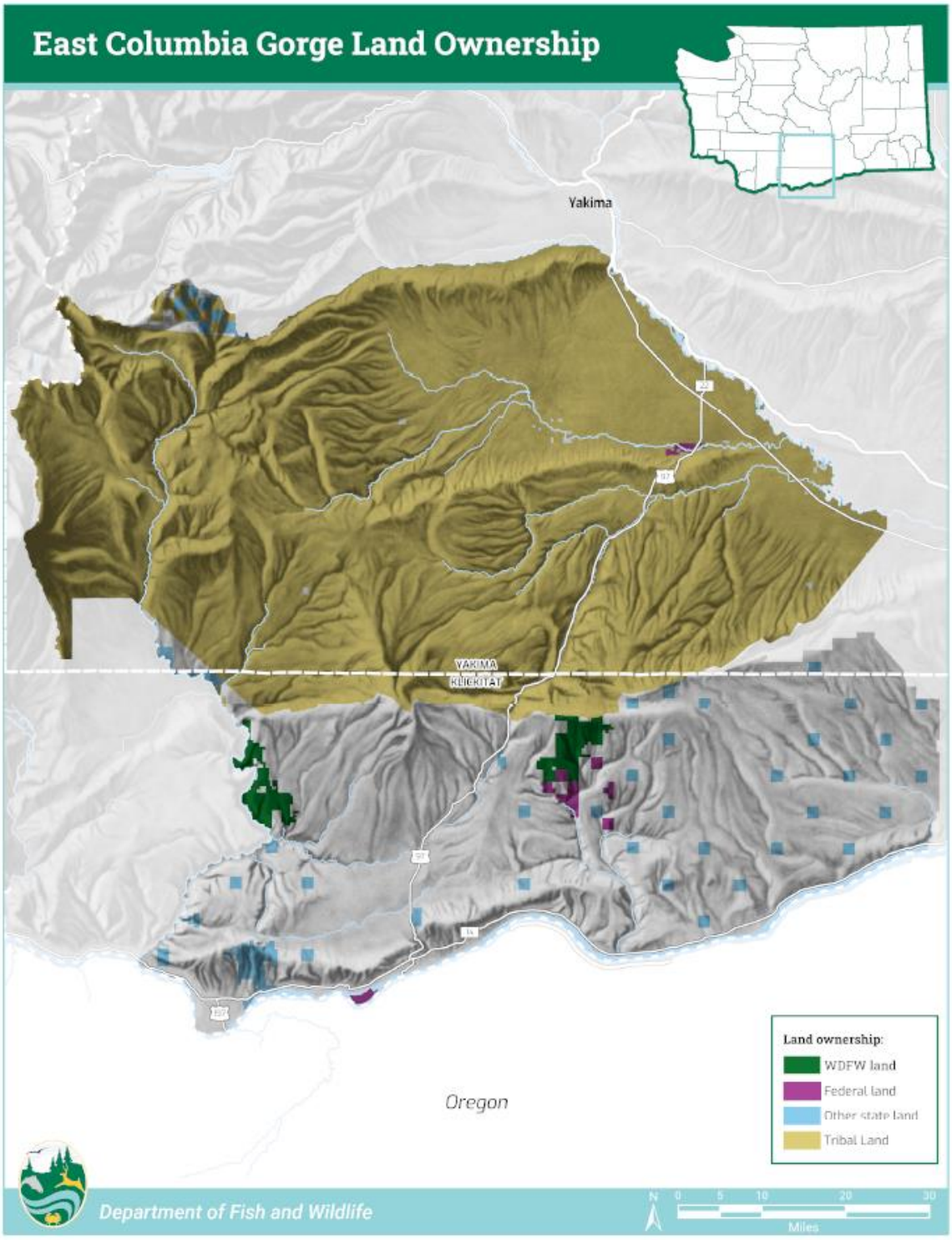

Figure 7. Land ownership in the East Columbia Gorge MDMZ.

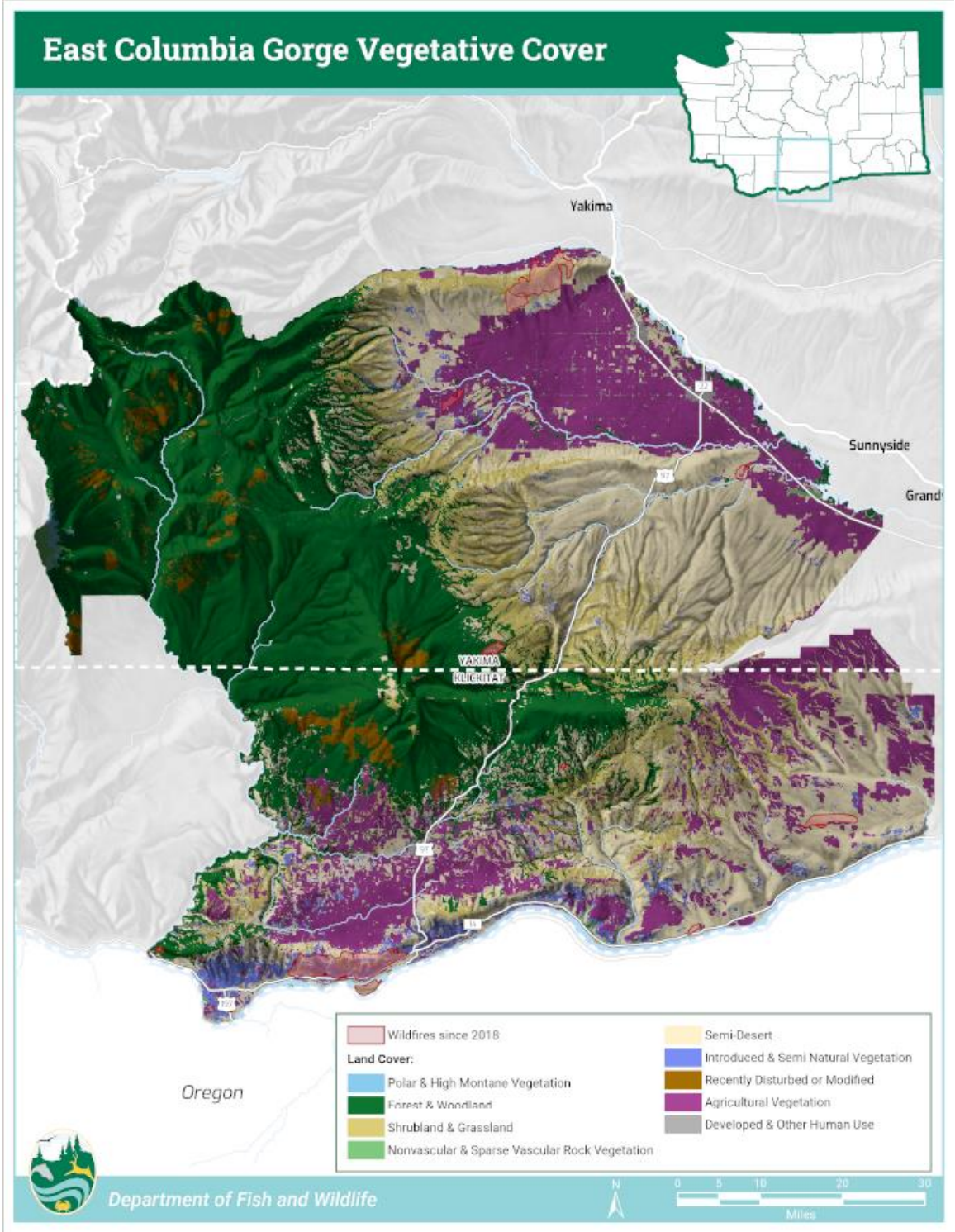

Figure 8. Vegetative cover and recent wildfire perimeters in the East Columbia Gorge MDMZ.

Threats and Actions

Habitat loss. Ungulate habitat in the East Columbia Gorge MDMZ is being lost to a number of human uses. Land conversion to agriculture, predominantly to vineyards, and extensive wind energy development has occurred in portions of the zone. More largescale wind and solar energy projects are proposed, but their potential to impact mule deer is uncertain due to limited knowledge of deer habitat use. Finally, large-scale wildfires are becoming more common through eastern Washington, resulting in habitat loss. Depending on fire severity, recovery and restoration can take several years. The Newell Road Fire, for instance, burned more than 60,000 acres in this MDMZ in summer 2023.

Habitat degradation. Recent and increasing instances of drought and low winter snowpack can reduce forage quality and quantity thereby reducing mule deer body condition during critical seasonal transition periods. These episodic impacts are compounded by forest management practices that have produced closed-canopy with little understory vegetation. Widespread across this landscape, these stands are of low value for mule deer. As in the other priority MDMZs, large scale wildfires, even where not severe, change the nutritional value of habitat for ungulates and other species by removing native species cover and facilitating invasive by invasive plants. Associated with post-wildfire community recovery and ongoing land conversion for the uses described above, fencing is erected across the landscape, creating movement barriers to ungulates and other wildlife. Fencing is also of concern on large energy developments. Further, livestock grazing on recently burned habitat may impede habitat recovery depending on how that grazing is managed.

Competition. Unlike the other priority MDMZs, mule deer in this zone may face competition with feral horses, which inhabit the northern portion of the East Columbia Gorge MDMZ on Yakama Nation lands. As the population of feral horses has increased over time, dispersing horses have expanded their range to the south, off reservation. Increasing densities of feral horses could potentially result in competition with mule deer for forage and space, but the level of competition is unknown.

Action	Threat-cause Addressed					
	Agricultural development	Climate change	Energy development	Feral horses	Past management practices	Wildfire
Acquisition projects focusing on improving and/or preserving important winter and migration habitat	x		x			
Develop conservation easements and/or other incentive programs for landowners to maintain migration corridors	x		x			
Develop state-federal cooperative agreements within the scope of the Good Neighbor Authority to implement habitat projects where appropriate					x	x
Explicit federal support for global reduction in greenhouse gas emissions		x				
Identify important migratory corridors and stopover sites to identify effects of habitat conversion and areas of greatest conservation need	x		x			
Monitor current and future research results from studies investigating potential influences to mule deer habitats and populations related to construction and operation of wind and solar energy farms			x			
Monitor for deleterious effects to mule deer associated with the presence of feral horses on mule deer ranges				x		
Prioritize habitat restoration and protection to ensure long-term viability of climate refugia and buffer migratory corridors from impacts of climate change		x				
Restore habitats through prescribed burning, forest thinning, noxious weed control, and planting of native shrubs to improve winter range and migratory corridors					x	x
Work with landowners, developers, and grazing producers to replace hard fencing with wildlife-friendly options, including virtual fence.	x		x			x
Work with landowners and grazing producers to adjust grazing practices post-wildfire to allow for habitat recovery.						x

Columbia Plateau

Description

The Columbia Plateau MDMZ, in east-central Washington (Figure 1), is the largest by landmass and is home to Washington's second largest mule deer herd (minimum estimate of 35,000 animals from data collected in 2018, 2019 and 2021). Limited data on mule deer movement and habitat use in this zone are available, but deer are believed to be dependent on migration corridors and forage in remnant patches of shrub-steppe habitat. Most natural habitat still available in this zone is generally low quality due to conversion and fragmentation. WDFW considers retention, protection, and enhancement of these limited natural areas within the agricultural matrix to be a very high priority. Undeveloped lands are under increasing pressure from residential and alternative energy development.

Landownership in the MDMZ (Figure 9) is predominantly private; public lands include federal (BLM, USFWS, NPS, DOE and DOD) and State (WDNR, WDFW, and WSDOT), and private land has largely been converted to agriculture (Figure 10) in both irrigated crop production and dryland farming. Other land uses include cattle grazing, and rural residential development. The limited remaining natural habitat in the zone is typically shrubsteppe and channeled scablands with some conifers in uncultivated 'eyebrows', highly-erodible, steep areas in crop fields.

Farmland enrolled in the Conservation Reserve Program (CRP) is a significant component of available habitat for mule deer in this zone and has been critical for other high priority species. As of June 2018, landowners had enrolled over 1.2 million ac. in CRP, idling cropland and planting to perennial grasses, forbs, and shrubs (roughly 16% of the state's total agricultural lands [7.3 million ac. 2017], mostly within this zone). There are also five different State Acres for Wildlife Enhancement (SAFE) projects, totaling over 112,000 acres within the Columbia Plateau MDMZ. The SAFE acres are included in the total CRP acreage.

Sparse movement data from mule deer collared in the early 2000s indicate portions of the mule deer population in the zone are migratory and move between spring-summer-fall and winter use areas (WDFW 2016, WHCWG 2012). Based on this information, WDFW conducts periodic post-hunt population surveys across three distinct high-use winter areas in the zone referred to as the Benge, Odessa, and Douglas Subherds.

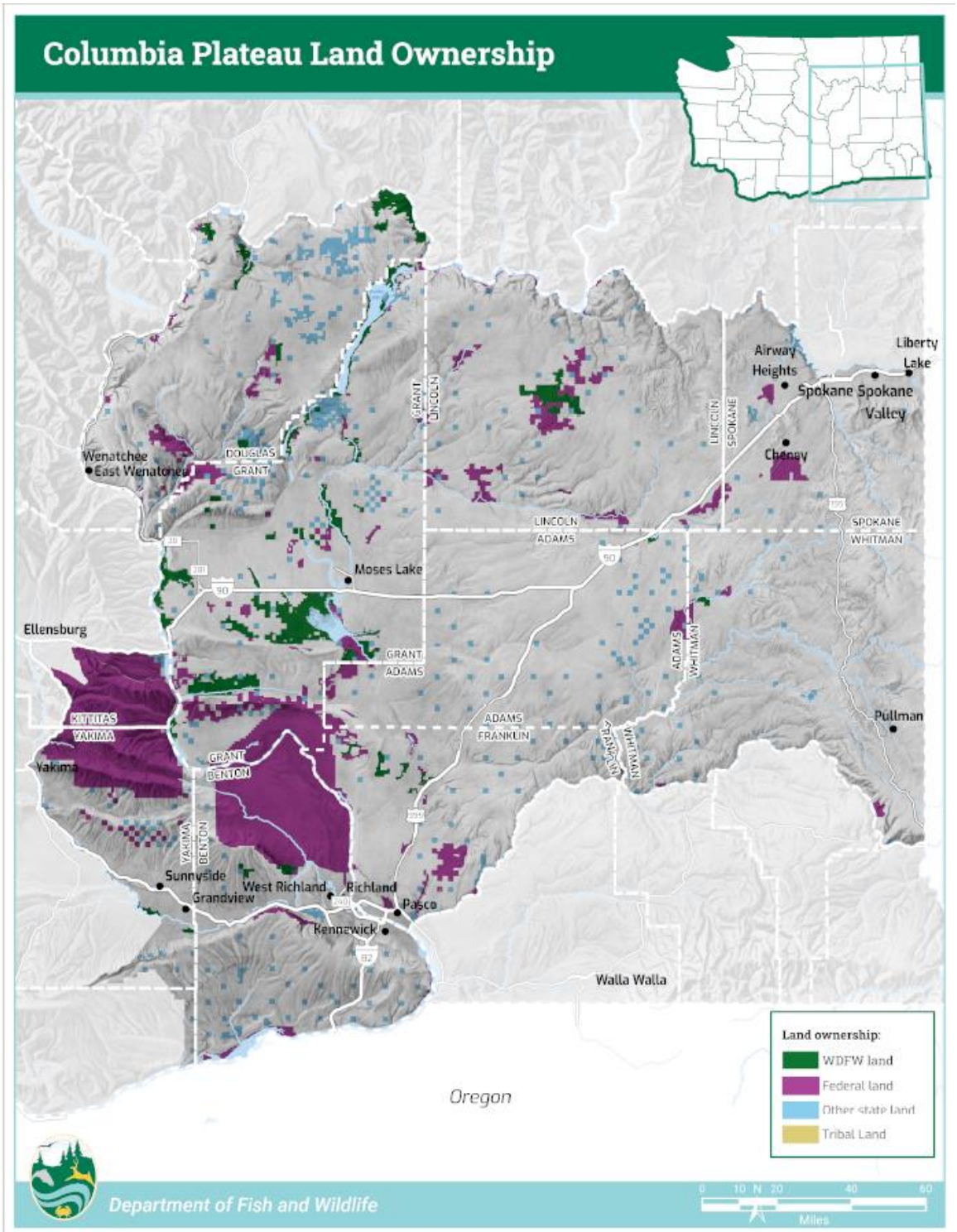

Figure 9. Land ownership in the Columbia Plateau MDMZ.

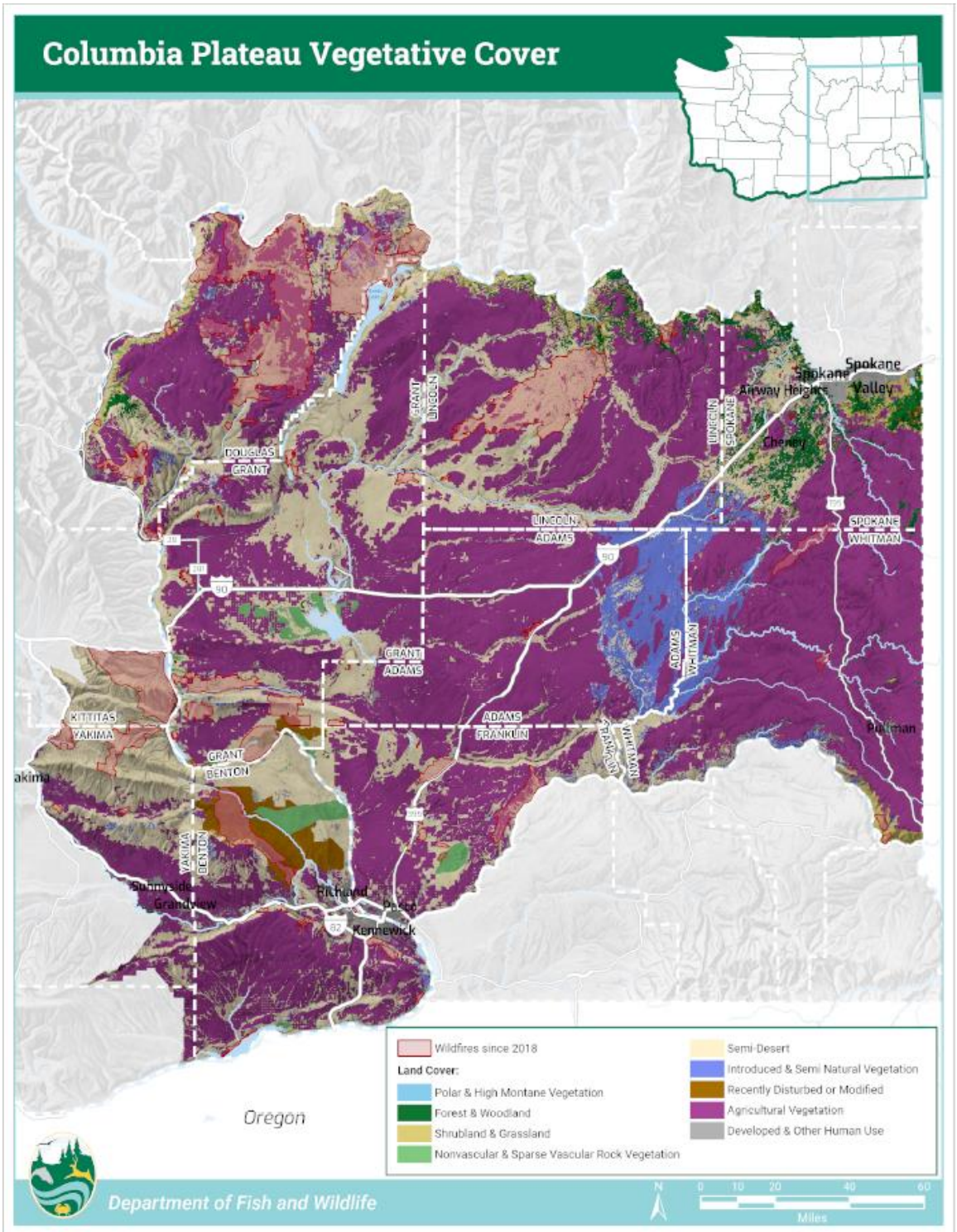

Figure 10. Vegetative cover and recent wildfire perimeters in the Columbia Plateau MDMZ.

Threats and Actions

Habitat loss. Like in other priority MDMZs, loss habitats important to mule deer, particularly shrubsteppe, riparian, and wet meadow habitat in the Columbia Plateau are being lost due to land conversion for agriculture, energy development and residential uses. As stated above, large-scale wildfires are becoming increasingly common throughout eastern Washington and several fires have occurred in this MDMZ since 2018 (Figure 10). Though fires have occurred on smaller scales in the last several years, more than 450,000 acres burned within this MDMZ in a 24-hour period in 2020; these fires resulted in the loss of critical mule deer movement corridors along East Foster Creek and other drainages. WDFW and its partners are continuing to restore habitat after these fires.

Habitat degradation. Climate change induced extreme weather conditions (e.g., drought, low winter snowpack) result in reduced overall nutritional carrying capacity of the landscape and reduced body condition of mule deer during critical seasonal transition periods. Large scale wildfires, even where not severe, significantly change the nutritional landscape for ungulates and other species by removing native species cover and facilitating invasive by invasive plants. Associated with post-wildfire community recovery and ongoing land conversion for the uses described above, hard fencing is erected across the landscape, creating movement barriers to ungulates and other wildlife.

Farmland enrolled in the federal CRP program is a significant component of available habitat for mule deer in this zone. These lands provide mule deer with refugia habitat but lower quality forage because plantings are often nonnative perennial grass cover to stabilize the soil. Conversely, the SAFE program establishes a higher bar for plantings. In Washington, native species and a diverse mix of grasses, forbs, and shrubs and required under SAFE. Other programs with the Farm Services Agency (FSA) and Natural Resources Conservation Service (NRCS) may offer opportunities to improve mule deer habitat in this zone.

Mortality. Unique to the Columbia Plateau, mule deer in this MDMZ face movement barriers and are subject to mortality due to irrigation canals that provide water as a part of the Columbia Basin Irrigation Project. These are linear structures built with steep concrete or slick rubber siding that entrap deer and other wildlife and bisect large portions of habitat. Existing equipment access ramps mitigate mortality in some areas, but many canals lack such ramps and canals present a movement barrier even when dry. Mortality and trapping of mule deer and other animals in these canals is not uncommon.

Action	Threat-cause Addressed						
	Agricultural development	**Climate change**	**Energy development**	**Federal policy**	**Irrigation canals**	**Residential development**	**Wildfire**
Acquisition of important undeveloped lands for conservation.	x		x			x	
Agency collaboration to more rapidly and effectively respond to fires in ways that address areas not covered by existing fire districts, and fires crossing jurisdictional boundaries including military facilities, and promoting a general shift in mindset to increase the priority to protect shrubsteppe habitats as critically valuable resources.							x
Delineate important movement corridors and stopover locations of subherds in the central and southern portions of the zone to support empirically-based decisions regarding prioritization of habitat conservation needs in those areas.	x		x			x	
Develop conservation easements focusing on improving and/or preserving important habitats in collaboration with private landowners.	x		x			x	
Develop mitigation agreements that emphasize use of wildlife-friendly fencing, minimize facility footprints, and minimize use of construction activities that remove native vegetation from the landscape.	x		x			x	
Develop state-federal cooperative agreements within the scope of the Good Neighbor Authority to implement habitat projects where appropriate							x
Explicit federal support for global reduction in greenhouse gas emissions.		x					
Increase number of acres available to enroll in SAFE.				x			
Increase the national enrollment cap for CRP while maintaining incentives that make the program attractive to producers.				x			

Action (*continued*)	**Threat-cause Addressed**						
	Agricultural development	**Climate change**	**Energy development**	**Federal policy**	**Irrigation canals**	**Residential development**	**Wildfire**
Intensive, long-term collaborative effort by state and federal agencies to reduce fuels, restore native vegetation, and control weeds in areas in the zone affected by wildfire on both Public and Private Lands.							x
Prioritize habitat work to protect climate refugia and buffer migratory corridor changes driven by climate (e.g., increase efforts to protect and restore riparian and wetland habitats).		x					
Provide enrollees in Farm Bill conservation programs with additional incentives to establish native plant communities (e.g., higher ranking points, cost share, incentive payments).				x			
Provide funding and other support for fencing and crossing structures to reduce movement barriers and prevent mule deer from entering and falling into canals.					x		
Provide funding and other support for structures to aid deer in escaping from canals.					x		
Work with landowners, developers, and grazing producers to replace hard fencing with wildlife-friendly options, including virtual fence.	x		x			x	x
Work with landowners and grazing producers to adjust grazing practices post-wildfire to allow for habitat recovery.							x

Notable accomplishments towards improving habitat quality

Priority Habitats and Species Program. The Washington Wildlife Habitat Connectivity Working Group (WHCWG), formed in 2007 between Washington State Department of Transportation (WSDOT) and WDFW, is an open collaborative science-based effort to produce tools and analyses that identify opportunities and priorities to provide habitat connectivity in Washington and surrounding habitats. While these efforts have not focused specifically on wildlife migration corridors and winter range, they have made structured, scientifically-based advancement on habitat connectivity questions for many species including mule deer (WHCWG 2012). Between 2022 and 2023, WDFW integrated WHCWG-derived corridors into the Priority Habitats and Species Program, which is the agency's primary means of transferring fish and wildlife information from our resource experts to local governments, landowners, and others who use it to protect habitat. The data integrated into PHS applies to parts of all three priority MDMZs.

Washington Shrubsteppe Restoration and Resiliency Initiative (WSRRI). During the 2021 legislative session, the Washington State Legislature appropriated $2.35 million from the state general fund to WDFW to restore and protect shrubsteppe habitat in Eastern Washington amid the threat of wildfires. WDFW formed a steering committee in partnership with the Washington State Conservation Commission (SCC) and the Washington Department of Natural Resources (DNR) to make decisions on how to use new state funding to benefit wildlife by restoring shrubsteppe habitat, implementing species-specific recovery actions, and supporting working lands in Eastern Washington. An advisory group with representatives from local, state, federal, Tribal, agricultural, and conservation organizations provided recommendations to the steering committee on delivery mechanisms, location priorities, and restoration program development. The WSRRI is making policy recommendations, identifying spatial priorities, and setting strategic direction to create a shrubsteppe landscape more resilient to fire, to better respond to wildland fire when it occurs, and to restore habitat after fires. Funding priorities thus far have included habitat restoration, wildlife friendly fencing (including virtual fencing), and grazing deferment for habitat recovery after fire. Mule deer are a priority species in this effort. The WSRRI geography includes significant portions of all of Washington's MDMZs, other than the Northern Rocky Mountains MDMZ.

Irrigation Canal Mitigation. WDFW has initiated cross-partner discussions to support development and installation of fencing and wildlife escapement structures along irrigation canals associated with the Columbia Basin Irrigation Project. To date, six escape ramps have been created in lieu of fencing. WDFW wildlife biologists report a notable decrease in complaints about deer trapped in canals since the escape ramps were installed. This work has occurred only in the Columbia Plateau MDMZ. Additional funding is necessary to continue this work.

Land protection. Since 2020, WDFW and its partners have invested in additional land protection, through acquisition and conservation easements, within the priority MDMZs to benefit mule deer and other species. WDFW has acquired, by deed, approximately 960, 608, and 3,253 acres in the East Slope Cascades, East Columbia Gorge, and Columbia Plateaus MDMZs respectively, adding more than 4,800 acres of protected land to benefit mule deer and other wildlife. In addition, the agency signed or renewed leases, primarily with WDNR, on almost 29,000 acres of land, to be managed for wildlife. Nearly 80 percent of these leased lands occur in WDFW's largest Wildlife Areas in the East Slope Cascades MDMZ, including the L.T. Murray Wildlife Area, which provides important winter habitat for the Wenatchee Mountains (also known as Kittitas) mule deer herd. Partners, such as the Chelan Douglas Land Trust (CDLT), have been actively working to secure additional protections. Since 2020, CDLT has protected an additional 2,946 acres, through acquisitions and easements adjacent to USFS lands, many in areas used by the Chelan mule deer herd.

Statewide Connectivity Action Plan. In the 2023-25 biennium, the State Legislature appropriated funding to WDFW to address climate resiliency, part of which includes development of a wildlife climate connectivity strategy. Using these funds, WDFW is actively working with WSDOT, Conservation Northwest, other partners and Tribes, to compile multi-species habitat connectivity data and build a collaborative process to generate a statewide connectivity action plan. This action plan will prioritize and guide investments in the long term to protect and increase habitat connectivity across Washington. The mule deer migration data described below, that WDFW has and will continue to collect, will be integrated into this planning process.

Good Neighbor Authority (GNA) Agreements. WDFW has a statewide master GNA agreement with USFS and several supplemental project agreements under that umbrella; supplemental project agreements to benefit migratory ungulates within the priority MDMZs is a priority. In 2023, WDFW developed a supplemental GNA agreement that will fund the Shared Stewardship Implementation Lead for the Central Washington Initiative. That position will lead development and implementation of shared stewardship projects with USFS in a geography that includes the East Slope Cascades MDMZ. The focus of that agreement is to implement fish and wildlife conservation projects on the Okanogan-Wenatchee Forest that also reduce wildfire risk; many of these could improve ungulate habitat. The habitat projects would be funded through multiple sources including USFS, WDFW, DNR, Tribes, NGOs, grants, and others.

Research Needs and Accomplishments

Across priority MDMZs, WDFW and its partners have ongoing needs for:

1. high-resolution, long-term movement data for mule deer that are sufficient for identification of habitats and important landownerships within the highest-use corridors and stopover locations important to migratory mule deer;
2. data pertaining to the near and long-term effects of solar, wind, and other land conversion/development activities on the health and sustainability of mule deer, mule deer habitat quality, and mule deer habitat connectivity;
3. data pertaining to the location and impact of movement barriers (e.g., highways, irrigation canals, human development) on mule deer movement patterns; and
4. data on the impacts of human disturbance in migratory and winter habitats on behavioral and reproductive ecology of mule deer.

Since the last iteration of Washington's Action Plan, WDFW has made headway in filling the data gaps above in two priority MDMZs. Through the East Slope Cascades Mule Deer Project, WDFW applied funds from the 2018 USFWS SO3362 Research Grant were used to purchase 117 collars in Kittitas and Chelan counties. Migration footprints were analyzed and published in Volume 3 of Ungulate migrations of the western United States USGS report (Kauffman et al. 2022; Figure 7 & 8). In 2022, additional collaring efforts (n = 25) were completed in the foothills near the city of Wenatchee to target the higher proportion of the population that is migratory, and more clearly identify the movement corridors intersecting U.S. Highway 97 near Blewett Pass. We expect analyses of these movement data to be published in Volume 4 of Ungulate migrations of the western United States USGS report. Additionally, WDFW is collaborating with WSDOT to deploy Variable Messaging Signs near Blewett Pass to warn drivers that wildlife may be crossing roads during key periods of the year and motorists are at risk.

Further, through the East Columbia Gorge Mule Deer Project, funds from the 2019 USFWS SO3362 Research Grant were used to purchase 109 GPS collars that were deployed in Klickitat County from 2020-2023. Analysis of movement data will be published in Volume 4 of Ungulate migrations of the western United States USGS report and will be used to inform mule deer habitat management efforts (e.g., collision mitigation, habitat preservation).

WDFW will continue to pursue those priority data described above as funding becomes available. We anticipate these data will:

- Provide means and support for essential research investigating mule deer population status, habitat quality, and habitat connectivity;
- Expand scale and increase utility of mule deer movement and habitat use data available to support meaningful planning and implementation of successful habitat management activities by state and federal land managers;

- Provide baseline data for delineation of mule deer migratory corridors prior to any future events that may adversely affect habitat quality or connectivity (e.g., wildfires, residential development, or energy development);
- Provide empirically-based map products in response to internal and external requests for information about mule deer habitat use; and
- Increase breadth and depth of information WDFW can provide to constituents about research and management activities, status of mule deer populations, and the importance of ongoing habitat conservation and restoration activities.

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Appendix A

THE SECRETARY OF THE INTERIOR

WASHINGTON

ORDER NO. 3362

Subject: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors

Sec. 1 **Purpose**. This Order directs appropriate bureaus within the Department of the Interior (Department) to work in close partnership with the states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming to enhance and improve the quality of big-game winter range and migration corridor habitat on Federal lands under the management jurisdiction of this Department in a way that recognizes state authority to conserve and manage big-game species and respects private property rights. Through scientific endeavors and land management actions, wildlife such as Rocky Mountain Elk (elk), Mule Deer (deer), Pronghorn Antelope (pronghorn), and a host of other species will benefit. Additionally, this Order seeks to expand opportunities for big-game hunting by improving priority habitats to assist states in their efforts to increase and maintain sustainable big game populations across western states.

Sec. 2 **Authorities**. This Order is issued under the authority of section 2 of Reorganization Plan No. 3 of 1950 (64 Stat. 1262), as amended, as well as the Department's land and resource management authorities, including the following:

a. Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701, *et seq.*;

b. U.S. Geological Survey Organic Act, as amended, 43 U.S.C. 31, *et seq.*;

c. National Wildlife Refuge System Improvement Act of 1997, as amended, 16 U.S.C. 668dd *et seq.*; and

d. National Park Service Organic Act of 1916, as amended, 54 U.S.C. 100101, *et seq.*

Sec. 3 **Background**. The West was officially "settled" long ago, but land use changes continue to occur throughout the western landscape today. Human populations grow at increasing rates with population movements from east and west coast states into the interior West. In many areas,

development to accommodate the expanding population has occurred in important winter habitat and migration corridors for elk, deer, and pronghorn. Additionally, changes have occurred across large swaths of land not impacted by residential development. The habitat quality and value of these areas crucial to western big-game populations are often degraded or declining.

The Bureau of Land Management (BLVD is the largest land manager in the United States (U.S.) with more than 245 million acres of public land under its purview, much of which is found in Western States. The U.S. Fish and Wildlife Service (FWS) and National Park Service (NPS) also manage a considerable amount of public land on behalf of the American people in the West. Beyond land management responsibilities, the Department has strong scientific capabilities in the U.S. Geological Survey (USGS) that can be deployed to assist State wildlife agencies and Federal land managers. Collectively, the appropriate bureaus within the Department have an opportunity to serve in a leadership role and take the initiative to work closely with Western States on their priorities and objectives as they relate to big-game winter range and migration corridors on lands managed by the Department.

Consistent with the American conservation ethic, ultimately it is crucial that the Department take action to harmonize State fish and game management and Federal land management of big-game winter range and corridors. On lands within these important areas, if landowners are interested and willing, conservation may occur through voluntary agreements.

Robust and sustainable elk, deer, and pronghorn populations contribute greatly to the economy and well-being of communities across the West. In fact, hunters and tourists travel to Western States from across our Nation and beyond to pursue and enjoy this wildlife. In doing so, they spend billions of dollars at large and small businesses that are crucial to State and local economies. We have a responsibility as a Department with large landholdings to be a collaborative neighbor and steward of the resources held in trust.

Accordingly, the Department work with our State partners and others to conserve and/or improve priority western big-game winter range and migration corridors in sagebrush ecosystems and in other ecotypes as necessary. This Order focuses on the Western States of: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah,
Washington, and Wyoming. These States generally have expansive public lands with established sagebrush landscapes along with robust big-game herds that are highly valued by hunters and tourists throughout the Nation.

The Department has broad responsibilities to manage Federal lands, waters, and resources for public benefit, including managing habitat to support fish, wildlife, and other resources. Secretary's Order 3356, "Hunting, Fishing, Recreational Shooting, and Wildlife Conservation Opportunities and Coordination with States, Tribes, and Territories," (SO 3356) was issued on September 15, 2017. SO 3356 primarily focused on physical access to lands for recreational activities, particularly hunting and fishing. This Order is focused on providing access to big game animals by providing direction regarding land management actions to improve habitat quality for big-game populations that could help ensure robust big-game populations continue to exist.

Further, SO 3356 includes a number of directives related to working with States and using the best available science to inform development of guidelines, including directing relevant bureaus to:

a. Collaborate with State, tribal, and territorial fish and wildlife agencies to attain or sustain State, tribal, and territorial wildlife population goals during the Department's land management planning and implementation, including prioritizing active habitat management projects and funding that contributes to achieving wildlife population objectives, particularly for wildlife that is hunted or fished, and identifying additional ways to include or delegate to States habitat management work on Federal lands;

b. Work cooperatively with State, tribal, and territorial wildlife agencies to enhance State, tribe, and territorial access to the Department's lands for wildlife management actions;

c. Within 180 days, develop a proposed categorical exclusion for proposed projects that utilize common practices solely intended to enhance or restore habitat for species such as sage grouse and/or mule deer; and

d. Review and use the best available science to inform development of specific guidelines for the Department's lands and waters related to planning and developing energy, transmission, or other relevant projects to avoid or minimize potential negative impacts on wildlife.

This Order follows the intent and purpose of SO 3356 and expands and enhances the specific directives therein.

Sec. 4 **Implementation**. Consistent with governing laws, regulations, and principles of responsible public stewardship, I direct the following actions:

a. With respect to activities at the national level, I hereby direct the BLM, FWS, and NPS to:

(1) Within 30 days, identify an individual to serve as the "Coordinator" for the Department. The Coordinator will work closely with appropriate States, Federal agencies, nongovernmental organizations, and/or associations to identify active programs focused on big-game winter range and/or migration corridors. The programs are to be organized and cataloged by region and other geographic features (such as watersheds and principles of wildlife management) as determined by the Deputy Secretary, including those principles identified in the Department's reorganization plan.

(2) Within 45 days, provide the Coordinator information regarding:

Past and current bureau conservation/restoration efforts on winter range and migration corridors;

(i) Whether consideration of winter range and corridors is included in appropriate bureau land (or site) management plans;

(ii) Bureau management actions used to accomplish habitat objectives in these areas;

(iii) The location of areas that have been identified as a priority for conservation and habitat treatments; and

(iv) Funding sources previously used and/or currently available to the bureau for winter range and migration corridor conservation/restoration efforts.

(3) Within 60 days, if sufficient land use plans are already established that are consistent with this Order, work with the Coordinator and each regional Liaison (see section 4b) to discuss implementation of the plans. If land use plans are not already established, work with the Coordinator and each regional Liaison to develop an Action Plan that summarizes information collected in section 4 (a) (1) and (2), establishes a clear direction forward with each State, and includes:

(i) Habitat management goals and associated actions as they are associated with big game winter range and migration corridors;

(ii) Measurable outcomes; and

(iii) Budgets necessary to complete respective action(s).

b. With respect to activities at the State level, I hereby direct the BLM, FWS, and NPS to:

(1) Within 60 days, identify one person in each appropriate unified region (see section 4a) to serve as the Liaison for the Department for that unified region. The Liaison will coordinate at the State level with each State in their region, as well as with the Liaison for any other regions within the State. The Liaison will schedule a meeting with the respective State fish and wildlife agency to assess where and how the Department can work in close partnership with the State on priority winter range and migration corridor conservation.

(2) Within 60 days, if this focus is not already included in respective land management plans, evaluate how land under each bureau's management responsibility can contribute to State or other efforts to improve the quality and condition of priority big-game winter and migration corridor habitat.

(3) Provide a report on October 1, 2018, and at the end of each fiscal year thereafter, that details how respective bureau field offices, refuges, or parks cooperated and collaborated with the appropriate State wildlife agencies to further winter range and migration corridor habitat conservation.

(4) Assess State wildlife agency data regarding wildlife migrations early in the planning process for land use plans and significant project-level actions that bureaus develop; and

(5) Evaluate and appropriately apply site-specific management activities, as identified in State land use plans, site-specific plans, or the Action Plan (described above), that

conserve or restore habitat necessary to sustain local and regional big-game populations through measures that may include one or more of the following:

(i) restoring degraded winter range and migration corridors by removing encroaching trees from sagebrush ecosystems, rehabilitating areas damaged by fire, or treating exotic/invasive vegetation to improve the quality and value of these areas to big game and other wildlife;

(ii) revising wild horse and burro-appropriate management levels (AML) or removing horses and burros exceeding established AML from winter range or migration corridors if habitat is degraded as a result of their presence;

(iii) working cooperatively with private landowners and State highway departments to achieve permissive fencing measures, including potentially modifying (via smooth wire), removing (if no longer necessary), or seasonally adapting (seasonal lay down) fencing if proven to impede movement of big game through migration corridors;

(iv) avoiding development in the most crucial winter range or migration corridors during sensitive seasons;

(v) minimizing development that would fragment winter range and primary migration corridors;

(vi) limiting disturbance of big game on winter range; and

(vii) utilizing other proven actions necessary to conserve and/or restore the vital big-game winter range and migration corridors across the West.

c. With respect to science, I hereby direct the USGS to:

(1) Proceed in close cooperation with the States, in particular the Western Association of Fish and Wildlife Agencies and its program manager for the Crucial Habitat Assessment Tool, prior to developing maps or mapping tools related to elk, deer, or pronghorn movement or land use; and

(2) Prioritize evaluations of the effectiveness of habitat treatments in sagebrush communities, as requested by States or land management bureaus, and identified needs related to developing a greater understanding of locations used as winter range or migration corridors.

d. I further hereby direct the responsible bureaus and offices within the Department to:

(1) Within 180 days, to update all existing regulations, orders, guidance documents, policies, instructions, manuals, directives, notices, implementing actions, and any other similar actions to be consistent with the requirements in this Order;

(2) Within 30 days, provide direction at the state or other appropriate level to revise existing Federal-State memorandums of agreement to incorporate consultation with State agencies on the location and conservation needs of winter range and migration routes; and

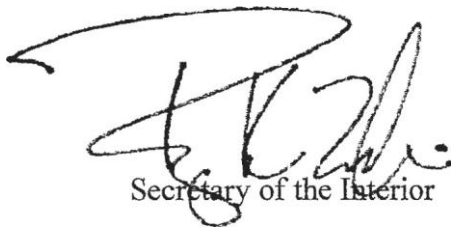
(3) Consult with State wildlife agencies and bureaus to ensure land use plans are consistent and complementary to one another along the entire wildlife corridor in common instances where winter range or migration corridors span jurisdictional boundaries.

e. Heads of relevant bureaus will ensure that appropriate members of the Senior Executive Service under their purview include a performance standard in their respective current or future performance plan that specifically implements the applicable actions identified in this Order.

Sec. 5 **Management**. I hereby direct the Deputy Secretary to take is responsible for taking all reasonably necessary steps to implement this Order.

Sec. 6 **Effect of Order**. This Order is intended to improve the internal management of the Department. This Order and any resulting reports or recommendations are not intended to, and do not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person. To the extent there is any inconsistency between the provision of this Order and any Federal laws or regulations, the laws or regulations will control.

Sec. 7 **Expiration Date**. This Order is effective immediately. It will remain in effect until its provisions are implemented and completed, or until it is amended, superseded, or revoked.

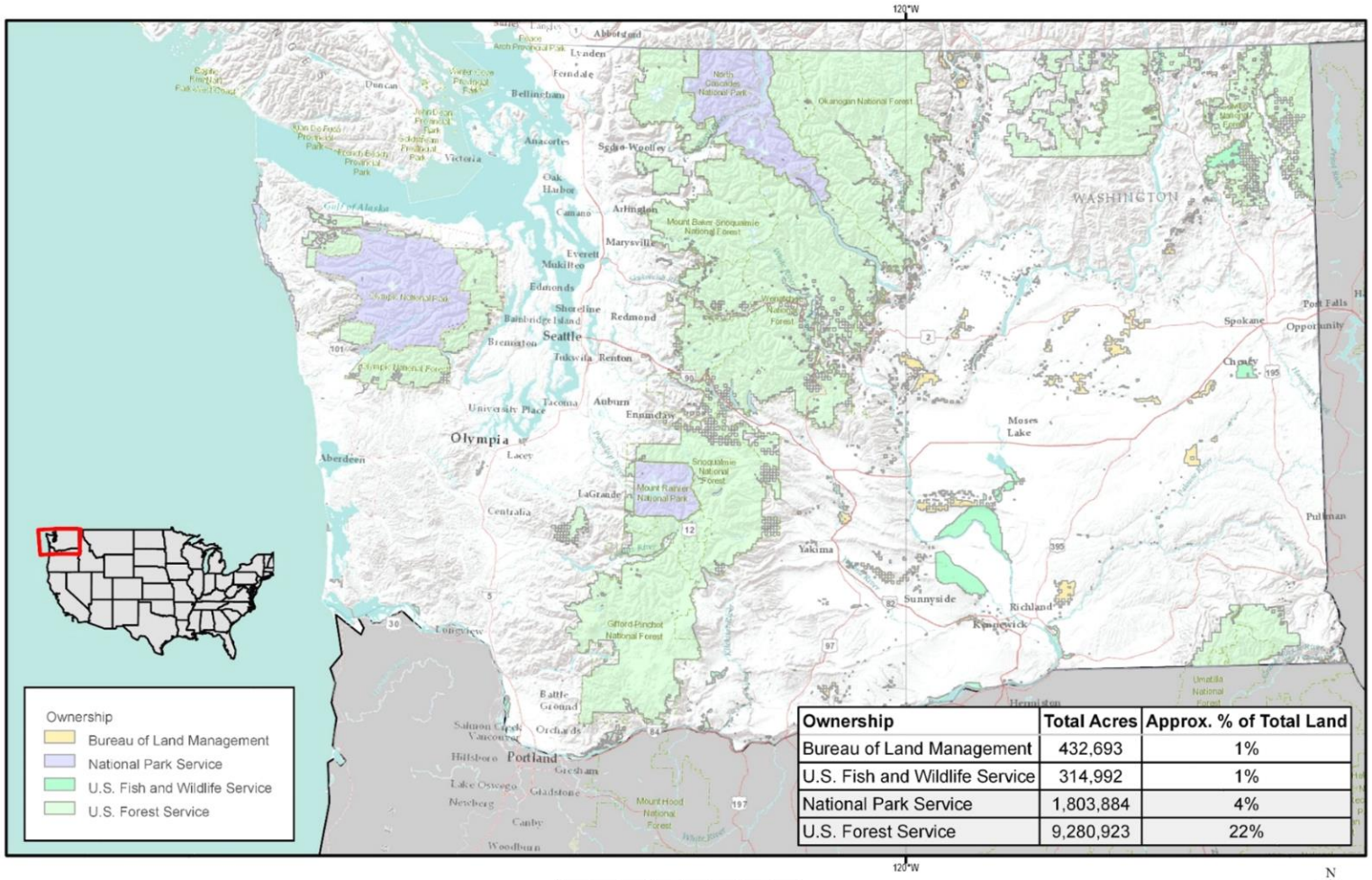


Date: FEB 0 9 2018

Appendix B

U.S. Department of the Interior

Distribution of Department of Interior and Department of Agriculture Lands in the State of Washington



Ownership	Total Acres	Approx. % of Total Land
Bureau of Land Management	432,693	1%
U.S. Fish and Wildlife Service	314,992	1%
National Park Service	1,803,884	4%
U.S. Forest Service	9,280,923	22%

Produced in the USFWS La Grande Field Office
La Grande, Oregon
9/5/2018 8:43 AM
Basemap: Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS
File: DOI Land Ownership SO 3362

The DOI makes no warranty for use of this map and cannot be held liable for actions or decisions based on map content.

This map represents the general spatial arrangement of land ownership and acreage of DOI and USDA lands in the State of Washington.

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