

IDAHO ACTION PLAN (V2.0)
For
Implementation of Department of the Interior Secretarial Order 3362: “Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors”

11 October 2019

PREFACE

Secretarial Order No. 3362 (SO3362) (09 February 2018; Appendix B) directs the Department of Interior (DOI) to assist western tribes, private landowners, state fish and wildlife agencies, and state highway departments with conserving and managing priority big game winter ranges and migration corridors. Per SO3362, the DOI coordinated with state wildlife agencies in 2018 to develop action plans identifying priority big game winter ranges, migration corridors, and corresponding management activities across jurisdictional boundaries.

The Idaho Department of Fish and Game (IDFG) and DOI jointly developed the first version (V1.0) of the SO3362 “Idaho Action Plan,” which identified 5 Priority Areas for managing pronghorn, mule deer, and elk winter range and migration routes (Appendix A). IDFG delineated Priority Areas based on the presence of key big game populations, locations of their corresponding winter ranges and migration routes, and the potential Risks/Threats to these populations. Idaho’s V1.0 Action Plan also identified three priority research needs to inform big game winter range and migration route mapping and management. The first research priority – Statewide Mapping of Elk and Mule Deer Winter Ranges, Movement Routes, and Stopover Locations – received SO3362 funds and is currently underway.

This second version of Idaho’s Action Plan has been prepared in response to DOI’s 26 April 2019 letter to IDFG (Appendix C), which solicited a second version (V2.0) of Idaho’s 2018 SO3362 Action Plan with updated Priority Area information and related research priorities. Correspondingly, IDFG views this Action Plan as a living document to be reviewed and updated as needed, for example when new priorities emerge, updated information becomes available, and management and research efforts are completed.

Per DOI’s request, V2.0 herein updates IDFG’s understanding of the extents and issues in each Priority Area and corresponding statewide research needs. The following key information has been incorporated into V2.0 to better focus cross-jurisdictional management of Idaho’s priority big game winter ranges and movement routes:

- Current efforts addressing Risks/Threats have been updated for each Priority Area.
- Actionable near-term efforts to address Risks/Threats have been identified for each Priority Area based on the best available information, present needs, and currently understood opportunities.
- Spatial extents and maps of the 5 Priority Areas have been updated including generalized boundaries of big game winter range, migration routes, and locations of actionable efforts where available (please note the following: (1) Priority Area extents and map contents herein are provisional and display IDFG’s current understanding of available

information; (2) statewide statistical analyses are currently underway to improve winter range, migration route, and stopover location mapping; and (3) V2.0 Priority Area maps are subject to change as new information becomes available).

- A list of high-priority, near-term actionable management efforts has been selected based on actionable efforts identified within Priority Areas and currently understood opportunities (see below section: Statewide Priority Management Efforts).
- Statewide research priorities have been updated to focus on delineating elk and pronghorn winter ranges and migration routes, which will support identification of management efforts needed to address Risks/Threats and revise Priority Areas to better focus winter range/migration route conservation needs and actions.

Idaho's SO3362 Action Plan V2.0 contains the following sections:

- Introduction.
- Statewide Priority Management Projects.
- Priority Areas for Big-Game Winter Range and Migration Routes.
 - Smoky-Boise Complex (formerly Smoky Boise – Winter Range – N of I84 Boise to Mountain Home and US20 Cat Creek Summit to Hill City).
 - Ashton to Montana State Border (formerly US20/SH87 Complex – Ashton to Montana State Line).
 - Panhandle Complex (formerly US95 McArthur Lake – Elmira to Naples).
 - Rocky Point (formerly US30 Rocky Point, milepost 443-447).
 - Big Desert-Mountain Valley Complex (formerly Interstate 15 – Market Lake to Montana border).
- Statewide Priority Research Projects.
- Literature Cited.
- Appendix A: SO3362 Idaho State Action Plan V1.0 (October 2018)
- Appendix B: Department of the Interior Secretarial Order 3362: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors.
- Appendix C: Department of Interior 26 April 2019 letter to the Idaho Department of Fish and Game soliciting a second version of Idaho's 2018 SO3362 Action Plan.

INTRODUCTION

Background

Each year, many populations of big game species migrate between seasonal habitats (e.g., winter and summer ranges). Land uses (urban, agriculture, and energy development), infrastructure (e.g., roads and fences), and largescale habitat changes (e.g., wildfire or noxious/invasive weeds) can degrade big game winter range and disrupt migration routes, thereby reducing harvestable surpluses available for hunting. Big game hunting and tourism contributes greatly to the cultures and economies of western states including Idaho. Big game hunting and the related economy are facilitated by a transportation system that accesses Idaho's expansive public lands. Factors that reduce big game hunting opportunities can in turn negatively affect both Idaho's economy and cultural values.

Many of Idaho's big game populations, particularly pronghorn, mule deer, and elk, migrate between seasonal ranges to increase survival. These migration routes often cross multiple jurisdictions including the DOI's Bureau of Land Management (BLM), US Department of Agriculture's (USDA) Forest Service (USFS), state, and private lands. Furthermore, migration routes often traverse topographic, development, and infrastructure bottlenecks.

The following are examples of Idaho's annual big game migrations:

- Pronghorn travel over 100 miles between the Pioneer Mountains and Beaverhead Mountains.
- Mule deer and elk migrate from Yellowstone National Park (NYP) to the Sand Creek Desert.
- Mule deer, pronghorn, and elk populations throughout Idaho migrate within watersheds between high-elevation mountain summer ranges to milder low-elevation winter ranges with south and west facing slopes.

To sustain big game populations at harvestable levels into the future, IDFG and stakeholders must understand, conserve, and manage the complete breadth of each species annual habitat requirements including seasonal ranges and migration routes. IDFG and partners have studied Idaho's big game winter ranges and migrations for decades. However, new technologies and analyses are now allowing a better understanding of the full scope of Idaho's big game migrations. The purpose of IDFG's SO3362 Action Plan is therefore to focus and facilitate ongoing and future cross-jurisdictional conservation of big game winter range and migration routes in Idaho. Additionally, conserving and managing big game winter range and migration routes will benefit a host of other wildlife species in Idaho.

Secretarial Order 3362

U.S. Secretary of the Interior Ryan Zinke signed SO3362 (Appendix A) on February 9, 2018. SO3362's purpose is to conserve and improve winter range and migration corridors in the West for pronghorn, mule deer, and elk. SO3362 currently applies to the following states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

SO3362 fosters collaboration among tribes, states, private landowners, and the DOI toward a common goal of sustaining robust big game populations at harvestable levels using the best available science to inform land management and habitat conservation actions. In particular, appropriate DOI bureaus are to partner with state wildlife agencies to improve the quality of big game winter range and migration corridors on DOI-managed federal lands in a manner that recognizes state authority to conserve and manage big game species and respects private property rights.

Moreover, SO3362 is intended to apply an all-lands ecological approach to conserving and improving (i.e., planning, management, and research) big game winter range and migration corridors on federal, state, and private lands including collaborating with the USDA through the USFS and Natural Resource Conservation Service (NRCS). The DOI is specifically directed to

prepare cross-jurisdictional Action Plans with state wildlife agencies that establish habitat management goals and estimated budgets for conserving and restoring state-priority winter range and migration routes. Action Plans are to specify site-specific management activities with measurable outcomes for big game winter range and migration routes such as the following examples:

- Removal of encroaching tree within sagebrush ecosystems.
- Post-wildfire rehabilitation.
- Treatment of exotic/invasive vegetation.
- Cooperative efforts with private landowners and state highway departments to address fences that impedes big game movements through migration corridors.
- Avoidance of development in crucial winter range or migration corridors.
- Minimization of development that would fragment winter range and migration corridors.
- Limiting of disturbance of big game on winter range.

SO3362 also expands and enhances SO3356, which directs the DOI to collaborate with state, tribal, and territorial fish and wildlife agencies to attain or sustain wildlife population goals and use the best available science to avoid or minimize potential negative impacts to wildlife from energy, transmission, or other relevant projects. Conserving pronghorn, mule deer, and elk winter ranges and migration corridors across jurisdictions will help promote the overall ecological integrity of terrestrial landscapes in the West.

Federal Lands in Idaho

The DOI is the largest public land manager in the US. Much of the DOI-managed lands are in western states and support big game, which contributes greatly to local economies through hunting and tourism. The DOI has broad stewardship responsibilities to manage public lands held in trust and maintain associated big game populations. Through SO3362, the DOI also has funding resources and scientific capabilities available to assist states including Idaho with conserving big game winter range and migration routes on both the West's extensive public lands and other ownerships. Accordingly, the DOI is supporting IDFG, private landowners, and other entities to conserve and restore state-priority big game winter range and migration routes on both public and private lands in Idaho.

Within Idaho, almost 64% (approximately 34 million acres) of the state is comprised of federal lands, much of which provides excellent hunting opportunities and supports Idaho's native species including winter range and migration routes for pronghorn, mule deer, and elk. The DOI's BLM, US Fish & Wildlife Service (USFWS), and National Park Service (NPS) manage a sizable portion of the federal lands within Idaho. Of the 34 million acres of federal lands in Idaho, the BLM manages more than 12 million acres for multiple uses. BLM's land management and conservation of big game winter range and migration routes includes wildfire restoration, fence removal, invasive weed treatments, and native vegetation seedings.

The USFWS manages seven national wildlife refuges in Idaho (totaling 87,698 acres), most of which support big game and allow public hunting. The NPS manages 7 national park units in Idaho (totaling 508,196 acres), including Craters of the Moon National Monument and Preserve

and part of Yellowstone National park (YNP), both of which support important wildlife movement and migration routes. The NPS conserves big game winter range and migration corridors with measures including route mapping and invasive species treatments.

In addition to the DOI, the USDA's USFS manages 16 national forests in Idaho comprising more than 20 million acres. Most national forest lands in Idaho are open to hunting. IDFG and USFS biologists routinely collaborate on forest management to perpetuate the abundant big game populations that inhabit national forest lands.

Transportation

Transportation and wildlife management needs often interact requiring close coordination between state wildlife and transportation agencies relative to respective department missions and responsibilities. To facilitate this inter-departmental cooperation in Idaho, IDFG and the Idaho Transportation Department (ITD) created a Memorandum of Understanding signed in 2015 to increase public safety and enable wildlife passage across highways. As a result, IDFG and ITD routinely cooperate to address potential wildlife-vehicle conflicts, including the following examples:

- IDFG provides technical assistance upon ITD request about wildlife-vehicle conflicts to inform proposed highway project designs and decisions.
- IDFG and ITD cooperate to collect and share wildlife roadkill data that is stored in the IDFG-maintained database hosted on the Idaho Fish and Wildlife Information System (IFWIS).
- IDFG maintains the Idaho Conservation Planner containing wildlife species distribution information to assist ITD decision-making about proposed highway projects.
- IDFG shares telemetry locations where big game regularly cross highways.
- IDFG and ITD collaborate to monitor the effectiveness of wildlife crossing structures.

STATEWIDE PRIORITY MANAGEMENT EFFORTS

Consistent with SO3362, IDFG identified 5 Priority Areas in Action Plan V1.0 for conserving big game winter range and migration routes. In response to DOI's 26 April 2019 letter (Appendix B), Action Plan V2.0 retained and updated the 5 original Priority Areas (see following section). V2.0's Priority Area updates clarified ongoing projects and near-term (i.e., 1-3 years) actionable efforts needed to address Risks/Threats to winter range and migration routes. IDFG's statewide priorities of near-term actionable management efforts were then narrowed based on currently identified near-term opportunities from all actionable efforts identified within each Priority Area.

The following are IDFG's current statewide high-priority, near-term actionable management efforts:

1. Statewide – IDFG capacity for Technical Assistance to implement winter range and migration route management projects within all Priority Areas; estimated cost = \$200,000/year.

- a. Guidance to resource management agencies (e.g., BLM, USFS, and IDL) upon request regarding habitat management including wildlife friendly fencing.
 - b. Responses to requests for input from regulatory agencies (e.g., BLM, USFS, IDL, ITD, and IDWR) regarding potential project effects to big game populations and habitat.
 - c. Coordination with and support for ITD upon request to assist with assessing and addressing wildlife-vehicle conflicts.
2. Panhandle Complex Priority Area – ITD construction of funnel fencing (including jump-outs, gates and wildlife guards) within project limits to enhance the efficiency of ITD’s planned Deep Creek Bridge Improvement Project for facilitating safe big game movements under US95.
3. Smoky-Boise Complex Priority Area – IDFG repair of wildfire-related damages to the existing SH21 wildlife underpass funnel fencing; estimated cost = \$5,000.
4. Panhandle Complex Priority Area – IDFG and ITD cooperative assessment of potential upgrades needed for existing funnel fencing (including jump-outs, gates and wildlife guards) and invasive weed control to enhance the efficiency of ITD’s existing US95 Copeland wildlife crossings.
5. Smoky-Boise Complex Priority Area – IDFG and ITD cooperative assessment of potential additional funnel fencing and conservation easement needs to improve the efficiency of the planned SH21 wildlife overpass.

PRIORITY BIG GAME WINTER RANGE AND MIGRATION AREAS

Priority Areas – The following subsections provide V2.0 updates for IDFG’s 5 Priority Areas (Figure 1), including new information about current efforts and near-term actionable efforts to address Risks/Threats, and spatial extents to focus management of big game winter ranges and movement routes (Priority Areas are presented in the same order as Action Plan V1.0):

- Smoky-Boise Complex.
- Ashton to Montana State Border.
- Panhandle Complex.
- Rocky Point.
- Big Desert-Mountain Valley Complex.

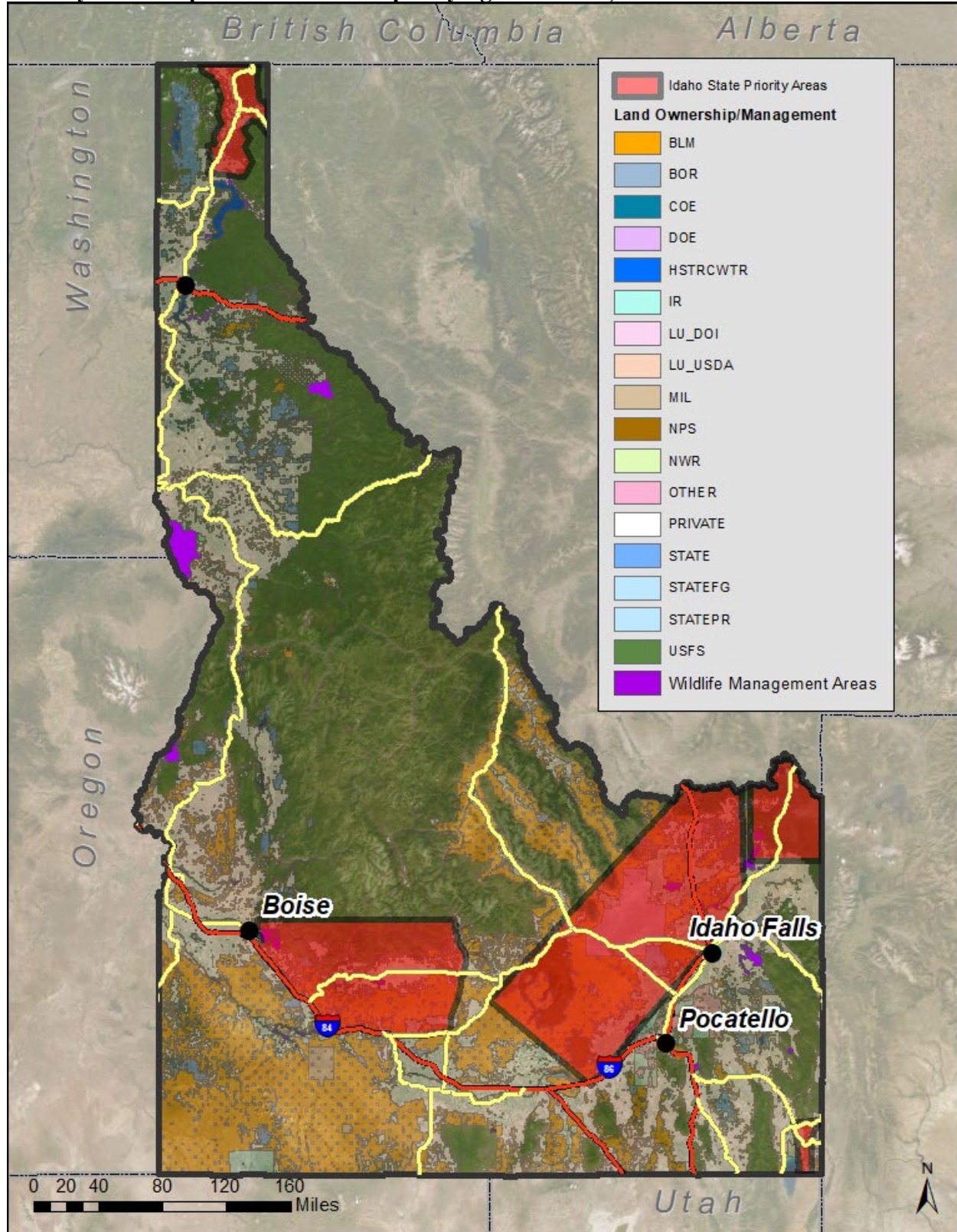
Contents – Each V2.0 Priority Area subsection contains summaries of the following topics requested by DOI (Appendix B), including revised maps:

1. Why area was selected.
2. Spatial location (including map).
3. Habitat types.
4. Important stopover areas.
5. Landownership.
6. Risks/Threats.
7. Current efforts to address Risks/Threats.
8. Actionable near-term efforts to address Risks/Threats.
9. Other issues for awareness (if applicable).

Cost Estimates – Estimated remaining costs for “Current and ongoing efforts addressing Risks/Threats” and estimated costs for “Actionable near-term efforts to address Risks/Threats” are provided if available. Fully funded efforts are also noted. Otherwise, cost estimates are currently unavailable if not provided and corresponding management efforts listed within a Priority Area are presently unfunded.

Priority Area Maps – Figure 1 provides a statewide overview of Priority area locations. Figure 1 also provides the legend of land ownership displayed on each Priority Area map, which is based on Bureau of Land Management Standard Publication colors for surface management agencies. Figures 2-6 provide individual V2.0 Priority Area maps. Information displayed on Priority Area maps represents IDFG’s best current understanding of available information including big game winter ranges and migration routes. Where provided on a Priority Area map, winter ranges are displayed as crosshatched polygons and migration routes are displayed as grey arrows of generalized movements from summer range to winter range. Displayed winter range polygons and migration route arrows are based on GPS radiotelemetry data, big game surveys, and expert knowledge. IDFG is currently performing statewide statistical analyses to improve winter range, migration route, and stopover location mapping (see the V2.0 Statewide Priority Research Projects section herein). Priority Area extents and map contents are therefore considered provisional and for current SO3362 planning purposes within a Priority Area. Results of IDFG’s statistical analyses of big game winter range, migration routes, and stopover areas will be used to refine future Priority Area map updates. Hence, V2.0 Priority Area maps are subject to change and updating in the future as new information becomes available.

Figure 1. Overview of Idaho's Big Game and Migration Corridor Priority Areas (see above Priority Area Map information and qualifying statements).



Smoky-Boise Complex (Figure 2)

1. *Why area was selected:*

- Contains Idaho's largest mule deer population (approximately 40,000 wintering mule deer), resident and migratory elk populations, and an expanding pronghorn population.
- Includes extensive big game winter range and multiple migration routes linking winter and summer ranges.
- Wildlife-vehicle conflicts occur with US20 and SH21.

2. *Spatial location:*

- Southwest and south-central Idaho.
 - Winter Range – South-facing slopes in the Boise foothills (including the Boise River Wildlife Management Area [WMA]) eastward across the Bennett Mountain foothills to approximately Shoshone, Idaho and south to I84.
 - Migration Routes – Transition areas between winter range and summer range to the north and east in the Boise River and Big Wood River watersheds, including crossings along US20 (e.g., Cat Creek Summit, Hill City, Camp Creek, and Poison Creek) and SH21 (e.g., Lucky Peak Reservoir).
- Notes.
 - The Priority Area was expanded for V2.0 to include additional areas with mule deer migration routes across the Camas Prairie.
 - The expanded Priority Area includes an ongoing radiotelemetry study describing pronghorn seasonal ranges, migration, and interactions with US20.
 - Priority Area extents and map contents herein are provisional and display IDFG's current understanding of available information; statewide statistical analyses are currently underway to improve winter range, migration route, and stopover location mapping; and V2.0 Priority Area maps are subject to change as new information becomes available (see the V2.0 Statewide Priority Research Projects section herein).

3. *Habitat types:* Primarily sagebrush steppe in the Owyhee Uplands ecological section.

4. *Important stopover areas:*

- Camas Prairie.
- South Soldier Mountains.
- Moonstone Mountain.

5. *Landownership:* Private, BLM, USFS, and State of Idaho.

6. *Risks/Threats:*

- Winter range degradation due to wildfire and invasive weeds.
- Urban, residential, infrastructure, and energy development, and land-use changes within winter range and along migration routes.
- Fencing designs that disrupt big game movements.
- Wildlife-vehicle conflicts within winter range and along migration routes.

7. *Current efforts to address Risks/Threats:*

- Technical Assistance.
 - Guidance to resource management agencies (e.g., BLM, USFS, and IDL) upon request regarding habitat management including wildlife friendly fencing.

- Responses to requests for input from regulatory agencies (e.g., BLM, USFS, IDL, ITD, FERC, BOR, and IDWR) regarding potential project effects to big game populations and habitat.
 - Coordination with and support for ITD upon request to assist with assessing and addressing wildlife-vehicle conflicts.
 - Winter Range and Migration Routes.
 - Post-wildfire restoration and weed control projects on IDFG's Boise River WMA and BLM-managed lands.
 - Post-wildfire restoration and weed control projects in the Bennett Mountain foothills on IDL- and BLM-managed lands.
 - Transportation Mitigation.
 - IDFG routine monitoring and maintenance of the SH21 wildlife underpass and funnel fence.
 - IDFG pronghorn radiotelemetry study with BLM and Blaine County describing migration and interactions with US20; estimated remaining cost = fully funded.
 - ITD and IDFG cooperative pilot study for US20 testing a smartphone application to enhance roadkill reporting; estimated remaining cost = fully funded.
8. *Actionable near-term efforts to address Risks/Threats:*
- Technical Assistance
 - Continued guidance as requested by regulatory and resource management agencies including ITD.
 - Winter Range and Migration Routes.
 - Participation with partners (e.g., BLM, USFS, IDL, private landowners, and non-governmental organizations [NGO]) in cooperative habitat restoration and enhancement projects as opportunities occur and are appropriate including post-wildfire restoration, shrub planting, weed control, and wildlife-friendly fencing.
 - Transportation Mitigation.
 - IDFG repair of wildfire-related damages (2 x 80-foot sections) and regular maintenance to the existing SH21 wildlife underpass funnel fencing; estimated cost = \$5,000.
 - IDFG participation as requested by ITD in design, engineering, and public input processes for the planned SH21 wildlife overpass structure and funnel fence.
 - Federal, state, and NGO collaboration in the Federal Lands Access Program Transportation Project (\$3,228,000 budget including \$84,000 IDFG match) to construct the planned SH21 wildlife overpass and funnel fence (including jump-outs, gates and wildlife guards), which will connect with existing funnel fence for the existing SH21 wildlife underpass; estimated cost = fully funded.
 - IDFG post-construction monitoring of wildlife use on the SH21 wildlife overpass.
 - IDFG and ITD cooperative assessment of potential additional funnel fencing and conservation easement needs to improve the efficiency of the planned SH21 wildlife overpass and associated funnel fencing.

- IDFG and ITD cooperative monitoring of wildlife use under the new US20 free-span bridges replacing culverts at Rock and Willow creeks; estimated cost = fully funded.
- 9. *Other issues for awareness:* Increasing human population growth rates in Idaho (fastest growing state in 2018) and corresponding anthropogenic development impact winter range near the Treasure Valley, Mountain Home, and Magic Valley.

Figure 2a. Smoky-Boise Complex Priority Area with generalized and provisional mule deer winter range (crosshatched polygons) and migration routes (grey arrows) from summer range to winter range (see above Priority Area Map information and qualifying statements).

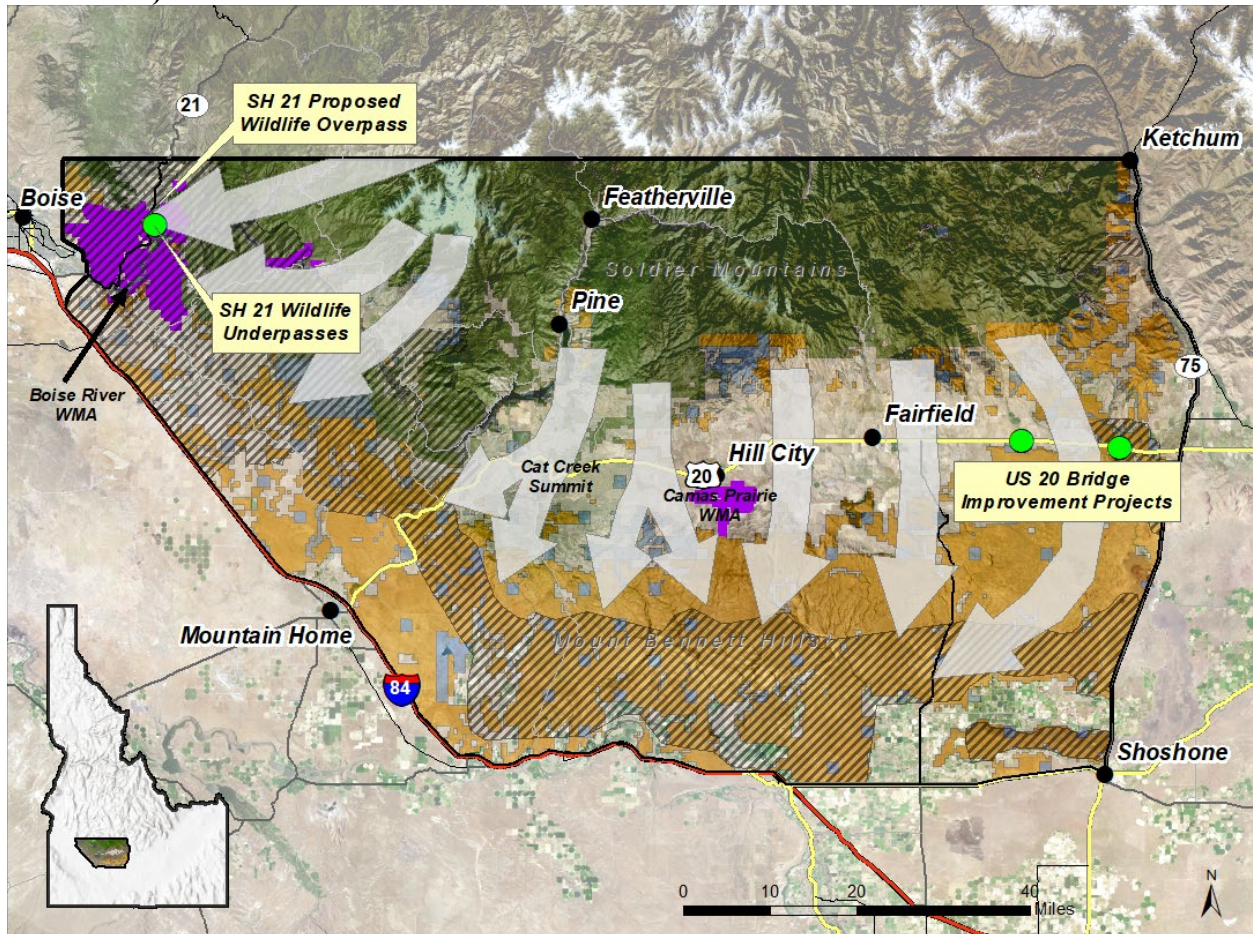
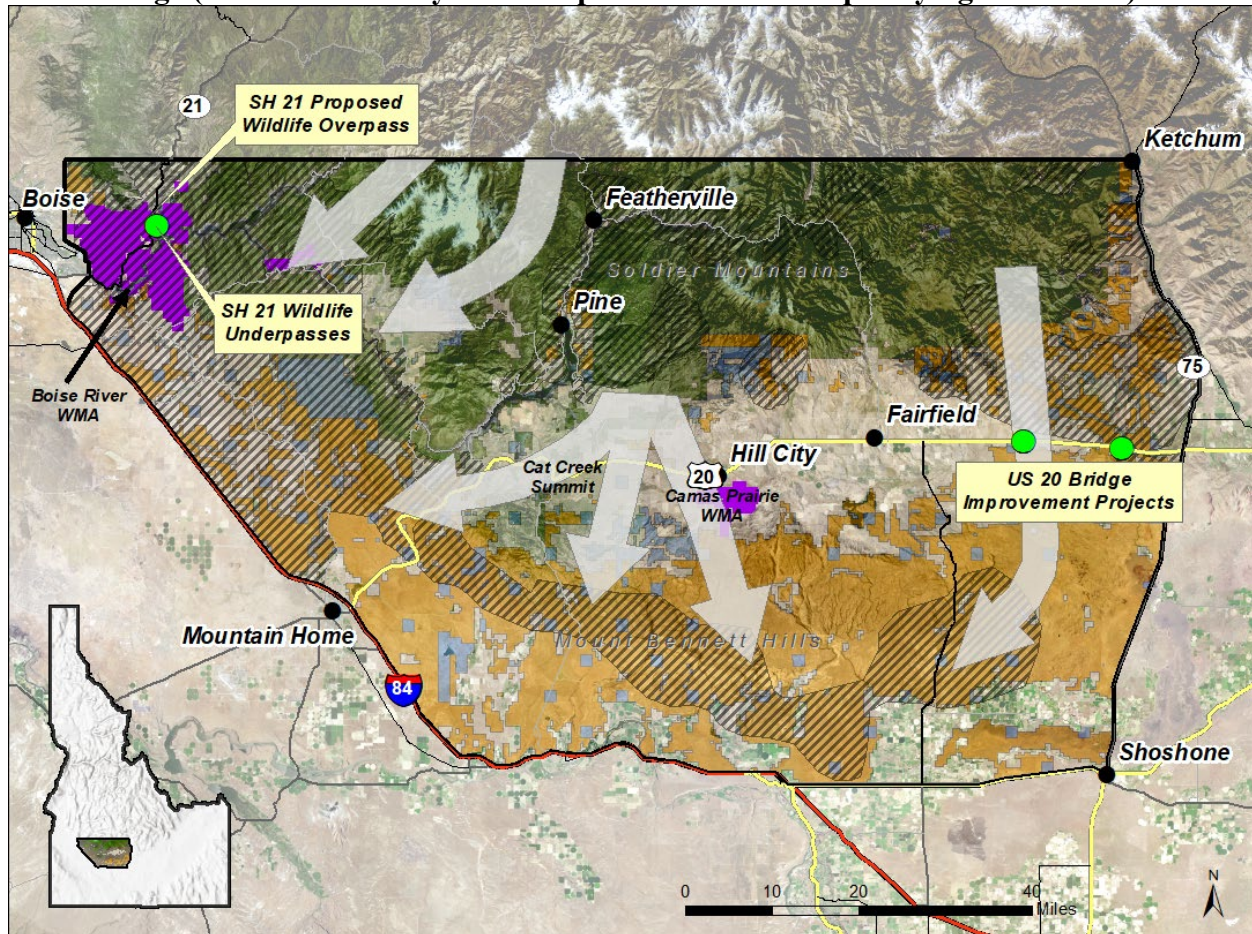


Figure 2b. Smoky-Boise Complex Priority Area with generalized and provisional elk winter range (crosshatched polygons) and migration routes (grey arrows) from summer range to winter range (see above Priority Area Map information and qualifying statements).



Ashton to Montana State Border (Figure 3)

1. *Why area was selected:*

- Contains long-distance big game migration routes linking winter ranges and summer ranges within the Greater Yellowstone Ecosystem.
- Wildlife-vehicle conflicts occur with US20 and SH87.

2. *Spatial location:*

- Northeast Idaho within the Greater Yellowstone Ecosystem.
 - Winter range – Sand Creek Desert in the southwest corner of the Priority Area.
 - Migration routes – Multiple routes from winter range to summer range occur across the Priority Area.
 - Pronghorn – southeastward from the Madison Valley winter range in Montana to Henry’s Lake Flats, including crossings along US20 and SH87.
 - Pronghorn – eastward from Big Desert winter range to the Shotgun Valley.
 - Pronghorn – northeastward from Big Desert winter range to Harriman State Park including crossings along US20 and SH87.
 - Mule deer – eastward and northeastward from the Sand Creek Desert onto the Island Park Caldera, surrounding mountains, and YNP including crossings along US20 and SH87.
 - Mule deer – southward from the Red Rock Lakes valley into the Centennial Mountains.
 - Mule deer – southward from low winter range valleys surrounding the Henry’s Lake area into the mountains.
 - Elk – eastward and northeastward from the Sand Creek Desert onto the Island Park Caldera, surrounding mountains, and YNP including crossings along US20 and SH87.
 - Elk – southeastward from the Madison Valley winter range in Montana to the Island Park Caldera, surrounding mountains, and YNP including crossings along US20 and SH87.
 - Elk – southward from the Red Rock Lakes valley into the Centennial Mountains.
- Notes:
 - Priority Area extents and map contents herein are provisional and display IDFG’s current understanding of available information; statewide statistical analyses are currently underway to improve winter range, migration route, and stopover location mapping; and V2.0 Priority Area maps are subject to change as new information becomes available (see the V2.0 Statewide Priority Research Projects section herein).

3. *Habitat types:* Forested and sagebrush steppe habitats in the Yellowstone Highlands and Beaverhead Mountains ecological sections.

4. *Important stopover areas:*

- Sand Creek Desert.
- Shotgun Valley.

- Big Bend Ridge.
 - Island Park Caldera.
5. *Landownership*: Private, BLM, USFS, State of Idaho, and National Park Service.
6. *Risks/Threats*:
- Winter range degradation due to wildfire and invasive weeds.
 - Residential and infrastructure development and land-use changes within migration routes.
 - Fencing designs that disrupt big game movements.
 - Wildlife-vehicle conflicts along migration routes.
7. *Current efforts to address Risks/Threats*:
- Technical Assistance.
 - Guidance to resource management agencies (e.g., BLM, USFS, and IDL) upon request regarding habitat management including wildlife friendly fencing.
 - Responses to requests for input from regulatory agencies (e.g., BLM, USFS, IDL, ITD, and IDWR) regarding potential project effects to big game populations and habitat.
 - Coordination with and support for ITD upon request to assist with assessing and addressing wildlife-vehicle conflicts.
 - Winter Range and Migration Routes.
 - Collaborative radio telemetry project on mule deer with IDG, Grand Teton National Park, and the Henry's Fork Chapter of the Mule Deer Foundation.
 - Collaborative radio telemetry project on elk with IDFG, Wyoming Game and Fish, and the Wildlife Conservation Society (multiple ongoing projects to help define movement routes and seasonal ranges).
 - Cooperative projects (e.g., private landowners, USFWS, and NRCS) to upgrade fences to wildlife-friendly standards; estimated remaining cost = fully funded.
 - Transportation Mitigation.
 - IDFG completion of the roadside carcass survey to inform USFS land-use planning, travel planning, and project specific analyses on the Caribou-Targhee National Forest; estimated remaining cost = fully funding.
8. *Actionable near-term efforts to address Risks/Threats*:
- Technical assistance.
 - Continued guidance as requested by regulatory and resource management agencies including ITD.
 - Winter Range and Migration Routes.
 - Participation with partners (e.g., BLM, USFS, IDL, private landowners, and NGOs) in cooperative habitat restoration and enhancement projects as opportunities occur and are appropriate including post-wildfire restoration, shrub plantings, weed control, and wildlife-friendly fencing.
 - Participation with partners (e.g., private landowners, NGOs, and agencies) as opportunities occur and are appropriate in cooperative conservation easements to conserve big game winter range and migration routes.

Figure 3a. Ashton to Montana State Border Priority Area with generalized and provisional pronghorn migration routes (grey arrows) from summer range to winter range (see above Priority Area Map information and qualifying statements).

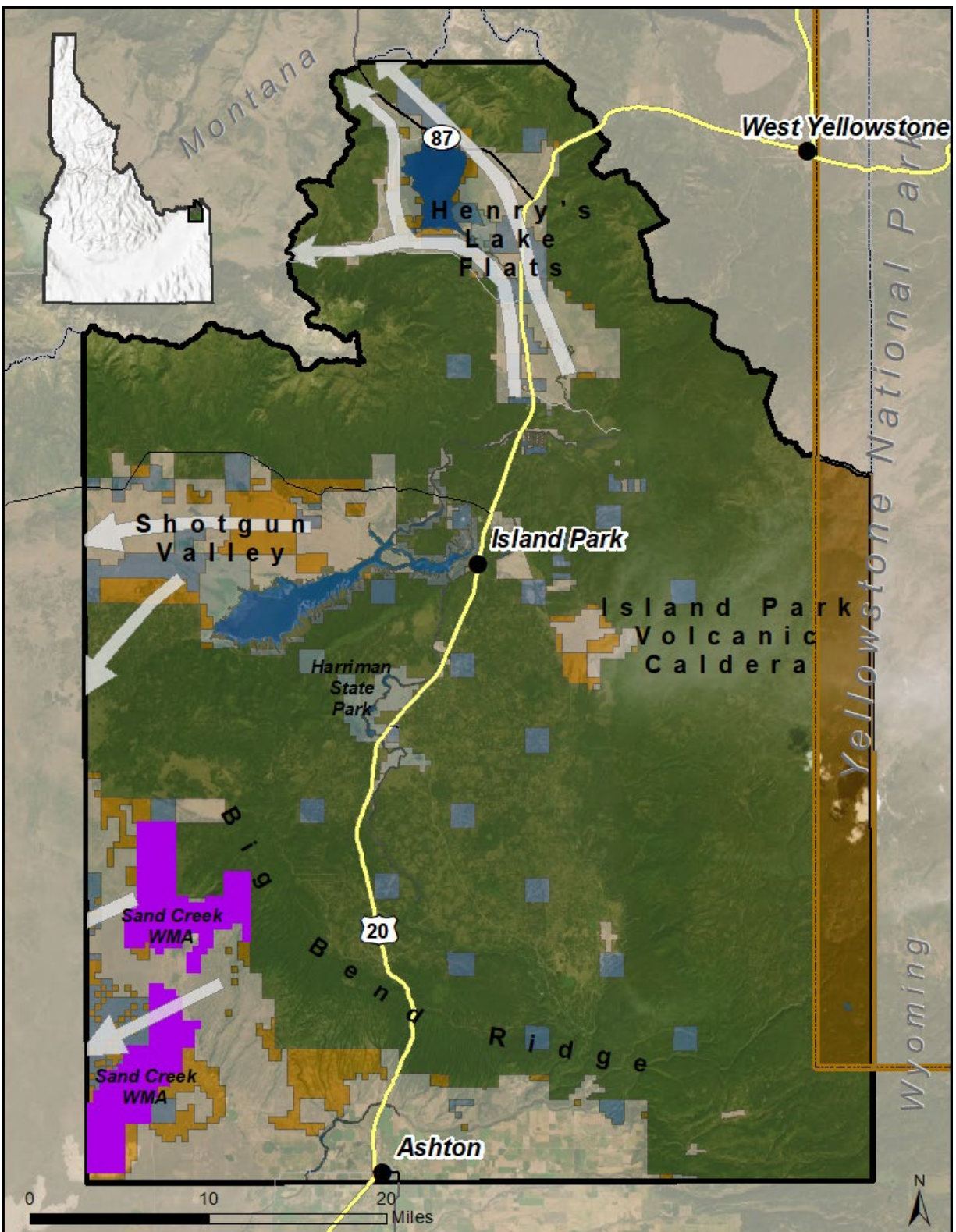


Figure 3b. Ashton to Montana State Border Priority Area with generalized and provisional mule deer migration routes (grey arrows) from summer range to winter range (see above Priority Area Map information and qualifying statements).

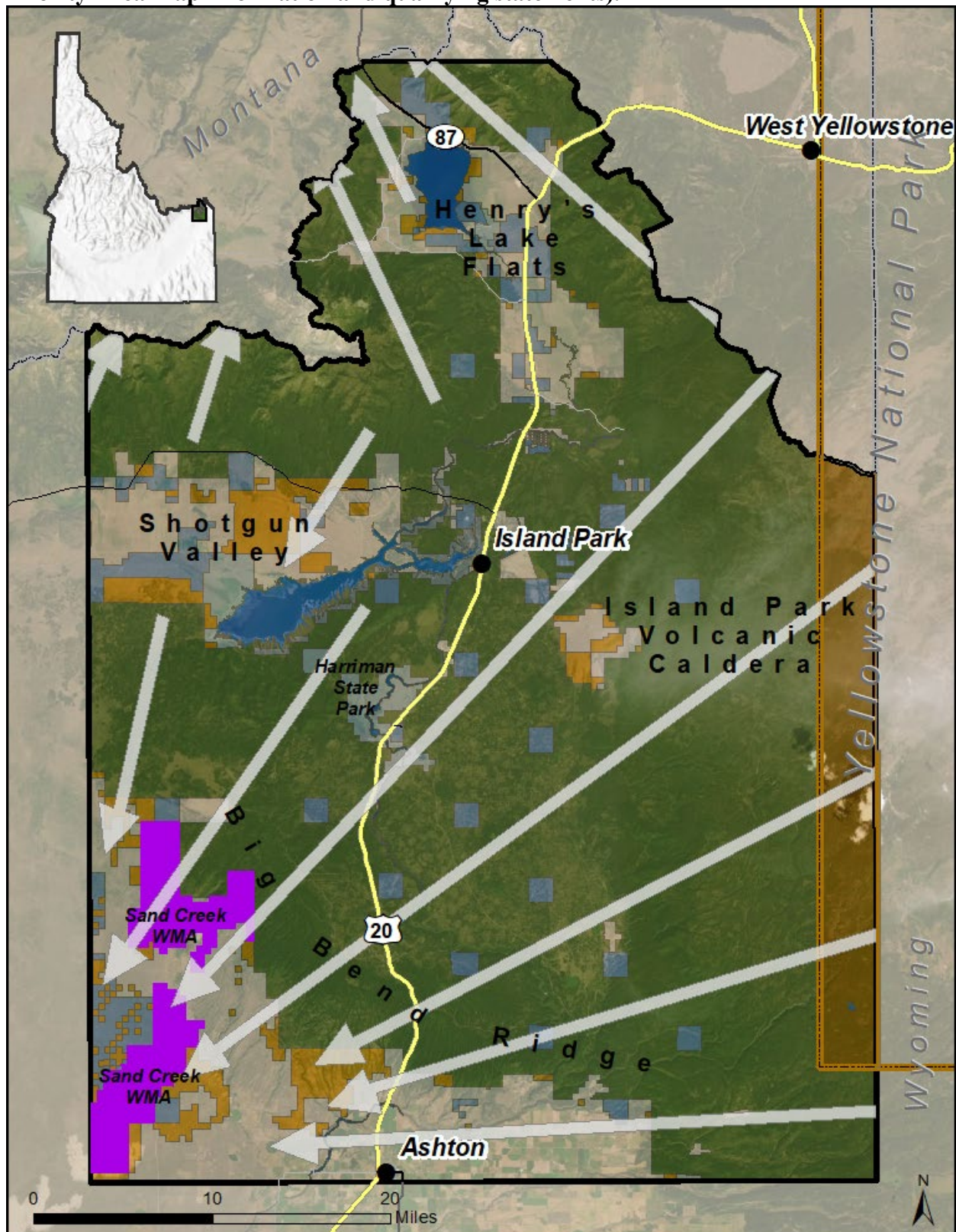
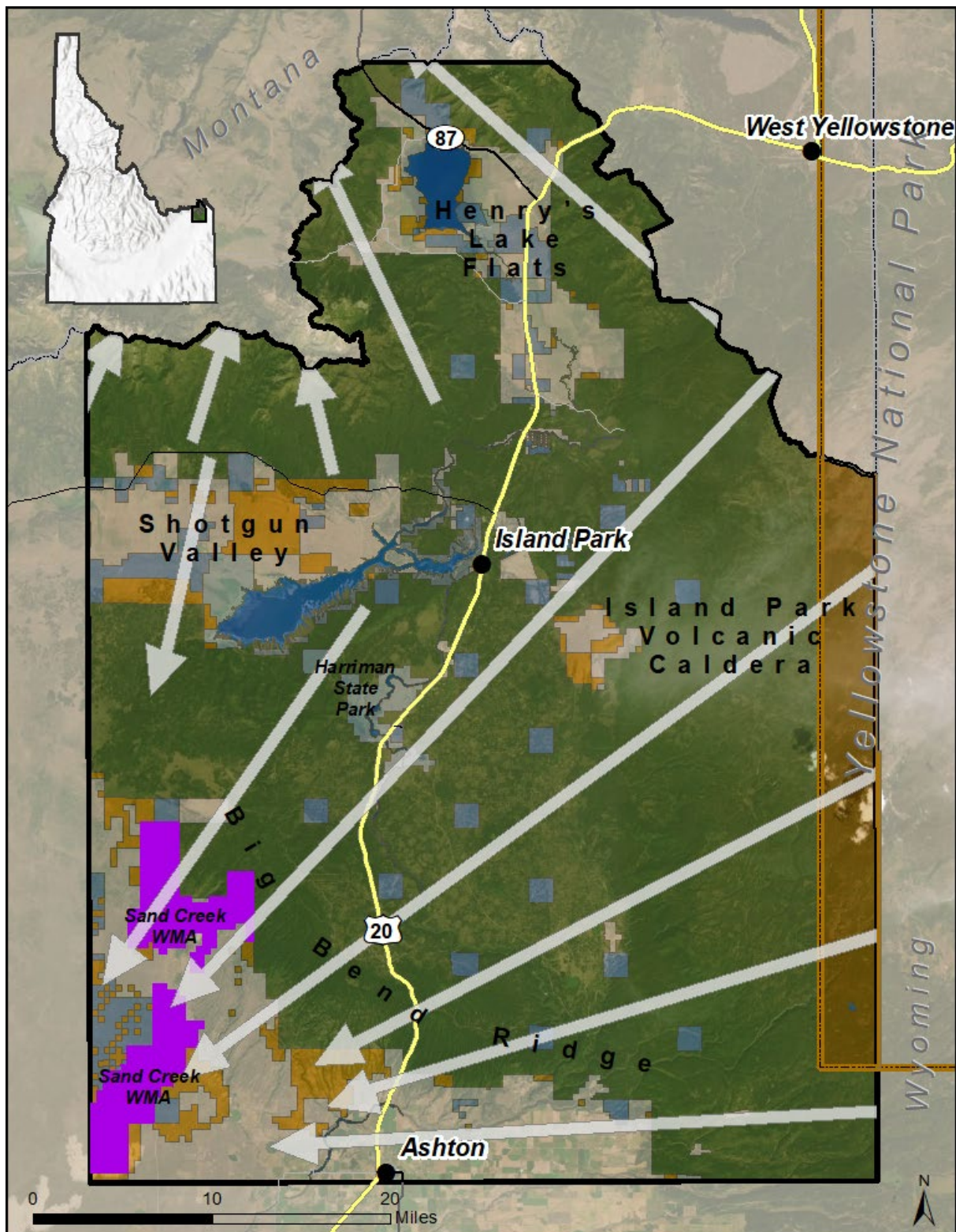


Figure 3c. Ashton to Montana State Border Priority Area with generalized and provisional elk migration routes (grey arrows) from summer range to winter range (see above Priority Area Map information and qualifying statements).



Panhandle Complex (Figure 4)

1. Why area was selected:

- Includes big game winter range and potential connectivity routes linking the Selkirk and Cabinet mountains.
- Wildlife-vehicle conflicts occur with US95 and US2.

2. Spatial location:

- Northern Idaho between the Selkirk, Cabinet, and Purcell mountains from the Canadian border south along the Kootenai River and US95 corridor and east along US2 to the Montana state border.
 - Winter Range – Low elevation areas (including the McArthur Lake WMA) along the Kootenai River and US95 corridor.
 - Migration Routes – Big game movements are observed across US95, but specific migration routes are currently unknown.
- Notes.
 - The Priority Area was expanded for V2.0 to include additional areas with potential wildlife-vehicle conflicts along US95 and US2.
 - A radiotelemetry study is planned for the expanded Priority Area to describe elk movements and identify migration routes (see the V2.0 Statewide Priority Research Projects section herein).
 - Priority Area extents and map contents herein are provisional and display IDFG's current understanding of available information; statewide statistical analyses are currently underway to improve winter range, migration route, and stopover location mapping; and V2.0 Priority Area maps are subject to change as new information becomes available (see the V2.0 Statewide Priority Research Projects section herein).

3. Habitat types: Okanagan Highlands and Flathead Valley ecological sections containing sub-alpine to mixed-use valley habitats including forested, agriculture, rural residential, riparian and small lacustrine systems, and managed and natural wetlands.

4. Important stopover areas:

- McArthur Lake WMA.
- Kootenai National Wildlife Refuge.
- Kootenai Tribe of Idaho (KTOI) Wildlife Mitigation Properties.
- Ball Creek Ranch Preserve owned by The Nature Conservancy (TNC).
- Boundary-Smith Creek WMA.
- Mid-to-low elevation areas on Kaniksu National Forest.
- IDL and private timberlands in the Selkirk, Purcell, and Cabinet mountains under Forest Legacy Program conservation easements.

5. Landownership: Private timberlands, private, KTOI, State of Idaho, USFWS, BLM, and USFS.

6. Risks/Threats:

- Residential development and land-use changes within winter range and along movement routes.
- Forest succession reducing the abundance of early seral stage forest communities within winter range.
- Wildlife-vehicle conflicts within winter range and movement routes.

- Wildlife-train conflicts within winter range and movement routes.
7. *Current efforts to address Risks/Threats:*
- Technical Assistance.
 - Guidance to resource management agencies (e.g., BLM, USFS, and IDL) upon request regarding habitat management.
 - Responses to requests for input from regulatory agencies (e.g., BLM, USFS, IDL, ITD, and IDWR) regarding potential project effects to big game populations and habitat.
 - Coordination with and support for ITD upon request to assist with assessing and addressing wildlife-vehicle conflicts.
 - Winter Range and Migration Routes.
 - Habitat management of IDFG's WMAs to benefit big game.
 - Participation with partners in cooperative habitat restoration and enhancement projects including tribal, private, TNC, State-of-Idaho, USFWS, and USFS lands.
 - Participation with partners (e.g., private landowners including Stimson, Hancock and Molpus timber companies; agencies including IDL; and NGOs including TNC) in cooperative conservation easements to conserve big game winter range and migration routes.
 - Transportation Mitigation.
 - IDFG participation as requested by ITD in design, engineering, and public input processes for the planned US95 Deep Creek Bridge Improvement Project.
 - IDFG and ITD cooperative monitoring of wildlife use of US95 wildlife underpasses near Copeland, Idaho.
 - IDFG and ITD cooperative roadkill data collection to assess wildlife-vehicle collision frequency and locations on US95 and US2.
8. *Actionable near-term efforts to address Risks/Threats:*
- Technical Assistance.
 - Continued guidance as requested by regulatory and resource management agencies including ITD.
 - Winter Range and Migration Routes.
 - Coordination and participation with partners in cooperative habitat restoration and enhancement projects as opportunities occur and are appropriate, including forest management projects on for example tribal, private, TNC, State-of-Idaho, USFWS, and USFS lands.
 - Participation with partners (e.g., private landowners including Stimson, Hancock and Molpus timber companies; agencies including IDL; and NGOs including TNC) in cooperative conservation easements as opportunities occur and are appropriate to conserve big game winter range and migration routes.
 - Transportation Mitigation.
 - IDFG continued participation as requested by ITD in design, engineering, and public input processes for the planned US95 Deep Creek Bridge Improvement Project.
 - IDFG and ITD cooperative construction of funnel fencing (including jump-outs, gates and wildlife guards) within project limits to enhance the efficiency

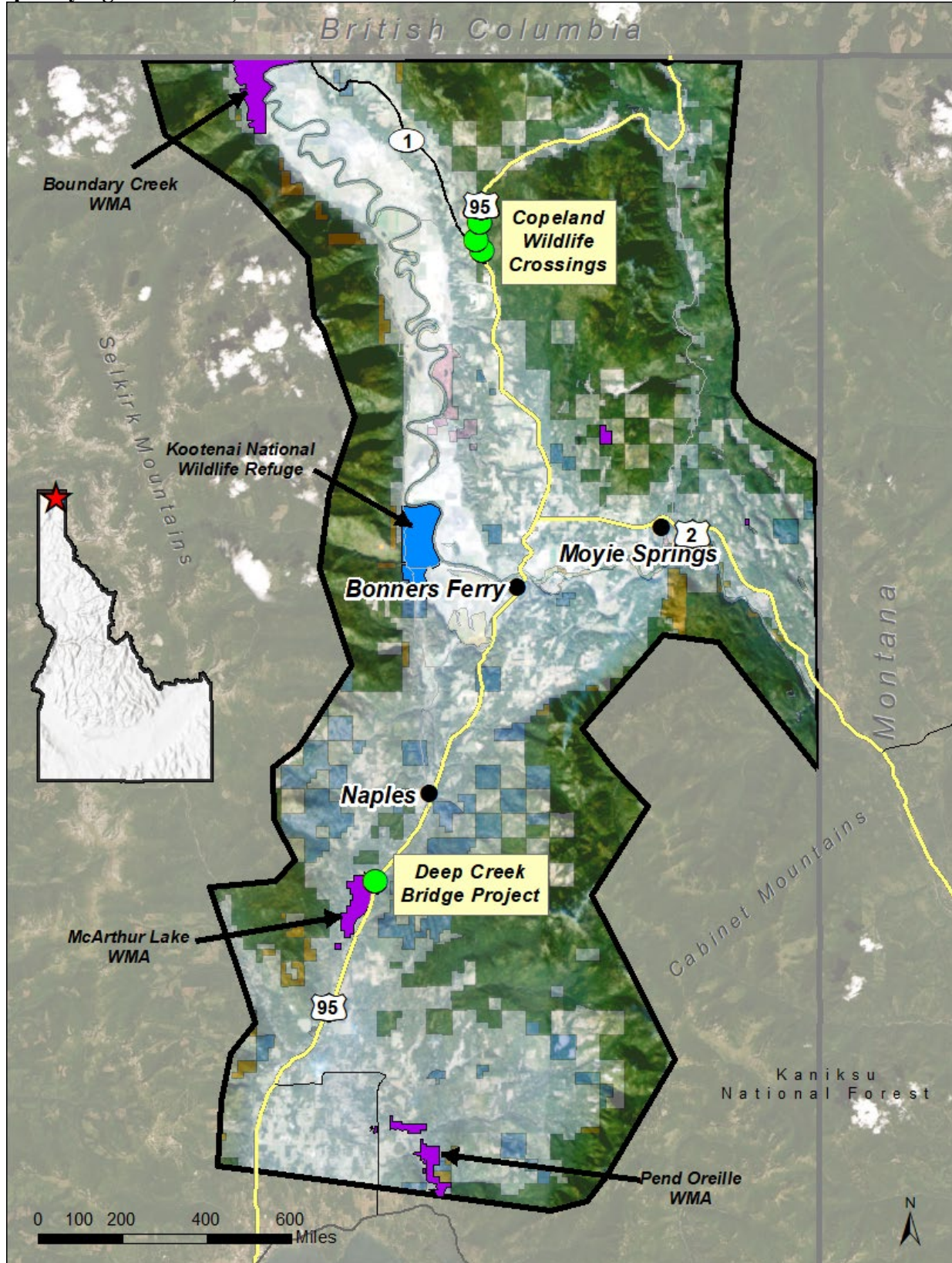
of ITD's planned Deep Creek Bridge Improvement Project for facilitating safe big game movements under US95.

- IDFG and ITD cooperative assessment of deficiencies and potential upgrade needs of existing funnel fencing (including jump-outs, gates and wildlife guards) and invasive weed control to enhance the efficiency of ITD's existing US95 Copeland wildlife crossings.

9. *Other issues for awareness:*

- Railroads adjacent to US95 pass 40-50 trains/day and cause big game mortalities and likely impede wildlife movements, particularly during winter.
- Approximately \$11,000,000 has been invested in securing Forest Legacy Program conservation easements on more than 8,000 acres of private timberlands including winter range adjacent to along US95.

Figure 4. Panhandle Complex Priority Area (see above Priority Area Map information and qualifying statements).



Rocky Point (Figure 5)

1. *Why area was selected:*

- Contains between 6,000 and 8,000 mule deer that migrate twice annually across Rocky Point between winter and summer ranges.
- Wildlife-vehicle conflicts occur with US30.

2. *Spatial location:*

- Southeast Idaho in the Bear River Corridor, Bear Lake Plateau, and southern Caribou Mountains.
 - Winter Range – Low elevation areas on the Bear Lake Plateau primarily south of US30.
 - Migration Routes – Transition areas linking winter range and summer range north of US30 in the Caribou Mountains.
- Notes.
 - The Priority Area was expanded for V2.0 to include additional areas with potential wildlife-vehicle conflicts along US30.
 - Priority Area extents and map contents herein are provisional and display IDFG's current understanding of available information; statewide statistical analyses are currently underway to improve winter range, migration route, and stopover location mapping; and V2.0 Priority Area maps are subject to change as new information becomes available (see the V2.0 Statewide Priority Research Projects section herein).

3. *Habitat types:* Sagebrush steppe in the Bear Lake and Overthrust Mountains ecological sections.

4. *Important stopover areas:*

- Bear Lake Plateau.
- Seasonal transition range between US30 and US89.

5. *Landownership:* Private, State of Idaho, BLM, USFS, and USFWS.

6. *Risks/Threats:*

- Land-use changes within winter range and along migration route.
- Fencing designs that disrupt big game movements.
- Wildlife-vehicle conflicts within winter range and along migration route.
- Wildlife-train conflicts within winter range and along migration route.

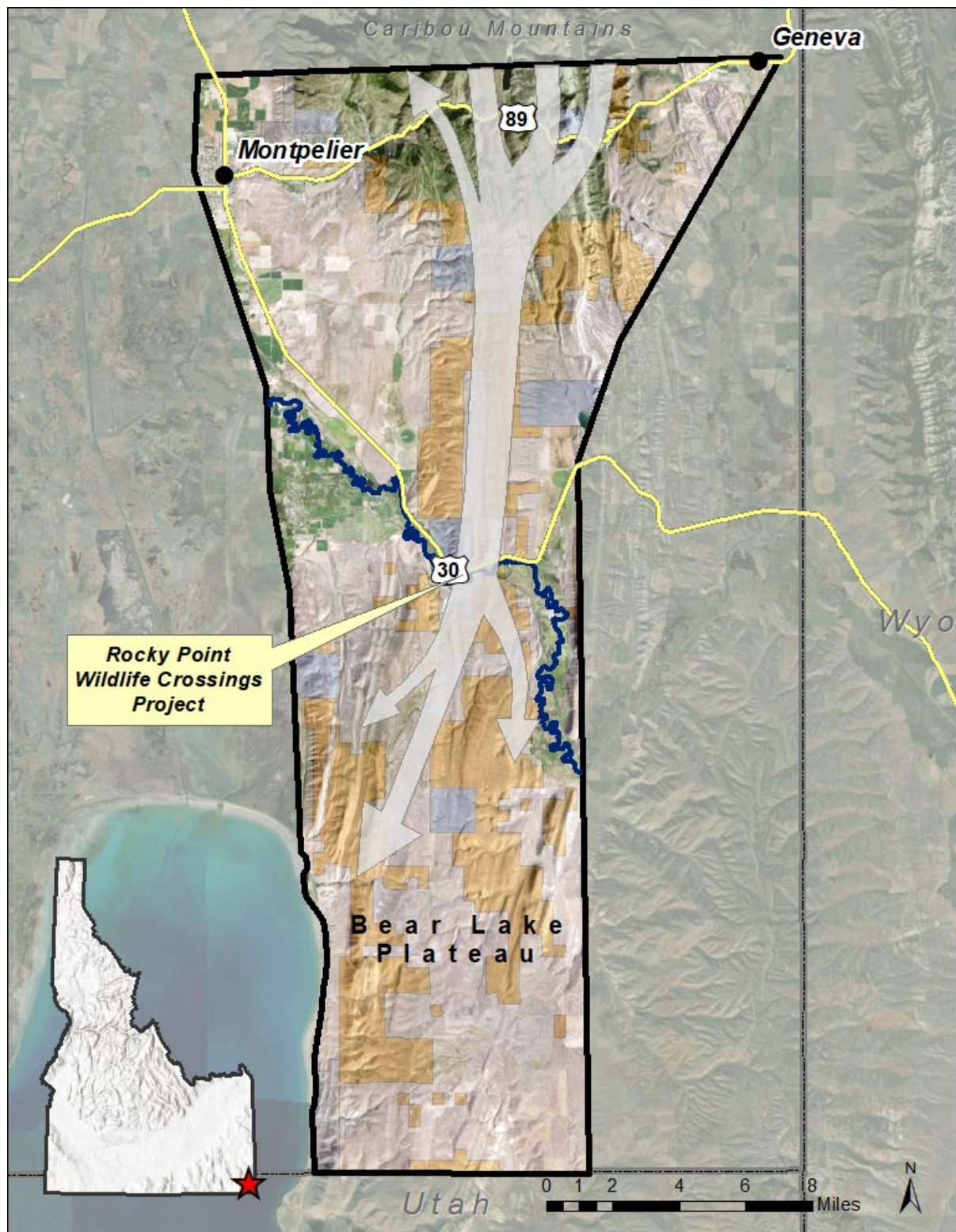
7. *Current efforts to address Risks/Threats:*

- Technical Assistance.
 - Guidance to resource management agencies (e.g., BLM, USFS, and IDL) upon request regarding habitat management including wildlife friendly fencing.
 - Responses to requests for input from regulatory agencies (e.g., BLM, USFS, IDL, ITD, and IDWR) regarding potential project effects to big game populations and habitat.
 - Coordination with ITD upon request to assist with assessing and addressing wildlife-vehicle conflicts.
- Winter Range and Migration Routes.
 - Mule deer radiotelemetry study describing migration; estimated remaining cost = fully funded.

- Cooperative projects with private landowners to upgrade fences to wildlife-friendly standards.
 - Transportation Mitigation.
 - IDFG cooperative conservation easement (approximately \$1,200,000) with partners to protect mule deer migration routes on private land and across US30; estimated remaining cost = fully funded.
 - IDFG participation as requested by ITD in design, engineering, and public input processes for planned US30 wildlife crossing structures and funnel fencing.
 - IDFG and ITD cooperative roadkill data collection to assess wildlife-vehicle collision frequency and locations to inform crossing structure siting and design.
 - IDFG trail-camera study documenting minimum mule deer numbers crossing US30 during migration.
8. *Actionable near-term efforts to address Risks/Threats:*
- Technical Assistance.
 - Continued guidance as requested by regulatory and resource management agencies including ITD.
 - Winter Range and Migration Routes.
 - Participation with partners (e.g., private landowners, BLM, USFS, IDL, and NGOs) in cooperative habitat restoration and enhancement projects as opportunities occur and are appropriate including wildlife-friendly fencing.
 - Participation with partners (e.g., private landowners, NGOs, and agencies) as opportunities occur and are appropriate in cooperative conservation easements and Farm Bill habitat conservation programs (e.g., Conservation Reserve Program [CRP] and State Acres for Wildlife Enhancement [SAFE]) to conserve big game winter range and migration routes.
 - Transportation Mitigation.
 - Continued participation as requested by ITD in design, engineering, and public input processes for planned US30 wildlife crossing structures and funnel fencing.
 - ITD construction of the US30 wildlife crossing structures (approximately \$5,500,000) and associated funnel fencing; estimated cost = fully funded.
 - IDFG and ITD cooperative construction of additional funnel fencing if needed for the US30 wildlife crossing structures.
 - IDFG post-construction effectiveness monitoring of US30 wildlife crossing structures and funnel fencing.
 - Short-interval (two locations/hour) GPS radiotelemetry study of mule deer movements.
 - Roadkill data collection to assess wildlife-vehicle collision frequency and locations.
 - Trail-camera study documenting minimum mule deer numbers using US30 crossing structures.
 - IDFG and ITD cooperative assembly of big game movement and roadkill data for US89.
9. *Other issues for awareness:*

- The railroad adjacent to US30 causes big game mortalities and likely impedes movements, particularly during winter.
- The accumulation of mule deer carcasses along US30 from wildlife-vehicle collisions causes incidental wildlife mortality, including for example 12 eagles killed by wildlife-vehicle collisions within two years.

Figure 5. Rocky Point Priority Area with generalized and provisional mule deer migration routes (grey arrows) between summer range and winter range (see above Priority Area Map information and qualifying statements).



Big Desert–Mountain Valley Complex (Figure 6)

1. *Why area was selected:*

- Contains important winter range for migratory pronghorn, mule deer, and elk.
- Potential big game migration routes are impeded by I15.
- Wildlife-vehicle conflicts occur on I15.

2. *Spatial location:*

- Upper Snake River Plain in eastern Idaho northward to the Montana border.
 - Winter Range – Low elevation sagebrush-steppe habitats within the Big Desert, Birch Creek, Sand Creek Desert, and adjacent to the I15 corridor.
 - Migration Routes – Transition areas linking winter range with elk and pronghorn summer ranges to the east in the Greater Yellowstone Ecosystem and west in the Little Wood, Little Lost, and Big Lost river watersheds.
- Notes.
 - Priority Area extents and map contents herein are provisional and display IDFG’s current understanding of available information; statewide statistical analyses are currently underway to improve winter range, migration route, and stopover location mapping; and V2.0 Priority Area maps are subject to change as new information becomes available (see the V2.0 Statewide Priority Research Projects section herein).
 - To focus future actionable management efforts, the spatial extent of this particularly large Priority Area will likely be modified in later Action Plan versions based on results of ongoing and proposed research projects including radiotelemetry (see the V2.0 Statewide Priority Research Projects section herein).

3. *Habitat types:* Sagebrush steppe in the Snake River Basalts ecological section.

4. *Important stopover areas:* Stopover areas will be identified with ongoing analyses (see the V2.0 Statewide Priority Research Projects section herein).

5. *Landownership:* Private, BLM, US Department of Energy, Craters of the Moon National Monument and Preserve (NPS), and State of Idaho.

6. *Risks/Threats:*

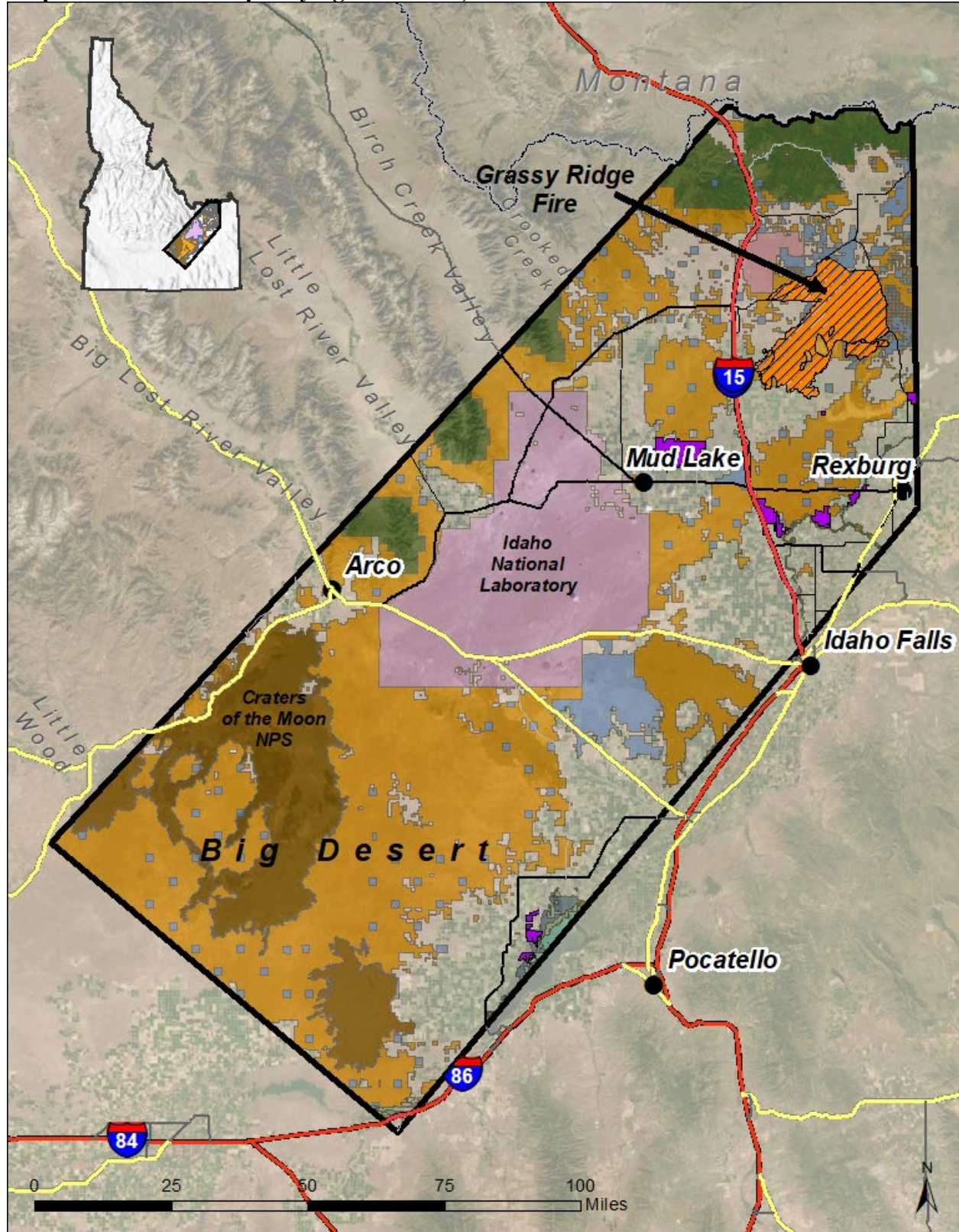
- Winter range degradation due to wildfire and invasive weeds.
- Land-use changes within winter range and along migration routes.
- Fencing designs that disrupt big game movements.
- Wildlife-vehicle conflicts including collisions and I15 movement impediments within winter range and along migration routes.

7. *Current efforts and to address Risks/Threats:*

- Technical Assistance.
 - Guidance to resource management agencies (e.g., BLM, USFS, and IDL) upon request regarding habitat management including wildlife friendly fencing.
 - Responses to requests for input from regulatory agencies (e.g., BLM, USFS, IDL, ITD, and IDWR) regarding potential project effects to big game populations and habitat.
 - Coordination with and support for ITD upon request to assist with assessing and addressing wildlife-vehicle conflicts.

- Winter Range and Migration Routes.
 - Cooperative inter-agency projects for post-wildfire restoration of the Grassy Ridge Fire, wet meadow expansion on Mud Lake WMA, native vegetation plantings on Crooked Creek and Reno Point, and wildlife-friendly fence modifications west of I15.
 - IDFG mule deer and elk radiotelemetry studies describing winter range use, migration, interstate movements, and interactions with I15.
 - NPS Trail camera monitoring of migrating pronghorn and mule deer across the Craters of the Moon National Monument and Preserve.
8. *Actionable near-term efforts to address Risks/Threats:*
- Technical Assistance.
 - Continued guidance as requested by regulatory and resource management agencies including ITD.
 - Winter Range and Migration Routes.
 - Participation with partners (e.g., private landowners, BLM, USFS, IDL, and NGOs) in cooperative habitat restoration and enhancement projects as opportunities occur and are appropriate including post-wildfire restoration, native vegetation restoration, invasive weed control, and wildlife-friendly fencing.
 - Participation with partners (e.g., private landowners, NGOs, and agencies) as opportunities occur and are appropriate in cooperative conservation easements and Farm Bill habitat conservation programs (e.g., CRP and SAFE) to conserve big game winter range and migration routes.
 - Transportation Mitigation.
 - IDFG analysis of landscape permeability for big game winter range use and movements to assess wildlife-vehicle conflicts with I15 including collisions and inhibiting movements.
9. *Other issues for awareness:*
- I15 likely impedes traditional east-west big game migration between winter and summer ranges.

Figure 6. Big Desert-Mountain Valley Complex Priority Area (see above Priority Area Map information and qualifying statements).



STATEWIDE PRIORITY RESEARCH EFFORTS

Idaho Action Plan V1.0

IDFG's highest priority SO3362 research project proposed in Action Plan V1.0 was the "Statewide mapping of elk and mule deer winter ranges, movement routes and stopover locations." The project's goal is to build upon IDFG's ongoing mule deer and elk resource selection studies identifying seasonal ranges and movement routes. SO3362 funding (i.e., \$300,000) was awarded in 2018 for this research project, which is currently in progress with an estimated completion in 2020.

The project consists of the following three research elements with each being performed by a corresponding research associate with the goal of identifying winter ranges and migration routes of high management priority based on risks (e.g., wildfire, invasive species, and anthropogenic development) per IDFG mandates:

- Delineating big game winter and summer ranges across Idaho using GPS relocations and resource selection function analysis (RSF) to evaluate environmental covariates that influence mule deer and elk habitat use across regional scales (e.g., snow condition, elevation, aspect, slope, and vegetation composition).
- Identifying big game migration routes connecting seasonal ranges with net squared displacement (Bunnell et al 2010) and Brownian Bridge Movement Models (BBMM, Horn et al. 2007, 2011) of radio-collared big game and a resistance surface or least-cost path framework to predict migration routes for areas lacking radiotelemetry data (Wade et al. 2015).
- Analyzing stopover locations along migration routes following a criteria based on RSF covariates (e.g., seasonal phenology metrics) and intermittent areas of increased use (Sawyer et al. 2011) and areas of a low and sustained rate of movement.

In collaboration with adjacent states, IDFG has deployed GPS radio-collars on mule deer and elk since 2004, and maintains a database with more than 2.8 million radiotelemetry relocations from 750 individuals since 2016. Research results will be integrated into the Western Association of Fish and Wildlife Agencies (WAFWA) Crucial Habitat Assessment Tool (CHAT). Moreover, the project's resulting predictive models of seasonal range, migration routes, and stopover locations will guide prioritization for range restoration and infrastructure development mitigation, and identify population interconnectivity for disease-related management decisions (e.g., Brucellosis and Chronic Wasting Disease) affecting big game across Idaho.

Idaho Action Plan V2.0

For V2.0, IDFG's priority big game winter range and migration research project consists of two elements which were previously presented in V1.0:

- McArthur Lake Landscape Connectivity.
- Pronghorn Winter Range, Movement Route, and Stopover Identification.

A. Project Summary

1. **Title:** McArthur Lake Landscape Elk Connectivity and Mountain-Valley Pronghorn Winter Range and Movement Studies.
2. **Study Purpose and Need:** The Idaho Department of Fish and Game's (IDFG) mission is to protect, preserve, perpetuate, and manage Idaho's fish and wildlife resources for the public interest (Idaho Code 36-103). Secretarial Order 3362 (SO3362) also requires the Department of Interior's (DOI) to coordinate with western states to develop Action Plans for the conservation and management of priority big game winter ranges and migration corridors. Understanding seasonal ranges and migration routes is critical for sustainably managing big game populations. However, seasonal habitats and movements are not well understood for elk in the McArthur Lake area of northern Idaho and pronghorn in mountain-valley areas of southern and eastern Idaho. Therefore, the objective of the proposed project will collect radiotelemetry and photographic data with the goal of describing elk and pronghorn seasonal ranges and movements in these areas. These data will be incorporated into IDFG's ongoing statewide SO3362 Action Plan project to statistically delineate and map big game winter ranges, migration routes, and stopover areas. The resulting maps will be available to inform land and population management decision-making processes affecting big game across Idaho. Conversely, the lack of quality winter range and migration route information can inhibit optimal big game management.
3. **Locations:**
 - McArthur Lake area of northern Idaho between the Selkirk and Cabinet mountains (i.e., SO3362 Action Plan's Panhandle Complex Priority Area).
 - Mountain-valley areas of the eastern Idaho including the Salmon River watershed, southern portion of the Big Desert, area east of I15, and Island Park area adjacent to Yellowstone National Park (i.e., SO3362 Action Plan's Smoky Boise Complex, Ashton to Montana State Border, and Big Desert-Mountain Valley Complex priority areas).

B. Project Narrative

1. Statement of Need:

The Idaho Department of Fish and Game's (IDFG) mission is to protect, preserve, perpetuate, and manage Idaho's fish and wildlife resources for the public interest (Idaho Code 36-103). Secretarial Order 3362 (SO3362) also requires the Department of Interior's (DOI) to coordinate with western states to develop Action Plans for the conservation and management of priority big game winter ranges and migration corridors. In 2018, the IDFG and DOI jointly developed the first version (V1.0) of the SO3362 "Idaho Action Plan," which identified five Priority Areas for the management of pronghorn, mule deer, and elk winter range and migration routes. IDFG selected Priority Areas based on multiple factors, which included presence of important big game

populations and identified Risks/Threats to key winter ranges and migration routes for these populations.

Understanding seasonal ranges and migration routes is critical for sustainably managing big game populations. Therefore, Idaho's V1.0 Action Plan version also identified priority research needs to inform big game winter range and migration mapping and management. The first research priority – Statewide Mapping of Elk and Mule Deer Winter Ranges, Movement Routes, and Stopover Locations – received SO3362 funds and is currently underway. The project's goal is to build upon IDFG's ongoing mule deer and elk resource selection studies identifying seasonal ranges and movement routes. SO3362 funding (i.e., \$300,000) was awarded in 2018 for this research project, which is currently in progress with an estimated completion in 2020. The ongoing project consists of the following three research elements with each being performed by a corresponding research associate with the goal of identifying winter ranges and migration routes of high management priority based on risks (e.g., wildfire, invasive species, and anthropogenic development) per IDFG mandates:

- Delineating big game winter and summer ranges across Idaho using Global Positioning System (GPS) relocations and resource selection function analysis (RSF) to evaluate environmental covariates that influence mule deer and elk habitat use across regional scales (e.g., snow condition, elevation, aspect, slope, and vegetation composition).
- Identifying big game migration routes connecting seasonal ranges with net squared displacement (Bunnell et al 2010) and Brownian Bridge Movement Models (BBMM, Horn et al. 2007, 2011) of radio-collared big game and a resistance surface or least-cost path framework to predict migration routes for areas lacking radiotelemetry data (Wade et al. 2015).
- Analyzing stopover locations along migration routes following a criteria based on RSF covariates (e.g., seasonal phenology metrics) (Kauffman, Middleton etc.) and intermittent areas of increased use (Sawyer et al. 2011) and areas of a low and sustained rate of movement.

IDFG has deployed GPS radio-collars on mule deer and elk since 2004, and maintains a radiotelemetry database with more than 2.8 million relocations. The ongoing project's analyses build upon past IDFG radiotelemetry data collected from more than 750 radio-collared big game animals beginning in 2016 among several collaborative projects with adjacent states. However, little data has been collected for elk in the McArthur Lake area of Northern Idaho and pronghorn in mountain-valley habitats of Eastern Idaho. Therefore, elk and pronghorn habitat use and movements in these areas are not well understood.

The proposed project will collect radiotelemetry and camera data to describe elk and pronghorn seasonal ranges and movements in these areas. These data will be incorporated into IDFG's ongoing statewide studies to statistically delineate and map big game winter ranges, migration routes, and stopover areas as part of SO3362. Research results will be integrated into the Western Association of Fish and Wildlife Agencies

(WAFWA) Crucial Habitat Assessment Tool (CHAT). Moreover, the project's resulting predictive models of seasonal range, mitigation routes, and stopover locations will guide prioritization for range restoration and infrastructure development mitigation, and identify population interconnectivity for disease-related management decisions (e.g., Brucellosis and Chronic Wasting Disease) affecting big game across Idaho.

2. Project Goals and Objectives:

This project's overarching goal is to contribute to IDFG's understand of big game seasonal ranges and migration routes for sustainably managing big game habitat populations. The project's specific goal is to contribute to the overarching goal by collecting radiotelemetry and camera data to describe elk and pronghorn seasonal ranges and movements in the study areas. The following objectives are designed to achieve project goals:

- McArthur Lake Elk Study Area
 - Capture and fit a sample of 40 elk with GPS radio-collars (clover traps and helicopter darting will be used for captures).
 - Deploy a grid of 119 trail-cameras across seasonal ranges and along US Highway 95 (US95) and railroads rights-of-ways.
 - Monitor radio-collared elk movements and seasonal ranges over 2 years, including US95 highway and railroad crossings, with radiotelemetry and trail cameras.
 - Investigate and determine causes of radio-collared elk mortalities.
 - Incorporate project data into IDFG's ongoing SO3362 project to delineate and map elk seasonal ranges, movement routes, and stopover areas as appropriate using analytical methods described in Action Plan V1.0.
- Mountain-Valley Pronghorn Study Areas
 - Capture and fit a sample of 60 pronghorn with GPS radio-collars (helicopter net-gunning will be used for captures).
 - Monitor radio-collared pronghorn movements over 2 years including highway and railroad crossings.
 - Investigate and determine causes of radio-collared pronghorn mortalities.
 - Assess applicability of analytical methods described in IDFG's SO3362 Action Plan V1.0 to delineate and map pronghorn seasonal ranges, movement routes, and stopover areas within the study areas.

3. Project Activities and Methods:

McArthur Lake Elk Study Area – To identify elk winter range, movement routes, and US95 and railroad crossing locations, IDFG will deploy a trail-camera grid and GPS radio-collars. The trail-camera grid will be deployed on winter, transition, and summer range to document distribution and movements for multiple species. Cameras will also focus on US95 and railroad to determine timing and crossing areas. This information also

will be used to target elk captures. Elk capture and radio-collaring is planned to occur during winter 2020. Monitoring of radio-collared elk is expected to occur at least through October 2021 or as long as the radio-collars are operational. Elk will be captured with clover traps or helicopter darting where possible. Iridium GPS collars will be deployed with a 4-hour fix schedule that may be remotely reconfigured to a higher fix rate during migration or near the highway. Migration routes will be modeled using the technology developed in Action Plan V1.0. We will develop winter and transition range resource selection models from the location data using fine-scale vegetation modeling and daily fine-scale NDVI products to produce annually varying climate and habitat covariates.

Mountain-Valley Pronghorn Study Areas – To complete Idaho’s ongoing big game range analyses, 60 pronghorn will be radio-collared in mountain-valley areas of the Salmon River drainage, southern portion of the Big Desert, area east of I15, and Island Park area adjacent to Yellowstone National Park. This study will provide movement data needed to complete the delineation of critical pronghorn ranges across Idaho. Pronghorn capture and radio-collaring is planned to occur during winter and summer 2020. Monitoring of radio-collared pronghorn is expected to occur at least through October 2021 or as long as the radio-collars are operational. Pronghorn will be captured with helicopter net-gunning. The distribution and number GPS radio-collared pronghorn will be expanded with captures in both winter and summer to increase the likelihood of documenting all winter ranges and migration routes in these intermountain-valley areas. This radiotelemetry study will also complement ongoing research on pronghorn vital rates and population estimation techniques being conducted in coordination with Utah State University. Combining these efforts will provide an estimate of population dynamics in nearly all of Idaho’s pronghorn populations.

Analyses – IDFG’s GPS telemetry data are easily cross-referenced with data on individual physiologic condition collected during animal capture. Migratory behavior can be determined from an individual animal’s location data. We can then assign a migration type and seasonal habitat following process known as Net Squared Displacement (NSD, Bunnell et al 2010). NSD analysis identifies if an individual is migratory, and what type of migration the individual has exhibited. Further, this analysis may be used to identify the specific locations used in winter range, spring migration, summer range and fall migration in a scientific and reproducible manner. The NSD analysis provides the necessary classes of spatial behaviors from which winter range, movement routes, and stopovers can be identified, a required step for the topics presented below.

- ***Winter range analyses.*** Winter range locations be analyzed with resource selection function analysis (RSF) to evaluate environmental covariates that may potentially influence the probability of big game use across regional scales. For winter range estimation and delineation, prior analysis has found that snow condition, elevation, aspect, slope, and vegetation composition are critical determinants of winter range. The resulting maps of predicted high quality winter range will then be cross-checked with IDFG’s winter survey efforts (1999-present) as data are available to verify occupancy of predicted use in relation to habitat quality.

- ***Movement path analyses.*** Locations from migratory individuals identified within the NSD analysis will next be used to elucidate important spring movement paths through the use of Brownian Bridge Movement Models (BBMM, Horn et al. 2007). From these individual annual migration paths, stopover locations will be identified following a criteria based on intermittent areas of increased use (Sawyer et al. 2011) and areas of a low and sustained rate of movement. All BBMM movement paths will be coalesced (and normalized for individuals producing multiple BBMM paths across several years) by region and overlain in a manner that highlights those paths that are used by multiple individuals and those representing larger populations as indicated from winter surveys. The above data and analyses can then be used in a resistance surface or least-cost path framework to predict migration routes for areas where animals have not been radio-marked (Wade et al. 2015)
- ***Stopover Site Analyses.*** Stopover locations will be identified following a criteria based on intermittent areas of increased use (Sawyer et al. 2011) and areas of a low and sustained rate of movement within the migration route. An RSF analysis will be used to identify environmental covariates associated with the spring movement routes and stopovers locations. Additional covariates pertaining to vegetation type and phenology stage will be used within a regional analysis across populations. Phenological covariates such as start and end of growing season, peak growth date (IRG), and seasonal maximum will be derived from NASA Modis NDVI (MOD13Q1 v6 & MYD13Q1 v6) and fused MODIS/Landsat daily products. Past western US studies have indicated that these seasonal phenology metrics influence ungulate migration timing and spatial occurrence (Middleton et al. 2013). When completed, this movement route analysis will allow an assessment of the viability of identified routes in light of habitat disturbances (fire and anthropogenic development). This information, in conjunction with that derived for the winter range analysis, will identify those routes of high management priority based on risks according to IDFG mandates and priorities.

4. Project Monitoring and Evaluation:

Over the 2-year project duration, key project team members will monitor and assess project progress (including objectives, deliverables, budgets and schedule) per routine State-of-Idaho departmental and grants administrative procedures for IDFG's Wildlife Research Program:

- Project lead: Mark Hurley – IDFG Wildlife Research Manager.
- Field logistics coordination: Paul Atwood – IDFG Senior Wildlife Research Biologist.
- Data management and analysis: Scott Bergen– IDFG Senior Wildlife Research Biologist.

5. Budget

The estimated budget is for materials, equipment, and capture services per the following:

Item	Count	Unit Cost	Total
Pronghorn Collars	60	\$1,600	\$96,000
Pronghorn Helicopter Capture Services	60	\$500	\$30,000
Idaho Daily 30-m NDVI Products	1	\$60,000	\$60,000
Elk Collars	40	\$1,600	\$64,000
Trail Cameras	119	\$420	\$49,980
Total			\$299,980
None: All requested funds are for materials and equipment with no labor or associated indirect costs.			

6. Budget Justification

Project costs for the requested budget are approximate for retail purchases of commercially available equipment and materials, and an anticipated quotation for helicopter capture services. Helicopter services assume approximately 3 pronghorn captured per hour of flight time. Note that IDFG will fund all project costs (direct and indirect) for personnel and operating (e.g., materials, equipment, and services) in excess of the stated budget.

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Submitted by: IDAHO DEPARTMENT OF FISH AND GAME

Approved by:

Ed Schriever
Director

Frank Edelmann
Habitat Program Coordinator

APPENDIX A: SO3362 Idaho State Action Plan V1.0 (October 2018)

IDAHO 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 -

Many wildlife species must migrate each year to survive as individuals and populations. Land uses such as residential and energy development, fences, roads, and largescale habitat changes due to wildfire or noxious/invasive weeds degrade winter range and disrupt migration routes that allow animals to move from one place to another. Such effects can not only reduce wildlife population growth but can also reduce the harvestable surplus of game species available for hunting, leading to decreases in hunting opportunity and hunters, resulting in an adverse impact to Idaho’s economy and cultural values.

Idaho’s big game populations, particularly mule deer, elk, and pronghorn antelope provide many examples of extensive migration. For example, mule deer migrate over one hundred miles to and from Wyoming and Idaho seasonal ranges. From the Pioneer Mountains, pronghorn travel over 100 miles to the Beaverhead Mountains and back. Elk and deer migrate from Yellowstone National Park across U.S. 20 to the Sand Creek desert of Eastern Idaho. Elk across Idaho migrate from high elevation summer ranges in all of Idaho’s mountains to milder winter ranges of lower elevation south and west facing slopes to increase their survival during winter months. Many of these routes cross multiple jurisdictions including Bureau of Land Management (BLM), USDA Forest Service (USFS), state, and private lands as wildlife navigate bottlenecks due to topography, human development, and other factors. Idaho Department of Fish and Game (IDFG) and other partners are now only beginning to understand the full scope of how and where movement and migration help sustain native wildlife. It is important for IDFG and stakeholders to manage and conserve the wildlife, their important migration and movement pathways, and associated seasonal habitats such as winter range.

Secretarial Order 3362

U.S. Secretary of the Interior Ryan Zinke signed Secretarial Order 3362 (Appendix A), on February 9, 2018 (SO3362), to improve habitat quality and western big game winter range and migration corridors for antelope, elk, and mule deer. The order fosters improved collaboration with states and private landowners and facilitates all parties using the best available science to inform development of management guidelines that helps ensure that robust big game populations continue to exist. Priority states currently include Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

SO3362 directs appropriate bureaus within the Department of the Interior (Department) to work in close partnerships with the above-mentioned states 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 and working with states in their efforts to increase and maintain sustainable big game populations across western states.

The United States Department of Agriculture (USDA), through the USFS and USDA Natural Resource Conservation Service, 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.

Federal Lands in Idaho

Idaho has over 34 million acres of federal lands, nearly 64% of the state. Much of that land supports Idaho's native species, provides excellent hunting opportunities, and supports winter habitat and migration pathways for elk, mule deer, and pronghorn. The BLM manages over 12 million acres of public lands in Idaho for multiple uses. The BLM undertakes various conservation and restoration efforts that benefit big game, winter range, and migration and movement, such as fence removal, invasive weed treatments, and native vegetation seedlings. The U.S. Fish & Wildlife Service (FWS) manages seven national wildlife refuges in Idaho, totaling 87,698 acres. Most of these refuges allow hunting during some portion of the season and provide habitat for big-game species. The National Park Service (NPS) manages seven national park units in Idaho (totaling 508,196 acres), including a portion of Yellowstone National Park and Craters of the Moon National Monument that anchor priority wildlife movement and migration routes. The NPS employs route mapping, invasive species treatments, and helps address wildlife mortalities due to vehicle collisions to conserve and restore big game winter range and migration routes. Idaho has sixteen national forests, and they cover more than 20 million acres - more than any other state except Alaska. Most national forest lands that are legally accessible via a public road, navigable waterway, or adjacent to state or federal land are open to hunting. IDFG and USFS biologists collaborate to identify forest management prescriptions conducive to continued use by large numbers of migratory elk and deer.

Transportation

To facilitate understanding and cooperation between their respective and sometimes overlapping state responsibilities, IDFG and the Idaho Transportation Department (ITD) entered into a Memorandum of Understanding in 2015 to increase public safety, promote wildlife passage, and reduce wildlife mortality due to vehicles. As a result, IDFG and IDT are working together on efforts that include monitoring studies measuring wildlife crossing and movement information to utilize in environmental assessments, developing data about wildlife roadkill and passage, recommending best management practices for transportation projects, and more effectively and efficiently exchanging information to inform actions. Other cooperative efforts include: 1) developing a statewide map and database of important "wildlife linkage" areas in relation to Idaho's transportation network and 2) developing a statewide online wildlife-vehicle collision database tool to document and monitor wildlife mortality caused by vehicles.

Consistent with SO 3362, IDFG has identified five priority big-game winter range and migration routes, as follows (in no order of priority):

PRIORITY BIG-GAME WINTER RANGE AND MIGRATION ROUTES –

Smoky Boise Complex – Winter Range – N of I84 Boise to Mountain Home and US 20 Cat Creek Summit to Hill City

Why this Area was selected: Safety due to wildlife-vehicle collisions. Largest mule deer herd in the state. The area provides an important south aspect winter range for elk and mule deer in the Bennett Mountains and north of I84. It includes summer range in the Upper Boise River – Smokey Area areas and migration areas across US 20.

Spatial location (Figure 1): SE of Boise and north of I84 between Boise and Mountain Home, Idaho. There are migration and movement areas between Cat Creek Summit and Hill City on US 20.

Habitat types: Primarily sagebrush steppe in the Owyhee Uplands ecological section.

Important stopover areas within the corridor: Winter range of south facing Danskin Mountains and foothills to the north of I84. Upper Camas Prairie and the lower Solider Mountains

Landownership: Private, BLM, USFS, and state.

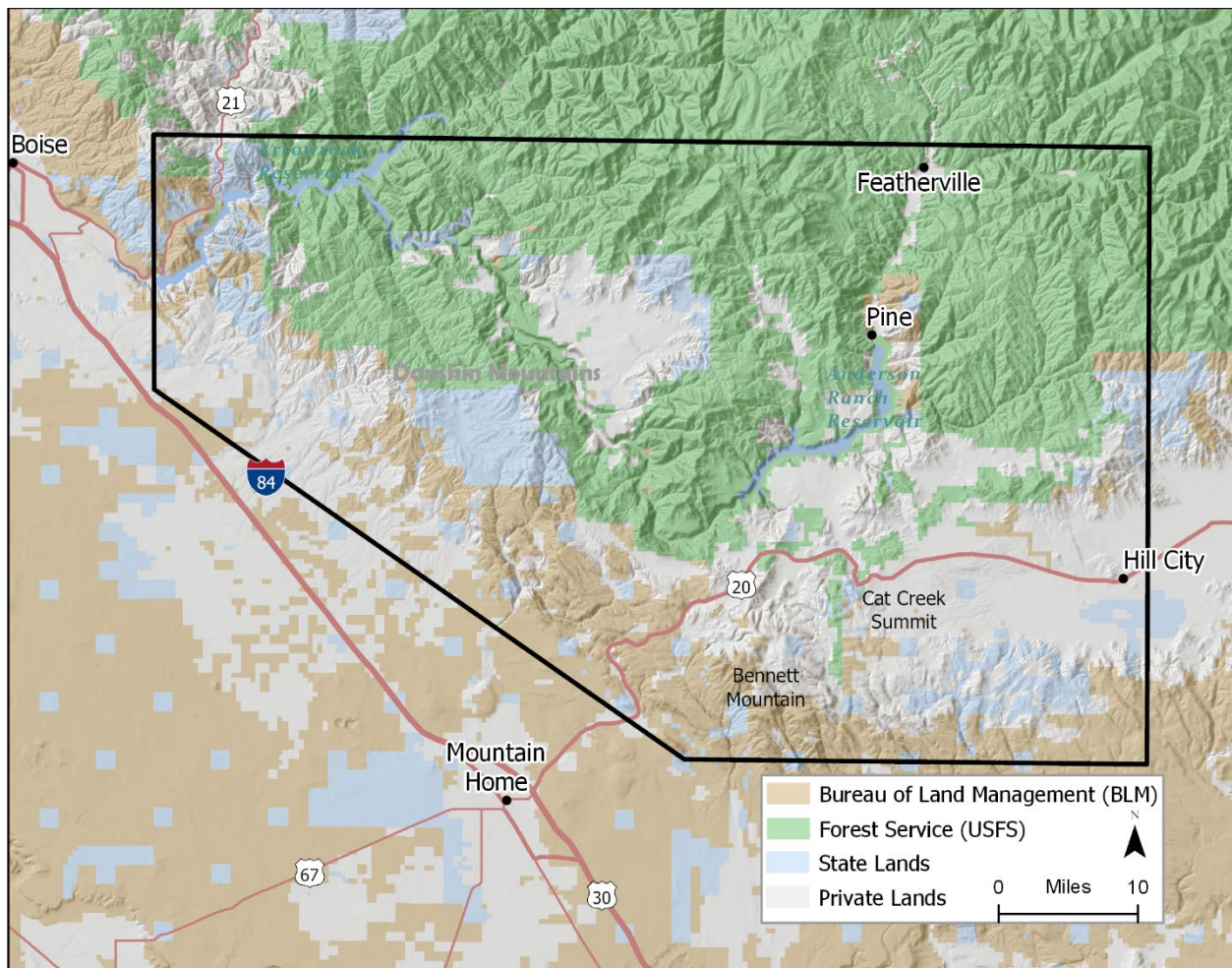
Risks/Threats: Wildfire, increasing development pressures, land use changes, recreation, noxious weeds, increasing vehicle traffic.

Current efforts: Public access agreements with private landowners. Range restoration efforts in cooperation with BLM and NRCS.

Cost of current or needed habitat treatments/road crossings, etc.: Unknown.

Other issues for awareness: High growth rates in Idaho threaten existing winter ranges close to the growing Treasure Valley, Mountain Home, and Magic Valley as per BSU project growth report.

Figure 1: General depiction of the Smoky Boise Complex Area. Note: this general area depiction does not represent any specific winter range or big game migration or movement.



US 20/SH87 Complex – Ashton to Montana State Line

Why this Area was selected: Safety due to wildlife-vehicle collisions with elk, deer, bison, moose, bears, antelope, wolves - big game migration and movement.

Spatial location (Figure 2): Extreme corner of NE Idaho and adjacent to Yellowstone NP.

Habitat types: Forested and sagebrush steppe habitats. Yellowstone Highlands ecological section.

Important stopover areas within the corridor: Snake River Plain, Yellowstone NP, USFS lands west of Yellowstone NP

Landownership: National Forest – 66%, Private – 17%, State – 6.5%%, National Park – 5.3%, BLM – 3.2%.

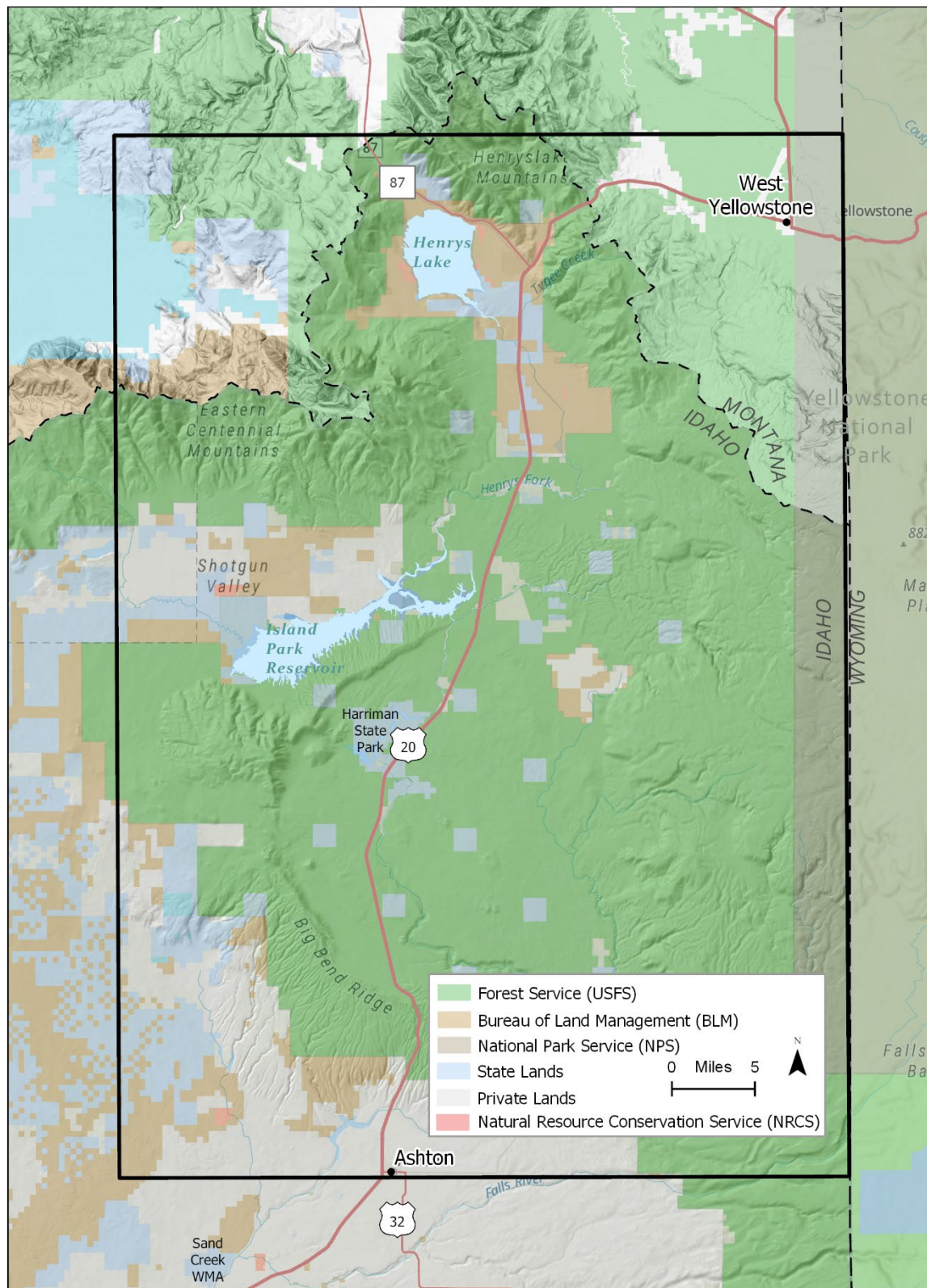
Risks/Threats: Highway expansion and improvement, land development, increasing tourism and vehicular traffic.

Current efforts: Proposed wildlife crossings and fencing in coordination with upcoming IDT US 20 improvement projects.

Cost of current or needed habitat treatments/road crossings, etc.: Unknown. Among the range of alternatives for NEPA evaluation, there are 4 overpasses, at least 3 underpasses, and fencing as part of the proposal.

Other issues for awareness: Roadkill and radio telemetry data used to confirm migration/movement areas. There is local community support for alternatives that do not include overpasses and fencing.

Figure 2: General depiction of the US 20/SH87 Complex Area. Note: this general area depiction does not represent any specific winter range or big game migration or movement.



US 95 McArthur Lake – Elmira to Naples

Why this Area was selected: Safety due to wildlife-vehicle collisions with elk, deer, moose, bears - landscape wildlife migration and movement.

Spatial location (Figure 3): Northern Idaho between Bonners Ferry and Sandpoint, Idaho

Habitat types: Forested valley habitats. Bridge between Okanagan Highlands and Flathead ecoregions.

Important stopover areas within the corridor: 1400-acre McArthur Lake Wildlife Management Area

Landownership: Predominately state and federal ownership and management except for private timber company lands (with Forest Legacy Program (FLP) easements) and private land in the valley bottom.

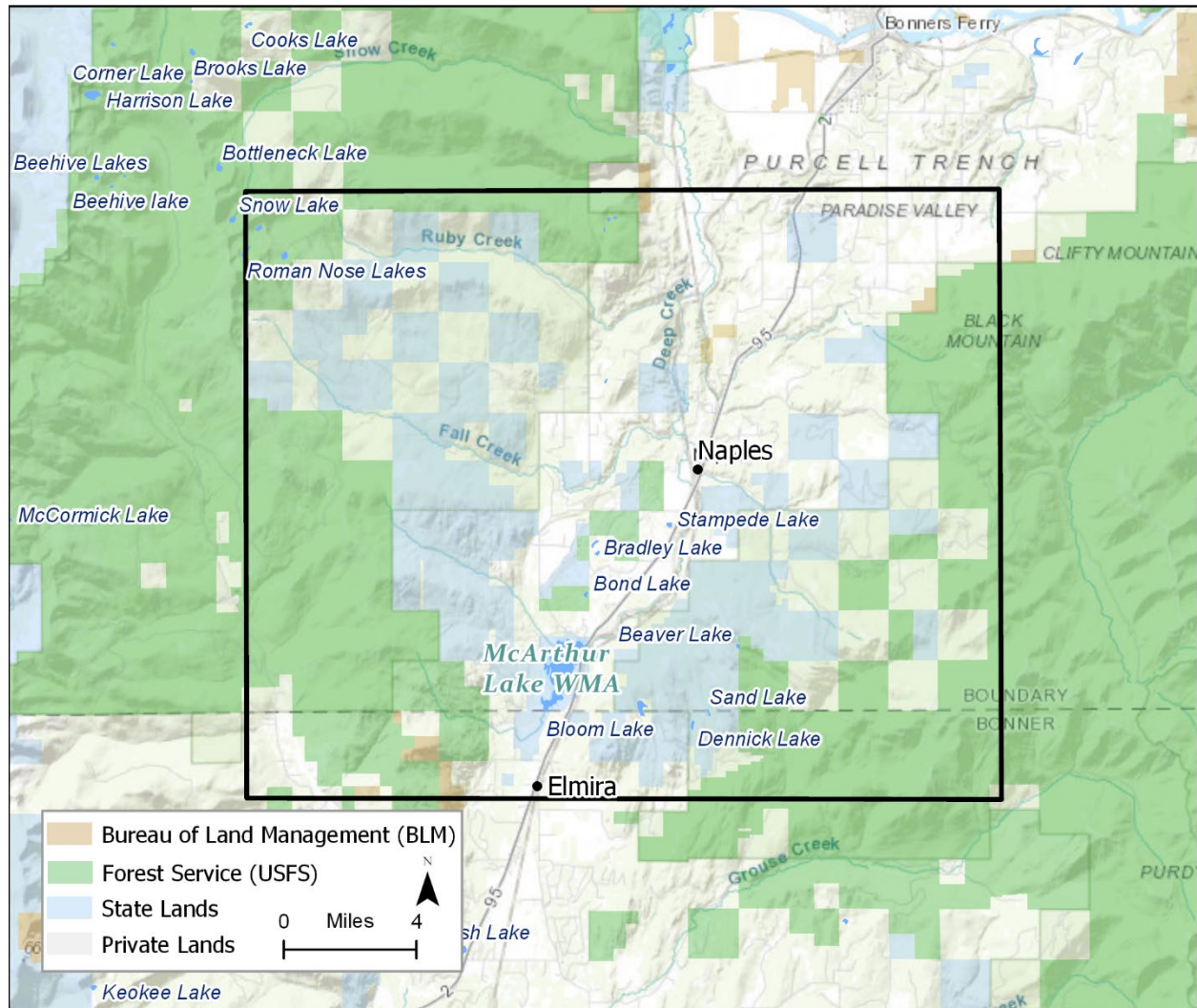
Risks/Threats: Highway development, increasing vehicular traffic, railroad traffic, land use.

Current efforts: Conservation easements on corporate timberlands, wildlife management areas and enhancement and management, proposed wildlife crossings. Partners include Idaho Department of Lands (IDL), The Nature Conservancy (TNC), IDFG, and Hancock and Molpus timber companies.

Cost of current or needed habitat treatments/road crossings, etc.: Proposed to expand bridge over Deep Creek and install wildlife overpass. Estimated cost > \$4M.

Other issues for awareness: Railroad adjacent to highway presents some obstacles and mortality threat to wildlife, especially in winter. More than \$11m already invested in conservation easements on 8000+ acres east and west of US 95.

Figure 3: General depiction of the US 95 McArthur Lake – Elmira to Naples Area. Note: this general area depiction does not represent any specific winter range or big game migration or movement.



US 30 Rocky Point, mile post 443 – 447

Why this Area was selected: 6000 – 8000 mule deer use US 30 migration route to and from winter range twice/year. Safety concerns due to wildlife-vehicle collisions.

Spatial location (Figure 4): Extreme SE Idaho in the Bear Lake basin.

Habitat types: Primarily sagebrush steppe habitats with forested habitats in the higher elevations in the Bear Lake ecological section.

Important stopover areas within the corridor: Winter ranges directly south of US 30. Summer range extends north on the Caribou National Forest.

Landownership: Predominately private, BLM, FWS Bear Lake National Refuge, and state lands.

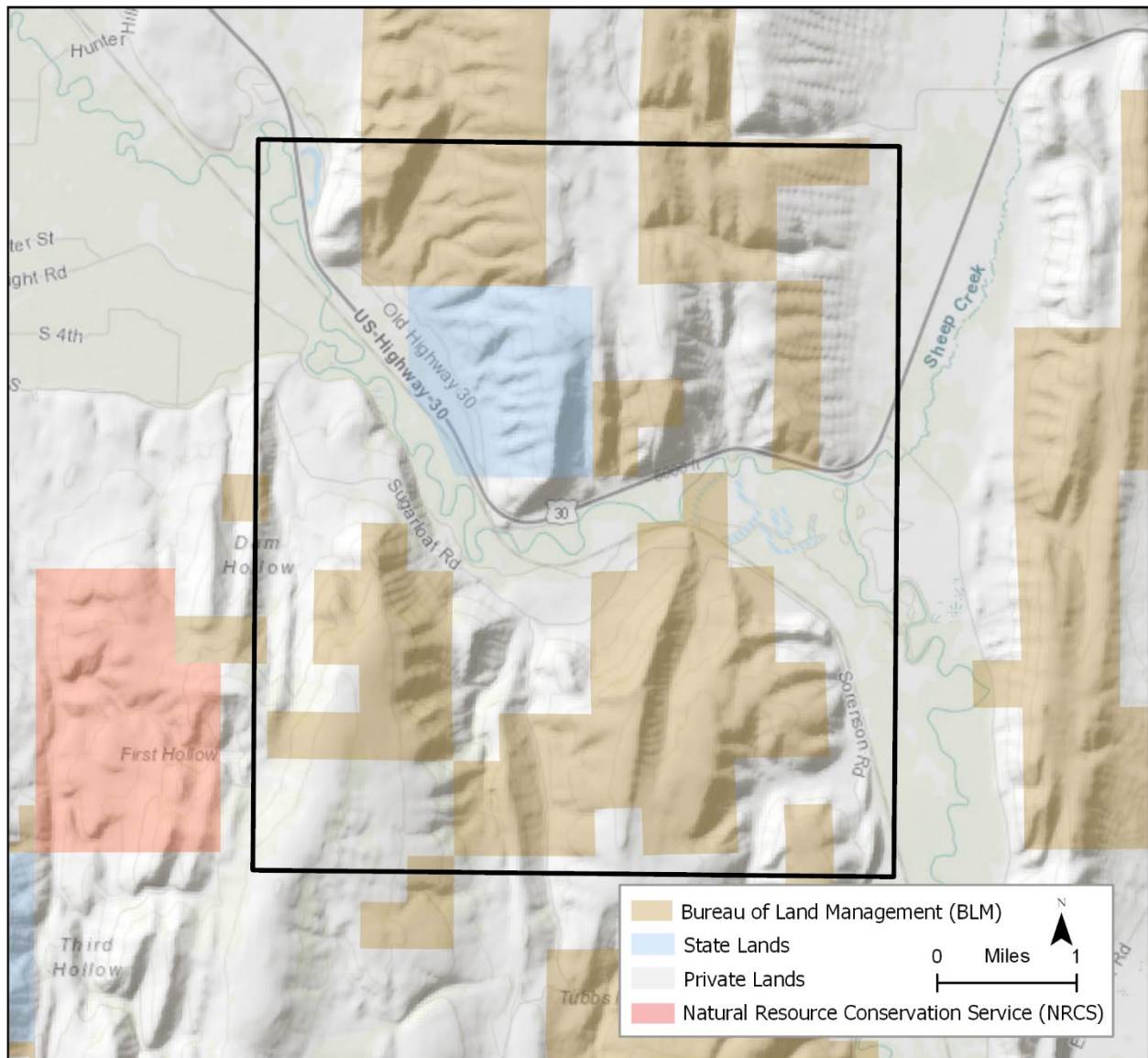
Risks/Threats: Increasing commercial truck traffic, land use.

Current efforts: ITD and IDFG cooperative effort to protect wildlife movement via conservation easements on private land and building wildlife underpasses and fencing.

Cost of current or needed habitat treatments/road crossings, etc.: Estimate >\$5M for 4+ wildlife underpasses plus fencing plus conservation easement on private land.

Other issues for awareness: Railroad adjacent to highway presents some obstacles and threat to mule deer and antelope. Commercial truck traffic does not create human collision safety problems but results in substantial deer mortality which leads to other incidental wildlife mortality such as 12 eagles killed by vehicles as they fed on road killed deer.

Figure 4: General depiction of the US 30 Rocky Point Area. Note: this general area depiction does not represent any specific winter range or big game migration or movement.



Interstate 15 – Market Lake to Montana border

Why this Area was selected: Migrating elk, antelope, and mule deer. Migration blocked by interstate and driver safety problems due to wildlife-vehicle collisions.

Spatial location (Figure 5): Snake River plain in eastern Idaho to Montana border.

Habitat types: Primarily sagebrush steppe in the Snake River Basalts ecological section.

Important stopover areas within the corridor: Snake River Plain, Idaho National Laboratory, Craters of the Moon National Monument, Camas Creek

Landownership: Predominately BLM, US Department of Energy (DOE), NPS Craters of the Moon National Monument and Preserve, and state.

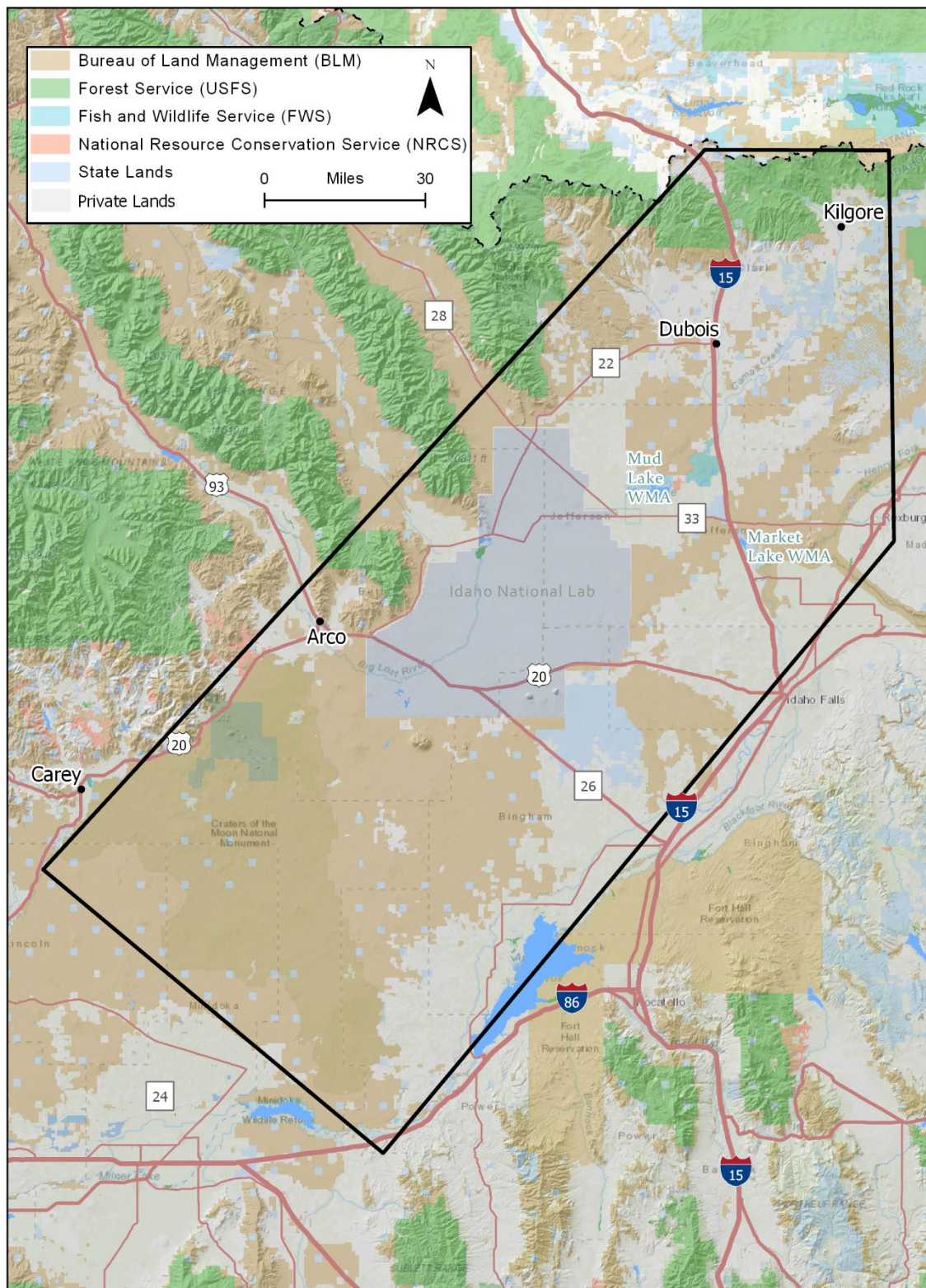
Risks/Threats: Wildfire, increasing vehicular traffic, noxious weeds, land use changes.

Current efforts: Radio telemetry information collection on migratory and resident mule deer, elk and antelope.

Cost of current or needed habitat treatments/road crossings, etc.: Unknown.

Other issues for awareness: I15 is felt to be a barrier to traditional east-west migration and movement of elk, antelope and deer.

Figure 5: General depiction of the Interstate 15 – Market Lake to Montana border Area.
Note: this general area depiction does not represent any specific winter range or big game migration or movement.



In addition, IDFG identified the following Research Priorities Related to the Management of Wildlife Migration and Movement and Winter Ranges-

1) Statewide mapping of elk and mule deer winter ranges, movement routes and stopover locations.

Overview. IDFG proposes to expand current efforts aimed at delineating the winter and summer ranges of ungulate species across Idaho. In tandem, IDFG will increase its efforts to identify movement routes and stopover locations that connect these ranges (Sawyer et al. 2011). Both of these efforts will build off of already successfully implemented projects across the state while expanding into less well studied areas through the incorporation of GPS location data. GPS data collection efforts began in the fall of 2016 and now consist of several collaborative projects throughout adjacent states (UT, WY, MT, and NV) and approximately 750 deployed collars per species of interest. This work provides seasonal ungulate range information for parts of Idaho in which we have historically lacked information, while at the same time serves to ‘update’ our current models by capturing changes in vegetation and structure (e.g., fire and human development). We also propose financial resources for assisting with integration of movement routes into the Western Association of Fish and Wildlife Agencies (WAFWA) Crucial Habitat Assessment Tool (CHAT).

In the past (2016-2017), IDFG has conducted resource selection with elk and mule deer in order to identify 1) winter and summer ranges and 2) movement routes. Such analyses often required GPS-collared seasonally-mobile species with annual individual ranges sometimes exceeding 100 miles. To this end, IDFG has deployed GPS collars on elk and mule deer since 2004 and maintains a database for elk and mule deer that contains a total of over 2.8 million locations. These data are easily cross-referenced with data on individual physiologic condition collected during animal capture. Migratory behavior can be determined from an individual animal’s location data. We can then assign a migration type and seasonal habitat following process known as net squared displacement (NSD, Bunnell et al 2010). NSD analysis identifies if an individual is migratory, and what type of migration the individual has exhibited. Further, this analysis may be used to identify the specific locations used in winter range, spring migration, summer range and fall migration in a scientific and reproducible manner. The NSD analysis provides the necessary classes of spatial behaviors from which winter range, movement routes, and stopovers can be identified, a required step for the topics presented below.

Winter range analyses. Where the winter ranges of elk and mule deer are sympatric, we will use winter range locations and resource selection function analysis (RSF) to evaluate environmental covariates that may potentially influence the probability of mule deer and elk use across regional scales. For winter range estimation and delineation, prior analysis has found that snow condition, elevation, aspect, slope, and vegetation composition are critical determinants of winter range. The resulting maps of predicted high quality winter range will then be cross-checked with IDFG’s winter survey efforts (1999-present) to verify occupancy of predicted use in relation to habitat quality.

Movement path analyses. Locations from migratory individuals identified within the NSD analysis will next be used to elucidate important spring movement paths through the use of Brownian Bridge Movement Models (BBMM, Horn et al. 2007, 2011). From these individual annual migration paths, stopover locations will be identified following a criteria based on intermittent areas of increased use (Sawyer et al. 2011) and areas of a low and

sustained rate of movement. All BBMM movement paths will be coalesced (and normalized for individuals producing multiple BBMM paths across several years) by region and overlain in a manner that prioritizes those paths that are used by multiple individuals and those representing larger populations as indicated from winter surveys. The above data and analyses can then be used in a resistance surface or least-cost path framework to predict migration routes for areas where animals have not been radio-marked (Wade et al. 2015)

Stopover Site Analyses. Finally, we will use the results of the movement route analysis and stopover analysis along with an RSF analysis to identify environmental covariates associated with the spring movement routes and stopovers locations within them. Additional covariates pertaining to vegetation type and phenology stage will be used within a regional analysis across population within a region. Phenological covariates such as season, peak growth date, and seasonal maximum will be derived from NASA Modis NDVI (MOD13Q1 v6 & MYD13Q1 v6). Past western US studies have indicated that these seasonal phenology metrics influence ungulate migration timing and spatial occurrence (Kauffman, Middleton etc.). When completed, this movement route analysis will allow us to assess the viability of identified routes in light of habitat disturbances (fire and anthropogenic development). This information, in conjunction with that derived for the winter range analysis, will identify those routes of high management priority based on risks according to IDFG mandates and priorities.

Conclusion. Analyses of elk and mule deer winter range, movement routes and the stopover locations contained within will provide an objective and systematic framework from which IDFG can identify areas requiring increased (or decreased) support and management. The results of this analysis will directly inform the decision making process. For example, our results will offer insight about how mitigating infrastructure and restoring habitats will improve ungulate seasonal movements (e.g. fire, invasive species, transportation) using scales that benefit local and landscape views. In addition, an understanding of population interconnectivity will be integral for any sound disease-related management decision making between Idaho and adjacent states (Brucellosis & Chronic Wasting Disease).

Funding Need and Products: IDFG's primary need is increased capacity to complete and update seasonal range (winter and summer) models, migration route and stopover analyses, and resistance surface predictions of migratory paths in Idaho. The resulting product will not only be predictive models of seasonal range and mitigation routes, but the automation of these analyses to be updated each year with minimal personnel effort. IDFG is currently collecting locating data from 1600 GPS collared deer and elk daily, requiring considerable personnel time just to process the incoming locations. Considering that IDFG currently has projects and data exchanges with 4 neighboring states concerning elk and mule deer movement patterns, the task becomes even more complex as the need for coordination between IDFG and surrounding regions increases. To expedite these analyses we request 2 research associates for 2 years to complete these analyses and develop software and underlying code to periodically update models with new location data and changing habitat covariates. We will complete the Brownian Bridge Movement Models and update of the seasonal range models within 1 year for all of our GPS collared individuals. The prediction of migration routes and software development will be completed at the end of 2 years. We will also request increased computer processing upgrades (dedicated server) to handle these CPU intensive models. We also request capacity to assist with integration of migratory information, in coordination with other western states, into the WAFWA CHAT.

The budget for this research effort will include:

2 Research Associates	\$49,000/year + 37% benefits = \$67,130 each x 2years =	\$268,520
Travel		\$ 8,280
Computer Server		\$19,200
CHAT support		\$ 4,000
Total		\$300,000

Additional Research Priorities For Idaho Department of Fish and Game

2) McArthur Lake Landscape Connectivity

- (a) Animal movements in northern Idaho between the Selkirk and Cabinet mountain ranges are not well defined. Winter range for elk, white-tailed deer and moose exists in the valley bottom (in vicinity to McArthur Lake WMA) where roadkill data has indicates significant mortality related to Highway 95 and railroad transportation corridors that run directly through this area.
- (b) GPS collars will be deployed on white-tailed deer, elk, and moose for the purposes of identifying movement routes across highway 95 and railroads within a multiple use, dense multiple stewardship landscape with multiple transportation needs and increasing development.

3) Pronghorn antelope winter range estimation, movement route identification, and stopover identification.

- (a) Idaho has quantitatively identified seasonal ranges and migratory paths for less than 20% of Idaho's pronghorn populations. Most of these populations exist at low density with little known concerning the influence of migration on population dynamics. This need will provide a means from which Idaho can identify many of these critical areas for pronghorn across Idaho.
- (b) Data collection and analysis. We will capture and place GPS collars in pronghorn populations lacking identified migratory information (Stanley, Sand Creek east of 15 Upper Snake, Fairfield – Bliss, and Owyhee).
- (c) This work will dovetail well with the current research on pronghorn vital rates and population estimation techniques in coordination with Utah State University. Combining these efforts would provide the full picture of population dynamics in many of our pronghorn populations.

CURRENT MANAGEMENT ACTIVITIES -

Smoky Boise Complex

- BLM Boise District Elk and Pony Fire Complex Emergency Stabilization and Rehabilitation (ESR) project to improve winter range of elk, mule deer, and pronghorn damaged by the 2013 Elk and Pony Fires. Rehab of ~51,000 acres included rangeland drill seeding and aerial seeding of forbs, sagebrush, alfalfa, and native grasses, and seedling planting of bitterbrush. Partners included the USFS, IDF and Idaho Department

of Lands. A seasonal restriction to motorized vehicles was established to protect big game during the winter months for a period of two years.

- BLM Boise District completed the Paradigm Fuel Breaks Project to reduce the number of large wildfires within the southern portion of the Smoky Boise Complex. By reducing the size of fires that burn in this area, sagebrush and other species important for big game winter range would be able to re-establish where they have been lost. Fuel breaks provide firefighters with more options for safely engaging wildfires and compartmentalize areas to help keep fires small. Elk mule deer, and pronghorn benefit.
- BLM Boise District completed the Cold Fire ESR project to improve winter range of elk, mule deer, and pronghorn damaged by the 2015 Cold Fire. Approximately 1,700 acres were treated by rangeland drill seeding and aerial seeding.
- BLM Boise District and FWS cooperated on the Breeze Post-fire ESR. The ESR improved vegetative conditions on approximately 1,100 of the 1,820 acres burned. All BLM land burned is being treated (1,110 acres).
- Construction of a highway overpass on SH 21 at MP 19.32. The work will be funded by a grant from the Idaho Federal Lands Access Program. The project will be funded by \$2.9M in funding from the grant plus 7.34% in match provided by partners including IDFG, Rocky Mountain Elk Foundation, Yellowstone to Yukon, Center for Large Landscape Conservation, Boise National Forest, and Idaho Deer Alliance. The project is scheduled for construction in 2021.
- Coordination with ITD to reduce wildlife vehicle collisions on Highway 20 that occur primarily as a result of mule deer migration to and from winter and summer ranges. Current efforts are limited to driver warning signs. Long-term needs include the consideration of incorporating wildlife underpasses and overpasses as well as fencing modifications through this priority area.

US 20/SH87 Complex

- The Idaho Falls BLM District has an active Land and Water Conservation Fund (LWCF) program in the Henry's Lake Area of Critical Environmental Concern. For the last 10+ years the District's Upper Snake Field Office has been working with landowners and partners to conserve important big game habitat in that migration route. Acquisition of conservation easements is ensuring big game habitat remains healthy for future generations.
- The Upper Snake BLM Field Office has removed three miles of old fencing from the Henry's Lake area.
- ITD has recently proposed the following projects for US-20 from Ashton north to the MT-ID state line: Ashton Hill Bridge to Dumpground Road, US-20 Chester to Montana Safety Corridor Plan, Targhee Pass (Jct. 87 to MT state line), A019 (913,606,711), and A014. Efforts continue to incorporate wildlife crossings and reduction of wildlife-vehicle collisions into these projects. Providing for wildlife migration and movement across US-20 is currently limited by funding and cooperative partnerships including locally. Ongoing coordination with Montana Fish, Wildlife and Parks is focused on cooperative management actions across the state line.

US 95 McArthur Lake – Elmira to Naples

- Reducing roadkill and providing for wildlife movement across the valley has been identified as a priority. To date, current efforts have provided more than \$11M in Forest Legacy and partner funding to acquire more than 8,000 acres of Forest Legacy conservation easements. ITD has proposed that U.S. 95 be straightened at the north end of IDFG's McArthur Lake WMA, where it crosses Deep Creek. This proposed highway improvement provides opportunity to install wildlife crossings in concert with ITD's proposed project. An existing and heavily used rail line also parallels US-95 at the site. Coincident with addressing driver safety and wildlife connectivity on US-95, discussions with the rail line about decreasing wildlife mortality and improving crossings will occur either separately or concurrently. Collaborative efforts include development of partners and additional funding support.

US 30 Rocky Point, mile post 443 – 447

- The FWS is working with ITD and IDFG to understand deer migration and allow safer deer movement in this area.
- IDFG and ITD have entered into an agreement to design, engineer, and construct a wildlife crossing along US-30. Included in the agreement will be effort to develop an easement or agreement with the private landowner to protect the migration route on either side of the crossing. Capacity building efforts are ongoing to develop partners and funding.

I15 – Market Lake to Montana border

- The NPS Craters of the Moon National Monument staff is advancing understanding of pronghorn migration between Carey and Arco, ID, using wildlife cameras.
- BLM Idaho Falls District
 - Fence Modification. Since 2013, approximately 10 miles of fence have been modified in the Table Butte area to allow for the safe passage of big game. Another 5 miles of fence modification is planned over the next two to three years. The fence modification efforts included or will include the removal of net wire and replacement with four-strand wire, with a high smooth bottom wire, to facilitate pronghorn passage.
 - Shrub Plantings. The Upper Snake Field Office has planted 500,000 sagebrush plugs in the area over the past 5 years to enhance wildlife habitat.
 - Fence Reconstruction. Approximately 25 miles of fence in the priority area (and an additional 55 miles outside of the area) was burned in the 100,000 acre Grassy Ridge fire in 2018. The fire encompassed much of the Sand Creek area, which provides winter range for significant numbers of big game each year, including 4,000 to 5,000 elk, 2000 mule deer, and 500 moose. The majority of the burned fencing was not up to wildlife-friendly standards prior to the fire but will be constructed to wildlife friendly standards over the next few years to facilitate the safe passage of big game.

- The FWS is restoring cottonwood shelterbelts on the refuge which will improve habitat for migrating big game species on the Camas Refuge Cottonwood Regeneration Project.
- Ongoing efforts to define and understand elk, mule deer, and pronghorn movements are being undertaken by IDFG. Historical and practical experience currently define seasons and locations of I15 wildlife crossings, seasons of use, potential stopovers and winter and summer use areas. Cooperative data analysis with Montana Fish, Wildlife and Parks is also needed as is design and engineering of potential crossing structures.

CURRENT IDFG-LED RESEARCH ACTIVITIES

- 1) ***Assessing Habitat Change, Connectivity, Barriers to Movement for Wildlife*** - This is a long-term project to evaluate the effects of habitat change on species survival and landscape connectivity. Subprojects include: 1) evaluation of population level effects of wildlife-vehicle collisions and the effectiveness of mitigation efforts, 2) evaluation of landscape connectivity for multiple species and potential barriers to movement, and 3) evaluation of large-scale agricultural landscape habitat changes (i.e., CRP vs ag vs native) and how populations are influenced. This is a major research project requiring a full time research biologist as project lead. The project has the potential to be a multi-collaborator project, incorporating funding and expertise from IDFG; Montana Fish, Wildlife, and Parks; Heart of the Rockies (NGO); and the High Divide Collaborative. This research will help better predict impacts of development (urban, roads, habitat modification), increasing the reliability information used in consultation with other agencies and private landowners. ***FY18 Accomplishments:*** Idaho State University graduate project investigating the effects of agriculture landscape change (active agriculture vs CRP vs CRP-SAFE) on Columbian sharp-tailed grouse lek abundance and habitat quality metrics. The student has developed a draft project proposal, outlined resource needs (e.g., remotely-sensed products), and began field work in spring of 2018.
- 2) ***Deer and Elk Seasonal Range Modeling*** - This project is using all of the GPS location data collected to date to model seasonal ranges, transitional ranges, migration routes, and calving/fawning habitat. It has produced first draft winter and summer resource selection models for the entire state and will update and refine these models as needed with input from field personnel and addition of new covariates and GPS data (~1800 animals/year). ***FY18 Accomplishments:*** Developing methods to estimate if, where, and when cow elk give birth based on analysis of GPS-location data. Will use this information to develop a calving habitat model for Idaho. Also are working on analyses of population spatial structure (especially for elk), updating covariates with more accurate information, and further scenario prediction (for example bad winter vs good winter or infrastructure development assessment). Also, High Divide (MT-ID) Collaborative elk seasonal ranges have been estimated using methodologies consistent with those used in Idaho.
- 3) ***Pronghorn Population Monitoring*** - This project is continuing the development of a reliable technique for monitoring status and trend of Idaho's low density pronghorn populations. Specifically, it is investigating the use of non-invasive sampling techniques to monitor pronghorn population parameters via fecal sampling. Fecal sampling will provide a method of determining pregnancy rates, measuring physiological stress, and quantifying nutritional condition. Fecal genetic mark-recapture will be used to validate

survey efforts for estimating population size. The project will elucidate factors that may be limiting pronghorn populations, provide insight on the physiological measures influencing pronghorn productivity, and provide parameters useful for population modelling. ***FY18 Accomplishments:*** The graduate student completed two semesters of graduate coursework, began collecting historic pronghorn survey data from regional offices, developed a draft study proposal that is currently going through review and revision by the committee, and prepared to initiate the first season of field work (summer 2018).

- 4) ***Mule Deer and Elk Population Modeling*** - Research is focused on developing a web-based integrated population model (IPM) for mule deer and elk. The IPM and associated web-based interface (PopR) contains modules for aerial survey sightability models and radio collar survival estimates along with annual estimates of population size. The final product from this research will include a nutrition-based carrying capacity estimate for each mule deer PMU or elk zone and provide a scientific basis to evaluate population or harvest goals. ***FY18 Accomplishments:*** Continued to refine the IPM interface and the interaction between the interface and IDFG databases. Have added predictive models of winter fawn survival from remote sensing data, including a tool to remotely download the information needed to predict fawn survival without the need for radio collars. The elk model will be completed pending adjustments to our statewide databases.

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APPENDIX B: SO3362: Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors).



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:

Federal Land Policy and Management Act of 1976, as amended, 43 U.S.C. 1701, U.S. Geological Survey Organic Act, as amended, 43 U.S.C. 31, *et seq.*;

- b. National Wildlife Refuge System Improvement Act of 1997, as amended, 16 U.S.C. 668dd *et seq.*; and
- c. 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 (BLM) 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 will 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:

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:

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

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

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

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

(v) 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

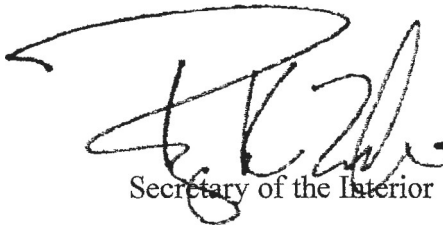
(3) Consult with State wildlife agencies and bureaus to ensure land use plans are consistent and complementary to one another along the entire wildlife corridor in common instances where winter range or migration corridors span jurisdictional boundaries.

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.



Secretary of the Interior

Date: FEB 09 2018

APPENDIX C: Department of Interior 26 April 2019 letter to the Idaho Department of Fish and Game soliciting a second version of Idaho's 2018 SO3362 Action Plan.



**United States Department of the
Interior**



FISH AND WILDLIFE SERVICE

Washington D.C. 20240

April 26, 2019

Ed Schriever, Director
Idaho Department of Fish and
Game PO Box 25
600 S. Walnut
Boise,

Idaho

83707 Dear

Ed,

On behalf of the Department of the Interior and the respective bureaus involved in the implementation of Secretarial Order 3362, "Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors" (SO3362)-Thank you! We worked well together over the past 6-9 months to cooperate and collaborate on the implementation of SO3362 and we look forward to your continued partnership. In a relatively short period of time, by working together, we are making meaningful progress on the initial implementation of State Action Plans. For example, \$330,000 was provided to your state agency to support big-game movement specific research and mapping. Additionally, \$245,190 was provided for habitat conservation on private land.

On February 1, 2018 the Western Association of Fish and Wildlife Agencies sent a letter to the Secretary of the Interior on the topic of big game seasonal habitats and migratory linkages in the western United States. Shortly thereafter,

on February 9, 2018 the Secretary of the Interior signed Secretarial Order 3362, "Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors." I became the Coordinator for implementation of SO3362 in May 2018 and the field Liaisons started in their role in July 2018.

Consistent with most new efforts, part of the objective is to learn and develop steps for improvement as we move forward. We will continue to implement SO3362 in an adaptive manner and use new knowledge and information to improve our effectiveness. Accordingly, we are now reaching out to solicit updates to your respective SO3362 State Action Plan for priority big game corridors, winter range, and related research needs. Our intent is to have Version 2 of the State Action Plans completed and approved by mid October 2019. Therefore, we ask that you provide updated priority corridors/winter range information that refine priority areas submitted last year or define actual corridors from new analyses. Additionally, we ask you provide related research priorities. Please provide this information by September 16, 2019 to allow time for updating, review, and final approval of the State Action Plan.

A primary objective for the Order and its implementation is to make a measurable and meaningful difference for big game habitat conservation and to help improve knowledge of their movements across landscapes. Throughout implementation of SO3362, we have sought and accepted the priority conservation areas and research priorities as determined by the individual states. We will continue to approach implementation of SO3362 in a similar manner, yet I hope we can strive to narrow the focus of the "priority areas," as the intent of the Order was to target limited habitat conservation dollars on the most important areas within your state (i.e., scientifically well-defined migration corridors or winter range areas). While recognizing that many priorities have not been fully analyzed, the "priority areas" submitted by some of the states are so enormous that it will be difficult to make a meaningful, focused, and measurable impact simply due to their expansiveness.

Consequently, we are requesting you revisit your top 1-5 priority corridors, stopover areas, or winter range areas identified in your State Action Plan. The overall goal is to scientifically link these areas to priority elk, mule deer, or pronghorn herds. If possible, it would help to narrow the scope and not submit hunt units or other large polygons as your priorities unless that is your best available information. If you choose to provide these large areas, please describe how this landscape will be evaluated to identify the most essential corridor within the area.

Further, it would be helpful to understand why (i.e., lack of necessary data to identify the actual corridor, stopover or winter range areas) you are submitting a large area and not a focused priority corridor or winter range. Please recognize that it is very difficult for grant proposal reviewers and

partners who may be considering habitat conservation activities to understand where to target limited resources in the most important area(s) when all they have to assist them is a large landscape.

If you lack or need additional scientific data to identify or better define where your migration corridor or winter range areas exist across your state, we are providing you with another opportunity this year to request funding for your respective research priorities to fill these knowledge gaps. See below for more details.

With all of this in mind, please provide the following information for the State Action Plan revision:

Top 1-5 priority migration corridors (linkages between seasonal habitats), and/or winter range areas. From our perspective, the objective is to create opportunities for habitat conservation activities in your highest priority corridors/movement linkages or winter range areas. If you do not have migration corridors/movement linkages or winter range areas identified, please consider sharing movement corridors that either cross or are impeded by highways. Alternatively, if work is underway to define your priority corridors or winter range areas, please feel free to omit this step.

Please attempt to address the following in your submission:

- Why the area was selected as one of your priorities
- Spatial location
- Habitat types
- Important Stopover areas within the corridor
- Land ownership
- Land Uses
- Risks/Threats (are they immediate or long-term; what actions are necessary to reduce or eliminate)
- Actionable habitat projects (NEW for Version 2)
- Current conservation efforts (what is the activity; who is conducting the work; partners involved; and what are the remaining costs to complete work).
- Cost of current or needed projects (e.g., habitat treatments, road crossings). Other issues to be aware of associated with your priority areas

Top research priorities for big game movement data, analysis, or mapping. Our ongoing approach is to work with you to help fill data gaps to identify priority migration/movement corridors or winter range areas by leveraging the science capacity of the Department of the Interior and developing partnership opportunities. In addition, in response to SO3362 the USGS Wyoming Cooperative Research Unit established a Corridor Mapping Team to help states with movement data analysis and corridor mapping

and are available to assist at your request. In addition, they welcome other team members. If your staff would like to participate please reach out to Matt Kauffman (307-766-6404).

Please submit a research proposal (no set format) for your respective research priorities on mule deer, elk, or pronghorn. Similar to last year, please limit your funding request to no more than \$300,000. New this year, we are requesting you to consider your research need by asking the following questions in sequential order:

1. Do we need research to collect data for identifying a priority herd movement corridor, stopover, or winter range (i.e., new data and associated equipment and deployment costs)?
2. Do we need financial support to conduct data analysis or mapping?
3. Do we need research to discover movement corridors that either cross or are impeded by highways?

As the Coordinator for this Order please send me (casey.stemler@fws.gov) and SO3362 Liaison Tom Olliff (tom_olliff@nps.gov), your submissions by September 16, 2019. Following the same approach as last year, we will seek your approval (or your designee) on the final draft of Version 2 of your SO3362 State Action Plan by mid- October 2019. Please do not hesitate to contact me with questions or concerns via email or by phone: 202-320-9904 (cell). Additionally, please feel free to have your staff reach out to Tom (406-581-2763)

We view the implementation of this order as a "state-driven" process and one in which we are trying to effectively use limited funding to advance knowledge and conservation. By continuing to approach implementation in a cooperative, collaborative, and adaptive manner, we can deliver on these fundamental principles and accomplish meaningful actions under SO3362.

Thank you,

/S/

Casey Stemler

cc: Tom Olliff