Boise River
Wildlife Management Area

Management Plan
2014

Southwest Region

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Wildlife Management Area

2014 – 2023 Management Plan
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Idaho Department of Fish and Game
Southwest Region
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Table of Contents

List of Tables

List of Figures

Executive Summary

The Idaho Department of Fish and Game (Department) manages 32 Wildlife Management Areas (WMAs). Researchers from the University of Idaho and The Nature Conservancy evaluated the value of Idaho's WMAs to wildlife. They found the WMA network, created to support game species, "also conserves the full range of Idaho's wildlife and other ecological features" (Karl et al. 2005). Surveys and monitoring work conducted by Department biologists on Southwest Region WMAs confirms their value to big game, nongame, and many at-risk species identified in Idaho's State Wildlife Action Plan. In many cases, WMAs provide the principal habitat for at-risk species in the Southwest Region.

Wildlife Management Areas often abut other protected lands such as National Forests, Bureau of Land Management (BLM) lands, or private lands protected by conservation easement. Due to the wildlife-focused management, WMAs often serve as highly productive core areas of the landscapes in which they exist. Management of these areas involves a combination of restoring and maintaining important natural habitats to contribute to landscape-level habitat function (e.g., sage-steppe, slough wetlands) and creating hyper-productive habitats (e.g., food plots, impounded wetlands) to enhance the carrying capacity for certain wildlife species.

Wildlife Management Area management plans strive to direct management that upholds these values. They may also be bounded by legislative and/or funding mandates, Department species plans, the State Wildlife Action Plan, conservation partner objectives, national wildlife conservation strategies and plans (federal and non-government organizations), and especially the Department's own strategic plan, *The Compass*. Priorities, Management Directions, Performance Targets, and Strategies have been developed to be as consistent as possible with all of these documents and to capture the broader conservation values already provided by WMAs and ensure these values are protected and enhanced.

The Department's Southwest Region includes six WMAs containing approximately 95,000 acres of land with a primary management focus of maintaining highly functional wildlife habitat, as well as providing wildlife-based recreation. Andrus WMA, at the upper end of Hells Canyon in Washington and Adams counties, is an important wintering area for deer and elk. Boise River WMA, in Ada, Boise, and Elmore counties, provides critical winter range for mule deer and elk near Idaho's largest human population centers. The other four Southwest Region WMAs comprise wetland, riparian, and upland habitats managed with an emphasis on upland game and waterfowl production and hunting. These include Fort Boise WMA at the confluence of the Boise and Snake rivers in Canyon County; Payette River and Montour WMAs along the Payette River in Payette and Gem counties; and C.J. Strike WMA on the Bruneau and Snake rivers near C.J. Strike Reservoir in Owyhee and Elmore counties.

Each WMA is managed as part of a larger habitat district, which may also include other lands owned or operated by the Department for wildlife habitat or public access. Management of lands for wildlife habitat could not succeed without the cooperation and collaboration of many partners, with the Department as either a licensed tenant or a neighbor. Examples include Idaho

Department of Lands, U.S. Army Corps of Engineers, USDI Bureau of Reclamation (BOR), BLM, USDA Forest Service (USFS), Bonneville Power Administration (BPA), Idaho Power Corporation, and other private landowners.

Personnel and operating funds for regional wildlife habitat programs are provided through a combination of hunting licenses and fees, federal aid from excise taxes under the Pittman-Robertson Act, and to some degree by BPA and BOR as mitigation for habitat losses resulting from construction of various dams in the region. Hunters fund a large portion of management costs, and they are rewarded with habitat management areas that sustain many of the region's big game herds and provide consistent waterfowl and upland game bird production and hunting opportunities. Non-hunters, who value the varied benefits provided by the Southwest Region's WMAs, also benefit from the broad ranging conservation values associated with Department lands.

The Boise River Wildlife Management Area (BRWMA), located east of Boise, Idaho, in Ada, Boise, and Elmore counties, is situated in the foothills of the Boise Mountains and along Lucky Peak and Arrowrock reservoirs in the Boise River Drainage. Over 36,000 acres of publicly-owned lands are managed for wildlife habitat and hunting access as part of Department ownership and agreements with the Army Corps of Engineers, USFS, BLM, and the Idaho Fish and Wildlife Foundation. The BRWMA has primary management responsibilities.

This document provides direction in the form of Priorities, Management Directions, Performance Targets, and Strategies for the management of the BRWMA. The Priorities for the BRWMA were determined through a combination of public and staff input, mitigation requirements identified in the cooperative agreements that formed the BRWMA, and Department statewide priorities identified in the "*The Compass*." A draft version of the BRWMA Management Priorities, Management Directions, Performance Targets, and Strategies was offered for public inspection and comment in July 2013.

This plan will serve as a guide for current and future managers in planning where to direct efforts and resources for maximum wildlife benefit, public enjoyment, and efficient operation. As new information and technology becomes available, and as more property is acquired, Strategies may be modified to most effectively reach the Management Directions and Performance Targets in this plan. All goals, objectives, and strategies are dependent on adequate funding, personnel, and public support.

Introduction

This management plan is designed to provide broad guidance for the long-term management of the Boise River Wildlife Management Area (BRWMA). It replaces an earlier management plan written in 2008. This updated plan was completed during 2012 and 2013 with extensive public input. This plan is tiered off other Idaho Department of Fish and Game (Department) plans and policies summarized below.

- State Wildlife Action Plan (2005)
- Statewide management plans for:
  - waterfowl (1991)
  - upland game (1991)
  - mule deer (2010)
  - white-tailed deer (2005)
  - elk (2014)
  - moose (1991)
  - furbearer (1991)
- Statewide big game depredation management plan (1988)
- Conservation Plan for the Greater Sage-grouse in Idaho (2006)
- Policy for Avian and Mammalian Predation Management (2000)

Department Mission

All wildlife, including all wild animals, wild birds, and fish, within the state of Idaho, is hereby declared to be the property of the state of Idaho. It shall be preserved, protected, perpetuated, and managed. It shall be only captured or taken at such times or places, under such conditions, or by such means, or in such manner, as will preserve, protect, and perpetuate such wildlife, and provide for the citizens of this state and, as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping (Idaho Code Section 36-103).

Department Strategic Goals

The Department's 2005 Strategic Plan, *The Compass*, is the primary guiding document for all other Department plans and outlines four goals for the Department:

- Fish, Wildlife and Habitat: Sustain Idaho's fish and wildlife and the habitats upon which they depend.
- Fish and Wildlife Recreation: Meet the demand for fish and wildlife recreation.
- Working With Others: Improve public understanding of and involvement in fish and wildlife management.
- Management Support: Enhance the capacity of the Department to manage fish and wildlife and serve the public.

The 2014 Wildlife Management Area (WMA) plans describe the management direction for each of the 32 WMAs the Department manages to help accomplish these goals. The specific *Compass* goals and objectives relevant to WMA management are included in Appendix I.

Statewide WMA Vision

Our WMAs are managed to provide and showcase important habitat for all wildlife and to offer high quality, wildlife-based public recreation.

Boise River WMA Mission

The BRWMA sustains high quality winter habitat for mule deer and elk as well as year-round habitat for a diversity of other wildlife species. Hunting, fishing, trapping, and other compatible wildlife-related recreational activities continue on the BRWMA. Boise River WMA is recognized for the valuable and unique opportunities it provides that enhance the quality of life for citizens of Idaho and the Treasure Valley.

Modification of Plan

This plan provides broad, long-term management direction for BRWMA. It will be evaluated at least every five years to determine if adjustments are needed. The plan will be modified as needed to accommodate changing conditions and goals and to incorporate available advancements in management knowledge and techniques.

Other Considerations

All strategies proposed in this plan are bound by the contractual agreements between cooperating agencies, the mission of BRWMA, and all applicable Department species management plans and policies. Issues and strategies that are inconsistent with the mission were not considered. In addition, the implementation of all strategies will be subject to available funding, personnel, and safety considerations.

Area Description and Current Status

For centuries, deer and elk migrated from their summer range in the Sawtooth Mountains, to their winter ranges in the Boise River Valley. Many of these herds dispersed downriver as far as the Deer Flat area near Nampa, Idaho. Over time, an increase in development and human activity along the river pushed these big game species out of these preferred wintering areas and into the unsettled foothills of Boise. As the human population expanded beyond the city limits and development began in the foothills, biologists voiced concern over the potential loss of critical mule deer winter range and the inevitable loss of the herds themselves.

In 1943, over 2,000 acres of land near the mouth of Mores Creek was purchased by the Department (Appendix II) to provide winter range for mule deer and to produce hay for winter-feeding operations along the Middle Fork of the Boise River. This land acquisition was the first of many that created the BRWMA (Game Management Unit 39) and began the process of permanently protecting critical winter range utilized by big game. Between 1948 and 1956, several other land acquisitions were conducted in the Middle Fork area. Major land purchases were also made in the 1960s and 1970s, as well as in 1993, 1999, 2004, 2006, and 2012 (Appendix IX). The Department currently holds title to approximately 18,900 acres.

Over 28,000 acres of intermixed-ownership lands are managed as part of the BRWMA under Department ownership and agreements with the U.S. Army Corps of Engineers (USACE), U.S. Forest Service (USFS), Bureau of Land Management (BLM), and private entities (Appendix IX). The cooperative management of these properties has ensured that herds of big game continue to have high quality critical winter range. The checkerboard pattern of ownership found throughout the WMA makes landowner cooperation essential for successful management. The BRWMA is managed in four distinct segments (Figures 1 & 2):

- The Boise Front Segment lies in the foothills of the Boise Mountains adjacent to the city of Boise and north of the Boise River and Lucky Peak Reservoir (Figure 1).
- The Spring Shores Segment is 15 miles east of Boise and north of Lucky Peak Reservoir between State Highway 21 and Forest Road 268 (Figure 1).
- The Charcoal Creek Segment is south of Lucky Peak Reservoir and north of Blacks Creek Road (Figure 1).
- The South Fork Segment is north of the South Fork arm of Arrowrock Reservoir (Figure 2).

For the welfare of our users, there is a designated safety zone around the BRWMA headquarters and Lucky Peak Mountain (Figure 3). Both of these areas have been posted.

Terrain on the BRWMA varies from gentle rolling hills to steep, highly dissected canyons. Elevations range from 2,880 feet at Council Springs Creek to 5,904 feet at the top of Lucky Peak Mountain. The level to hilly alluvial fans, drainage ways, draws, and stream terraces are depositional areas of late Pleistocene- and Holocene-age sediments, mostly derived from weathered granite and reworked Tertiary sediments. Undulating to very steep fan remnants,

gulches, hills, and structural benches occur in areas of eroded Pliocene-age lake sediments of sandstone and mudstone overlain in places by cobbly alluvium. There are also steep buttes, hills, and structural benches that occur in areas of eroded Pliocene-age basalt, tuft, and volcaniclastic sediments.

Soils on the property range from deep, well-drained loess formed silt loams to shallow stony soils. The majority of parent materials consist of basalt and granite. Complexes of basalt and granitic-derived soils can be found at lower elevations. As elevation increases, granitic soils from erosion of Cretaceous rock of the Idaho batholith are more dominant. Significant amounts of gravelly, sandy, silt, and clay loams are also present throughout the WMA.

The summers on the BRWMA are hot and dry with average temperatures of 90°, while the winter temperatures are as low as 27° Fahrenheit. Temperature extremes have been recorded between 109° to -23° Fahrenheit. Annual precipitation on the property ranges from 11 inches at lower elevations to 24 inches at higher elevations, with most occurring from November through April. Half of the annual precipitation comes during this time of year. The growing season varies with elevation but is typically between 80 and 140 days.

Although the landscape of the WMA seems dry, the property actually contains a significant amount of water. In addition to having water from the two forks of the Boise River, the property also contains numerous creeks and over 50 springs (Appendix XI). Winters are generally moderate, but snowfall can be heavy at times, especially at elevations above 4,000 feet. However, at lower elevations with south-facing slopes, snow accumulates for short periods of time making these areas well suited for wintering big game.

The BRWMA supports a diversity of wildlife species including 65 mammals, 217 birds, 15 reptiles, seven amphibians, seven fish, and numerous invertebrates. Some of these species include bald eagles, deer mice, western rattlesnakes, and Pacific tree frogs (Appendix VII).

The WMA is the primary winter range for Unit 39 mule deer and elk. It is estimated that 5,000 to 7,000 mule deer and 1,200 elk winter on the WMA each year. Black bear, mountain lion, and a small population (<100) of pronghorn are also found on the property. In addition, the WMA supports populations of upland game birds including chukar, gray partridge, California quail, dusky grouse, ruffed grouse, and mourning doves.

Vegetation types throughout the management area are consistent with mountain foothills settings across southwest Idaho. Upland areas are characterized by shrub-steppe vegetation (85%) dominated by mountain and xeric big sagebrush (*Artemisia tridentata* ssp. *vaseyana* and ssp. *xericensis*), antelope bitterbrush (*Purshia tridentata*), and rabbitbrush (*Ericameria* spp.). Native bunchgrasses such as bluebunch wheatgrass (*Pseudoroegneria spicata*), bottlebrush squirrel tail (*Elymus elymoides*), Sandburg bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), and red threeawn (*Aristida purpurea*) occur in these areas along with numerous forb species such as arrowleaf balsamroot (*Balsamorhiza sagittata*), yarrow (*Achillea millefolium*), and crane's bill (*Erodium cicutarium*). Approximately 10% of the WMA supports mountain shrub species that require more moisture to survive (e.g., snow accumulating mid-elevation north slopes) including

bittercherry (*Prunus emarginata*), chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos* spp.), and Rocky Mountain maple (*Acer glabrum*). About 1% of the property is characterized by riparian vegetation occurring along streams and around springs and seeps. These areas are generally vegetation-rich, with black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), black hawthorn (*Crataegus douglasii*), redosier dogwood (*Cornus sericea*), water birch (*Betula occidentalis*), willows (*Salix* spp.), and Woods' rose (*Rosa woodsii*). Coniferous forest cover type occupies about 2% of the WMA and consists primarily of Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) stands located on north-facing slopes at higher elevations. Finally, other cover types, including rock outcrop, cliff, and barren areas, are found on the remainder of the property (Appendix VI).

As is true of many areas in Idaho, invasive exotic plants are common in many areas on the WMA. Cheatgrass (*Bromus tectorum*) and medusahead (*Taeiantherum caput-medusae*), non-native annual grasses, dominate large acreages of former shrub-steppe habitat. In 2013, over 2,000 acres of the management area were impacted by fire. Native shrubs, perennial grasses, and forbs that provide critical winter forage and cover for wildlife were either reduced or eliminated. Unfortunately, the seeds of most noxious weeds and invasive plants are not consumed by fire. Therefore, the fire allows these plants have a competitive advantage over native species and they quickly infest the area. Over time, if a site is repeatedly burned, desirable plants will be unable to establish. This change in plant communities on the WMA could ultimately cause a shift in habitat preference or avoidance of the area by wildlife species (Lowe et al. 1978).

Noxious weeds such as rush skeletonweed (*Chondrilla juncea*), spotted knapweed (*Centaurea stoebe*), and hoary cress (*Cardaria draba*) can also be found on the property. Noxious weeds are controlled by a variety of methods in order to protect wildlife habitat from these undesirable plants.

In order to ensure that the habitat on the BRWMA satisfies the needs of wildlife, human access is managed throughout the property. Access management is used to maintain or improve hunting and other wildlife-oriented recreational opportunities, while still providing high quality wintering habitat for big game and productive habitat for other wildlife.

The rapidly expanding human population of the Treasure Valley has significantly increased the demand for hunting opportunities, wildlife-oriented recreation, and other outdoor recreational activities such as hiking, mountain biking, paragliding, and dog walking on the BRWMA. In order to accommodate the intensity of these public activities and still provide conditions that will ensure the long term health of southwest Idaho's largest migratory mule deer herd, certain restrictions have been established on the WMA. These restrictions are necessary to protect vegetation and soils, as well as wintering mule deer and elk from human disturbance.

Idaho State Highway 21 and Warm Springs Avenue bisect the BRWMA and the critical big game winter range it provides. Collisions between big game and motor vehicles occur frequently on these roadways. Thirty-two years of big game mortality data indicate an upward trend in wildlife-vehicle collisions. The increase in traffic in these roadways can also seriously impact wildlife movement and distribution. Therefore, the BRWMA is working with other agencies to

mitigate for this conflict and to increase landscape permeability. Mitigation efforts include installation of wildlife-exclusion fencing, underpass construction, and public education (Appendix XIV).

In 1970, the Boise Front Coordinated Resource Management Plan was implemented to improve livestock grazing management on the BRWMA. Currently, there is a rest-rotation grazing system on the property to control cattle use and distribution. Nine pastures are managed for moderate utilization by livestock, with each pasture rested every other year. In order to help distribute cattle and to keep them from exceeding desired utilization levels in the pastures, springs have been developed. In addition, sheep graze a portion of the Boise Front Segment each spring and fall for a month. Spring grazing is utilized for noxious weed control throughout the area.

Physical improvements on the BRWMA consist of roads and trails, buildings and structures, fences, and water developments (Appendix X). Approximately 45 miles of primary and secondary roads are maintained on the property. All roads have some type of restricted use. Buildings and structures consist of an office facility, a machine shop, two out buildings, a fuel shed, and a tool shed. There are approximately 48 water developments and approximately 75 miles of barbed wire fence on the WMA.

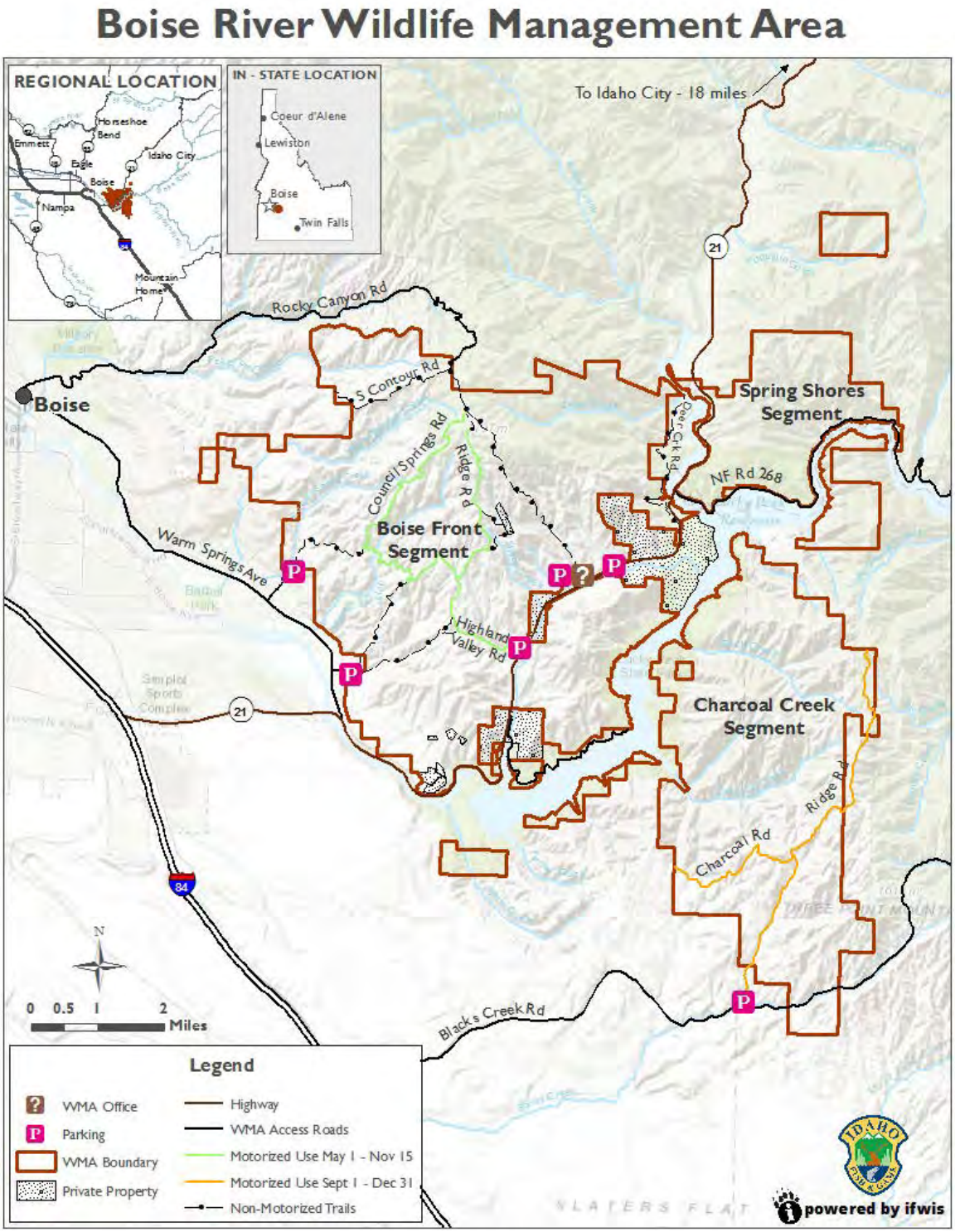

Figure 1. Map of the Boise River Wildlife Management Area.

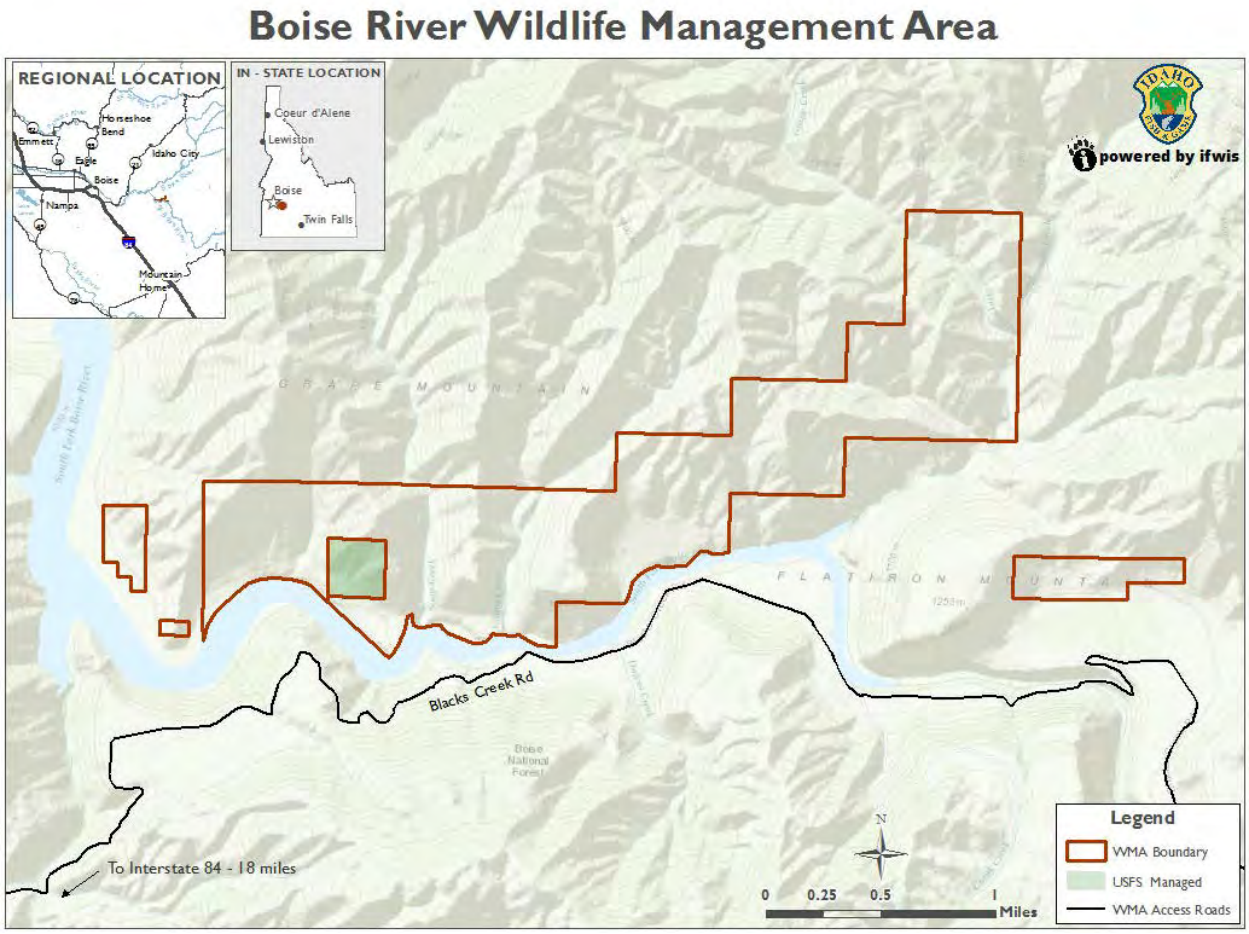

Figure 2. South Fork Boise River Segment of Boise River WMA.

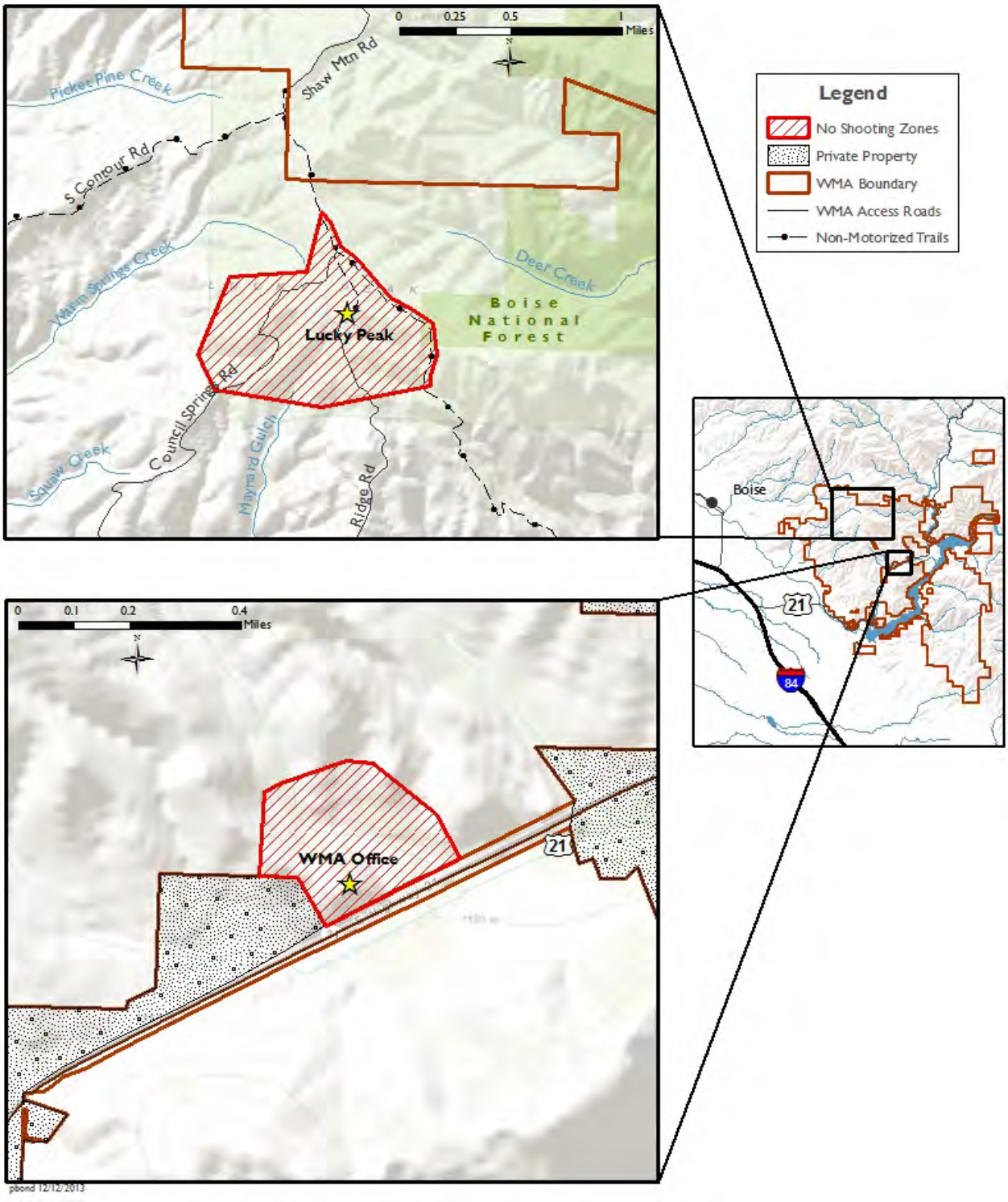

Figure 3. Designated safety zone around the Boise River WMA headquarters and Lucky Peak Mountain.

Management Issues

Throughout 2012 (Feb-Dec), and again in 2013 (May-June), an online survey form was available on the Department website. This survey allowed participants to answer questions and provide feedback on WMA management statewide and the management of specific WMAs. Over 600 emails were sent out to neighbors, cooperators, legislators, sportsmen's groups, land management agencies and concerned citizens inviting them to take the online survey. A news release was also issued in the Idaho Statesman inviting the public to take the online survey.

BRWMA staff and volunteers also conducted on-site surveys from June-November of 2012. This paper survey included similar questions to the online survey and provided an opportunity for users to suggest ways to improve management of the WMA. Random survey time periods, alternating between early and late in the day and between weekends and weekdays, were selected for each week. Surveys were handed out to users by staff and volunteers, and returned to those same individuals when completed by the visitor.

One-hundred and twenty-three online surveys and 33 on-site surveys from WMA users were collected in 2012 and twelve online surveys from WMA users were collected in 2013, for a total of 168 surveys. One-hundred and twenty-nine (76.3%) respondents indicated that they were satisfied or very satisfied with their experience. Many commented that they enjoyed their outdoor experience, noticed habitat improvements, and appreciated the late archery hunt. Twenty-four (14.2%) respondents were unsatisfied or very unsatisfied with their experience. Many commented that they wanted more enforcement of Department regulations (off-leash dogs, trash, off-road use), felt that non-motorized free flight (i.e., paragliding) should be allowed on the property, that more mountain bike trails should be established on the WMA, wanted to see an improvement in big game populations, and wanted a longer period of time to conduct bird-dog training on the property. Fifteen (9.5%) respondents felt neutral or had no opinion about their experience. 2012 data on visitor use trends on the WMA are available in Appendix IV.

Comments collected from the public during the survey process (Appendix IV) as well as from Department staff with experience managing the property, were then gathered together in order to identify the current challenges facing the BRWMA. Once organized based on similarity, these challenges were then separated into three general categories: Habitat Management, Wildlife Management, and Public Use Management. In the following section, we summarize each management challenge and discuss some techniques used to address these issues in order to improve management of the BRWMA.

Issues Identified by the Department

Habitat Management

1. Increase habitat capacity.

Discussion: An abundance of game and nongame wildlife rely on the BRWMA for adequate food, water, cover, and space throughout all of their life stages. These habitat requirements vary among species, but are necessary for their persistence. For example, high quality shrub-steppe is a critical habitat component for mule deer since it maintains food stores during the winter months (MDWG 2004). In addition, shrubs, grasses, and forbs planted to restore and enhance mule deer and elk habitat also provide cover and nesting habitat for numerous upland bird species. Big game habitat maintenance and improvement are the primary management objectives of the BRWMA, with management efforts focusing on protecting and improving critical winter range habitat.

In order to maintain this habitat and to provide wildlife with a selection of plant species that support their needs, management efforts on the WMA are directed at maintaining and improving upland and riparian habitat conditions, especially in areas of big game critical winter range. The focus of this effort is on establishing native vegetation that provides critical winter forage and cover for wildlife including sagebrush, bitterbrush, and willow. A variety of management techniques are used to influence plant community composition and successional stages. These techniques include direct seeding, transplanting, and manipulation of residual cover to produce mixtures of important plant species (Schemnitz 1980).

Each year, volunteers and Department staff plant over 40,000 shrub seedlings on the BRWMA to enhance desirable vegetation species such as bitterbrush and sagebrush on the property. This large-scale effort focuses on areas affected by wildfire and south-facing slopes with suitable soil moisture. The selection of plant species used for this effort is based on the knowledge of wildlife food habits.

Another ongoing management effort is restoring perennial grasses (i.e., bluebunch wheatgrass) and forbs (i.e., wildflowers) on the BRWMA. Grass and forb seed is broadcasted in the fall by volunteers and Department staff in areas affected by wildfire. This allows the seed to germinate the following spring when soil moisture is abundant.

Although riparian habitat only occupy a small percentage (1%) of the BRWMA, they are vitally important for wildlife. They provide cover for migration, movement corridors, nesting and foraging areas, and a place to escape predators. Riparian areas on the WMA contain a plethora of vegetation including willows, wild rose, and currant. Mature trees such as black cottonwood can also be found there, providing thermal and screening cover for a variety of wildlife including deer, elk, birds, and rodents. The drainage patterns found in riparian areas promote pooling of water, which encourages the growth of forbs and a diversity of shrubs (Cox et al. 2009). Unfortunately, riparian habitat on the WMA is in poor to fair condition due to past land management practices. Years of overgrazing, vegetation clearing, gravel

extraction, diversion or impoundment of free-flowing water, road building, agriculture, and development have been major factors in the degradation of the natural functions of the riparian areas on the WMA. These activities have changed the water flow regime on the property and have caused the lowering of the water table, deterioration in stabilizing vegetation, as well as a decline in water storage capacity and quality. In order to provide high quality riparian habitat for all wildlife species utilizing the BRWMA, Department staff are currently developing a plan to conduct riparian restoration on the property.

Finally, BRWMA staff work in conjunction with the USDA Agriculture Research Service Northwest Watershed Research Center (ARS-NWRC) to conduct research on desirable vegetation species found on the BRWMA. The ARS-NWRC has been conducting a study on the BRWMA in Warm Springs Basin focusing on increasing site availability of bluebunch wheatgrass and sagebrush communities. The study intends to do this by controlling medusahead and cheatgrass, introducing seed to improve species availability, and evaluating species performance for both native and non-native plant materials. Results for this study will become available to WMA staff in the next two to three years. In the spring of 2013, the ARS-NRRC began conducting research on the WMA that primarily focuses on the establishment of perennial native grasses used in restoration projects throughout the Great Basin. This project will specifically look at weather and climate conditions on Hammer Flat and evaluate grass establishment within a community with and without medusahead and cheatgrass.

2. Reduce noxious weeds and invasive plants.

Discussion: Of the 36,000 acres that make up the BRWMA, large areas of the property have been colonized by noxious weeds and invasive plants that have degraded the quality of the habitat. Infestations of hoary cress (whitetop), rush skeletonweed, cheatgrass, and medusahead began with historic land use practices and the elimination of native plant communities. Today, activities such as OHV use, livestock grazing, and wildfire suppression can disturb the soil and create new areas for weeds to proliferate and expand. According to Olson (1999), noxious weeds alter soil properties, the composition of plant communities by displacing native vegetation, and the activity patterns of wildlife. For instance, in early spring, cheatgrass exploits the moisture, nutrients, and elements of the soil before native grasses can initiate growth (Abraham et al. 2009). By reducing soil nutrients and minimizing the availability of water, cheatgrass has a competitive advantage over native grasses. Since this change in plant community composition happens rather rapidly, wildlife species are unable to shift their habitat requirements quickly enough to adapt. Therefore, wildlife must leave the area to forage in a more productive one or risk a reduction in the population (Miller et al. 1994).

To combat the current weed infestation and minimize its expansion, integrated weed management is utilized on the BRWMA. The purpose of this type of management is to reduce weed abundance, improve the overall health of the habitat, and comply with legal requirements. Management includes prevention, as well as manual (use of hand-operated tools and hand tools to cut, clear, or prune vegetation), mechanical (use of motorized

equipment such as dozers, tractors, rangeland drills, plows, and mowers to treat vegetation), chemical (use of herbicides to stop vegetation from reaching a mature stage of growth), and biological methods (use herbivorous animals, insects, or pathogens to suppress, inhibit, or control vegetation) (BLM 2013). New infestations are eradicated, and established species are managed to limit expansion. All available control methods are used where appropriate and new methods incorporated when practical. Finally, activities on the WMA are managed to reduce soil disturbance, minimizing weed infestations.

3. Reduce impacts of wildfires on wildlife habitat.

Discussion: In some natural landscapes, fires are essential in improving plant availability and palatability of forage by stimulating crown growth (Williams et al. 1980). Unfortunately, as the human population has increased, so has the frequency and magnitude of wildfires. According to the BLM (2013), in the wildland urban interface of the Boise metropolitan area, on average, 23 fire starts occur annually. Approximately 83% of those fires are caused by humans (Humphrey 2011). This increase in wildfires in and around Boise has had a detrimental effect on wildlife habitat.

As fires on the BRWMA have intensified over the years, a greater proportion of native shrubs and perennial grasses that provide critical winter forage and cover for wildlife have been reduced or eliminated. Disturbance in plant communities such as this have led to an increase in noxious weed or invasive plant infestations. Since the seeds of most noxious weeds and invasive plants are not consumed by fire, these plants have a competitive advantage over native species. Over time, if a site is repeatedly burned, desirable plants will be unable to establish. This change in plant communities on the WMA could ultimately cause a shift in habitat preference or avoidance of the area by wildlife species (Lowe et al. 1978).

To prevent this process from occurring and to provide a mix of habitat types needed by wildlife, volunteers and Department staff seed and plant shrub seedlings in areas of the WMA that have been affected by fire. Department staff is currently developing a plan to integrate a fuels reduction program into the yearly work plan of the BRWMA. This plan may include the removal of fuel accumulations through mowing or cutting and the development of green strips between the WMA and public highways/roads, private property, or interior designated routes. However, the success of this project will be based on priority and availability of funding.

4. Remove/repair internal fencing.

Discussion: Fences on the BRWMA are constructed and maintained in order to delineate property boundaries, control access, and to manage livestock.

In order to provide high quality habitat for wildlife and manage livestock grazing, the WMA keeps both fence and water development infrastructures. The infrastructure allows staff to contain livestock in specific grazing pastures and exclude them from sensitive habitats such as riparian areas (Boone and Thompson-Hobbs 2004). Although repair of this infrastructure

requires considerable annual maintenance, without it, management would be much more challenging.

However, there are miles of old barbed wire fences on the BRWMA, which can create an impediment and danger to wildlife, especially to wintering big game. Even though mule deer, elk, and pronghorn are capable of traversing fences, they can be injured by the barbs, become entangled, and have their migratory routes disrupted. According to Harrington and Conover (2006), in the rangelands of Utah and Colorado, on average, one ungulate per year was found tangled for every 2.5 miles of fence. These fences can also become a barrier to fawns and calves, separating them from the rest of the herd. In the same study, Harrington and Conover (2006) found that juvenile ungulates were eight times more likely to die from fences than adults. The ability of ungulates, in particular fawns and calves, to escape from predators is also greatly reduced when escape routes are blocked by fences (Hölzenbein and Marchinton 1992). In addition, birds such owls and hawks collide with fences when hunting prey and get entangled, impale themselves on the barbs or break their wings (Harrington and Conover 2006).

In order to prevent this situation from occurring on the BRWMA, fences on the property identified as non-essential to the grazing program will be removed. Fences necessary for boundary delineation and controlled access will be made wildlife-friendly by removing all barbed wire and replacing it with smooth (barbless) wire. These fences will be low enough for adult ungulates to jump over (<40”) and high enough for pronghorn, fawns and calves to crawl under (at least 18’ from ground level). In addition, the two top wires will be no less than 12” apart to deter entanglement of hind legs. This fencing will prevent snagging, injury, and death of wildlife utilizing the property, as well as give them ability to move easily throughout the habitat. In addition, this type of fencing should reduce the number of hunting dogs injured annually on the property.

5. Improve livestock management.

Discussion: Beginning in 1970, a cooperative program was created for the BRWMA to provide mule deer and elk with winter range and to protect the watershed and upland game habitat. Fifteen years later, the Boise Front Coordinated Resource Management Plan (CRMP) was officially established. Today, the CRMP consists of federal, state, and private landowners including the BLM, Natural Resources Conservation Service (NRCS), USFS, USACE, Idaho Department of Lands (IDL), Highland Livestock and Land Company, Harris Ranch, and the Department. The BRWMA uses the plan’s Best Management Practices (BMPs) to maintain appropriate ecosystem functions that will benefit both wildlife and livestock.

The BMPs utilized on the BRWMA include a well-distributed rest-rotation pasture management system, proper forage utilization levels in upland and riparian areas, salt blocks to distribute livestock away from sensitive areas, and active range riding to ensure proper distribution of livestock. This system allows wildlife and livestock to compatibly coexist on the WMA by positively influencing plant community composition and successional stages.

Under this plan, cattle will primarily forage on grass and have less of an impact on forbs and browse (Cox et al. 2009). This management system is also used by Department staff in order to manage noxious weeds and improve rangeland health. This in turn benefits wildlife, especially mule deer, since adequate cover and herbaceous understory remain intact. In addition, the WMA contains many natural springs that were developed over the years for use as livestock water sources. These springs were capped and the water was then piped to a trough. As the number of livestock utilizing the WMA has decreased over the years, some of these water developments are no longer needed for their original purpose. Nevertheless, they do provide valuable micro-sized water sources for a variety of wildlife species including birds, big game, and bats. Therefore, developed springs will be evaluated for their ability as livestock or big game water sources, and those that are no longer needed will be rehabilitated to allow natural riparian vegetation to reestablish.

Grazing on the BRWMA is conducted primarily through the exchange of use agreements with adjacent private landowners. These private landowners are permitted to graze WMA lands during spring and/or summer (Apr-Jul) in exchange for wildlife use on their land during the winter. The current management system on the Boise Front Segment consists of eight use pastures (Picket Pen, Warm Springs, Squaw Creek, Maynard, Queens Mine, Tower, White Ranch, Island) and one reserve pasture to be used in case of an emergency (Dead Dog). There is a total of 535 AUMs (animal units per area or total animal unit months) on the WMA. Only four pastures are scheduled each year for cattle grazing, the remaining pastures are then rested. Additionally, there is a total of 425 AUMs on the Charcoal Creek and South Fork Segments of the BRWMA each year.

Highland Livestock and Land Company is the sheep operator on the BRWMA. Approximately 1,000 ewes/lamb pairs graze on the Boise Front for 30 days in the spring and 30 days in the fall. The band is moved every three days to off-set the heavy use of bedding areas. Watering areas on the WMA dictate the routes that the sheep take. In the spring, another band is allowed to utilize the property for three days as they trail from Rocky Canyon to Highland Valley where they are transported by truck to their summer range on USFS lands.

6. Reduce the impact of housing developments on wildlife and wildlife habitat.

Discussion: In the past, a variety of wildlife species utilized the Barber Valley on a daily basis for survival. It was especially common to see hundreds of mule deer using the agricultural fields along Warm Springs Avenue and the base of the Foothills during the winter. Unfortunately, that is not the case today. Current development will result in the building of nearly 5,000 homes and numerous commercial properties within one-half mile of the BRWMA (Bottum 2008). This amount of urban growth will not only bring a substantial influx of people to the area, but impact wildlife through habitat loss/fragmentation, disruption of movement patterns, and increased road mortality (Blades et al 2007). This amount of urban growth can also cause negative responses in wildlife populations including changes in behavior, distribution, and reproduction. In addition, urban encroachment may also affect hunting, trapping, wildlife viewing, and other recreational opportunities on the BRWMA.

With urban growth comes permanent habitat loss and fragmentation. The conversion of open space to homes, businesses, roadways, and other supporting infrastructure will result in the loss of crucial wildlife habitat. Open areas that once provided good foraging and resting opportunities for mule deer and elk, especially during the winter season, are lost. Vegetative cover for small mammals that once protected them from predators is now altered. Consequently, animals such as these will be displaced and will have to utilize less suitable habitats, if available, in order to survive. In addition, infrastructure such as roads and trails can fragment habitats, causing home ranges of wildlife species to also become more fragmented and discontinuous. This infrastructure can also act as a barrier to some species, disrupting migration patterns, dispersal, and gene flow. According to Ash (1997), fragmentation of terrestrial habitat in North Carolina that was previously used by amphibians for breeding caused a reduction in the population. In Barber Valley, development could impede big game as they move between the BRWMA and the Boise River corridor. Finally, the increase in the number of roads and traffic along Warm Springs Avenue may result in an increase in the number of wildlife-vehicle collisions, leading to a rise in big game mortality.

Urban development can also modify wildlife behavior. Some animals living within these areas may change their activity patterns based on the timing of human activity within the development. Since humans are more active during the day, some animals have become more active earlier/later in the day or become completely nocturnal to limit their interactions with humans. This type of behavior could have an effect on survival. For instance, in birds this behavior could reduce their ability to locate and capture prey, potentially negatively affecting their diet, reproduction, and condition (Ditchkoff et al. 2006). Additionally, urban development may cause changes in wildlife distribution. In this case, artificial food sources such as ornamental plants, manicured lawns, bird feeders, and trash create communal feeding sites. Although these sites have adequate nutrition, they do increase reproduction rates which can lead to a greater density of animals in a smaller area. According to Etter et al. (2002), the number of adult white-tailed deer killed by motor vehicles in Chicago increased due to greater deer density in urban areas. In comparison, mortality in white-tailed deer in rural areas around Chicago was mainly due to hunting activities.

In order to minimize the adverse impacts urban development have on wildlife, BRWMA staff provide technical assistance to planners and developers and encourage residents to become informed. Information on addressing potential effects to fish, wildlife, and habitats and how these impacts might be mitigated are provided. For example, the speed limit on Warm Springs Avenue was lowered in order to minimize the impact from motor vehicles on big game crossing the road. Other mitigation techniques including the clustering of houses, planting deer resistant vegetation in yards, installing wildlife crossings, and conducting educational programs on this issue are also recommended for the area.

7. Expand the BRWMA to mitigate for habitat loss.

Discussion: As the human population and associated development continues to expand in the Treasure Valley, the threat to existing flora and fauna on and around the BRWMA will continue to increase. Therefore, the Department seeks opportunities to enhance the existing

WMA through effective habitat mitigation. Acquisition of lands or management of lands elsewhere are employed in order to offset the loss of wildlife habitat by human encroachment and restore habitat values, thus maintaining or increasing wildlife densities and the associated ecological benefits (Cox et al. 2009). Although funding for land acquisitions is limited, the Department recognizes the BRWMA as a priority area for habitat expansion since it provides the fundamental requirements needed by wintering mule deer and elk and a vast array of other wildlife species. The positive impact of habitat mitigation to the distribution and abundance of these species will ultimately be seen in the recreational opportunities they provide.

As a result of the construction of the Federal Columbia River Power System, the Bonneville Power Administration (BPA) and its partners are required to mitigate for the impact that hydro development has had on healthy fish and wildlife populations in the Pacific Northwest. The BPA accomplishes this obligation by funding Department projects that strongly emphasize the ongoing effort to protect, restore, and enhance habitat. The following are two land acquisitions conducted by the Department utilizing BPA mitigation funds. An approved BPA management plan to increase the habitat capacity of these properties through restoration and rehabilitation can be found in Appendix XIII.

Hammer Flat
In 2012, the Department acquired Hammer Flat, a 705-acre parcel of land overlooking Lucky Peak Reservoir. The purchase of this land was critical to the survival of migrating big game since it was the last piece of low-elevation winter range available to them in the Treasure Valley. In addition, the property also supported other wildlife species including golden eagles, bald eagles, coyotes, lizards, snakes, insects, and a variety of songbirds. Habitat such as this was once available for wildlife, but is now either developed or will be developed sometime in the near future. Hammer Flat is owned and managed as part of the Boise River Wildlife Management Area for wildlife habitat conservation purposes by the Department.

Sandy Point
In 2013, the Department acquired Sandy Point, a 137-acre parcel of land east of Hammer Flat. The purchase of this property included approximately 16 proposed housing lots. The Sandy Point acquisition will provide big game species the opportunity to continue moving between the western part of the BRWMA and the eastern part of the WMA without disruption.

Wildlife Management

1. Improve game populations.

Discussion: There are multiple factors that influence game populations throughout the BRWMA including severe weather, reproductive success, predation, disease, increased hunting mortality, and forage quality. Ultimately, no single factor impacts wildlife more than habitat quality since reproductive performance and overall health are influenced by its condition (IDFG 2008). For instance, the quality of plants can affect the body growth of

ungulates as plants high in protein provide more energy, and take less time for rumination. Providing high quality habitat for wildlife, especially mule deer and elk, is the BRWMA's foremost priority. The Management Program Table in the following section describes a multi-scale approach that BRWMA staff will use to address mule deer and elk habitat issues.

The WMA conducts vegetation monitoring to ensure wildlife species have the resources they need to thrive and for populations to persist. This strategy allows WMA staff to learn about the ecological responses that habitat has to land management practices, to document current condition of critical habitats, and to evaluate ecological changes over time (IDFG 2008). Vegetation composition and structure for the property therefore, is a mosaic of high quality habitat of sagebrush stands (vary in height and canopy cover) and a diverse understory of perennial grasses and forbs that can be utilized by a variety of wildlife species. The habitat is monitored over time to determine how and if wildlife are benefiting from it. By managing shrub communities, ensuring that security cover requirements are incorporated in all restoration, restoring ecological function of the habitat and in fostering habitat protection, the long-term management of game populations on this critical habitat is ensured (MDWG 2004).

In order to attain one or more management objectives for the game species found on the BRWMA, the Department influences these animals at the population level through hunting seasons and bag limits. The regulation of seasons and bag limits is addressed through the season setting process and is adjusted based on data including population trends, population abundance, male to female ratios, estimated age structure in the population or age composition in the harvest, size or conformation of harvested males, number harvested (by sex or age class), hunter effort or harvest rates, juvenile to female ratios, habitat condition and, incidence of agricultural depredations or other conflicts (Keegan et al. 2011).

The Department conducts aerial surveys and fawn mortality surveys to monitor big game populations on the BRWMA. The aerial surveys are used to estimate total numbers of deer and elk on the winter range. This type of survey provides reliable information on population composition. Radio-marking fawns annually allow the Department to monitor over-winter fawn survival. The Department uses a sightability model to correct for those animals not observed during the surveys. Aerial surveys for Unit 39 between 1991 and 1998 indicated that between 35-45% of the mule deer observed in the unit were on the WMA. In 1992 to 1993 and again in 2001 and 2002, densities of mule deer on the WMA reached 270 individuals per square mile after severe winter storms. These population estimates combined with data on recruitment and adult female survival data help detect major dies-offs in the population, as well as provide the opportunity to respond with appropriate management actions.

2. Minimize road kill mortality.

Discussion: Every fall when the days get shorter and the temperatures become cooler, mule deer and elk migrate long distances from their summer range in the Boise Mountains to their historical winter range in and around the Boise Foothills. Some come from as far away as the

Sawtooth Mountains while others descend around Boise from mountains to the north. These animals migrate to these lower elevations to seek out areas with less snow, milder temperatures, and available forage to survive the winter. Each year, over 7,000 mule deer and 1,200 elk spend the winter months on the BRWMA, browsing, resting, and waiting out the long, cold winter season. During other seasons, both species are much less abundant, though quality range encourages some to remain throughout the year. Although it may seem large at nearly 35,000 acres, the WMA represents less than 10% of the critical winter habitat used by deer and elk in the Boise Foothills. Most of the critical winter wildlife habitat in the Boise Foothills is held by private landowners. Therefore, it is difficult to overstate the importance of WMA lands for big game survival.

Idaho State Highway 21 (SH-21) between Boise and Idaho City bisects this big game winter range between Mile Posts 8 and 22. The impact this highway and other roads have had on this big game population has increased over the last 10 years. Collisions between big game species and motor vehicles occur frequently as residents and recreationists of the Treasure Valley and the surrounding counties utilize the highway as their primary means of transportation and access. Thirty-two years of big game mortality data collected on SH-21 indicate an upward trend in collisions with increased highway traffic. Since 1996, annual collisions have exceeded 100 deer and five elk per year, with some years exceeding 200 collisions. More than 5,000 deer, elk, and moose were killed by cars on Idaho's roads in 2012. These represent documented collisions with carcasses retrieved. Since many animals later die due to their injuries, total collisions are likely 50% higher. The total estimated cost of all collisions on SH-21 over the last 32 years was $17.4 million dollars (motor vehicle damage, personal injury, insurance costs, emergency services responses, law enforcement investigations, post-collision clean up, etc.). Annual costs are estimated at over $480,000 per year (Jones 2009).

In addition to monetary costs of the collisions, there are also the impacts to mule deer and elk populations through inter-related mortality (loss of next spring's fawns and calves due to pregnant doe and cow deaths). The Department is highly concerned about the impact that wildlife-vehicle collisions are having on the long-term persistence of big game populations and hunter harvest. According to the data, Unit 39 is losing the same number of mule deer to collisions as they do to harvest. In order to maintain big game harvest and sportsman opportunity, the Department is focusing its efforts on monitoring these collisions. The Department has created the Roadkill Report, a webpage were anybody can report roadkill mortalities (https://fishandgame.idaho.gov/species/roadkill). This site provides the Department and Idaho Transformation Department (ITD) information to help prevent wildlife losses, locate "hot spots" where the animals cross roads, and make highways safer. The Department is coordinating with the ITD to consider these areas in future road construction projects (Russell 2012). Finally, the Department is working in conjunction with the Ada County Highway District (ACHD) and a local company to install and evaluate an animal detection system on Warm Springs Avenue in Boise. This system would provide motorists with an advanced warning when big game is in the roadway.

Man-made barriers such as roads and highways can also affect wildlife movement and cause fragmentation between habitats, limiting connectivity (Forman and Alexander 1998). These obstacles can pose a threat to the long-term persistence of wildlife populations by limiting the dispersal of young (Beier and Noss 1998), altering genetic interchange (Epps et al. 2005), and decreasing the ability of the species to adapt to environmental changes. Therefore, the Department has developed an extensive mapping system highlighting major wildlife movement areas throughout the state. By identifying important wildlife movement areas that cross transportation corridors, the Department can provide information on where new roads or improvements should allow for wildlife-friendly over- and underpasses. Maintaining or reestablishing connectivity between these core areas is seen as a critical management objective.

In October of 2010, ITD, working in conjunction with the Department, completed the construction of a wildlife crossing under SH-21 at mile post 18.2. This area of the highway was one of five identified hot spots in southwest Idaho for wildlife-vehicle collisions. This structure allows wildlife, including mule deer and elk, to pass under the road. Motion sensing cameras have been installed at the underpass to monitor its effectiveness. Although the crossing is complete and wildlife is using the structure (Appendix XIV), additional fencing is needed on the east side of the road to make the structure work to its full potential. Currently, Department staff as well as representatives from other agencies and organizations are actively seeking funding to complete this project. The underpass has numerous benefits for both people and wildlife, including effective and safe connectivity between mule deer and elk summer and winter range habitats that are vital for over-all population productivity; healthy, stable, or increasing mule deer and elk herds which use adjacent winter range and upper basin summer ranges on federal and state lands; a reduction in the number of motor vehicle collision-related mortalities of mule deer and elk along the SH-21 corridor; an increase in motorists' safety by reducing wildlife-vehicle collisions; and continued public awareness through volunteer participation and education about Idaho wildlife, the importance of habitat connectivity for big game, and the risk associated with highways, motorists, and wildlife. In time, it is expected wildlife-vehicle collisions will be reduced by more than 80% in the immediate vicinity of the underpass, while providing the habitat connectivity the animals need for migration and continuing the economic and social value provided by big game species.

3. Increase efforts to control predators.

Discussion: Managing wildlife is complex, and many factors must be considered. State law requires the Department to manage all wildlife, including predators. The law also requires the Department "to preserve, protect and perpetuate populations for hunting, fishing and trapping." To fulfill this responsibility, the Department must efficiently and effectively manage populations of predators as well as populations of prey species to meet management objectives. The Department recognizes predator management to be a viable and legitimate wildlife management tool that must be available to wildlife managers when needed. The Department uses regulated hunting, fishing, and trapping when feasible to resolve predator conflicts with people, to reduce their impacts on other wildlife populations, and to maintain a

healthy game population. When game numbers drop below objectives and regulated harvest of predators is not adequate, biologists may take a more aggressive approach, guided by a predation management plan. In August 2000, the Policy for Avian and Mammalian Predation Management (IDFG 2000) was adopted by the Idaho Fish and Game Commission. This policy identified a protocol whereby a predation management plan must be written when certain conditions are met and problems are identified. The management plan identifies ongoing efforts to reduce adverse impacts of factors influencing game populations and identifies approaches to monitor the effects of predator-caused reductions. Action can be taken in conjunction with state management plans for individual species (wolf, bear, mountain lion, and elk) to ensure species management objectives are met.

4. Allow trapping on the Boise River WMA.

Discussion: Trapping, or the use of a device to remotely catch an animal, is legally allowed on the BRWMA. An abundant supply of furbearing animals such as bobcat, red fox, raccoon, beaver, river otter, and badger can be found on the property. Trapping is conducted on the WMA for a variety of purposes including food, wildlife management, recreation, making clothing or other articles, pest control, and for supplemental income.

The Department manages furbearer species in much the same way it does other fish and wildlife populations, by regularly monitoring and evaluating the effect that trapping may have on a population and responding with the appropriate management strategy. This strategy incorporates data on the ecology, behavior, habitat quality and availability, disease risk, wildlife damage, reproductive biology, and current population levels of each species. In addition, all trappers are required to submit a mandatory harvest report and in some cases, must present all harvested animals to the Department for the collection of biological information. Trapper reports and annual surveys are used to help monitor species distribution and trends in population productivity. Collectively, this data is used to help determine the maximum harvestable surplus for that species.

As more people grow up in urban settings, a decreasing number are exposed to the activity of trapping. Thus, for many the word “trapping” brings to mind a negative connotation and is associated with no sort of control or regulation. This, fortunately, is not the case in Idaho. Trapping is a highly-regulated activity and set harvest regulations and restrictions have been implemented to protect and enhance the long-term survival of furbearer species. Idaho law requires trappers to purchase a trapping license and comply with regulations both on public and private land. Those that plan on utilizing the BRWMA for trapping are required to contact management headquarters or the Department regional office. Every trap or snare, except those used for unprotected rodents, need to have a metal tag bearing the name and current address of the trapper; or a six-digit number assigned to them by the Department. This information allows the removal of illegal traps and staff to respond to any incidents that may arise. Additionally, no person shall place snares or traps for furbearing animals, predatory or unprotected, except unprotected rodents, without visiting every trap or snare once every 72 hours and removing any catch therein. Trappers are encouraged to use

selective sets that will kill their catch as quickly and humanely as possible, or hold animals alive with little or no injuries and minimize the time an animal is held.

As the number of non-wildlife based recreational users (all recreational activities except hunting, fishing, or trapping) on the BRWMA continues to increase, so does the number of dogs. This in turn increases the chances for a domestic dog to come in contact with a trap. In order to minimize this conflict, trappers are encouraged to avoid setting traps near heavily used areas or trails on the WMA. Furthermore, dog owners utilizing the Boise Front Segment of the WMA should be aware that all dogs, except for hunting dogs actively hunting during the hunting season, are required to be on a leash. Signs informing the public of this requirement have been placed at all Boise Front trailheads. To inform the public that trapping season is in effect, signs are posted annually at each trailhead and the BRWMA headquarters.

Finally, trappers are encouraged to demonstrate ethical and responsible trapping while on the WMA by using BMPs. This set of recommendations was developed using sound scientific research and regional, social, and economic factors including, but not limited to, maintaining good landowner relations, respecting the resource, staying familiar with improvements in trapping equipment and techniques, choosing set locations that maximize opportunities to catch target species and minimize opportunities to catch other animals, and appreciating the perceptions of non-trappers. Details can be found at: http://jjcdev.com/~fishwild/?section=best_management_practices.

Public Use Management

1. **Increase opportunities for wildlife viewing and appreciation.**

Discussion: Providing users with the opportunity to view and appreciate the wildlife found on the BRWMA is essential in obtaining their continued support of wildlife management. Historically, wildlife on the WMA provided food, clothing, and shelter for human beings. More recently, wildlife has assumed a high economic and cultural significance, as well as become a symbol of ecosystem health. Therefore, the Department encourages its users to visit the WMA and explore this valuable resource through wildlife-based recreational activities including fishing, hunting, trapping, and wildlife observation.

Another opportunity for the public to view and appreciate the wildlife that utilizes the BRWMA is by visiting the Ada County Oregon Trailhead on SH-21. This trail overlooks the Boise River and is directly across from the BRWMA. North of the highway, above the Black Cliffs, visitors may have the opportunity to observe mule deer, elk, and pronghorn on Hammer Flat, especially during the winter months. Interpretive panels along the walkway provide information about the wildlife and the habitat.

In the future, BRWMA staff plan to develop and install a series of interpretive panels on Hammer Flat that will educate the public about the wildlife species found there, the habitat, wildlife management, and wildlife-based recreation. These panels may focus on topics such as the importance of mule deer and elk winter range, the ecological communities and wildlife

found in the area with special emphasis on the shrub-steppe and riparian ecosystems, noxious weed management, and human-wildlife interactions. Using a combination of educational text and visual graphics, these panels will convey a consistent message to many people at one time and increase their appreciation of the WMA.

Finally, the BRWMA permits the Idaho Bird Observatory to conduct research on avian species that visit Lucky Peak Mountain during their fall migration. It is here where woodland birds find food and shelter before heading south. Due to the mountains unique geography and habitat, the area is one of only a few in the western U.S. where great numbers of diurnal raptors, songbirds, and forest owls concentrate during their migration (IBO 2011). Visitors are welcome to the research site to learn about bird behavior and physiology, migratory patterns, population trends, survival, and mortality, as well as the importance of breeding and wintering habitat.

2. Involve public in planning and management process.

Discussion: The Boise River Wildlife Management Plan tiers off the Department strategic plan and provides broad, long-term management direction for the BRWMA. How the Department engages public involvement is guided by a "Regulatory and Public Involvement Process" policy approved by the Idaho Fish and Game Commission in 2006. The Department provides a variety of opportunities for public involvement including public meetings, mail, telephone, web-based surveys, news media, task groups, and workshops (IDFG 2008).

Public involvement is a critical component in developing a wildlife or WMA management plan, and continues to be throughout its implementation. Funding for fish and wildlife management comes from a variety of sources including hunter and angler licenses, permit and tag sales, federal funds from excise taxes on hunting and fishing equipment and motorboat fuel, mitigation agreements for hydro-electric projects and other commercial activities, and federal and private grants and donations (IDFG 2013). However, the main funding source for managing wildlife in Idaho comes from one segment of the population—hunters and anglers—primarily through the sale of hunting and fishing licenses. In 2006, direct revenues to the Department from mule deer license and tag sales were nearly $6.3 million, representing nearly 20% of total license/tag revenues used by the Department to implement important wildlife conservation programs including enforcement, population monitoring and research, and habitat monitoring (IDFG 2008). Therefore, the Department works extensively with hunters, anglers, and trappers while developing each plan. For instance, in 2006, the Department contracted with the University of Idaho to conduct a statewide random survey of mule deer hunters. The survey was designed to 1) measure satisfaction, 2) understand motivations for mule deer hunting, 3) identify management preferences, and 4) evaluate acceptance for various management options. The survey was also posted on the Department website to provide additional opportunity for public involvement. In addition, the Department, along with Sportsman's Warehouse and the Southeast Idaho Mule Deer Foundation hosted a Mule Deer Workshop. The workshop featured invited mule deer experts discussing numerous aspects of mule deer management. Furthermore, the Department hosted "sounding board" meetings throughout the state.

Finally, the Department solicited public comment on the draft plan using open houses and the website. These efforts provided the Department with quality feedback on the Mule Deer Management Plan and guidance on the development of regulations (IDFG 2008).

In the last 10 years, there has been a dramatic increase in residential and commercial development around and adjacent to the BRWMA. According to COMPASS (2006), the population of southwestern Idaho is projected to double from about one-half million, at present, to about one million in the next 25 to 30 years. Many of the residents occupying these developments often emphasize that they chose to live where they do largely because of the location to public lands. Thus, community members are encouraged to become involved in the planning process to provide insight regarding public opinion of wildlife management both inside and outside the BRWMA boundary.

Throughout 2012 (Feb-Dec), an online survey was available on the Department website. This survey allowed participants to answer questions and provide feedback on WMA management statewide and the management of specific WMAs. Additionally, BRWMA staff and volunteers conducted on-site surveys which included similar questions to the online survey and provided an opportunity for users to suggest ways to improve management of the WMA. Comments collected from the public during the survey process were then gathered together in order to identify the current challenges facing the BRWMA. These challenges were then addressed in this current plan. Since this plan will be evaluated at least every five years to determine if adjustments are needed, additional community involvement in this process will be encouraged in the future.

3. Inform users about hunting, fishing, and trapping opportunities.

Discussion: Big game and other wildlife are property of the state to be managed for the benefit of Idaho residents. Under the Idaho Administrative Procedures Act (IDAPA) 13.01, the Idaho Fish and Game Commission has the legal authority to adopt rules concerning the public use of lands owned or controlled by the Department of Fish and Game. Users who would like more information about these rules are encouraged to review them at http://adminrules.idaho.gov/rules/current/13/index.html.

To better inform users of the opportunities available to them, BRWMA staff conducts presentations to sportsman's groups, clubs, associations, and schools. Additionally, requests for information and literature by mail/email/telephone, walk-in, or inquiries from persons in the field are answered by staff in a timely manner. Publications on hunting, fishing, and trapping regulations on the WMA can be found online at http://fishandgame.idaho.gov.

4. Provide learning opportunities about the Department, the BRWMA, its wildlife, and wildlife habitat.

Discussion: Big game and other wildlife are the property of the state and are to be managed for the benefit of Idaho residents. The Department strategic plan states the following vision: "The Idaho Department of Fish and Game shall work with the citizens of Idaho in providing

abundant, diverse fish and wildlife and ensuring a rich outdoor heritage for all generations." An essential component of this vision is to provide learning opportunities for students, educators, and the general public. For example, the Department conducts classes in hunting, bowhunting, and trapping for anyone who enjoys the outdoors and has an interest in conservation; offers Project WILD training to local teachers to learn ways to incorporate wildlife and ecological concepts into a subject they are already teaching; and organizes Free Fishing Day, an event to help first-timers discover the joys of fishing.

Additional opportunities are available for the public to learn about the management of the WMA and how to protect and improve critical winter range. Boise River WMA staff have presented to numerous sportsman's groups, clubs, associations, and schools. These presentations focus on the importance of the WMA, the type of wildlife that can be found there, current management objectives, and volunteer opportunities. Each year, community members help maintain and improve the habitat on the WMA. Volunteers assist staff in planting native vegetation such as sagebrush, bitterbrush, perennial grasses, forbs, and willow on the property for winter forage and cover for wildlife. During this opportunity, volunteers learn about a variety of management techniques used to influence plant community composition and successional stages including direct seeding and transplanting.

Volunteers also assist staff in conducting research on the number of wildlife utilizing the BRWMA, as well as vegetation that is found on the property. Volunteers have been trained to perform bird and big game observational surveys on Hammer Flat (Appendix XV). These surveys allow the participant to learn about big game identification, behavior, migration, and foraging activities. Those that volunteer their time to conduct vegetation sampling and mapping have the opportunity to discover native plants, explore the WMA further, and learn how wildlife interact with plant communities. Furthermore, volunteers conduct visitor use surveys at BRWMA access points to help the Department better understand the social science aspects associated with user satisfaction, needs, and wants and interact positively with community members.

Recognizing that the location of the community lies in a corridor directly between two important wildlife and habitat areas, the Harris family proactively initiated a comprehensive Wildlife Assessment and Mitigation Plan which provides a means for enabling actions and options for avoiding, minimizing, or mitigating development impacts. This plan established the Harris Ranch Wildlife Mitigation Association, which directs the efforts of restoration and enhancement of wildlife habitat and the coordination and facilitation of conservation education programs. Many of these restoration and enhancement activities are conducted on the BRWMA. The various projects and programs offered by the Harris Ranch Wildlife Mitigation Association provide opportunities for residents, neighbors, and visitors to learn how to support and live nearby a WMA.

Lastly, an open house will be held by BRWMA staff at least once a year for community members. This will be an opportunity for new or current residents, neighbors, and users to learn more about the WMA's mission; current management objectives; hunting, fishing, and trapping regulations; and volunteer opportunities. Participation is encouraged.

5. Increase, decrease, or maintain hunter opportunities/alter hunting season structure to reduce hunter crowding.

Discussion: To provide sportsmen and sportswomen with a quality hunting experience, the Department assesses game populations annually. Using population models and data collection methods such as aerial surveys and harvest reports, Department biologists can provide a reasonably accurate population estimate that is useful when making management decisions and evaluating goals and objectives. For example, buck to doe ratios are measured in late December in order to provide biologists and hunters with a relative assessment of buck abundance and age structure following the hunting season. These ratios are then used to guide harvest management decisions for the type of hunting opportunity provided (IDFG 2008). A second example is when hunters stop at mandatory check stations around the state. This provides the Department the opportunity to collect biological and physical data from a harvested animal (e.g., age, sex). This allows the Department to monitor the size, composition, and health of the populations, information that is needed to determine the amount of tags that can be distributed to hunters each year.

In order to maintain a sustainable mule deer hunter harvest on the BRWMA, a percentage of does and fawns are trapped and radio-collared each winter. Once trapped, biologists collect information on individuals including weight, chest girth, hind foot length, and body condition. This data is then used to determine the health of the animal before they have gone through the most strenuous months of the year, January, February, and March. Radio collars are then placed on the deer before they are released. These collars send signals to biologists throughout the year both on the animal's movements, but also lack thereof. If a collar indicates that the deer has likely died, then the carcass is located and the cause of mortality is determined. Tracked over time, this data as well as information on other changing factors can be evaluated to determine deer population trends on the BRWMA.

Hunter density is an important issue contributing to hunt quality and hunter satisfaction. In Idaho, hunter densities range as high as 3.5 hunters/ mi^2 in some general hunts. In controlled hunts, hunter densities are typically <0.5 hunters/mi^2. Overall though, hunter crowding was not identified as a major issue for Idaho hunters. In a 2006 survey, >50% of the hunters said that the quality of their hunting experience was not lessened by other hunters. In addition, more than one-half of hunters indicated that encounters with other hunters did not reduce the quality of their hunting experience (IDFG 2008). Therefore, the Department seems to be meeting the demands of the broad spectrum of hunters at this time.

The Department has and will continue to provide a diversity of hunting experiences on the BRWMA to meet the varying motivations and preferences of Idaho sportsmen and sportswomen. Through the creation of programs such as Access YES!, Disabled Veterans Program, Mule Deer Initiative, and the Hunting Passport, the Department strives to offer hunters numerous recreational hunting opportunities.

6. Allow more/less motorized vehicle access on designated routes.

Discussion: As the human population in the Treasure Valley continues to grow, so does the trend in motorized vehicle ownership. Consequently, the use of motorized vehicles such as trucks and off-highway vehicles (OHVs) (e.g., motorbikes, UTVs, and ATVs) to access public lands for recreation has multiplied over time. For instance, the number of registered OHVs in Idaho increased from 8,000 in 1987 to approximately 117,000 in 2007 (Cook and O'Laughlin 2008).

Due to its close proximity to Boise, the BRWMA has become a popular location for those with motorized vehicles to hunt and recreate. Unfortunately, this has increased the level of illegal off road use on the WMA. The illegal trails created by these vehicles can have detrimental effects on wildlife and their habitat. These trails fragment the landscape, act as a barrier to some wildlife species, and destroy nests, eggs, and the young of ground nesting birds (Brown and McLachlan 2002). Off road use also directly impacts vegetation by bending or flattening the plant or by removing the plant from the soil (Li et al. 2007). This in turn increases the likelihood of noxious weed introduction and expansion. According to a study conducted by Lacey et al. (1997), thousands of spotted knapweed seeds can be carried up to 10 miles away on the undercarriage of vehicles. Once established, noxious weeds out-compete native vegetation, thereby reducing the amount of forage and cover for wildlife. In addition, off road vehicles can cause soil compaction and erosion. The compaction of soils may result in changes to the hydrologic patterns on the WMA and decrease soil productivity (Li et al. 2007). Soil erosion or compaction can therefore limit the amount of native vegetation growth, another reduction in food and security for wildlife species.

Motor vehicle use not only alters wildlife habitat, but it may also modify an animals' daily activity. For instance, big game, particularly mule deer, rely on fat reserves accumulated during the spring-fall and energy conservation (i.e., minimizing movement) to survive the severe, extended winters of Idaho. Each time they expend energy fleeing from a vehicle, they have fewer reserves to rely upon at the end of the season. Therefore, providing secure habitat with limited disturbance has a positive impact on winter survival rates (Bottum 2008). They also alter their movement pattern around the road, increasing the amount of time and energy needed to move from one part of the habitat to another. Another example of activity modification in wildlife has been observed in elk. According to Preisler et al. (2006), elk responded to the presence of ATVs at distances greater than 1,000 m. The study also determined that the probability of an elk fleeing the area was higher when they were closer to an ATV route, even when there was great distance between the two. These changes in behavior may lead to reduced reproduction in some species, increased susceptibility to disease, and the temporary or permanent abandonment of habitat (Gabrielson and Smith 1995).

Finally, motor vehicle activity not only affects wildlife, but also hunter satisfaction in Idaho. In a survey conducted by Coombs et al. (2007), mule deer hunters commented frequently about their dissatisfaction with the number of off-road vehicles (e.g., ATVs) in an area and

concern of their improper use. These hunters intentionally relocated to other hunting areas where there were fewer disturbances from motor vehicles (Sanyal et al. 2008).

To limit disturbance to wildlife, protect vegetation and soils, provide secure winter range for mule deer and elk, and offer a higher-quality hunting experience, the use of all motorized vehicles on the BRWMA is permitted only on designated routes (IDAPA 13.01.03.100.01). From May 1 to November 15 of each year, approximately 10 miles of road are open to motorized vehicles on the Boise Front Segment (Figure 1). From September 1 to December 31 of each year, approximately seven miles of road are open to motorized vehicles on the Charcoal Creek Segment (Figure 1). Motorized vehicle access is available at designated entry points only. No new motorized routes will be developed on the BRWMA and some routes currently open to motorized vehicles may be restricted. Additionally, the impacts of motor vehicle use will be assessed and evaluated annually and management adjusted, if necessary, to reduce negative impacts on the WMA.

7. Improve maintenance of designated routes.

Discussion: The designated routes controlled by the Department are kept in a useable but low maintenance state (i.e., useable by four-wheel drive vehicles during most spring-fall weather conditions). The clay content in the soils found on the BRWMA make maintaining smooth dirt road conditions a difficult and expensive undertaking. Improving the road surface (e.g., gravel) would be an even more costly endeavor. In order to improve designated routes or conduct additional road maintenance, funding from imperative management priorities such as habitat improvements, facilities and equipment maintenance, and land acquisitions would have to be expended. At this time, no additional funds will be diverted away from these central priorities to increase road maintenance, but Department staff will continue to maintain the designated routes on the BRWA for public use in a useable, low maintenance condition.

8. Provide better maps, signage, and boundary markers.

Discussion: There are several ways in which the Department conveys information about the BRWMA to its users. The first is by providing up-to-date maps of the lands owned and managed by the Department. Information such as the location of the BRWMA headquarters, boundaries, private property, and roads open and closed to motorized use and can be found by going to http://fishandgame.idaho.gov/public/wildlife/wma/. An interactive hunting map for the BRWMA and Unit 39 can also be found on the Department website at http://fishandgame.idaho.gov/ifwis/huntplanner/huntplanner.aspx.

Boise River WMA staff understands that in order to effectively communicate with users, signage providing a clear and concise message must be provided. Therefore, they have worked diligently to install kiosks at all designated access points to guide and inform users. These kiosks may include a variety of information including, but not limited to, current Department rules and regulations (e.g., dogs on leash, dumping of trash, trapping), notifications of road and area closures, and a map of the WMA. Planning, designing,

fabricating, and installing kiosks and signs is time consuming for staff. Therefore, we ask that all users avoid posting non-Departmental information on these kiosks. In addition, vandalism and theft are costly for the Department, so we ask users to refrain from these destructive activities.

Users are reminded that they are responsible for abiding by all state laws pertaining to Department lands. For details about the rules, please refer to the following Idaho Administrative Procedures Act: http://adminrules.idaho.gov/rules/current/13/index.html and Idaho Code: http://legislature.idaho.gov/idstat/Title36/T36.htm.

9. Increase enforcement/staff presence to enforce laws and curtail illegal activity.

Discussion: With the support of Department Conservation Officers, BRWMA staff enforces all state laws that pertain to the WMA. Unfortunately, compliance of these laws has been minimal. The dumping of trash, trespassing, off-road vehicle use, vandalism, and unleashed dogs are just a few examples of prohibited activities that take place on the WMA almost daily.

In order to improve compliance of these laws, it is necessary to increase the presence of BRWMA staff and Conservation Officers on the property. Although it is agreed that this action would be beneficial to wildlife and their habitat as well as users of the WMA, Department staff must operate within certain funding and workload constraints. This limits the time and number of personnel available to curtail these illegal activities. In the case of Conservation Officers, they are not only responsible for observing and reporting the state of local fish and wildlife, but also for recommending changes in hunting, fishing, and trapping rules; patrolling areas to locate poachers and prevent illegal killing of game species; and interacting with a variety of user groups and land agencies. Therefore, it is unlikely that the presence of officers on the BRWMA will be increased at this time.

Boise River WMA staff is currently working with enforcement staff to utilize new technologies that will provide further information on illegal activities conducted on the property. Boise River WMA staff will maintain a presence on the property and will issue warnings and citations to those users not complying with state law. Staff and officers will continue maintaining a presence during peak use periods (e.g., morning/late afternoon and hunting season). Finally, staff and officers will continue to interact with and educate users about how their activities influence wildlife and their habitat.

10. Reduce the impact that human activities have on wildlife/allow non-wildlife based recreation.

Discussion: To effectively manage recreation and access onto the BRWMA, a significant amount of time is spent on educating users about the effects that their activities may be having on wildlife and their habitat. Public presentations are conducted for hunting organizations and clubs, special interest groups, homeowners, school groups, and local colleges and universities. These discussions focus on the three primary ways these activities

impact wildlife on the WMA: 1) displacing wildlife through habitat loss (e.g., residential/ commercial development), 2) by altering physical characteristics of the habitat (e.g., vegetation damage and erosion from off-road/trail use), and 3) displacing wildlife through disturbance (e.g., noise, human activities such as running and biking, allowing dogs to run off leash). These interactions provide WMA staff with the opportunity to encourage positive behaviors and increase compliance with regulations. Wildlife and their habitat will not benefit from the management of the BRWMA without the continued support and cooperation of local community members, state and federal agencies, and private landowners.

As the human population in southwest Idaho continues to expand, so does the use of the BRWMA. The WMA sustains high quality winter habitat for mule deer and elk and provides habitat for a diversity of other wildlife species. It is also recognized for the valuable and unique opportunities it provides that enhance the quality of life for citizens of Idaho and the Treasure Valley. Many residents view the WMA as an asset for wildlife-based recreation such as hunting, fishing, and trapping, while others see the property as a place for non-wildlife based recreation (all recreational activities except for hunting, fishing, or trapping) such as dog walking, running, and mountain biking. As the demands for public use increase, so does the impacts that these activities have on wildlife and wildlife habitat. The resources required to manage the current recreational demands on the BRWMA is already limited. The possibility of this demand to increase dramatically in the next few years is great as new housing and commercial developments are constructed within close proximity of the WMA. Two planned communities totaling nearly 5,000 new homes are currently being built adjacent to the Boise Front Segment of the WMA, and additional planned communities are being contemplated adjacent to the Charcoal Creek Segment. Other smaller subdivisions are likely to be built near or adjacent to the WMA. These developments have and will continue to increase the number of people using the property, while reducing the amount of critical winter range available for mule deer and elk (Bottum 2008) and habitat utilized by other wildlife species throughout the year, such as upland game birds. Therefore, the management of both consumptive and non-consumptive users on the BRWMA has become of upmost importance.

Due to the close proximity of the WMA to the large population centers of the Treasure Valley, the management area experiences significantly more non-wildlife based recreational use than comparable WMA's in other parts of the state. This in turn diminishes its value for deer and elk winter range, the primary purpose for which it was acquired by the Department. As of January 2011, there were 137.22 miles of trails in the Boise Foothills. Roughly 4% of those trails are located on the BRWMA According to data collected from Department trail counters located at the Council Springs access point (Homestead trail), currently over 15,000 people use this trail on an annual basis. In 2011, the highest visitor use occurred on this trail during the months of June (9,607) and September (2,177). Although visitor use declined during the winter months of January, February, and March, usage was still noteworthy (January = 748, February = 687, March = 1,084). Additionally, over 5,000 people used the Highland Valley access point (West Highland Valley + Cobb) on an annual basis in 2011. Again, the highest visitor use occurred during the months of June (615) and September (616), and the lowest visitor use happened in the winter months of December (16), January (219),

and February (231). This trend can be expected to continue, thus making land within the BRWMA more and more valuable to wildlife in the coming years (Bottum 2008).

As the community continues to expand, there is great concern over the preservation of the BRWMA's mission to "sustain high quality winter habitat for mule deer and elk as well as year-round habitat for a diversity of other wildlife species" and to "provide for hunting, fishing, trapping, and other recreational activities which are compatible with the mission." Therefore, the following management actions are in place or have been incorporated into this plan to minimize the effects of non-wildlife based activities on the WMA.

a) In order to minimize the effects that hiking, biking, running, mountaineering, dog walking, and other non-wildlife based activities have on wildlife, no new non-motorized routes or access points will be developed on the BRWMA. An increase in the number of routes and access areas could have an indirect effect on wildlife in several ways. First, having the number of users entering the WMA in a wider area may cause the animals to alter their activity (e.g., traveling or foraging). For instance, in a study conducted by Freddy (1986), mule deer ran for a longer period of time in response to people on foot than they did when encountering snowmobile activity, thus requiring greater amounts of energy. This can create a higher level of stress for the animal (Gabrielson and Smith 1995). In the case of mule deer, physiological stress may lead to a decline in their energy reserves that they rely on to survive the long, cold winters of Idaho (Rost and Bailey 1979). Over time, the stress could affect survival, growth, and reproduction of that animal (Geist 1978). Secondly, having additional routes and access points can also provide the opportunity for people to move unpredictably through the WMA. This in turn can generate a stronger behavioral response in wildlife which can ultimately lead to the temporary or permanent abandonment of the habitat (Gabrielson and Smith 1995).

   In 2009, the Department entered into a memorandum of understanding (MOU) with the BLM, Ada County, the City of Boise, and the USFS. The MOU formalized the pursuit of a collective approach to managing public lands. This MOU created an Agency Coordinating Committee (Committee) to cooperatively oversee and efficiently manage the resources of public Foothills lands, while recognizing that each agency has its own unique mission, legal authorities, and finite resources for achieving that mission. One task identified by the Committee as needing immediate attention shortly after signing of the MOU was the desire of mountain bike riders to conduct their sport in other areas of the Foothills, including the BRWMA. In order to accommodate this request, while still upholding the mission of the BRWMA, approximately 5.4 miles of WMA roads are now cooperatively managed through a partnership with the Ridge to Rivers trail system (Homestead, West Highland Valley, and Cobb). These designated routes were chosen to minimize the impact this activity may have on wildlife, their habitat and wildlife based recreation such as hunting. The Department is satisfied with the current terms set forth in the agreement with Ridge to Rivers regarding mountain bike use on the WMA. Thus, no future designated routes or trails will be authorized for the use of this activity. The BRWMA will continue to increase public awareness about the routes available on the WMA for mountain bike riding through the maintenance of signage and rider education.

b) The increased presence of new non-wildlife based recreational activities (e.g., paragliding, hang gliding) in Idaho could have an effect on wildlife utilizing the BRWMA. Disturbance from recreation may have both immediate and long-term effects on a variety of species. For example, the presence of humans in certain areas of the WMA may result in animals avoiding parts of their normal range (Gander and Ingold 1997). Thus, these activities will be reviewed, evaluated, and possibly considered by the Department only during periods of time when they are not detrimental to wildlife or wildlife habitat; impacts can be avoided, minimized, or mitigated; and they do not conflict with wildlife management priorities.

c) Development in the Barber Valley has not only increased the number of non-wildlife based recreational users on the BRWMA, but also the presence of dogs. There has been considerable concern over the biological effects unleashed domestic dogs can have on wildlife utilizing the WMA, especially when in high densities (Sime 1999). Some of these effects include the separation of mother and young, disruption of habitat use, the displacement of animals, and the injuring or killing of wildlife directly or indirectly. In addition, the impact of this type of harassment can be accumulated over time, causing higher mortality rates within the population (Knight and Cole 1995; Theobald et al. 1997; Enggist-Düblin and Ingold 2003)

   According to Lenth et al. (2006), trails that allow dogs have more of a disturbance effect on mule deer and small mammals than trails that do not allow dogs. In areas that permit dogs, deer showed reduced activity within at least 100 m of trails, while on trails that prohibited dogs, mule deer were less active only up to 50 m from the trails (George and Crooks 2006). Similar results were found for small mammals including squirrels, rabbits, chipmunks, and mice. Hence, the areas that were otherwise suitable mule deer habitat were now potentially unsuitable because of dogs. This is especially disconcerting during the winter months when deer, elk, and pronghorn are concentrated on the BRWMA. Although not a significant source of overall mortality, harassment of wildlife by dogs during the winter can cause the animals to use energy otherwise stored for winter survival. If the harassment continues, further depleting the energy reserves, the animal will not survive (Cox et al. 2009).

   Finally domestic dogs that are not leashed can increase the transportation of noxious weeds by transporting and encouraging seed dispersal. While the scale of seed dispersal is much smaller compared to that of motorized vehicles, dogs do explore areas where motorized vehicles cannot travel.

   Although some recreationists do maintain control of their dog(s) on the WMA, most users do not comply with the on-leash dog regulation posted on the Boise Front Segment kiosks (IDAPA Code 13.01.03). Many dog owners continue to allow their pets to travel out of sight or hearing distance and dogs continue to chase/hunt wildlife, with the exception of hunters with dogs actively hunting during open season. Therefore, additional steps are necessary to increase compliance from users.

The BRWMA will continue to increase public awareness about the dog-on-leash regulation by maintaining signage on all Boise Front and Spring Shore Segment kiosks and WMA boundaries. In addition, staff will personally interact with dog owners and remind them about the ecological impacts that dogs have on wildlife communities and encourage users to keep dogs on leash for the benefit of other users, as well as future use of the property.

d) In recent years, antler collecting during the winter months has become a more popular non-wildlife based recreational activity on the BRWMA. This activity, also known as shed hunting, is very lucrative for those involved. According to Peterson (2008), in Colorado, a freshly dropped set of dark-gray antlers can sell for $7 to $15 per pound and hundreds of dollars' worth can be collected in a day. The antlers are used for everything from personal use, knife handles, chandeliers, furniture, trophies, and as dog chews. A triple tail elk/mule deer chandelier with 24 lights, approximately 68" in diameter and 80" in height can cost over $8,400 (Buonamici 2011).

   As this activity has increased on the WMA, so has the harassment and disturbance of big game animals. In some instances, shed hunters utilize unleashed dogs to locate dropped antlers, increasing the radius of disturbance on wildlife. The presence of antler hunters and their dogs in addition to harsh winter temperatures, near starvation conditions, and losses of fat reserves can have detrimental effects on big game populations. Some of these animals can lose up to 30% of their body weight during this time. Therefore, the accumulation of these stresses can dramatically impact over-winter survival of big game.

   There is not only concern about the effects that this activity has on game species, but on nongame species as well. For instance, antlers shed by big game species are an important food source to many small mammals including mice, voles, chipmunks, and ground squirrels. Antlers provide these smaller mammals with critical nutrients, such as calcium that is vital to survive the winter. During the spring when these animals become more active, these nutrients are passed on to larger mammals and birds when they are caught and consumed. The connection between shed antlers and small mammals plays an important ecological role within the WMA. Therefore, BRWMA staff will continue to increase public awareness about the effects of antler hunting on big game populations. In addition, staff will personally interact with antler hunters and remind them about the ecological impacts their activity has on wildlife communities.

e) Those individuals that would like to conduct bird-dog training and field trials using artificially propagated game birds can obtain a training permit from the Department at https://fishandgame.idaho.gov/public/licenses/dogFalconryTrain.pdf. In consideration of nesting season closures and the impact this activity can have on hunting opportunities, bird-dog training and field trials can be conducted on Department lands between August 1 and September 30 (http://adminrules.idaho.gov/rules/2000/13/0103.pdf).

f) In 2012, the Department purchased Hammer Flat, 705 acres of low-elevation winter range for mule deer, elk, and pronghorn. This critical winter range was extended the following year through the purchase of Sandy Point, 137 additional acres of winter range. The acquisition of these two properties is a component of the BRWMA's wildlife management objective to protect and improve essential habitat for wildlife. Unfortunately, the amount of winter range left to acquire and expand the WMA is extremely limited.

Acquiring additional winter range is not the only way for the Department to increase winter survivability and reduce the impacts of recreational activities on big game. Another way in which to do this is by implementing a winter closure to all human use on the Boise Front and Spring Shores Segments of the BRWMA from January 1 through May 1 of each year. These two segments receive the highest number of users on the BRWMA because of its close proximity to Boise City. Big game populations winter in these areas because it is where the least snow falls and they can limit their energy use. Snow impedes movement, increases energy expenditures, decreases body condition and reduces forage availability for these animals. According to Nelson and Leege (1982), approximately 40% more food is required in winter to generate energy for daily metabolic and activity requirements. The BRWMA is the only local winter range capable of providing forage increases of this size. Additionally, big game remains on the WMA through the early spring so they have the opportunity to recover from winter weight loss. Until green forage is available in sufficient quantities, deer and elk will not improve their physical condition. Consequently, they remain vulnerable to the adverse effects of disturbance. Thus, prohibiting entry to all human use on the BRWMA until May will allow big game to minimize energy loss and allow them to naturally disperse during and after the spring green-up.

A winter closure will also minimize the physiological stresses that disturbance has on breeding females utilizing the BRWMA. Mule deer enter the winter season having just completed the breeding season, and pregnant females are in the early gestation period. Disturbance can increase the female's body temperature as well as her respiration rate, both physical reactions that could complicate the pregnancy. A shed hunter searching for dropped antlers, or even a local resident on a walk with their family, could cause major stress to females. Ultimately this could lead to a decrease in the production of young the following summer (Freddy 1986).

Cooperation from hunters, anglers, trappers, and the general public for a winter closure is the key in protecting wildlife on the BRWMA. In the 2011 Foothills Trail User Survey conducted by the city, 82% of the respondents agreed to seasonal trail closures to protect wintering wildlife. In Boise, there are over 130 miles of trails for non-wildlife based recreationists to utilize during the winter months. Therefore, it is possible to institute a winter closure on the WMA and not disturb the activities of recreational users. Other wildlife agencies across the west have initiated successful seasonal closures including Montana and Washington. In Montana, 31 out of the 75 WMAs in the state are closed from December 1 to May 31 to protect wildlife. In Washington, the Cummings Creek

Area of the Wooten Wildlife Area is closed to all human entry until April of each year. In regards to seasonal closures prohibiting shed hunting, Wyoming prohibits this activity from January 1 – April 30, Colorado from March 15 – May 15, and Utah from February 1 –April 12.

Education of BRWMA users is a fundamental component to wildlife management. To increase public awareness about the impacts that human disturbance has on wildlife and the importance of winter range to mule deer and elk, Department staff will continue to conduct public presentations, maintain signage at access points, and provide accurate information to the public. By implementing a winter closure for all users on the Boise Front and Spring Shores Segments of the BRWMA, the Department will reduce the impact that human disturbance and habitat loss have on wildlife. Lastly, the public use patterns that the Department establishes now will help sustain the integrity of the BRWMA well into the future (Bottum 2008).

Boise River WMA Management Program

The Department is responsible for the conservation, protection, perpetuation, and management of all wildlife, fish, and plants in Idaho. Wildlife Management Areas play an integral role in directly affecting habitat to maximize suitability for species in key areas. Management that maintains and restores important natural habitat and improves wildlife carrying capacity remain key strategies for the BRWMA. The most pervasive threats to the ecological integrity of the wildlife habitat found on the WMA typically come from outside of its boundary. These threats include the expansion of noxious weeds, residential and commercial development, non-wildlife based recreation, and mortality from motor vehicles. Therefore, the WMA manager must recognize and create opportunities to collaborate with other land agencies and adjacent landowners to expand the conservation efforts of the Department.

In order to meet the needs of the wildlife species that depend on the BRWMA, the Department must determine the composition, quantity, and configuration of the elements they utilize (Lambeck 1997). Unfortunately, it is impractical to identify all of these elements for every species. Therefore, a more effective way to have a broader influence over future habitat management of the BRWMA is to utilize Conservation Targets. Conservation Targets are either a focal species (those used to determine the appropriate size and configuration of a conservation area) or a habitat-type that benefits numerous species (Noss et al. 1999). The careful selection of Conservation Targets assists in the identification of landscape-scale targets across ownership boundaries, addresses wildlife-related issues, creates a platform for conservation partnerships, and determines the overall needs of each species.

A six-step process was used to create the BRWMA management program described in this plan. Each of these steps is described in detail on the subsequent pages.

1) Summary of Management Priorities
2) Focal Species Assessment
3) Selection of Conservation Targets
4) Coverage Assessment of Selected Conservation Targets
5) Spatial Delineation of Conservation Target Landscapes
6) Creation of Management Program Table

Summary of Management Priorities

Legal mandates associated with the 2001 appropriation of federal funding for the State Wildlife Grants program also guide the Department's management priorities. The U.S. Congress appropriated federal funds through the State Wildlife Grants program to help meet the need for conservation of all fish and wildlife. Along with this new funding came the responsibility of each state to develop a State Wildlife Action Plan (SWAP). The Department coordinated this effort in compliance with its legal mandate to protect and manage all of the state's fish and wildlife resources (IDFG 2005). The SWAP does not distinguish between game and nongame species in its assessment of conservation need and is Idaho's seminal document identifying species at-risk.

Therefore, at-risk species identified in the SWAP, both game and nongame, are a management priority for the Department.

In addition to the biological goals of preserving, protecting, and perpetuating all fish and wildlife in Idaho, the Department also has a statewide goal of protecting and improving wildlife-based recreation and education. The Department's strategic plan, *The Compass*, outlines multiple strategies designed to maintain or improve both consumptive (e.g., hunting, trapping, fishing) and non-consumptive (e.g., wildlife watching) wildlife-based recreation opportunities across the state.

Boise River WMA was created for the specific purpose of conserving mule deer and elk wintering habitat. Therefore, this management priority is incorporated into any cooperating agency and land ownership agreements. Public demand for wildlife-based recreation and wildlife-based educational opportunities is also incorporated into the BRWMA mission and management priorities. Issues and strategies that are inconsistent with the mission or are outside the scope or function of the WMA were not considered. In addition, the implementation of all strategies will be subject to available funding, personnel, and safety considerations.

Taking the biological and funding resources of the BRWMA into consideration, in concert with these foundational priorities of the WMA and statewide Department priorities, the Department developed the following list of BRWMA Management Priorities.

Boise River WMA Management Priorities (in order of priority)

1. Big Game Habitat
2. Special Status Species Habitat
   a) Shrub-steppe
   b) Riparian
3. Wildlife-based Recreation and Education
4. Management Support

Focal Species Assessment

In order to identify Conservation Targets that will guide the management of the BRWMA, an assessment of various fish and wildlife species that utilize the property was conducted. Table 1 shows the evaluation of these taxa and separates them into either flagship species and/or a species at risk (Groves 2003). These taxa are also identified by key federal agencies as well as the Department in the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005).

Flagship species are popular, charismatic species that serve as symbols and catalysts to motivate conservation awareness, support, and action (Heywood 1995). These species often represent a landscape or ecosystem (e.g., Boise River watershed or foothills ecotone), a threat (e.g., habitat loss or climate change), organization (e.g., state government or non-government organization), or geographic region (e.g., protected area, Department Region or state; Veríssimo et al. 2009). For example, mule deer are a species that fit the criteria as both a flagship and focal species because

they are a symbol that motivate action and can be used to determine the appropriate size and configuration of a conservation area. In addition, mule deer are a culturally and economically important species in Idaho and represent a founding priority for the establishment of the BRWMA. Therefore, species such as this are considered in the assessment.

A principal limitation of the flagship species concept is that by focusing limited management resources on culturally and economically important species, more vulnerable species may receive less or no attention (Simberloff 1998). To overcome this limitation, we are explicitly considering a wide variety of at-risk species (Groves 2003); yielding a more comprehensive assessment that includes culturally and economically important species (e.g., mule deer and elk) along with formally designated conservation priorities (e.g., bald eagle and flammulated owl). Categories of at-risk vertebrate species considered in this assessment are: 1) species designated as Idaho Species of Greatest Conservation Need (SGCN); 2) species designated as Sensitive by Region 4 (Intermountain Region) of the USFS; and 3) species designated as Sensitive by the Idaho State Office of the BLM.

The Idaho SGCN list was developed as part of the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005). The Idaho Comprehensive Wildlife Conservation Strategy document is now referred to as the Idaho SWAP. Idaho's SWAP serves to coordinate the efforts of all partners working toward conservation of wildlife and wildlife habitats across the state. Although the Idaho SWAP SGCN includes most of the special status species identified by land management agencies in Idaho, some species not listed as SGCN are considered priorities by other agencies.

United States Forest Service Sensitive Species are animal species identified by the Intermountain Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. The Forest Service Manual (FSM 2670.22) directs the development of sensitive species lists. This designation applies only on USFS–administered lands.

Bureau of Land Management Sensitive Species are designated by State Directors in cooperation with the State fish and wildlife agency (BLM manual 6840). The Idaho State BLM Office updated these designations in 2003. The sensitive species designation is normally used for species that occur on BLM public lands and for which BLM has the capability to significantly affect the conservation status of the species through management.

Information on species status, occurrence, beneficial management/conservation actions, and threats were derived through consultation with Department staff, occurrence records in the Department's Idaho Fish and Wildlife Information System database, consultation with various BLM and USFS species lists, and species summaries provided in the Idaho SWAP.

Suitability of assessed species as a focal species were estimated by Southwest Regional Habitat and Diversity staff based on descriptions in Groves (2003) and USFWS (2005). Potentially suitable focal species may include species with one or more of the following five characteristics:

- *Species with high conservation need*
- *Species or habitats that are representative of a broader group of species sharing the same or similar conservation needs*
- *Species with a high level of current program effort*
- *Species with potential to stimulate partnerships*
- *Species with a high likelihood that factors affecting status can realistically be addressed* (USFWS 2005)

Table 1. Status of flagship and special status species on Boise River WMA, including their potential suitability as a focal species for management.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
Birds					
American Avocet (*Recurvirostra americana)*	IDFG SGCN	Distribution dependent on suitable habitat. Found in wetlands containing bulrush, cattails, & sedge. Spend most of time in more open areas with no/sparse vegetation. Global population estimated at 450,000 adults. Population size nesting in the southern half of Idaho unknown.	Illegal shooting & trapping. Wetland contamination & other human activities. Loss of wetland habitat. Disturbance at nest site. Nest destruction from routing levee grading. Human induced increases in predation.	Address habitat & management needs. Monitor for contamination issues & nesting sites regularly. Research interactions between with primary predators.	***Unsuitable as a focal species.*** Due to the lack of wetlands on the WMA there is no habitat in the management area.
American three-toed woodpecker (*Picoides dorsalis)*	IDFG SGCN	The subspecies *P. d. fasciatusoccurs* in northern & central portions of Idaho. Follows distribution of boreal forest region. Associated with spruce forests, but occurrence in other types of coniferous forest varies geographically.	Fragmentation & habitat loss. Susceptible to forestry practices that reduce dead & decaying trees. Logging rotations that do not allow old growth forests to develop.	Gather data on reproduction & demography in different forest environments. Retain large patches of dead & decaying trees & 579 acres per pair in old growth mixed conifer forests.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
American White Pelican (*Pelecanus erythrorhynchos)*	IDFG SGCN	2,770 breeding pelicans in Idaho. Two nesting colonies, one at Minidoka National Wildlife Refuge & one at Blackfoot Reservoir. Winter habitat includes southern & western coastal marine habitats.	Habitat loss from flooding or draining areas. Human disturbance at breeding colonies. Shooting. Conflicts between American white pelicans & fish populations.	Protect & maintain wetlands & water levels. Monitor breeding colonies every three years & protect from disturbance. Educate about human disturbance, foraging habits & food preference.	***Unsuitable as a focal species.*** Due to the lack of wetlands on the WMA there is no habitat in the management area.
Bald Eagle (*Haliaeetus leucocephalus)*	ESA Delisted, USFS R1 & R4 Sensitive, BLM Threatened, IDFG SGCN	Nests found in three areas in Idaho – along Snake River, within Pend Oreille River drainage & Kootenai Valley, & on/around Cascade Reservoir. 156 nest sites occupied. Found in aquatic ecosystems, including lakes, rivers, coastlines, marshes, & reservoirs.	High levels of organochlorine compounds for crops/mosquito control. Shooting, poisoning, & electrocution. Human development. Disturbance from forestry, human recreation & human development.	Idaho populations have been met or exceeded. Annual nest monitoring conducted. Buffer zones created around active nests to avoid/minimized disturbance during territory establishment & breeding activities.	***Suitable as a focal species.*** Regularly documented occurrence of this species on the WMA landscape makes this species suitable as a focal species.
Black-necked Stilt (*Himantopus mexicanus)*	IDFG SGCN	North American breeding population at 150,000. Current population in Idaho unknown. Nest along sewage ponds or shallow inland wetlands containing emergent vegetation, flooded lowlands & permanently-flooded pastures.	Illegal shooting & trapping. Loss of wetlands & contamination. Disturbance at nest site. Nest destruction resulting from routing levee grading.	Address habitat & management needs. Monitor contamination. Monitor nesting sites on regular basis. Research interactions with primary predators.	***Unsuitable as a focal species.*** Due to the lack of wetlands on the WMA there is no habitat in the management area.
Brewer's Sparrow (*Spizella breweri)*	BLM Imperiled, IDFG SGCN	Distribution similar to historical range, no large scale changes documented. Population size in Idaho 1.2 million. Shrub-steppe obligate species. Associated with big sagebrush (*Artemisia tridentata*).	Habitat destruction, degradation & fragmentation. Activities that destroy native shrub cover (e.g., fire, chaining, herbicides, agricultural conversion, etc.). Grazing.	Preserve unfragmented habitat. Restore natural fire regimes. Maintain critical lands (Craters of the Moon National Monument, Idaho National Laboratory, & Snake River Birds of Prey National Conservation Area).	***Suitable as a focal species.*** Occurrence of this species on the WMA landscape & the management of its primary habitat for the benefit of a diverse group of game & nongame species makes this species suitable as a focal species.
California Gull (*Larus californicus)*	IDFG SGCN	North American breeding population is 414,000. Approximately 36,320 pairs bred at American Falls, Blackfoot, Magic, & Mormon Reservoirs, Bear Lake, Deer Flat, & Minidoka National Wildlife	Low water levels. Predators. Human disturbance. Covering of landfills. Access to colonies by the recreating public. Entering colonies for research purposes.	Maintain water levels that separate nesting islands from dry land. Monitor effects of landfill coverings. Monitor the breeding colonies every three years. Protect colonies from disturbance. Research effects of	***Unsuitable as a focal species.*** The populations of this species found adjacent to the WMA are outside the area of management influence to its open water association.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
		Refuges & Ted Trueblood Wildlife Management Area. Use fairly open habitats for foraging, including reservoirs, lakes, irrigation canals, weirs, garbage dumps, feed lots, irrigated agricultural fields & pastures.		entering colonies & findings applied to future work.	
California Quail (*Callipepla californica)*	Flagship	Introduced to Idaho. Popular game bird. Best adapted to semiarid environments with abundant food, ground cover, & dependable water source. Found in chaparral, sagebrush scrub (*Artemesia*), oak-grassland, riparian & foothill woodland and disturbed areas with humid forest ranges. Cover needed for roosting, resting, nesting & escaping from predators Highly dependent on protective, brushy escape cover. Along Snake River, rocky outcrops provide escape cover.	Enhancements in agricultural production. Conversion of small farms to large agribusiness without hedgerows. Degraded riparian conditions due to burning & grazing. Improved roads or dirt & gravel roads. Water extraction or inappropriate recreational use levels. Invasive plants. Suburbanization. Water distribution. Domestic & feral cat populations.	Assess existing habitat conditions. Identify potential & existing habitats & conditions. Plan habitat enhancements & improvements at watershed scale. Increase plant diversity in early seral habitats. Maintain or increase availability of dense escape & roosting cover. Maintain vigorous, self-sustaining understory of grasses & forbs with emphasis on seed-set & dispersal.	***Suitable as a focal species.*** Upland bird populations are an added priority for the WMA. They are a culturally & economically important wildlife species in southwestern Idaho & are a species with a good potential for developing conservation partnerships.
Caspian Tern *(Sterna caspia)*	IDFG SGCN	North American breeding population is 68,000. Sixty pairs were breeding as of 1993 at Blackfoot, Magic, & Mormon Reservoirs & Minidoka National Wildlife Refuge. Generally nest on open, fairly flat islands or islets of lakes, reservoirs, & rivers.	Low water levels. Predators. Human disturbance. Shooting. Conflicts between Caspian terns & fish populations.	Maintain water levels that separate nesting islands from dry land. Monitor breeding colonies every three years. Study effects of entering colonies & minimize disturbance. Explore additional potential nesting sites.	***Unsuitable as a focal species.*** The populations of this species found adjacent to the WMA are outside the area of management influence to its open water association.
Chukar Partridge *(Alectoris chukar)*	Flagship	Introduced to Idaho. Found on steep, dry, rocky slopes with shrub-steppe vegetation. Cheatgrass is a major food source. Also eat lush grasses & forbs. Select rocks for nesting in west-central Idaho. Favor southeast slopes for nesting.	Heavy grazing. Intense fire. Changes in plant community structure. Spread of exotic grasses & weeds. Urban sprawl. Loss of sagebrush & bunchgrass habitat. Severe winter or dry weather. Predation.	Gather data on distribution. Conduct population surveys, roadside brood counts& helicopter counts. Determine impacts of disease, predation & weather, especially precipitation.	***Suitable as a focal species***. Partridge populations are an added priority for the WMA. They are a culturally & economically important wildlife species in southwestern Idaho & are a species with a good potential for developing conservation partnerships.
Clark's Grebe (*Aechmophorus clarkii)*	IDFG SGCN	Population is approximately 15,000 individuals, 472 breed in Idaho. Distribution in Snake River drainage. Colonial waterbirds. Nest on marshes or freshwater lakes with open water.	Water quality & water level fluctuations. Disturbance by humans approaching the colony on foot or by boat. Pesticides.	Monitor water quality & reduce water level fluctuations. Monitor breeding colonies every three years. Close breeding areas to recreational activities. Address increase development along shoreline & recreational boating.	***Unsuitable as a focal species.*** The populations of this species found adjacent to the WMA are outside the area of management influence to its open water association.
Common Loon (*Gavia immer)*	USFS R1 & R4 Sensitive, IDFG SGCN	Population size in North America unknown. Nesting has never been confirmed in Idaho except for Indian Lake in Teton County (lies mostly in Wyoming). Winter along coasts, & in coastal waters. Flightless chicks reported in Bonner County on northern end of Priest Lake, Upper Priest Lake, & Clark Fork Delta of Pend Oreille Lake.	Shooting. Heavy metals & lead poisoning from lead sinkers. Predation. Underwater fish traps & gill nets. Oil spills. Water level instability. Degradation of habitat from shoreline development & recreational use. Direct impact from outboard propellers & jet skis.	Monitor during the breeding & non–breeding season. Increase study of toxic sensitivity of loons. Expand public education & cooperation.	***Unsuitable as a focal species.*** The populations of this species found adjacent to the WMA are outside the area of management influence to its open water association.
Ferruginous Hawk (*Buteo regalis)*	BLM Imperiled, IDFG SGCN	Idaho breeding population is 625 individuals. Open–country species inhabiting grasslands, shrub-steppes, deserts, flat & rolling terrain in grassland	Agricultural development & cultivation of native grasslands. Effects of cultivation, grazing, poisoning & controlling small mammals, mining, & fire in nesting habitats.	Maintain or increase population by enhancing nest substrates, maintaining prey populations & mitigating development impacts from wind farm turbines, mining,	***Potentially Suitable as a focal species.*** While suitable habitat can be found on the WMA, there is limited information on its current distribution in the project area.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
		or shrub-steppe at edge of western piñon–juniper woodlands. Distributed throughout southern Idaho. Found in Snake River plain.	Development of wind farms.	pipeline construction, & urbanization.	
Flammulated Owl *(Psiloscops flammeolus)*	USFS R1 & R4 Sensitive, BLM Imperiled, IDFG SGCN	Distributed throughout Idaho montane forests & mid-elevation old-growth or mature stands of open ponderosa pine, Douglas-fir, & co-dominated stands.. Breeding habitat combines open, mature montane pine forests, scattered thickets of saplings or shrubs & grassland edges. Obligate cavity nesters. Use natural cavities & old woodpecker holes in large trees & snags.	Direct habitat loss from timber harvest practices. Fire exclusion resulting in altered forest structure, stocking rates, & species composition. Pesticides. Cutting of dead trees for firewood. Lack of fire disturbance creating undesirable high-density vegetation conditions. Changes in stand structure impacting insect populations & habitat suitability for woodpeckers.	Develop coordinated, statewide & count-based monitoring programs. Refine population estimates & trend data. Research on clustered spatial distribution, unoccupied habitat, behavior, distribution, & potential threats on winter ranges. Guidelines for restoration of ponderosa pine ecosystems. Implement & fund education programs to promote value of snags in forest habitats.	***Potentially Suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, very little of its preferred habitat is found within the area of management influence.
Franklin's Gull (*Larus pipixcan)*	IDFG SGCN	North American breeding population is 653,236. Eight thousand pairs breed in eastern Idaho at Bear Lake National Wildlife Refuge, Camas & Grays Lake NWR, Market Lake Wildlife Management Area, Mud Lake WMA, & Oxford Slough Waterfowl Production Area. Nests in marshes. Breed in large areas with fairly open emergent vegetation & deep water.	Fluctuating water levels. Exotic plant species & overgrowth of marsh plants. Presence of substantial carp populations. Human disturbance.	Maintain suitable water level & vegetation for nest construction. Monitor colony size & movement of breeding colonies every three years. Limit disturbance. Carefully plan research activities to avoid periods of sensitivity.	***Unsuitable as a focal species.*** Due to the lack of wetlands on the WMA there is no habitat in the management area.
Gray Partridge *(Perdix perdix)*	Flagship	Introduced to Idaho. Found in croplands in association with native grasses, weedy herbaceous cover & hayfields. In Palouse region, wintered mostly in plowed stubble fields. Idaho study found most nests in areas of permanent cover.	Habitat degradation. Pesticides. Loss & fragmentation of grass & shrub cover. Hay mowing. Invasive weeds.	Maintain & develop roadsides, field edges & hillside vegetation with grass/forb cover. Establish scattered shrubs. Light grazing. Eliminate burning of roadsides & waterways. Increase cover density & edge. Study population trends, recruitment & habitat use & selection.	***Potentially Suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, very little of its preferred habitat is found within the area of management influence.
Harlequin Duck (*Histrionicus histrionicus)*	USFS R1 & R4 Sensitive, BLM Rare, IDFG SGCN	Western North American population is 150,000–200,000. Seventy breeding pairs in Idaho in 16 different areas. Breed along streams from Canadian border to Selway River & in southeastern Idaho near Wyoming border. Breed along clear, swiftly flowing streams.	Activities affecting riparian habitats, water yield, water quality, & increase disturbance during the breeding season. Destruction of coastal habitat. Pollution. Overharvest of remnant populations on wintering areas.	Protect breeding area watersheds, & coastal molting & wintering sites. Collect information on demography, population size, & trend. Determine metapopulation structure & dispersal rate to delineate appropriate population management units.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Hooded Merganser (*Lophodytes cucullatus)*	IDFG SGCN	Year–round resident in Panhandle & Upper Snake regions of Idaho. Some spend winter in southern part of state (Twin Falls area).. Found on streams, lakes, swamps, beaver wetlands, marshes, & estuaries. In Idaho, prefers wooded streams & flooded bottomlands in summer, & open bodies of water in winter.	Habitat alteration, forestry practices & especially snag removal. Effects of acid rain. River channelization, deforestation, & agricultural practices that reduce the size of forested floodplains & increase sediment loading in streams.	Forest management goals that establish & conserve cavity trees. Maintain riparian forested corridors & forests located within 1.6 km of suitable brood habitat. Create statewide all-bird monitoring program. Restore &/or preserve water quality & natural aquatic hydrology.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Lesser Goldfinch (*Spinus psaltria)*	IDFG SGCN	Few records in Idaho. More recent unpublished breeding record from Bannock County. Uses areas where water	Increased use of herbicides that kill seed-producing weedy plants. Loss of riparian habitat.	Gather data on current breeding & wintering status. Protect & restore riparian habitat throughout breeding range.	***Unsuitable as a focal species.*** Limited information on distribution in the project area in addition to limited habitat on the WMA.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
		is available, in partly-open situations with scattered trees, & in woodland edges, second growth, open fields, pastures, & around human habitation.			
Lesser Scaup (*Aythya affinis)*	IDFG SGCN	Year–round resident in Panhandle & south–central regions of Idaho. Some spend winter scattered along Snake River Plain. Found in fresh to moderately brackish, seasonal & semi-permanent wetlands & lakes with emergent vegetation. Prefers smaller bodies of water. Found along coasts & sheltered bays, estuaries, marshes, or on inland lakes, ponds, & rivers.	Degradation of habitat. Loss or degradation of wetlands due to drainage & conversion to agriculture, dredging & filling, modification of water levels, levee construction, changes in salinity & siltation. Introduction of exotic plants.	Restore wetlands with cooperation of federal, state, & provincial resource agencies, private organizations, state waterfowl associations, & private landowners. Gather data on causes for population declines. Create coordinated, statewide all-bird monitoring program.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Long-billed Curlew (*Numenius americanus)*	BLM Watch-list, IDFG SGCN	Population size in North America is 20,000. Estimated 3,000–5,000 nesting pairs in southern Idaho. Current population size is unknown. Nest in open short-grass or mixed-prairie habitat with level to slightly rolling topography. Avoids areas with trees, high-density shrubs, & tall, dense grass.	Loss of habitat. Conversion of grasslands to croplands, development of residential communities, & increasing recreational use. Disturbance from vehicle traffic & recreational use. Pesticides. Lack of reliable data on population sizes & trends.	Protect habitat areas that are >104 acres & nesting areas from human disturbance. Monitor impacts of pesticides. Contribute to regional monitoring effort on population size & trends.	***Potentially Suitable as a focal species.*** While suitable habitat can be found on the WMA, there is limited information on its current distribution in the project area.
Merlin (*Falco columbarius)*	IDFG SGCN	Three subspecies occur in North America; all three have been documented in Idaho: Taiga merlin (*F. c. columbarius*), Richardson's or prairie merlin (*F. c. richardsonii*), & black merlin (*F. c. suckleyi*). Locally abundant winter resident in Idaho, but a rarely breed here. Nesting in shrub-steppe.	Increase in agricultural lands. Effects of DDT & its metabolites. West Nile Virus & avian influenza. Avicides (poison) used to control European starlings at feedlots during winter. Habitat modification by humans.	Continue monitoring environmental contaminants. Implement habitat management activities designed to benefit breeding pairs. Introduce birds to suitable breeding habitat in state.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
Mountain Quail (*Oreortyx pictus)*	USFS R1 & R4 Sensitive, BLM Imperiled, IDFG SGCN	Primarily found in areas of west–central Idaho, with remnant populations in Riggins. Populations in southwestern Idaho are in jeopardy of extirpation, but could grow quickly. Breed & winter in shrub–dominated communities with manzanita & oak–dominated areas in more coastal habitats to riparian areas of hawthorn, willow, & chokecherry.	Habitat loss & degradation from forest succession, reservoir construction, fire, weed invasion, & human developments. Interspecific competition with California quail & chukar. Lack of clear mechanisms for population declines.	Protect & maintain habitats through better management of riparian & forest habitats. Investigate the mechanisms for recent declines. Use reintroductions to expand range into restored habitats.	***Potentially suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, preferred habitat is found within the area of management influence.
Peregrine Falcon (*Falco peregrinus anatum)*	ESA Delisted, USFS R1 & R4 Sensitive, BLM Imperiled, IDFG SGCN	The subspecies American peregrine (*F. p. anatum*) breeds & winters in Idaho. The Arctic peregrine (*F. p. tundrius*) has been documented here during migration. North American breeding population is 8000 – 10,000 pairs. Inhabits mountains, river corridors, marshes, lakes, coastlines, & cities. Migrate south during winter but some remain near Nampa & Boise year-round. Eyries found near Lewiston to & Stanley.	Loss of habitat. Human activities. Nest disturbance. Shooting. Electrocution. Collisions with windows, wires, motor vehicles & aircraft. Environmental contaminants from agriculture & forestry use. Diseases such as West Nile Virus & avian influenza.	Survey & protect nest sites from disturbance &/or destruction. Monitor poison used at feedlots & dairies & eggshell thickness of resident breeders to assess environmental contamination. Maintain wetlands adjacent to eyries. Prosecute illegal shooting. Continue stocking sites with captive-bred young, young produced from urban pairs, or young produced on easily accessible towers.	***Suitable as a focal species.*** Regularly documented occurrence of this species on the WMA landscape makes this species suitable as a focal species.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
Northern Pintail *(Anas acuta)*	IDFG SGCN	Approximately 1,800 in Idaho. Breed in Panhandle & along Snake River Plain. Prefers lowland marshes, but winter on small creeks & reservoirs in southern Idaho. Forms large roosting & feeding flocks on open, shallow wetlands & flooded agricultural fields.	Habitat degradation. Drainage of wetlands. Agricultural alterations. Competition against agricultural & urban users for limited water & space.	Restore wetlands & integrate waterfowl management into farming practices. Collect data on causes for population decline. Monitor wintering population as part of a coordinated, statewide all–bird monitoring program.	***Unsuitable as a focal species.*** Due to the lack of wetlands on the WMA there is no habitat in the management area.
Pygmy Nuthatch (*Sitta pygmaea)*	USFS R1 Sensitive, BLM Watch-list, IDFG SGCN	Subspecies *S. p. melanotisis is* a common resident in northern Idaho. Less common in west-central mountains & rare in eastern & southern regions. Approximately 5,300 individuals in Idaho year-round. Distribution is limited to the southern slopes of mountains. Found in ponderosa pine forests, woodlands & dry forest habitat. Prefers old-growth, mature, undisturbed forests. Nests in dead pines & live trees with dead sections. Needs heterogeneous stands with a mixture of well-spaced, old pines & vigorous trees of intermediate age.	Degradation of ponderosa pine forests as a result of timber harvest, fire suppression, & grazing. Loss of historical open, park-like stands of pine.	Restore ponderosa pine forest & woodlands. Emphasize snag recruitment & retention, return of historical fire regimes, & reduced grazing pressure, at least in some areas in management activities. Conduct studies to determine why population declining rapidly.	***Unsuitable as a focal species.*** Due to the lack of forests on the WMA there is no habitat in the management area.
Short-eared Owl (*Asio flammeus)*	BLM Watch-list, IDFG SGCN	Population size in Idaho is 32,000 individuals, slightly more abundant in west-central Idaho. Confirmed or suspected breeder across nearly all of the state. Winter in the northern & southern portions of the state. Found in marshes, grasslands, tundra, & agricultural lands. Utilize wooded environments during winter, but rarely breed in forests (except in areas that have been cleared of trees).	Timing of agricultural activities such as tilling, mowing, burning, etc. Roads & vehicle collisions. Habitat loss & degradation. Human disturbance. Residential, commercial, transportation, utility, & agricultural development.	Protect, enhance, or restore suitable foraging & breeding habitats Monitor use of agricultural lands prior to ground disturbing actions. Enhance & restore waterfowl nesting & foraging habitats. Design projects that benefit other grassland & shrub-steppe species. Create standardized survey protocol, monitoring of human disturbance & predation. Provide education.	***Unsuitable as a focal species.*** Due to the lack of wetlands & forests on the WMA there is no habitat in the management area.
Swainson's Hawk (*Buteo swainsoni)*	BLM Watch-list, IDFG SGCN	Estimated 16,800 breeding individuals in Idaho. Abundant & stable. Breeds throughout southern half of state & in Palouse region. Absent from Idaho panhandle except as an uncommon fall transient. Found in open pine/oak woodlands, & agricultural areas with scattered trees. Found in grasslands & open country during migration. Nest in trees or shrubs near riparian zones adjacent to agricultural lands.	Organophosphate insecticides used to control grasshopper outbreaks in alfalfa & sunflower fields. Conversion of native grasslands to alfalfa fields & other hay crops. Conversion to woody perennial crops. Urban development. Development of wind farms.	Maintain &/or restore native grassland. Monitor conversion of agricultural areas to commercial & residential real estate. Identify migration corridors & protect important stopover habitat. Collect better data on mortality rates as a result of wind farm development. Test alternative, less toxic pesticides & grasshopper baits in Argentina.	***Unsuitable as a focal species.*** Due to the lack of wetlands & forests on the WMA there is no habitat in the management area.
Trumpeter Swan (*Cygnus buccinator)*	USFS R4 Sensitive, BLM Imperiled, IDFG SGCN	Found in southeast Idaho throughout wetlands & lakes surrounding Island Park & east to Wyoming line. Nest at Market Lake & Sand Creek. Nest at Grays Lake & Bear Lake National Wildlife Refuge & Fort Hall Reservation. Some nest as far west as Fairfield, Idaho. One hundred birds breed in southeast & south central Idaho. Population in southeast swells to	Periodic drought crowded wintering grounds, & low local productivity. Disturbance to nesting habitat from fishing, hiking, & off road vehicles. Loss of nesting habitat to consumptive land uses. Power lines over nesting & wintering habitat. Lead poisoning. Poaching.	Continue monitoring collared birds to document winter distribution & habitat use. Necropsy when cause of death is unknown. Investigate unknown causes of death & illegal shootings. Conduct educational programs on identification & conservation.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
		3000 during winter. Winter on Henry's Fork & South Fork of Snake River.			
Western Burrowing Owl (*Athene cunicularia hypugaea)*	BLM Watch-list, IDFG SGCN	Patchy distribution in southern half of Idaho. Population size is unknown. Breed in open, well-drained grasslands, prairies, farmlands, steppes, & airfields. Use natural burrows excavated by American badgers. Found in irrigated agriculture. Forage in short-grass, mowed or overgrazed pastures, golf courses, airfields, & irrigated agricultural fields.	Loss of nesting habitat through urbanization & agricultural conversion. Illegal shooting. Pesticides through direct contact with overspray or consuming prey that has been sprayed. Lack of reliable data for population sizes & trends in Idaho.	Protect American badger populations & burrows for owl nesting. Investigate illegal shooting. Monitor impacts of pesticide spraying. Conduct a statewide population assessment. Establish statewide monitoring program.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
Western Grebe (*Aechmophorus occidentalis)*	IDFG SGCN	Occur seasonally in wetlands in most of west. Approximately 110,000 individuals in North America & 4,034 of these breed in Idaho. Breed along Snake River drainage, Cascade Reservoir, & several locations in the Panhandle. Nest on freshwater lakes or marshes with extensive open water.	Water quality & water level fluctuations. Disturbance by humans approaching the colony on foot or by boat. Depredation of eggs by gulls, crows, or ravens. Increased boat traffic. Gill nets & oil spills. Pesticides.	Monitor water quality & reduce water level fluctuation during breeding season. Close off important breeding areas to recreation. Monitor development along shoreline & increase in boating. Monitor existing breeding colonies every three years.	***Unsuitable as a focal species.*** Due to the lack of wetlands & forests on the WMA there is no habitat in the management area.
White-faced Ibis (*Plegadis chihi)*	BLM Rare, IDFG SGCN	Great Basin nesting population is 57,978 individuals. 6,760 breeding individuals in Idaho. Nest at Bear Lake, Camas & Grays Lake NWRs, Duck Valley Indian Reservation, Market Lake & Mud Lake WMAs, & Oxford Slough. Found in hard stem bulrush/cattail marshes. After nesting season, congregates by the thousands to feed on mudflats of American Falls Reservoir. Forages for aquatic & moist soil invertebrates in shallow flooded wetlands & irrigated croplands. Alfalfa, barley, & native hay meadows are important foraging areas.	Drought &/or diversion of water away from existing marsh/wetland habitat. Fluctuating water levels, from flooding, drought, & wetland drawdowns. Pesticides. Human intrusion into colonies during the early nesting period.	Acquire water rights for existing wetland sites used for nesting. Provide stable water levels at colony sites during nesting period. Minimize disturbance at colony & maintain a minimum buffer zone. Minimize research disturbance to colony, particularly during the early nesting period. Monitor the breeding colonies every three years.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
White-headed Woodpecker (*Picoides albolarvatus)*	USFS R1 & R4 Sensitive, BLM Rare, IDFG SGCN	Range extends western Idaho & west–central Nevada. Uncommon or rare in Idaho. Population size in Idaho is 320 individuals. Occupies montane coniferous forests. Stands are typically multi-storied & open-canopied mature & old-growth ponderosa pine. Use large-diameter ponderosa pines for breeding, roosting, & foraging.	Habitat conversion, including destructive resource harvesting (e.g., clearcutting forests, even-aged stand management, & snag removal), logging, & changes in ecological processes e.g., fire suppression) & forest fragmentation. Loss of live & dead large-diameter ponderosa pine.	Collect data on natural history, demography & populations. Study metapopulation delineation, determination of reproductive success, & effects of changing forest tree species composition, stand age & structure on populations. Refine current population estimates.	***Unsuitable as a focal species.*** Due to the lack of forests on the WMA there is no habitat in the management area.
White-winged Crossbill *(Loxia leucoptera)*	IDFG SGCN	Occupies boreal coniferous forests in northern & eastern Idaho. Occurrence is highly irregular. Breeds where conifers are abundant & producing good cone crops. Up to 10,000 individuals moving through an area in a single day in search of crops.	Construction & maintenance of roads for forestry practices.	Gather data on current breeding & wintering status. Protect forested habitat from logging & increase rotation age. Maintain large tracts of mature forest for maximum cone production. Use less salt on roads in winter.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
Wilson's Phalarope (*Phalaropus tricolor)*	BLM Watch-list, IDFG SGCN	North American population is 1.5 million birds. Idaho breeding population size is unknown. Nest in marshes & idle, hayed, & grazed grasslands/wet meadows of wetland. Move to deeper, more permanent wetlands during dry years. Habitat selection has not been studied in Idaho.	Loss of high quality fresh water habitat. Collisions with power transmission lines over wetlands. Selenium leaching from agricultural fields & pesticides.	Burn, mow & graze upland nesting habitat. Protect &/or restore wetland complexes (seasonal & semi-permanent wetlands). Do not disturb breeding areas during breeding season.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Yellow-billed Cuckoo (*Coccyzus americanus)*	ESA Candidate, USFS R4 Sensitive, BLM Threatened, IDFG SGCN	Occur in drainages in southern Idaho, including Snake River Valley. Found in large tracts of cottonwood & willow habitats with dense sub-canopies. Breeding population statewide is limited to a few dozen pairs. Requires large blocks of riparian habitat for nesting.	Loss & degradation & conversion of habitat into agriculture. Urbanization, dams & river flow management, stream channelization & bank stabilization. Overgrazing by livestock. Lowering of water table & replacement of native vegetation with non-native plants. Human disturbance. Tropical deforestation on wintering grounds.	Determine numbers of cuckoos & map remnant populations. Protect established breeding areas & acquire habitat. Repeat statewide survey & monitor every three years. Eliminate pesticide spraying adjacent to riparian areas. Investigate feasibility of captive breeding & reintroduction.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Mammals					
Black Bear *(Ursus americanus)*	Flagship	Black bear distribution in Idaho corresponds closely to the distribution of coniferous forests. North of the Snake River plain they are found throughout the forested mountains & foothills. Few black bears occur south of the Snake River, except in southeastern Idaho.	Forest practices. Wildfires. Plant succession. Increased human access. Habitat loss & fragmentation.	Minimize soil disturbance where berry-producing shrubs are abundant. Maintain security cover, aspen stands, dense pole-sized timber stands & mature trees in logged areas. Implement area closures to motorized vehicles.	***Suitable as a focal species.*** Black Bear are a culturally & economically important wildlife species in southwestern Idaho & are a species with a good potential for developing conservation partnerships.
Bobcat *(Lynx rufus)*	Flagship	In Idaho, occupy boreal coniferous & mixed forests in north, bottomland hardwood forest in south-east, & desert & scrubland in the south-west. Favor low & mid-elevations. No national population estimates, but bobcats are considered to be increasing.	Habitat loss due to development. Interspecific competition with expanding coyote populations.	Continue research on population trends. Large-scale population assessments.	***Suitable as a focal species.*** Bobcats are a culturally & economically important wildlife species in southwestern Idaho & are a species with a good potential for developing conservation partnerships.
Canada Lynx *(Lynx canadensis)*	ESA Threatened, USFS R4 Threatened, BLM Threatened, IDFG SGCN	Subspecies *Lynx canadensis canadensis* found in Idaho. Occur north of Salmon River & Caribou Range. Population size in Idaho unknown, but thought to be less than 100 individuals. Inhabits montane & subalpine coniferous forests. Dens in mature forests. Wide-ranging & require large tracts of forest.	Habitat alterations, degradation, fragmentation & loss. Timber management & fire suppression affecting vegetation composition & structure. Increased road densities & human disturbance. Increased winter recreation & snow compaction. Illegal or incidental harvest from trapping.	Gather data on population. Enhance habitat for prey species through timber management. Increase habitat complexity at landscape scale by creating a variety of seral stages. Manage road densities & human disturbance.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Dwarf Shrew *(Sorex nanus)*	IDFG SGCN	Lack of data on status in Idaho. Single record reported in Idaho. Potential range in upper Snake & Bear River basins near Idaho-Wyoming border & central interior of Idaho. Occurs in small, isolated populations. Found in rocky, montane habitat. Also found in mixed-shrub meadows in lower elevation forests, sagebrush, pinyon-juniper woodland, shortgrass prairie, or stubble fields.	Lack of data on distribution & status of populations. Increasing levels of human activity in alpine & subalpine ecosystems.	Baseline surveys needed on population status, trends, distribution, & habitat associations as well as life history.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
Elk *(Cervus elaphus)*	Flagship	Boise River WMA is critical winter range for elk from Department game management unit 39. Boise River WMA & the immediate vicinity has provided winter habitat for approximately 1,200 elk.	Rural residential/commercial development in the Boise River watershed. Habitat fragmentation. Loss of shrub-steppe habitat. Wildlife-vehicle collisions.	Protect & expand existing winter range. Work collaboratively with BLM & USFS to maintain adequate elk security cover. Provide technical assistance to private landowners to expand tolerance & available habitat. Provide technical assistance to county planning & zoning staff to minimize loss or degradation of habitat.	***Suitable as a focal species.*** Elk are a priority for the WMA & the Department has extensive data on their use of the area. Elk are a culturally & economically important wildlife species in southwest Idaho & are a species with a good potential for developing conservation partnerships.
Fisher *(Martes pennanti)*	USFS R1 & R4 Sensitive, BLM Imperiled, IDFG SGCN	Subspecies *M. pennanti columbiana* occurs in northern & central Idaho. Found in conifer & mixed conifer-hardwood forests. Occurs in a mosaic of mesic conifer, dry conifer, & subalpine forests. Mature & old-growth forests are used during summer, young & old growth forests used during winter. Forested riparian habitat is important & stream courses may be used as travel corridors.	Habitat loss & degradation. Loss of forested habitat, particularly old growth forests, to fire & timber harvest. Habitat fragmentation. Incidental trapping of fishers with marten traps.	Determine status of populations. Research & evaluate landscape- & regional-scale responses to disturbance & forest management. Protect & restore important habitat. Maintain old growth & early seral-stage forests & protect riparian habitat. Gather data on habitat fragmentation, movement patterns & genetic composition.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Fringed Myotis *(Myotis thysanodes)*	USFS R1 Sensitive, BLM Imperiled, IDFG SGCN	Occur in northern & western Idaho most frequently at low- & mid-elevation mines & in steep river valleys, large canyons, or sites with steep & rocky terrain. No available data on habitats or roost sites used as maternity sites or hibernacula.	Lack of data on distribution, population status, & ecological requirements. Renewed mining & closures. Forest management that reduce snag availability. Pesticides to manage forest & agricultural pests.	Determine distribution & status of populations. Monitor & evaluate population trends. Survey inactive mines & protect mines providing roosting habitat. Maintain a diversity of snags. Consider the effects of reduced insect densities.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Merriam's Shrew *(Sorex merriami)*	IDFG SGCN	Scattered in areas dominated by xeric shrubs & grasses across Idaho, but rarely encountered. Habitats include sagebrush steppe & grassy openings in dry coniferous forests.	Lack of data on distribution & status of populations. Livestock grazing.	Determine distribution, current status, & habitat associations of populations.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Mountain Lion *(Puma concolor)*	Flagship	Found in coniferous forests, open grasslands, chapparral, brushlands & desert edges. Prefer rough, rocky, semi-open areas. Like areas where deer occur in large, rugged & remote areas of Idaho.	Housing development. Habitat fragmentation. Human activity that leads to more human-lion interaction. Oil & gas development.	Continue management of predator/prey dynamics, demographics & behavioral responses. Research & develop better population monitoring tools.	***Suitable as a focal species.*** Mountain Lion are a culturally & economically important wildlife species in southwestern Idaho & are a species with a good potential for developing conservation partnerships.
Mule Deer *(Odocoileus hemionus)*	Flagship	Boise River WMA is critical winter range for mule deer from Department game management unit 39. Boise River & the immediate vicinity provides winter habitat for approximately 7,000 mule deer.	Rural residential/commercial development in Boise River watershed. Habitat fragmentation. Loss of shrub-steppe habitat. Wildlife-vehicle collisions.	Protect & expand existing winter range. Support management that increases shrub-steppe habitat. Work collaboratively with other agencies (USFS, BLM, City of Boise, Ada & Boise counties) to maintain thriving mule deer herds. Provide technical assistance to private landowners to expand tolerance & available habitat. Provide technical assistance to county planning & zoning staff to minimize loss or degradation of habitat.	***Suitable as a focal species.*** Mule deer are a foundational priority for the creation of the WMA & the Department has extensive data on their use of the area. Mule deer are a culturally & economically important wildlife species in southwest Idaho & are a species with a good potential for developing conservation partnerships.
North American Wolverine *(Gulo gulo luscus)*	ESA Candidate, USFS R1 & R4 Sensitive, BLM Imperiled,	Occur only in Idaho & Montana. Populations in Idaho found in Selkirk Mountains, Lochsa & Kelly Creek drainages, & Smoky Mountain complex	Habitat fragmentation. Human disturbance. Increased winter recreation. Incidental trapping.	Determine & monitor status of populations & determine if self-sustaining or dependent on dispersers from Canada. Limit disturbance to habitat. Establish wilderness	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.

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	IDFG SGCN	of Sawtooth Mountains. Large home ranges & extensive movements. Winter habitat is mid-elevation conifer forest. Summer habitat is subalpine areas.		designations in subalpine & mid-elevation forests. Eliminate incidental trapping.	
Piute Ground Squirrel *(Spermophilus mollis)*	BLM Imperiled, IDFG SGCN	Three subspecies occur in Idaho: *S. mollis idahoensis, S. mollis mollis, & S. mollis artemisia.* Subspecies *S. mollis idahoensis* & *S. mollis artemisia* is endemic to Idaho. *S. mollis idahoensis* occurs north of Snake River, south of Payette River & Boise Mountains, & east of Glenn's Ferry. *S. mollis artemisia* occurs on plains north of Snake River between Bliss & Dubois. *S. mollis mollis* occurs south of Snake River between Murphy & Pocatello. Occurs in shrub-steppe habitat with big sagebrush, shadscale, black greasewood, & winterfat.	Habitat alteration by livestock grazing, agricultural development, invasive plants & alteration of fire regime to more frequent & severe. Habitat degradation & fragmentation. Human persecution. Rodent poisoning in response to crop depredation. Recreational shooting.	Determine current distribution & status. Monitor population trends statewide. Efforts to protect & restore habitat needed where populations are small or declining. Monitor recreational shooting of the subspecies *S. mollis artemisia.* Provide public education & enforcement of shooting regulations.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Pronghorn *(Antilocapra americana)*	Flagship	Found in shrub lands, grassland & temperate desert. Most frequent treeless, flat terrain, short-grass prairies & shrub-steppe.	Habitat loss from agriculture, urban development & mining expansion. Removal of native vegetation by rangeland projects. Fencing across migration routes. Heavy livestock grazing.	Continue monitoring population structure. Identify wintering grounds. Protect key habitats. Reduce incidences of conflict with agriculture. Loss or restriction to food sources & habitat.	***Suitable as a focal species.*** Pronghorn are a priority for the WMA & the Department has extensive data on their use of the area. Pronghorn are a culturally & economically important wildlife species in southwest Idaho & are a species with a good potential for developing conservation partnerships.
Pygmy Rabbit *(Brachylagus idahoensis)*	USFS R4 Sensitive, BLM Imperiled, IDFG SGCN	Rare in Idaho, but relatively abundant in localized areas. Occur in southern half of state. Found in tall, dense sagebrush aggregations with deep, loose alluvial soils for burrowing. Inhabit areas with cold winters, warm summers & minimal precipitation.	Loss, alteration, degradation & fragmentation of habitat. Decline in pygmy rabbit populations. Agricultural conversion, urbanization, prescribed & wildland fire, invasive plants, conifer encroachment, removal of sagebrush & livestock grazing.	Collect data on distribution, status, & population trends. Evaluate spatial connectivity. Consider habitat needs in development, land use plans & range restoration. Minimize disturbance to habitat. Conserve sagebrush habitats.	***Potentially Suitable as a focal species.*** Limited information on the current distribution in the project area.
Townsend's Big-eared Bat *(Corynorhinus townsendii)*	USFS R1 & R4 Sensitive, BLM Imperiled, IDFG SGCN	Two subspecies occur in Idaho, *P. townsendii pallescens* found in east & *P. townsendii townsendii* found in west. Occur mostly on Snake River Plain, scattered populations reported throughout state. Distribution & abundance correlated with cavity forming rock formations & historic mining districts. Hibernacula in lava tube caves in south central & southeast Idaho.	Disturbance & destruction of roost sites through mine closures, renewed mining, recreational caving, & other roost-disturbing activities. Anthropogenic disturbances.	Document state population trends. Restore year-round roosting options. Compare distribution of species with the distribution of habitat types & focus recovery efforts in areas where historical populations occurred.	***Potentially Suitable as a focal species.*** Limited information on the current distribution in the project area.
Townsend's Pocket Gopher *(Thomomys townsendii)*	IDFG SGCN	Subspecies *T. townsendii townsendii* occurs in southern Idaho along Snake River in Elmore, Owyhee, Ada, Canyon, Payette, & Washington counties. Disjunct populations occur near American Falls Reservoir in Bingham, Power, & Bannock counties. Distribution related to distribution of deep soil deposited by Pleistocene lakes. Found in sagebrush- &	Habitat loss. Activities that reduce plant biomass. Conversion of habitat to urban or agricultural areas. Livestock grazing. Altered fire regime.	Conduct surveys throughout range to determine distribution & status of populations, as well as habitat associations, habitat condition, & local threats to habitat suitability.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
		shadscale dominated habitat.			
Fish					
Bull Trout (*Salvelinus confluentus)*	ESA Threatened, USFS R4 Threatened, BLM Threatened, IDFG SGCN	Found in Boise, Payette, Weiser & drainages north of Columbia River basin. Small isolated population in Jarbidge drainage south of Snake & Little Lost River. 1.24 million trout in 269 local populations. Spawning takes place in headwater & tributary streams.	Habitat degradation, fragmentation & alterations from dewatering, road construction & maintenance, mining & grazing. Blockage of migratory corridors by dams/diversion structures. Poor water quality. Incidental angler harvest. Entrainment into diversion channels. Introduction of non–native species.	Monitor distribution & status of population. Develop recovery criteria & plan. Assess ways to improve & enhance habitat conditions. Work with neighboring states on conservation efforts.	***Potentially Suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, very little of its preferred habitat is found within the area of management influence.
Inland Redband Trout (*Oncorhynchus mykiss gairdneri)*	USFS R1 Sensitive, BLM Imperiled, IDFG SGCN	Found in Columbia River basin east of Cascades to Shoshone Falls on Snake River & Kootenai Falls on Kootenai River, upper Fraser River & Salmon & Clearwater drainage. Abundance in Idaho is unknown. Resident populations above Hells Canyon & Dworshak dams. Abundant in the Boise, Weiser, Payette, Owyhee & Wood/Malad river drainages. Found in stream habitats in southwestern, central & northern Idaho.	Habitat loss & fragmentation. Isolation of existing populations. Hybridization with coastal rainbow trout & cutthroat trout.	Monitor distribution & trend. Continue sterile fish planting program. Monitor genetic purity of populations. Maintain or reestablish connectivity of metapopulations. Develop conservation status & management plan.	***Potentially Suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, very little of its preferred habitat is found within the area of management influence.
Leopard Dace (*Rhinichthys falcatus)*	IDFG SGCN	Found in Columbia & Frasier River. Records & collections from Payette, Boise, Bruneau, Salmon Falls Creek & upper Little Salmon drainages. Abundance is unknown. Occur in stream habitats with slower & deeper water. Inhabit streams with clean substrates of rock, boulders & cobble where water velocity prevents siltation.	Lack of information on population distribution, status & life history. Altered stream habits resulting in reduced flows & sedimentation. Isolation of populations due to construction of dams, diversions & road crossings. Introduction of non–native fish species.	Determine distribution. Conduct studies of life history. Work with land & water agencies to protect existing stream channels & to improve degraded habitat. Manage nonnative fish species.	***Potentially Suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, very little of its preferred habitat is found within the area of management influence.
Umatilla Dace (*Rhinichthys umatilla)*	IDFG SGCN	Distribution & status is unknown in Idaho. Found in Boise, Salmon, Snake & Little Wood rivers. Found in relatively productive, low–elevation streams. Inhabit streams with clean substrates of rock, boulders & cobble where water velocity prevents siltation.	Lack of data on population distribution, status & life history. Altered stream habits resulting in reduced flows & sedimentation. Isolation of populations due to construction of dams, diversions & road crossings. Introduction of non–native fish species.	Determine distribution. Conduct studies of life history. Work with land & water agencies to protect existing stream channels & to improve degraded habitat. Manage nonnative fish species.	***Potentially Suitable as a focal species.*** While population of the species are known to exist in the vicinity of the WMA, very little of its preferred habitat is found within the area of management influence.
Westslope Cutthroat Trout *(Oncorhynchus clarkii lewisi)*	USFS R1 & R4 Sensitive, BLM Imperiled, DFG SGCN	One of fourteen subspecies found in North America. Inhabit the Salmon, Clearwater, Coeur d'Alene, Clark Fork & Kootenai drainages. Occupy 18,000 miles of streams in Idaho. Require well–oxygenated water, clean, well–sorted gravels with minimal fine sediments for successful spawning & complex habitat structure for cover.	Habitat loss & fragmentation. Isolation of existing populations. Hybridization with rainbow trout & other subspecies of cutthroat trout.	Continue monitoring populations, their genetic purity & sterile fish stocking program in areas where cutthroat & introduced hatchery fish overlap. Maintain connectivity of metapopulations.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.

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White Sturgeon (Snake River) *(Acipenser transmontanus)*	BLM Imperiled, IDFG SGCN	Largest freshwater fish in North America. Found in Snake river upstream to Shoshone Falls & below American Falls dam & Salmon river. Rarely seen above the North Fork Salmon River. Two populations located between Bliss & C. J. Strike dams & from Hells Canyon Dam downstream to Lower Granite Dam in Washington. Adults occur in larger, deeper pools of main river channels; juveniles & sub-adults seasonally occupy sloughs off main channel.	Population fragmentation by hydroelectric dams. Altered flow patterns from upstream irrigation storage dams & flow regulation for power generation. Water quality degradation from municipal & agricultural return systems, impoundments, & reduced flows. Hooking mortality.	Continue Snake River White Sturgeon Conservation Plan & TMDL development process to return Snake River to state standards. Conduct studies on population effects of catch & release angling. Complete & implement Snake River White Sturgeon Recovery plan & coordinate with adjacent states.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Reptiles					
Ground Snake *(Sonora semiannulata)*	BLM Imperiled, IDFG SGCN	Subspecies *Sonora semiannulata semiannulata* occur along Snake River canyon, from Bruneau to Marsing in Idaho. Additional records have been reported in the town of Star, Hell's Canyon, & Orchard Training Area. Disjunct from Nevada populations. Found in xeric habitat with sandy or loose soil textures, talus slopes, boulder fields, & sparse vegetation.	Habitat loss. Rock quarrying. Off road vehicle use. Pesticide & herbicide use. Habitat conversion to urban & agricultural uses.	Collect data on extent of populations within known range, direct threats to those populations, & population trend. Conduct a comprehensive survey & monitoring program for reptiles & amphibians occurring within the range of this species.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
Longnose Snake *(Rhinocheilus lecontei)*	BLM Imperiled, IDFG SGCN	Two subspecies in U.S. The western long–nosed snake *(R. l.lecontei*) is found in Idaho. Idaho populations are disjunct from ones in Utah & Nevada. In Idaho, occur at lower elevations along Snake River in Canyon, Ada, Elmore, & Owyhee counties. Occurs in xeric habitats, particularly in shrub–dominated areas with rodent burrows.	Conversion of native bunchgrass & shrub habitat to exotic grasslands or agriculture. Rock quarrying, off–road vehicle use, & other activities causing surface disturbance. Conversion of native habitat to urban habitat.	Develop monitoring program to ascertain population trends, distribution, & abundances. Collect information on ecology & threats. Protect & maintain habitat corridors between subpopulations.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
Mojave Black-collared Lizard *(Crotaphytus bicinctores)*	BLM Imperiled, IDFG SGCN	Occurs in southwest Idaho at lower elevations along Snake River, in Owyhee & Canyon counties. Sparsely distributed within habitat. Occurs in rocky, sparsely vegetated habitat. Vegetation at sites including sagebrush, saltbush, & bunchgrasses.	Loss or alteration of suitable habitat. Rock quarrying. Off–road vehicle use. Pervasive replacement of low–elevation shrub habitat in the region with non–native grasslands.	Monitor & evaluate distribution & population trend. Develop habitat protection measures to minimize habitat conversion & alteration. Protect core habitats & connectivity .	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Ringneck Snake *(Diadophis punctatus)*	USFS R1 Sensitive, BLM Watch-list, IDFG SGCN	Two subspecies found in Idaho, the northwestern ring–necked snake (*D. p. occidentalis*) & the regal ring–necked snake (*D. p. regalis*). Found in Clearwater, Potlatch & Portneuf river drainages & lower Salmon River drainage near White Bird & Bear River Range. Disjunct from populations in Washington. Habitat requirements are poorly understood. West–central populations are	Threats are not known. Possible threats include habitat loss & changes in the prey base arising from habitat change & species introductions.	Clarify the status of populations, including habitat requirements & threats to populations. Protect sites from large scale habitat destruction associated with timber harvest, damming, & intensive agricultural use.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
		adjacent to perennial rivers or streams in grassland or forested habitats. Found in areas characterized by sagebrush–dominated habitat & rocky canyons adjacent to ephemeral & perennial water sources.			
Amphibians					
Northern Leopard Frog (*Rana pipiens)*	BLM Imperiled, IDFG SGCN	Populations in Idaho reported in Snake River & tributaries, including Boise, Payette, Weiser, Portneuf, Bear Rivers, & Marsh Valley. Distribution along the Snake River extends discontinuously as far downstream as Washington County. Occurs in wetlands, including marshes, pond margins, & slow moving sections of streams & rivers.	Loss & degradation of wetland & riparian habitat. Urban & agricultural development, pollution from agricultural runoff, mining & mineral processing, water withdrawal & diversion, & livestock waste & trampling of habitat. Introduced competitors & predators (bullfrogs & sport fishes). Disease.	Understand population status throughout state. Investigate cause of declines statewide & regionally. Protect & restore degraded wetland sites.	***Unsuitable as a focal species.*** Due to the lack of wetlands on the WMA there is no habitat in the management area.
Woodhouse's Toad (*Bufo woodhousii)*	BLM Imperiled, IDFG SGCN	Northwestern range is isolated, disjunctive populations in lower–elevation parts of Columbia & Snake river drainages. Idaho populations occur along western Snake River Plain from Bruneau to Weiser. Occur in moderately xeric to mesic grassland & shrubland environments, often in washes, floodplains or riparian habitat.	Degradation of habitat. Water impoundment & diversion. Habitat conversion from urban & agricultural development. Pollution from agricultural runoff. Infections from *Aeromonas hydrophila*, a bacterium causing red–leg disease.	Conduct surveys throughout range to assess distribution. Monitor & evaluate population trend. Consider in water development projects & riparian & wetland habitat preservation & restoration activities.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Bivalves					
Western Ridged Mussel (*Gonidea angulata)*	IDFG SGCN	Found historically on Snake, Salmon, Clearwater & Little Salmon River in Idaho. Large portion of historic colonies extirpated on Snake River. Current populations extant on middle Snake River, lower Salmon & Little Salmon Rivers & Hells Canyon. Inhabits creeks & rivers.	Habitat loss. Nutrient enhancement & pollution. Eutrophication of habitat from freshwater aquaculture, agriculture, & urban & development. Alteration of habitat by dams. Mining. Change of distribution & abundance of host fishes.	Conduct surveys on patterns of distribution & abundance. Identify & prioritize conservation of important populations.	***Unsuitable as a focal species.*** There are no known occurrences on the WMA or the immediate vicinity.
Insects					
A Stonefly (*Utacapnia nedia)*	IDFG SGCN	Occurs in southwest Idaho including Ada & Washington counties. Habitat affiliations have not been documented.	Threats are not known. Negative changes to aquatic habitats.	Surveys to determine distribution & habitat needs.	***Potentially Suitable as a focal species.*** Limited information on the current distribution in the project area.
A Tiger Beetle (*Cicindela plutonica)*	IDFG SGCN	Occurs in limited portions of Idaho. Distribution in southern parts of state, including Ada, Canyon, Cassia, Elmore, Jefferson, Lemhi, & Owyhee counties. Found in high-elevation mountainous areas. May not be restricted to true alpine habitat.	Habitat loss. Lack of information regarding habitat associations & condition of occupied habitat.	Surveys to determine distribution, habitat & status.	***Potentially Suitable as a focal species.*** Limited information on the current distribution in the project area.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
Plants					
Aase's Onion (*Allium aaseae*)	SGCN	From Ada & southern Gem counties & Rebecca Sand Hill, Washington County, Idaho. Hulls Gulch Reserve, City of Boise, Ada County. Found in coarse, sandy soil & gravelly river benches.	Restricted distribution in terms of both geography & habitat. Mining. Housing developments. Weed invasions. Off-road vehicles. Trampling.	Locate protectable population(s) of Aase's onion on Ada County land which appears to have prospects for long-term viability. Acquisition of land.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
American Wood Sage (*Teucrium canadense var. occidentale*)	SGCN	Grows in moist soils of thickets & along marshes, tolerates poorly drained soil.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Bugleg Goldenweed (*Pyrrocoma insecticruris)*	SGCN	Gravelly moist meadows, grassy shrubby flats.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Compact Earth Lichen (*Catapyrenium congestum)*	SGCN	No populations of the species are currently known to be found on the BRWMA & no information is available on its habitat associations.	Specific threats to this taxon are unknown..	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Crenulate Moonwort (*Botrychium crenulatum)*	SGCN	In marshy & springy areas.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Davis' Peppergrass (*Lepidium davisii)*	SGCN	Restricted to six counties in Idaho (Ada, Elmore, Owyhee, Twin Falls). Playas of sagebrush plains & mesa, vernal ponds.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Desert Pincushion (*Chaenactis stevioides)*	SGCN	Open, arid or semiarid, sandy or gravelly slopes & flats, shrublands.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Giant Helleborine (*Epipactis gigantea)*	SGCN	Wet gravel & sandy stream shores/bars, riparian willow, box elder, river birch woodlands, chaparral, seepages, marshes, wet cliffs, hot springs.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Idaho Dwarf-primrose (*Douglasia idahoensis)*	SGCN	From a narrow region of northern Idaho Gravelly soils, subalpine	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Mourning Milkvetch (*Astragalus atratus var. inseptus)*	SGCN	No populations of the species are currently known to be found on the BRWMA & no information is available on its habitat associations.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Mulford's Milkvetch (*Astragalus mulfordiae)*	SGCN	No populations of the species are currently known to be found on the BRWMA but potential suitable sandy Lake Idaho deposit habitat may exist.	Invasive species, OHV use, livestock trampling.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Potentially Suitable as a focal species.*** Limited information on distribution in the project area.
Packard's Buckwheat (*Eriogonum shockleyi var. packardiae)*	SGCN	Distributed in south Idaho. Gravel or clay flats, washes, slopes, saltbush, blackbrush, & sagebrush communities, pinyon-juniper woodlands.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown; no known populations exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution.

Species	Status Designation(s)	Occurrence Context in Boise River WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Boise River WMA
Profuseflower Mesamint (*Pogogyne floribunda)*	SGCN	No populations of the species are currently known to be found on the BRWMA & no information is available on its habitat associations.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Sacajawea's bitterroot (*Lewisia sacajaweana)*	SGCN	No populations of the species are currently known to be found on the BRWMA & no information is available on its habitat associations.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Shining Flatsedge (*Cyperus bipartitus)*	SGCN	No populations of the species are currently known to be found on the BRWMA & no information is available on its habitat associations.	Specific threats to this taxon are unknown..	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Simpson's Hedgehog Cactus (*Pediocactus simpsonii)*	SGCN	Found along the canyon rims of Salmon Falls Creek & the Bruneau River. Powdery soils among sagebrush & pinion & juniper, montane, & prairie grasslands, coniferous forests. Associated with benches & canyon rims or ridgetops.	Commercial collectors. Off-road vehicle use.	Maintain or restore populations & occupied habitat contribute to their long-term viability of these species.	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
Slickspot Peppergrass (*Lepidium papilliferum)*	SGCN	Endemic to southwestern Idaho. Distributed in Ada, Canyon, Elmore, Gem, Owyhee, & Payette counties. Sagebrush steppe, desert flats, edge of playa. Characterized by a near-surface distribution of soluble sodium salts, thin vesicular surface crusts, & shallow well-developed argillic horizons or layers that are impermeable when wet.	Habitat loss due to the pervasive elimination & degradation of the sagebrush-steppe ecosystem on the western Snake River Plain. Irrigated agriculture. Urban/suburbanization. Introduction of exotic annual grasses. Livestock grazing. Increasing fire frequency.	Data on overall population trends	***Potentially Suitable as a focal species.*** Associated habitat does occur on the WMA but there is limited information on its current distribution in the project area.
Snake River Milkvetch (*Astragalus purshii var. ophiogenes)*	SGCN	Located in mountains & deserts. Found in arid, shrub-steppe habitat sometimes growing in shallow soils without sagebrush. It is a seral species preferring disturbed rocky soils.	Habitat loss due to the pervasive elimination & degradation of the sagebrush-steppe ecosystem on the western Snake River Plain. Irrigated agriculture. Urban/suburbanization. Introduction of exotic annual grasses. Livestock grazing. Increasing fire frequency.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Potentially Suitable as a focal species.*** Limited information on distribution in the project area.
Spreading Gilia (*Ipomopsis polycladon)*	SGCN	Found in sandy, gravelly or rocky slopes to 5000', creosote bush scrub, pinyon-juniper woodland.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Tall Swamp Onion (*Allium validum)*	SGCN	A Cascade-Sierran species in western Idaho. Swampy meadows in mountains.	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
White-margined Wax Plant (*Glyptopleura marginata)*	SGCN	Found in the Great Basin. Sandy or rocky deserts, alkali flats, arid grasslands, often with *Atriplex*, sometimes with *Larrea.*	Specific threats to this taxon are unknown.	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Unsuitable as a focal species.*** Limited information on distribution in the project area.
Wovenspore Lichen (*Texosporium sancti-jacobi)*	SGCN	Largest concentration in Pacific Northwest occurs clustered in three sites south of Boise in Ada & Elmore counties. Occurs with biotic crusts in arid & semi-arid habitats. Occur on wood, including sagebrush & old fence posts.	Specific threats to this taxon include loss of crust as sites are converted from sagebrush-steppe to annual grasslands due to excessive livestock disturbance and fire	Benefits to this species in the management area are unknown as no populations are known to currently exist within its borders.	***Potentially Suitable as a focal species.*** Limited information on distribution in the project area.

Selection of Conservation Targets

The Department defines an effective Conservation Target as one providing meaningful conservation benefits for multiple species that share similar habitat requirements or life history traits. They are useful for directing limited management resources and maximizing conservation effort. One measure of effectiveness is to assess the number of species that a Conservation Target benefits (or covers) within the management landscape.

Staff also evaluated which species or guilds would receive little or no tangible benefit from management actions for specific Conservation Targets; these are designated as "conservation needs." Conservation needs for several species or guilds were identified and it was determined that further data would be useful to inform the next WMA planning process. A prudent management strategy is to consider a landscape where these species may be prioritized for management in the future. Broad strategies for addressing these management needs are identified in the following Management Program Table (pages 71-78), but typically include collection of additional baseline data.

The Conservation Targets selected to guide management on the BRWMA (corresponding BRWMA Priority in parentheses) are:

1. Mule Deer and Elk (Big Game Habitat)
2. Shrub-steppe Habitat (Special Status Species Habitat)
3. Riparian Habitat (Special Status Species Habitat)

Mule Deer and Elk

Mule deer and elk were selected as a Conservation Target to represent Big Game Habitat on the BRWMA because:

- Mule deer and elk are flagship species and are the primary foundational priority for the creation of the BRWMA.
- There has been a significant amount of mule deer and elk research completed within this landscape, enabling a fairly complete outline of their seasonal habitats and migration patterns. Therefore, it is possible to identify crucial areas within the landscape and guide offsite activities that will help sustain the integrity of the BRWMA into the future.
- Mule deer and elk rely on a broad array of habitat components including sagebrush, bitterbrush, riparian habitat, and live streams to thrive within the BRWMA landscape. Therefore, efforts to sustain deer and elk herds by conserving these varied habitat components will benefit a wide range of other species including those potentially suitable and suitable focal species such as bald eagles, pygmy rabbits, black bear, and Townsend's big-eared bats listed in Table 1.

Shrub-steppe Habitat

Shrub-steppe habitat was selected as a Conservation Target to represent Special Status Species Habitat on the BRWMA because:

- Seventy-seven percent of the species evaluated in Table 1 will benefit from efforts to protect and restore shrub-steppe habitat.
- Shrub-steppe habitat extent can be mapped and monitored on the BRWMA and the adjacent landscape.
- Shrub-steppe habitat restoration areas can be tracked spatially by BRWMA staff.
- Given the high species value of shrub-steppe habitat, particularly for priority species such as mule deer, elk, Brewer's sparrows, pygmy rabbits and Western burrowing owls, shrub-steppe restoration partnerships are very achievable.

Riparian Habitat

Riparian habitat was selected as a Conservation Target to represent Special Status Species Habitat on the BRWMA because:

- Sixty-three percent of the species evaluated in Table 1 will benefit from efforts to protect and restore riparian habitat.
- Riparian habitat extent can be mapped and monitored on the BRWMA and the adjacent landscape.
- Riparian habitat restoration areas can be tracked spatially by BRWMA staff.
- Given the high species value of riparian habitat, particularly for priority species such as mule deer, elk, upland game birds, snakes, inland redband trout and bull trout, riparian restoration partnerships are very achievable.

Coverage Assessment of Selected Conservation Targets

We define an effective Conservation Target as one providing meaningful conservation benefits for multiple species that share similar habitat requirements or life history traits. They are useful for directing limited management resources and maximizing conservation effort. One measure of effectiveness is to assess the number of species that a Conservation Target benefits (or covers) within the management landscape.

Regional Habitat and Diversity staff worked together to complete the coverage assessment table (Table 2). We evaluated each of the Conservation Targets to determine which species from Table 1 would benefit from management activities focused on that target. Evaluations are based on knowledge of species habitat requirements, occurrence within the management landscape, and the scope of current and planned management actions. The assessment considered only those habitat features or needs relevant to the species as it occurs on the management landscape. For instance, we emphasized the importance of wintering habitat for mule deer and elk, knowing that most fawning and calving will occur off the WMA. Our results indicate that the selected Conservation Targets on BRWMA provide substantial, but variable habitat benefits for an array

of assessed species. Management efforts directed toward maintaining or enhancing shrub-steppe habitat will provide conservation benefits for 19 of the 27 assessed species while those actions targeting riparian habitat, although important, will benefit only six other species.

We also evaluated which species or guilds would receive little or no tangible benefit from management actions for specific Conservation Targets; these are designated “conservation needs.” We identified conservation needs for several species or guilds and determined that further data will be useful to inform the next WMA planning process. Recent studies suggest the conservation needs of some of these species (e.g., Myotis guild) are increasing dramatically. A prudent management strategy is to consider a landscape where these species may be prioritized for management in the future. Broad strategies for addressing these management needs are identified in the following Management Program Table (pages 71-78), but typically include collection of additional baseline data.

Table 2. Analysis of Conservation Target coverage and identification of conservation needs.

	Conservation Targets[a]			
Species Assessed in Table 1	**Shrub-steppe**	**Mule Deer and Elk**	**Riparian**	**Conservation Need**
Bald Eagle	P	P	P	Yes
Brewer's Sparrow	X	X	P	
California Quail	X	X	X	
Chukar Partridge	P	P	P	
Ferruginous Hawk	P	P		
Flammulated Owl	P	P		
Gray Partridge	X	X		
Long-Billed Curlew	P	P		Yes
Merlin	P	P		
Peregrine Falcon	P	P		
Western Burrowing Owl	P	P		Yes
Black Bear		X	X	
Bobcat	P	P	P	
Elk	P	X	P	
Mountain Lion	P	X	P	
Mule Deer	P	X	P	
Pronghorn	P	P		Yes
Pygmy Rabbit	P	P		Yes
Townsend's Big-eared Bat	P	P		Yes
Bull Trout			X	Yes
Island Redband Trout			X	Yes
Leopard Dace			X	Yes
Umatilla Dace			X	Yes
Westslope Cutthroat Trout			X	Yes
Ground Snake	X	X	X	
Longnose Snake	X	X	X	
Ringneck Snake	X	X	X	

[a] Entries marked with "X" indicate that the majority or all habitat needs for an assessed species within the management landscape are being met by management actions benefitting the Conservation Target. Entries marked with "P" indicate only a portion of the species habitat needs are being met by management actions for the Conservation Target. Conservation Needs exist where target-specific management actions provide little or no tangible habitat benefit for an assessed species. Blank cells under conservation targets may indicate a conservation need or where dissimilar habitat needs preclude conservation benefits.

Spatial Delineation of Conservation Target Landscapes

The land surrounding the BRWMA is both similar to and influences the habitat within the management area boundaries. Using factors such as topography, land use (e.g., rangeland, recreation, and development), watershed use, soil conditions, habitat occupancy, land ownership, and sensitive plant species records, an area of influence around the BRWMA has been determined (Figure 4).

Each of the focal species selected as Conservation Targets not only utilize the BRWMA to meet their annual needs, but also these areas of influence. Therefore, it is crucial that the Department actively participates in habitat conservation efforts beyond the borders of the management area if they are to maintain the integrity of the WMA itself. For instance, if public lands in the Sawtooth Mountains were severely damaged by wildfires, this loss of big game summer range could negatively influence mule deer fawn production now and into the future. In cases such as this, the Department would not be able to do enough within the BRWMA boundaries to sustain the wintering mule deer population over the long term. Staff used the best data available (i.e., survey data for species utilizing the WMA, biological and ecological data, scientific literature, seasonal movement data, and local knowledge) to construct Conservation Target-specific landscapes. These landscapes were then used in the Management Program Table (pages 71-78) to identify Conservation Target-specific Management Directions, Performance Targets, and Strategies for both the BRWMA and the landscape as a whole.

This section describes the manner in which BRWMA staff cooperates with other land and public management agencies as well as private landowners to preserve, maintain, and enhance the landscape outside of the WMA's borders to maintain a viable and healthy wildlife population.

Elk and Mule Deer Landscape

The BRWMA supports a diverse and dynamic assembly of wildlife, consisting of more than 300 species, including the largest wintering mule deer population in the state. Elk, migrating raptors, neo-tropical migrant birds, and several rare or otherwise special status species are also found on the property. In order to support the needs of these various species, habitat conservation efforts will focus on two priority species, mule deer and elk. By concentrating on these animals, habitats throughout the greater landscape that provide food, security and thermal cover, water, and space to all other wildlife species found on the WMA can be maintained or enhanced.

In order to maximize the effort that is needed to preserve, maintain, and enhance the lands outside of the WMA, Department staff provides technical assistance to private landowners. This assistance comes in many forms including, but not limited to, working with landowners to develop a management plan or project design to benefit big game and habitat on their lands, determining what species, including at-risk species, are on their land and which would benefit from habitat improvements or protection, and informing them about the types of financial assistance programs that are available.

Department staff also provides technical assistance to numerous land management agencies, city and county agencies, and non-profits throughout the larger habitat landscape. Some of these include the BLM, USACE, City of Boise, ACHD, ITD, Harris Ranch Wildlife Mitigation Association, Idaho Fish and Wildlife Foundation, and the Boise River Wildlife Linkage Partnership. The following are just some of the projects that have occurred since 2008 for the preservation, maintenance and enhancement of this Conservation Target Landscape:

1. Coordinated with BLM on vegetation rehabilitation planning and implementation for the 2013 Pony, Elk, and Hilltop fires.
2. Supported USACE efforts to remove unnecessary fencing to protect wildlife; reviewed Lydle Gulch Disk Golf Plan.
3. Oversaw the purchase of Hammer Flat from the City of Boise; assisted with the revision of Boise City's Foothills Open Space Plan; worked with Ridge to Rivers to inform the public when trapping season is open.
4. Worked in conjunction with ITD to determine where the SH-21 Wildlife Underpass should be placed to maintain wildlife habitat connectivity; assisted in the collection and reporting of road kill mortality on SH-21.
5. Managed Maynard Gulch as part of the BRWMA (bestowed upon the Department by the Idaho Fish and Wildlife Foundation) and maintained it as a wildlife movement corridor.

Additionally, Department staff has also worked with the City and housing developers on the creation of primary and secondary wildlife movement corridors on Warm Springs Avenue, coordinated with private landowners to protect appropriate wildlife habitat through conservation easements, trained and supervised volunteers to conduct big game surveys on the WMA, strictly enforced off-road vehicle use to designated routes to minimize disturbance to wildlife especially during the winter months, conducted numerous land exchanges that will benefit wildlife, and acquired funding for additional wildlife exclusion fencing for the wildlife underpass on SH-21.

Shrub-steppe Habitat Landscape

In the late 1800s and early 1900s, frequent fires and grazing eliminated much of the native shrub community of bitterbrush, big sagebrush, and perennial grasses found in the area. Today, many areas within the WMA and the larger landscape contain an overabundance of undesirable weeds and invasive plants such as cheatgrass, medusahead, and rush skeletonweed. After many years of effort, some of the shrub-steppe habitat on the WMA and surrounding lands has been preserved, protected and enhanced, but much more effort is needed to maintain a healthy and viable wildlife population.

In order to maximize the effort that is needed for the preservation, maintenance, and enhancement of the lands outside of the BRWMA, Department staff provides technical assistance to private landowners. This assistance comes in many forms including providing guidance to landowners about the benefits and types of improvements that can be done on their property to increase the value of the land for themselves and for wildlife, and to help determine which program or combination of programs will best fit their needs. There are also several NRCS programs available that provide financial and technical assistance to private landowners

who want to enhance wildlife habitat in areas that have been impacted by agricultural activities. One of these programs is the Environmental Quality Incentives Program. This program focuses on agricultural producers who have natural resource concerns and would like to improve water and air quality, conserve ground and surface water, reduce soil erosion and sedimentation, or improve or create wildlife habitat on their property.

Department staff also provides technical assistance to numerous land management agencies, city and county agencies and non-profit organizations throughout the larger habitat landscape. Since the greater landscape is an arid mountain desert environment with shallow soils and frequent fires, shrub-steppe habitat restoration is extremely difficult. Therefore, in order to preserve, maintain, and enhance the landscape, numerous habitat restoration projects have taken place since 2008. The following are just some of the projects that have occurred since 2008 for this Conservation Target Landscape:

1. Planted over 50,000 shrub seedlings annually both off and on the WMA.
2. Assisted BLM with Wildlife Urban Interface planning; conducted seeding efforts in fire damaged areas.
3. Supported USACE efforts to rehabilitate Turner Gulch after wildfire.
4. Oversaw the implementation of vegetation surveys on Hammer Flat, BLM, and USACE lands.
5. Strictly enforced off-road vehicle use to designated routes to minimize disturbance to vegetation and reduce erosion.
6. Conducted and assisted in weed management activities.

In the future, staff will work in conjunction with the National Inter-Agency Fire Center, other land management agencies, private landowners, and public transportation departments to design and implement a fire prevention plan to limit the number of acres of shrub-steppe habitat that is lost from wildfires each year. In the summer of 2013 alone, there were four fires that impacted over 2,000 acres of land owned or managed by the Department.

Riparian Habitat Landscape

Boise River WMA is located along the uppermost section of the lower Boise River watershed. The lower watershed includes approximately 1,450 mi^2 or 35% of the entire Boise River watershed (USACE 1988). The lower Boise River watershed originates at the Lucky Peak Reservoir, roughly 65 miles upstream from where the Boise River and Snake River converge. Downstream from its confluence with the South Fork, the Boise River flows west, and adds the major tributary of Mores Creek along SH-21, and passes through Lucky Peak Dam to emerge from the foothills southeast of Boise (Figure 5).

Even though the BRWMA is located within the Boise River watershed, surface water on the WMA is scarce due to past land management practices. Surface water is critical to the survival of many wildlife species, especially mule deer and elk. The streams and drainages on the WMA and the larger landscape support ephemeral and intermittent water flow, which helps maintain riparian areas that a variety of wildlife species depend on for survival. Riparian areas, or the

interface between the river and the upland, are composed of lush vegetation including black cottonwood, coyote willow (*Salix exigua*), golden currant (*Ribes aureum*), red-osier dogwood, Woods' rose, and many other species of plants. This vegetation component not only provides an additional source of forage for some wildlife species, but also thermal and screening cover. In addition, riparian areas also provide a source of fresh water for wildlife and a corridor that enables them to move along the river system. Furthermore, riparian areas also benefit humans by reducing the risk of flooding and stream bank/channel erosion and purifying water by removing sediments and other contaminants. Therefore, protecting, maintaining, and enhancing riparian habitat is critically important to all within the larger landscape.

The main goal of conserving these riparian areas are to maintain healthy functioning habitats that provide linkage and habitat continuity throughout the watershed. Therefore, Department staff provides technical assistance to private landowners. This assistance comes in many forms including providing guidance to landowners about the benefits and types of improvements that can be done on their property to increase the value of the riparian habitat for themselves and for wildlife and to help determine which program or combination of programs will best fit their needs. There are several programs available that provide financial and technical assistance to private landowners who want to enhance riparian areas on their land. One of these programs is the Natural Resources Conservation Tax Credit. This program provides income tax credits in exchange for habitat improvement or restoration on riparian habitat, and habitat for threatened, endangered, or sensitive plants or animals.

Department staff also provides technical assistance to numerous land management agencies, city and county agencies, and non-profits throughout the larger habitat landscape. Since the water quality and riparian habitat on the BRWMA is influenced by riparian habitat conditions throughout the watershed, staff work in conjunction with others to preserve, maintain, and enhance these areas. Additionally, several projects will be conducted in the future that focuses on this Conservation Target Landscape including:

1. Map and assess the quality of riparian areas within the BRWMA; provide data to appropriate land management agencies.
2. Re-vegetate riparian areas within the BRWMA to create additional thermal cover for wildlife, especially mule deer and elk, and to reduce erosion/flooding and protect water quality.
3. Continue current grazing management practices to protect and perpetuate quality vegetation needs; provisions for fencing or other means of exclusion will be utilized.
4. Create a minimum 100-foot buffer zone from the edge of any riparian habitat to protect vegetation from off-road vehicle use.

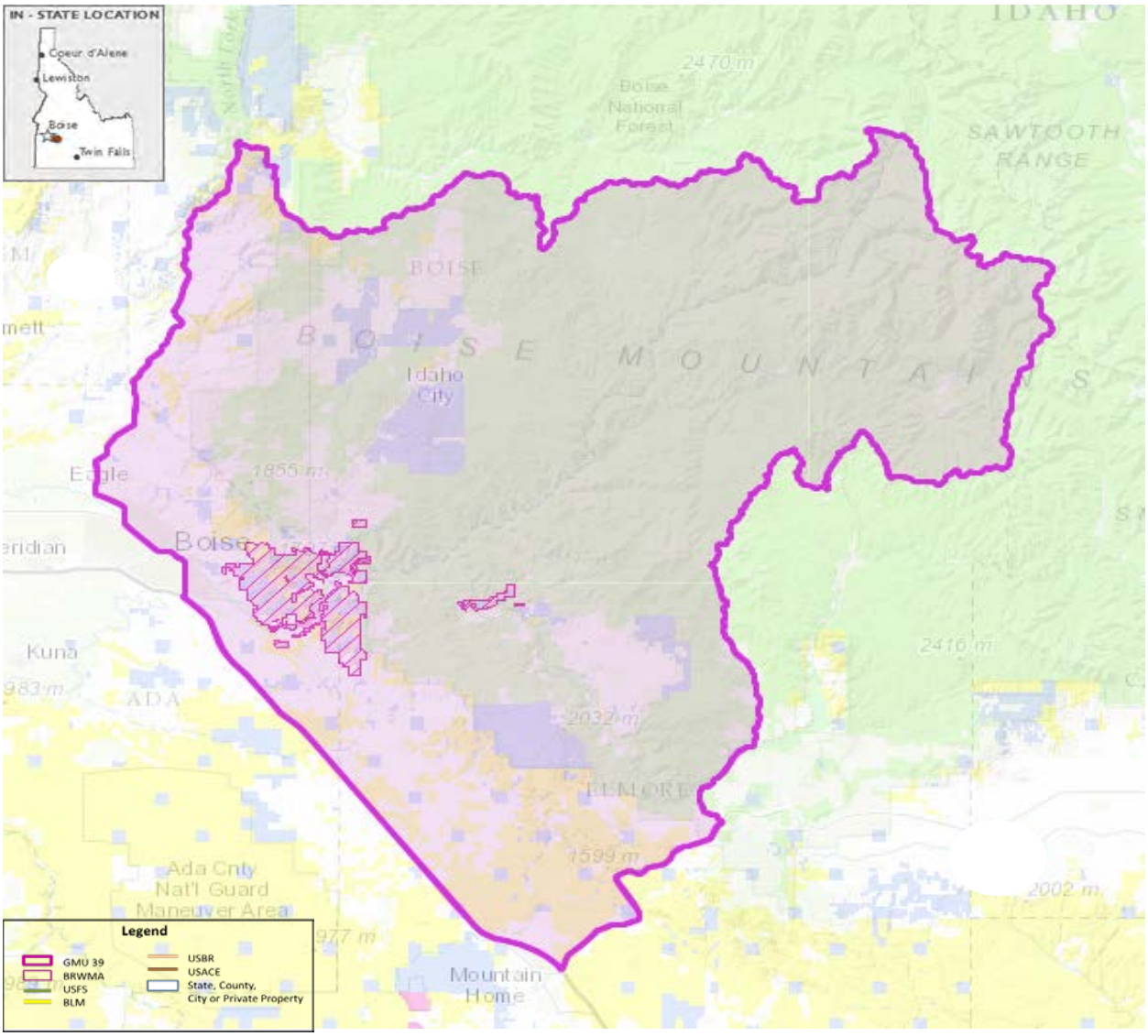

Figure 4. Map of public and private lands that comprise the mule deer, elk, shrub-steppe, and riparian Conservation Targets landscape.

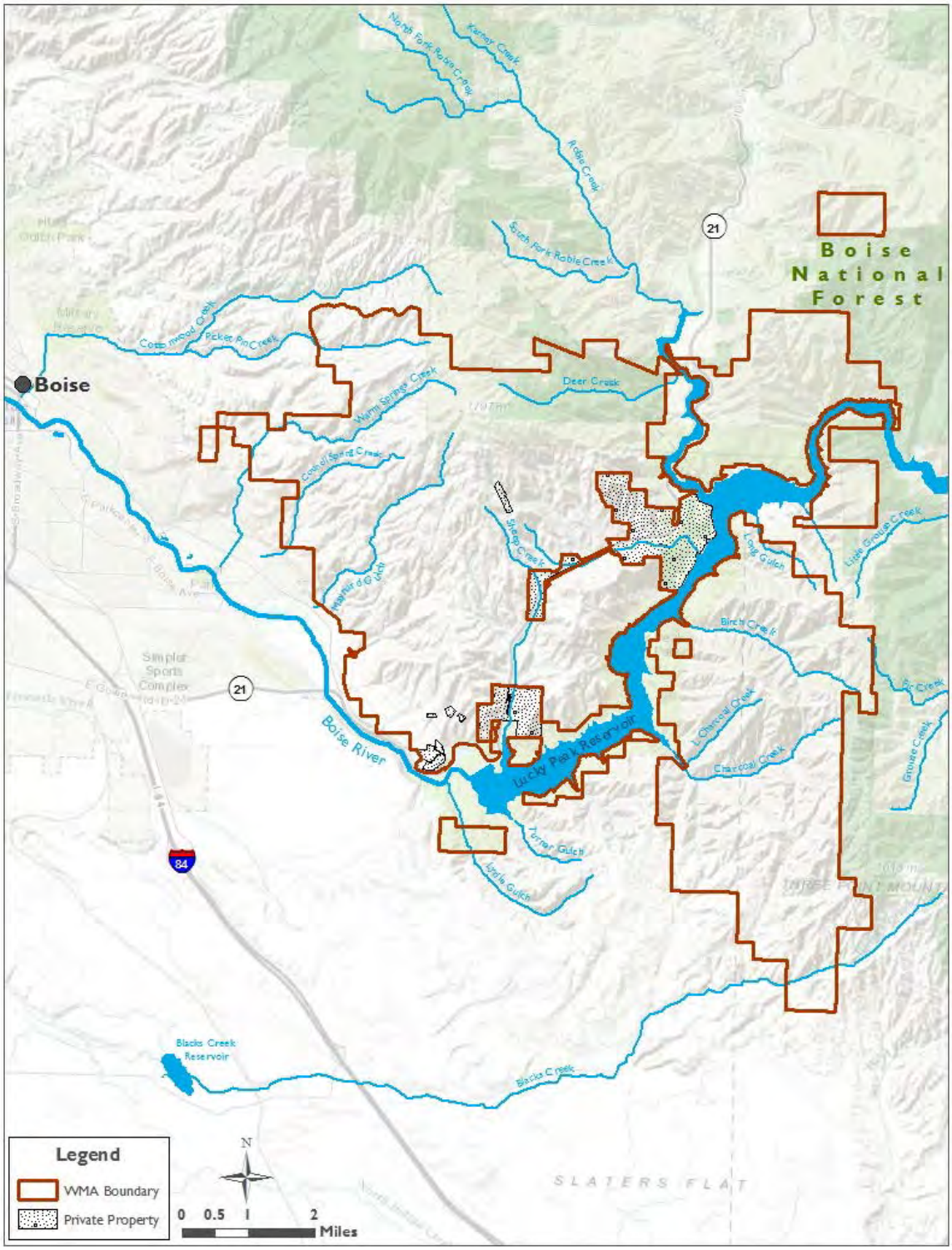

Figure 5. Map of the Boise River watershed and its association with the Boise River WMA and the surrounding landscape.

Boise River WMA Management Program Table

The following table outlines the Management Directions, Performance Targets, Strategies, and Outcome Metrics BRWMA staff will use to manage for the Conservation Targets selected (page 61) to represent each BRWMA Priority (page 44) at both the BRWMA and Conservation Target-specific landscape scale. The last section of the table outlines strategies that will be used to increase our knowledge of the Conservation Needs identified in the Conservation Target coverage assessment (Table 2). The Compass Objective column links the Management Directions in this table to the objectives of the Department's strategic plan, *The Compass* (Appendix I).

WMA Priority: Big Game Habitat					
Conservation Target: Mule Deer and Elk					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide high quality, secure winter range for migratory mule deer and elk	Conduct at least one management project on Hammer Flat/Sandy Point property by 2019 to increase knowledge of wildlife/vegetation/ habitat condition to improve winter range	Create database and GIS layer of all known weed occurrences, treatment plans and results of control efforts	Projects Completed	A, B, C, D, K
			Survey high priority weed locations to detect new occurrences annually		
			Annually monitor big game use from December to April		
			Annually monitor bird use from April to November		
			Establish/continue vegetation monitoring and photopoints to learn about the ecological responses that habitat has to land management practices, to document current condition of critical habitats and to evaluate ecological changes over time		
		Conduct at least two management projects on the Boise Front by 2019 to increase knowledge of wildlife/vegetation/habitat condition to improve winter range	Create database and GIS layer of all known weed occurrences, treatment plans and results of control efforts		
			Survey high priority weed locations to detect new occurrences annually		
			Conduct mule deer herd composition counts in December		
			Revisit vegetation photopoints to learn about the ecological responses that habitat has to land management practices, to document current condition of critical habitats and to evaluate ecological changes over time		
		Conduct at least one management project on the Charcoal Creek Segment by 2019 to increase knowledge of wildlife/vegetation/habitat condition to improve winter range	Create database and GIS layer of all known weed occurrences, treatment plans and results of control efforts		
			Survey high priority weed locations to detect new occurrences annually		
			Establish/continue vegetation monitoring and photopoints to learn about the ecological responses that habitat has to land management practices, to document current condition of critical habitats and to evaluate ecological changes over time		
		For the next 10 years, annually restore shrubs, grasses, and forbs on 25 acres of degraded, poor quality habitat on Hammer Flat/ Sandy Point property determined by condition assessments	Provide critical winter forage and cover by planting shrub seedlings (e.g., sagebrush, bitterbrush and rabbitbrush)	Acres Improved	
			Restore native perennial grasses (e.g., bluebunch wheatgrass) and forbs (e.g., wildflowers) in highly degraded areas		
			Incorporate green strips into landscape to minimize the impact that wildland fires may have on high quality winter range		
			Utilize chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the expansion of established weeds to improve the overall health of the habitat		

WMA Priority: Big Game Habitat					
Conservation Target: Mule Deer and Elk					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide high quality, secure winter range for migratory mule deer and elk	Annually restore shrubs, grasses, and forbs for the next 10 years on 50 acres of degraded, poor quality habitat on the Boise Front Segment determined by condition assessments	Provide critical winter forage and cover by planting 3,000 shrub species (e.g., sagebrush, bitterbrush and rabbitbrush)	Acres Improved	A, B, C, D, K
			Restore native perennial grasses (e.g., bluebunch wheatgrass) and forbs (e.g., wildflowers) in highly degraded areas		
			Incorporate green strips into landscape to minimize the impact that wildland fires may have on high quality winter range		
			Utilize sheep grazing to manage invasive weeds (i.e., hoary cress)		
			Utilize chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the expansion of established weeds to improve the overall health of the habitat		
		For the next 10 years, annually restore shrubs, grasses, and forbs on 25 acres of degraded. Poor quality habitat on the Charcoal Creek Segment determined by condition assessments	Provide critical winter forage and cover by planting 2,000 shrub species (e.g., sagebrush, bitterbrush and rabbitbrush)		
			Restore native perennial grasses (e.g., bluebunch wheatgrass) and forbs (e.g., wildflowers) in highly degraded areas		
			Utilize chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the expansion of established weeds to improve the overall health of the habitat		
		Manage public access on 100% of winter range yearly to minimize mule deer and elk energy expenditure to improve winter survival (Boise Front and Spring Shores – Jan 1 to May 1 Closed to All Entry ; Charcoal Creek Segment - Jan 1 to Aug 31 Closed to Motorized Access)	Close the Boise Front and Spring Shores Segment of the BRWMA from all entry and the Charcoal Creek Segment of the BRWMA from motorized vehicles to protect wintering big game	Violations Detected	
			Ensure all BRWMA gates and designated routes are closed to public motorized travel from January 1 until May1 of each year		
			Maintain weekly BRWMA personnel presence during the winter to enforce closures		
			Track unauthorized use on the BRWMA; evaluate and modify closure areas to prevent unauthorized uses and minimize disturbance to big game		
			Confirm proper signage is in place (on roads, trailhead kiosk, boundaries) to inform public of access restrictions		
		Conduct at least one management project on Hammer Flat/Sandy Point property by 2019 to increase knowledge of wildlife/vegetation/habitat condition to improve year-round range	Establish/continue vegetation monitoring and photopoints to learn about the ecological responses that habitat has to land management practices, to document current condition of critical habitats and to evaluate ecological changes over time	Projects Completed	A, B, C, D, F, K
			Create database and GIS layer of all known weed occurrences, treatment plans and results of control efforts		
		Conduct at least two management projects on the Boise Front Segment by 2019 to increase knowledge of wildlife/vegetation/habitat condition to improve year-round range	Inspect, map and evaluate boundary fence to determine condition; if necessary replace for livestock use or remove to reduce impact on big game		
			Evaluate developed springs for their ability as livestock or big game water sources; those that are no longer needed will be removed		
			Create database and GIS layer of all known weed occurrences, treatment plans and results of control efforts		
			Classify riparian habitats and document condition, noxious weed infestations, livestock impacts, and target species occupancy		

WMA Priority: Big Game Habitat					
Conservation Target: Mule Deer and Elk					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide high quality, secure winter range for migratory mule deer and elk	Conduct at least one management project on the Charcoal Creek Segment by 2019 to increase knowledge of wildlife/vegetation/ habitat condition to improve year-round range	Inspect, map and evaluate boundary fence to determine condition; if necessary replace for livestock use or remove to reduce impact on big game	Projects Completed	A, B, C, D, F, K
			Evaluate developed springs for their ability as livestock or big game water sources; those that are no longer needed will be removed		
			Create database and GIS layer of all known weed occurrences, treatment plans and results of control efforts		
			Create database and GIS layer of property watershed and document condition		
			Classify riparian habitats and document condition, noxious weed infestations, livestock impacts, and target species occupancy		
		For the next 10 years, annually restore shrubs, grasses, and forbs on 25 acres of degraded, poor quality habitat on Hammer Flat/ Sandy	Utilize chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the expansion of established weeds to improve the overall health of the habitat		
		Annually restore shrubs, grasses, and forbs for the next 10 years on 50 acres of degraded, poor quality habitat on the Boise Front Segment determined by condition assessments	Utilize chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the expansion of established weeds to improve the overall health of the habitat	Acres Improved	
			Enhance riparian habitat through planting of 200 willow/shrubs		
		Annually restore shrubs, grasses, and forbs for the next 10 years on 25 acres of degraded, poor quality habitat on the Charcoal Creek Segment determined by condition assessments	Utilize chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the expansion of established weeds to improve the overall health of the habitat		
			Enhance riparian habitat through planting of 200 willow/shrubs		
		Manage public access on an annual basis on year-round range to minimize disturbance to mule deer and elk	Maintain weekly BRWMA personnel presence		
			Ensure all BRWMA gates and designated routes are properly signed and non-designated routes are minimized to prevent habitat disturbance and erosion		
			Track unauthorized use on the BRWMA; evaluate and modify closure areas to prevent unauthorized uses and minimize disturbance to big game		
			Confirm proper signage is in place (on roads, trailhead kiosk, boundaries) to inform public of access restrictions		
			Collect and maintain pedestrian trail use data to determine long-term use by public	Violations Detected	
			Maintain weekly BRWMA personnel presence to enforce Department regulations		
			Track unauthorized activity use on the BRWMA; evaluate and modify areas to prevent use and reoccurrence (e.g., illegal dumping, unauthorized routes)		
			Ensure proper signage is in place (on roads, trailhead kiosk and boundary) to inform the public of property regulations		
			Report all regulation violations on adjacent public lands; work with other agencies to improve access infrastructure		
Mule deer and Elk Landscape	Expand the BRWMA to provide a sufficient quantity of secure winter and year-round habitat to meet the needs of migrating and resident mule deer and elk	Acquire (or use conservation easement, leases or property transfers) at least 100 acres around and within the boundaries of the BRWMA to provide the resources wintering mule deer and elk require, to create a buffer zone around core winter range and to increase habitat connectivity by 2023	Develop a database and GIS map of all non-Department managed lands to create ranking criteria to prioritize properties and then rank them (current ownership, vegetation, perceived/potential habitat value)	Projects Completed	A, B, C, D, E, F, G, H, I, J, K, N
			Create a GIS map that identifies the boundary of the BRWMA, the buffer zone around core winter range and connectivity/wildlife corridors utilizing biological data and professional knowledge		
			Work with partner agencies to acquire funding for long-term habitat management		

WMA Priority: Big Game Habitat					
Conservation Target: Mule Deer and Elk					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Mule deer and Elk Landscape	Expand the BRWMA to provide a sufficient quantity of secure winter and year-round habitat to meet the needs of migrating and resident mule deer and elk	Provide yearly technical assistance to both private and public entities to mitigate for habitat loss, reduce mule deer and elk mortality and promote security for wintering game	Make available information and recommendations on how to mitigate for the impact a project may have on mule deer and elk and winter range (developers, city planners, county officials, homeowner associations, landowners)	Projects Completed	A, B, C, D, E, F, G, H, I, J, K, N
			Work with the Department's Landowner-Sportsman Coordinator and utilize landowner assistance programs (e.g., MDI, HIP) to help private landowners provide/improve winter range habitat and provide additional recreational opportunities	Projects Reviewed	
			Cooperate with Boise River Wildlife Linkage Partnership members to improve infrastructure and incorporate new technologies on roads to reduce wildlife-vehicle collisions		
			Assist landowners with management of high priority habitats determined in GIS assessment		
			Assist public managers in developing winter human entry, cross-country travel, or motorized travel restrictions to minimize disturbance and provide security to wintering mule deer and elk		
			Work with land management agencies and landowners to minimize damage of wildfires to wildlife habitat and rehabilitation of area		
			Continue assisting land management agencies and landowners with habitat connectivity projects (i.e., wildlife movement corridors/crossings)		
WMA Priority: Special Status Species Habitat					
Conservation Target: Shrub-steppe Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide high quality shrub-steppe habitat to benefit a wide range of fish and wildlife species	Establish 10% canopy coverage of shrubs on >500 acres of degraded shrub-steppe habitat by 2023	Seed and plant shrub seedlings on the BRWMA, especially those areas damaged by fire	Acres Improved	A, B, C. H. J, K, L, N
			Prioritize noxious weed control efforts in shrub-steppe habitats and control them using chemical, mechanical and biological methods		
			Determine WMA locations where fire is prone to occur; develop priority list and create green strip areas to prevent loss of acreage from fires	Projects Completed	
			Using input from Department Diversity Program staff, enhance shrub-steppe habitats to specific SGCN needs		
		Conduct at least two projects to increase knowledge of shrub-steppe condition, function, and methodology to improve shrub-steppe habitats by 2023	Reinstate photo point project on the BRWMA		
			Conduct monitoring of habitat restoration on Hammer Flat and Sandy Point properties		
		Minimize livestock trespassing on Charcoal Creek Segment yearly	Install fencing on east side of property and repair any fencing to stop trespassing		
			Work with neighboring land owners to quickly address trespassing issues		
		Identify other big game species that utilize shrub-steppe habitats on BRWMA by 2019	Determine habitat use and migration route of Pronghorn		

WMA Priority: Special Status Species Habitat					
Conservation Target: Shrub-steppe Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide high quality shrub-steppe habitat to benefit a wide range of fish and wildlife species	Identify SGCN that utilize shrub-steppe habitats on BRWMA by 2019	Create GIS layer of SGCN observations on or near BRWMA	Projects Completed	A, B, C. H. J, K, L, N
			Identify most frequent/prevalent SGCN on BRWMA; work with Department Diversity Program to identify habitat needs.		
			Support Department Diversity Program by conducting surveys for and reporting observations of SGCN.		
		Communicate and cooperate with agency managers and private land owners	Continue to represent Department at working groups and associations and provide technical assistance		
			Assist BLM with Wildlife Urban Interface and wildfire rehabilitation planning		
		Establish 10% canopy coverage of shrubs on >200 acres of degraded shrub-steppe habitat by 2023	Provide land management agencies and landowners with technical assistance in the implementation of seeding, planting and monitoring projects on their lands		
			Conduct seeding, planting and monitoring projects on other land management agency lands that we manage		
			Utilize chemical, mechanical, cultural, and biological methods on other land management agency lands that we manage to control noxious weed infestations and limit the expansion of established weeds		
			Strictly enforce off-road vehicle use to designated routes on other land management agency lands that we manage		
		Provide opportunity for USDA Agricultural Research Service to conduct biological research on the BRWMA that focuses on shrub-steppe habitat	Provide technical assistance and special use permits to outside agencies that would like to perform research projects on shrub-steppe habitat restoration		
WMA Priority: Special Status Species Habitat					
Conservation Target: Riparian Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide riparian habitat in good to excellent ecological condition to benefit a wide range of fish and wildlife species	Conduct at least two projects to increase knowledge of riparian area condition, function, and methodology to improve habitat by 2023	Map and rapidly assess the condition and function of riparian areas using Department protocols; provide data to appropriate land management agencies	Projects Completed	A, B, C. H. J, K, L, N
			Continue riparian photo point project on the BRWMA		
			Establish riparian monitoring transects as needed to measure effectiveness of restoration efforts		
		Restore 1 mile of riparian habitat in poor to fair ecological condition functioning and good to excellent condition by 2023	Re-vegetate riparian habitat with native trees and/or shrubs to create additional thermal cover for wildlife, stabilize streambanks, reduce erosion/flooding, and to protect water quality		
			Create a >16' wide buffer zone around any riparian habitat using wildlife friendly fencing to protect vegetation from off-road vehicles		
			Prioritize noxious weed control efforts in riparian habitats and control them using chemical, mechanical and biological methods		
		Protect and/or restore 10% of riparian habitat from incision/erosion by 2019	Install bioengineered streambank stability treatments on the BRWMA where necessary		

WMA Priority: Special Status Species Habitat					
Conservation Target: Riparian Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide riparian habitat in good to excellent ecological condition to benefit a wide range of fish and wildlife species	Prevent trespassing from livestock in riparian habitat to minimize their impact in areas of importance determined by riparian assessment by 2019	Construct wildlife friendly fencing where needed to exclude livestock from riparian habitat	Number of trespass cattle incidents	A, B, C. H. J, K, L, N
			Continue current grazing management practices to protect and perpetuate high quality native riparian vegetation		
		Minimize erosion and flooding at roads-creek crossings in areas of high priority determined in riparian assessment by 2023	Replace, repair or relocate non-functioning culverts or culverts with high erosion or flooding potential as needed	Project Completed	
Riparian Landscape	Provide riparian habitat in good to excellent condition in the greater landscape that will benefit a wide range of fish and wildlife species	Communicate and cooperate with agency managers and private land owners	Continue to represent Department at working groups and associations and provide technical assistance on riparian protection and restoration where needed	Projects Reviewed	
			Assist land management agencies and landowners to maintain, restore and establish a diverse mix of native riparian species on their lands and manage land use to minimize impacts to riparian areas		
		Partner with federal, state, and private landowners to improve the function and restore the condition of at least 0.75 miles of degraded streams on public lands by 2023	Assist with planting projects to re-establish native trees and shrubs in degraded riparian habitats		
WMA Priority: Wildlife-based Recreation and Education					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide opportunity for consumptive and non-consumptive wildlife-based recreation	Annually provide recreational hunting, fishing and trapping opportunities consistent with the BRWMA mission	Maintain the current level of public access (motorized and non-motorized) to provide recreational hunting, fishing and trapping opportunities	Number of days hunting, fishing and/or trapping	E, F, G, H, I, J, K, M
			Increase Department staff presence to curtail illegal activities (e.g., illegal harvest, motor vehicle use, littering) that diminish the recreation for law abiding sportsmen and sportswomen		
			Evaluate hunter congestion if occurring and, if action is warranted, evaluate the feasibility of limiting access to relieve congestion and improve hunting, fishing and trapping experiences		
			Continue expanding collaborations with landowners to provide recreational hunting, fishing and trapping opportunities on private land for sportsmen and sportswomen		
			Provide information to and opportunities for sportsmen and sportswomen to be involved in the decision making process		
			Maintain access infrastructure for recreational hunting, fishing and trapping (signage, gates, fences, parking, designated routes)		
			Afford hunters, anglers and trappers the opportunity to view and appreciate wildlife utilizing the BRWMA		
			Provide maps, Department regulations and interpretive materials at the BRWMA headquarters and access kiosks		
			Monitor public use and satisfaction with the BRWMA user survey	Project Completed	

WMA Priority: Wildlife-based Recreation and Education					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BRWMA	Provide opportunity for consumptive and non-consumptive wildlife-based recreation	Provide annual non-consumptive wildlife-based recreation opportunities consistent with the BRWMA mission	Maintain the current level of public access (motorized and non-motorized) to provide non-consumptive wildlife-based recreational opportunities	Number of days non-consumptive wildlife-based recreational activities	G, H, J
			Increase Department staff presence to curtail illegal activities (e.g., illegal motor vehicle use, littering, dogs off leash) that diminish the recreation for law abiding citizens		
			Make opportunities available for non-consumptive recreationists to be involved in the decision making process		
			Afford non-consumptive recreationists the opportunity to view and appreciate wildlife utilizing the BRWMA		
			Continue to work with the Idaho Bird Observatory to provide quality wildlife education opportunities on the BRWMA		
			Provide maps, Department regulations and interpretive materials at the BRWMA headquarters and access kiosks		
			Monitor public use and satisfaction with the BRWMA user survey	Project Completed	
	Provide opportunity for wildlife-based education	Offer educational projects or programs compatible with the BRWMA mission by2023	Recruit and train volunteers to assist Department staff in 1-5 wildlife or habitat projects on the BRWMA each year (e.g., wildlife surveys, shrub planting and seeding, fencing maintenance)	Number of volunteer hours contributed	K, L
			Conduct presentations or provide short-term projects to local organizations or groups (e.g., schools, HOAs and scouts)		
			Oversee 1-3 projects conducted by interns on the BRWMA per year (e.g., vegetation, riparian and watershed monitoring)	Number of intern projects completed	
			Permit wildlife research on the BRWMA (e.g., Idaho Bird Observatory, Boise State University and USDA-ARS)		
		Provide public with information about the BRWMA, the Department and local items of importance annually	Install and maintain educational signage on the BRWMA (e.g., Hammer Flat)	Number of signs maintained, website visits & contacts made	
			Make available information on Department land use rules, hunting, fishing and trapping regulations, wildlife, habitat and mitigation		
			Inform planners and developers about project impacts to wildlife and habitat ad how to avoid or mitigate the impacts		
	Maintain safe, reliable and presentable working infrastructure for Department staff and recreational infrastructure for the public	Maintain BRWMA building infrastructure on a yearly basis	Inspect all buildings each year and make necessary repairs	N/A	M
			Maintain the BRWMA headquarters office, yard and parking areas in a safe and clean manner		
			Submit requests for capital outlay improvements to facilities for major repairs/renovations as needed		
			Complete all improvements annually as required by the state safety inspector	Documented response by inspector	
		Maintain BRWMA designated routes and parking areas biennially	Repair and maintain designated routes on the BRWMA as needed	N/A	
			Repair and maintain parking areas as needed		
			Remove all trash illegally dumped on the BRWMA as needed		
		Annually maintain BRWMA access infrastructure	Inspect, maintain and replace access gates and fences as necessary		
			Operate trail and vehicle counters at access areas		
			Inspect, maintain and update/replace access signage as necessary		
			Evaluate effectiveness of access infrastructure in program goals; modify locations and types of infrastructure to address problems		

Monitoring

Monitoring and reporting are critical for tracking accomplishment of performance targets identified in the BRWMA Management Program Table. Monitoring can be separated into three categories: compliance monitoring, biological monitoring, and public use monitoring.

Compliance Monitoring

Compliance monitoring documents the completion of regular management tasks that are essential to WMA operations. These include but are not limited to:

- Maintaining WMA facilities and access sites
- Maintaining infrastructure at ponds and wetlands
- Providing technical assistance to local agency staff and private landowners
- Maintaining public access sites

Compliance monitoring will be reported annually at work plan meetings between regional and headquarters staff.

Biological Monitoring

Wildlife Management Areas across the state have a range of established biological monitoring programs and needs. Additional monitoring needs may have been identified during development of the BRWMA Management Program Table. Biological monitoring includes wildlife, vegetation, and habitat monitoring. It may also include assessing the effectiveness of management and restoration activities. Monitoring may occur at multiple spatial and temporal scales, depending on objectives. Currently, biological monitoring is conducted on the following Target Species Habitats:

Elk and Mule Deer

Over 7,000 mule deer and 1,200 elk migrate to the BRWMA every winter. In addition, over 500 resident deer live in the Barber Valley year-round. During December of each year, Department staff conduct herd composition counts and aerial surveys to record the number of deer and elk utilizing the WMA. These counts are conducted by BRWMA staff on the Boise Front and Spring Shores Segments of the WMA. In addition, aerial surveys steered toward determining elk and mule deer population numbers, bull to cow to calf and buck to doe to fawn ratios. Finally in order to determine harvest rates of elk and mule deer on the BRWMA, visitor use surveys are provided to hunters, and check station stops are held.

Shrub-steppe Habitat

Plant communities and the soil that supports them form the foundation upon which wildlife diversity and the health of game populations are based. They provide food and cover necessary

for the survival and reproduction of all wildlife. Plant communities are not static; they change over time in response to climatic conditions, land uses, and management practices. Range and wildlife managers must be aware of, and responsive to, changes in the ecosystems being managed. Effective range management requires an understanding of ecosystem processes and knowledge of current conditions and trends. Therefore, biologists have used the Manual for Grassland, Shrubland, and Savanna Ecosystems, Idaho Department of Lands Habitat Monitoring Protocol, Volumes I and II, to conduct monitoring on two parcels of land owned by the Department that were impacted by fire, Hammer Flat and Sandy Point. Vegetation and noxious weed monitoring were conducted using transects and photo points on these properties. These transects are in areas representative of habitat and plant community types present on the BRWMA and have been placed to include a diversity of elevational and topographic ranges.

In Table 3, future monitoring needs associated with performance targets and strategies identified in the BRWMA Management Program Table are summarized. The goal is to measure success or effectiveness of strategies that are implemented to reach performance targets. A detailed monitoring plan including specific techniques will be completed for the BRWMA by December 31, 2014.

In 2010, the Department initiated a statewide, long-term habitat monitoring program for all WMAs. The goal of the program is to collect quantitative and comparable baseline data to monitor habitat change on all WMAs due to management actions or other causes. The baseline data collected will be specific to each WMA, based on the habitat types present and its unique management issues. All data collected during the monitoring will be reported to the Department or to the appropriate land agency. Baseline data typically includes:

- Distribution and extent of cover types, including mapping of vegetation cover types, including noxious weeds
- Vegetation structure, composition, and condition
- Presence or abundance of noxious weeds and other invasive plants
- Riparian and wetland condition and function assessment
- Photo points

To date, this program has collected baseline data on five WMAs, with surveys of all 32 WMAs expected to be completed by 2019. This is a long-term program and will be repeated starting in 2020.

Public Use Monitoring

Wildlife Management Areas use public surveys and monitoring tools (e.g., traffic counters) to evaluate public satisfaction and use patterns as well as identify issues of concern. In some areas, hunter check stations monitor hunter success and satisfaction. These survey data help managers determine whether they are meeting the goals for the WMA.

Most recently, Visitor Use Surveys were provided to WMA users to monitor the level of public satisfaction with the properties management of wildlife and habitat conservation, and

recreational opportunities. These surveys were conducted at access points for all categories of WMA user types (e.g., bikers, hunters, hikers, OHVs). In total, 156 surveys were collected, 123 online and 33 on paper (Appendix IV).

In addition, trail counters and traffic counters have been installed at all parking areas and trailheads to determine the number of people utilizing the property. The data from these counters are then used to determine the total number of users on the property per year, the time of day most frequented, and size of visiting groups.

Over the next 10 years, BRWMA staff would like to evaluate user congestion on the WMA and if occurring, if action is warranted, evaluate the feasibility of limiting access to relieve overcrowding and improve hunting, fishing, and trapping opportunities. Furthermore, it is imperative that monitoring of the level of public access from non-wildlife based recreationists be conducted and findings be evaluated to determine if additional actions are needed to protect wintering mule deer and elk.

Reporting

Each WMA will produce a five-year report on implementation of this WMA plan in 2019, including a summary of accomplishments and progress towards meeting performance targets. During the five-year review, WMA staff will determine whether modifications to the plan are needed to meet performance targets, to accommodate changing conditions and priorities, or to incorporate advancements in management knowledge and techniques.

Table 3. Biological monitoring for Boise River WMA, 2014-2023.

Performance Target	Survey Type	Survey Frequency
By 2019, increase monitoring effort of shrub-steppe habitat on Hammer Flat and Sandy Point by 50%	Vegetation sampling (composition, cover and structure)	Annually
By 2019, increase photo monitoring of shrub-steppe and riparian habitats on WMA by 50%	Photo points	Every 2 years beginning in 2016
By 2023, assist other land management agencies with monitoring of lands damaged by fire that BRWMA manages by 20%	Vegetation sampling (composition, cover and structure) and photo points	Every 5 years beginning in 2016
By 2019, increase monitoring effort of riparian habitat on WMA by 50%	Vegetation sampling (composition, cover and structure)	Annually

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Appendices

I. THE COMPASS – THE DEPARTMENT'S STRATEGIC PLAN

In 2006, the Department completed a strategic plan—*The Compass*—based on public input and legislative mandates. It continues to guide the Department in 2014 and is the primary guiding document for all other Department plans developed since 2006. The following table presents the goals, objectives, and strategies from *The Compass* that are most relevant to WMA management. *Compass* objectives are lettered on the left side for reference in the Management Program Table.

The Compass
GOAL—Fish, Wildlife, and Habitat
A. Objective – Maintain or improve game populations to meet the demand for hunting, fishing, and trapping.
B. Objective – Ensure the long-term survival of native fish, wildlife, and plants.
C. Objective – Increase the capacity of habitat to support fish and wildlife.
D. Objective – Eliminate the impacts of fish and wildlife diseases on fish and wildlife populations, livestock, and humans.
GOAL—Fish and Wildlife Recreation
E. Objective – Maintain a diversity of fishing, hunting, and trapping opportunities.
F. Objective – Sustain fish and wildlife recreation on public lands.
G. Objective – Maintain broad public support for fish and wildlife recreation and management.
H. Objective – Increase opportunities for wildlife viewing and appreciation.
I. Objective – Increase the variety and distribution of access to private land for fish and wildlife recreation.
GOAL—Working With Others
J. Objective – Improve citizen involvement in the decision-making process.
K. Objective – Increase public knowledge and understanding of Idaho's fish and wildlife.
GOAL—Management Support
L. Objective – Attract and retain a diverse and professional workforce.
M. Objective – Provide equipment and facilities for excellent customer service and management effectiveness.
N. Objective – Improve funding to meet legal mandates and public expectations.

II. HISTORY

The Boise River Wildlife Management Area (BRWMA) has been utilized by humans for thousands of years. Over 4,500 years ago, the ancient Great Basin Shoshone peoples (Shoshone and Bannock-Paiute tribes) used the WMA lands for hunting and fishing. These tribes used areas such as Council Springs (formerly Squaw Creek) drainage for a wintering area and the property below Lucky Peak Dam as a salmon fishing site. Artifacts of this historic occupation have been discovered on and near the WMA.

Additional historic visits have also been noted in the area. In 1811, the Astor party came to Boise to trap for fur. In 1843, John Fremont and his party explored the Boise River. During the 1830-1850s, the Oregon Trail passed within a short distance of the WMA, allowing the travelers with a place to graze their livestock.

In 1862, gold was discovered in the Boise River region and the Idaho City Basin. This brought active mining to the area. Mines such as Black Hornet, Adelman, Iron Wheel, Queens, Centennial, and several other un-named mines were operated until the 1940s. The 1864 toll road that led to the Idaho City gold field passed near WMA lands. Today, the only active mine left on the property is the Adelman. Most of the old mining sites have long been abandoned, although some mining occurs in the clay soils of Council Springs/Squaw Creek for manufacturing bricks.

To support mining activities, farming and ranching operations sprang up in and around the BRWMA. Many old ranching homestead sites can be found on the WMA including Gabaloia, Percy, Pringle, Mace, Smith, White, Palmatier, Seeley, McDonald, and Kirk. The Barber Lumber Mill city and lumber complex were also present during this time and influenced many activities on the WMA.

By 1863, grazing by cattle and sheep on the Boise Front segment intensified as the City of Boise was built and expanded. Livestock numbers increased in 1868 when Fort Boise was established and again in the 1890s when the Fort Boise Military Reservation was established. Unauthorized and often excessive livestock grazing was common on the Boise Front segment until the property was purchased by the Department for mule deer winter range.

In 1943, over 2,000 acres of land near the mouth of Mores Creek was purchased by the Department to provide winter range for mule deer and to produce hay for winter-feeding operations along the Middle Fork of the Boise River. This land acquisition was the first of many that created the BRWMA (Game Management Unit 39) and began the process of permanently protecting critical winter range utilized by big game species.

A portion of winter range and some WMA lands were flooded with the completion of the Lucky Peak Dam and the filling of the reservoir in 1955. In addition, major deer migration routes on the property were bisected by the reservoir. To compensate for this loss, the U.S. Army Corps of Engineers set aside property around Lucky Peak Lake as mule deer winter range, managed by the BRWMA. Although deer have modified their migration routes since that time, some still swim

across portions of Lucky Peak Lake to reach the Charcoal Creek segment. The stress associated with this event is often severe during winter.

Between 1948 and 1956, land acquisitions were conducted with the Taylor, Rose, Peer, Kirk, and McDonald families. These ranches were located in the Trail Creek, Jackass Creek, and Corral Creek areas and along the Boise River. The Taylor, Rose, and Peer ranches were traded to the USFS in 1995. Major land purchases were also made in the 1960s and 1970s in the Charcoal Creek and Boise Front segments. Additional land acquisitions and exchanges occurred in 1993, 1999, 2004, and 2006.

In 1959, following a wildfire that burned portions of the Boise Front segment, two severe rainstorms caused flash flooding and mudslides in North Boise. These events emphasized the need for sound watershed management throughout the foothills to protect human life and property in the city. In the early 1960s, contour trenches were built on the slopes of Picket Pen and Warm Spring drainages to minimize damage to the city from future flash floods. These horizontal lines are still visible in the foothills. Since bare ground and weeds offer little protection from heavy rain, all the lands in the BRWMA are managed with an emphasis on watershed quality. Perennial plants that stabilize soils and hold moisture have been planted every year on the WMA since 1960. The results of this management philosophy are better flood protection and quality habitat for wildlife.

In 2012, the Department acquired Hammer Flat, a 705-acre parcel owned by the City of Boise. This property is the largest undeveloped low elevation property near the BRWMA. It is a natural wintering area for mule deer, elk, and pronghorn during severe winters when deep snow covers higher elevations on the WMA. This acquisition was one of the most significant for wildlife in Ada County. In that same year, the Department purchased an additional 137 acres of low elevation critical winter range referred to as Sandy Point. These two acquisitions were highly complementary to the mission of the BRWMA.

III. MANAGEMENT REQUIREMENTS AND AUTHORITIES

Federal funds, including those derived from the Land and Water Conservation Fund and USFWS Federal Aid Program, have been used in part to acquire and manage BRWMA lands. Certain activities are prohibited from funding with Federal Aid funds, and all provisions of Federal Aid funding are followed.

Other federal and state laws also affect management of BRWMA. The Department has responsibility under provisions of the Endangered Species Act to ensure that management actions protect threatened and endangered species, and responsibility under the Clean Water Act to ensure that water quality standards and guidelines are in place on BRWMA lands and waters. Under the National Historic Preservation Act, the Department must ensure that historic properties are protected on BRWMA.

The Idaho Noxious Weed Law under Idaho Code 22-2405 requires all landowners to eradicate noxious weeds on their lands, except in special management zones. The counties are required to enforce the law and the State of Idaho is required to ensure the counties do so.

Consistent with Idaho Codes 38-101 and 38-111, and through a cooperative agreement with the Idaho Department of Lands, the Department is required to pay a fee for fire protection on all forest and some rangeland acreage it owns, and for residences in forest areas. Fees are submitted annually based on the number of qualified acres and residences owned by the Department.

The Department is required by Idaho Code 63-602A to pay a fee-in-lieu of taxes (FILT) for lands that are owned by the Department and meet certain code requirements. These fees are submitted annually to affected counties based on the number of qualifying acres and agricultural tax rates.

IV. PUBLIC INPUT SUMMARY AND VISITOR USE DATA

The following is a list of issues mentioned by members of the public at the open house meetings or in written comments:

1. Habitat Management
   a. Enhance desirable shrub species
   b. Increase quantity and quality of vegetation in riparian areas
   c. Control noxious weeds
   d. Reduce impact of wildfires on wildlife habitat
   e. Reduce impact of barbed-wire fencing on wildlife
   f. Improve livestock management
   g. Reduce impact of urban encroachment on wildlife and wildlife habitat ("I like that this critical wintering habitat is protected").

2. Wildlife Management
   a. Improve game populations ("increase tag numbers/late season archery; plant more birds/improve habitat/post info about birds in area/ three birds per week rather than two per day; reduce hunting pressure by opening up triangle/limit hunting access b/c of pressure; allow hunting access for upland birds and geese to Hammer Flat; late season deer hunts and doe hunts; trapping and hiking with kids do not mix -traps are scary and dangerous and NO warning")
   b. Road kill mortality
   c. Predator management ("eliminate wolves")
   d. Allow trapping on WMA

3. Public Use Management
   a. Increase opportunities for wildlife viewing and appreciation ("how people can help and how their actions affect the wildlife and ecology of a place; value of habitat to birds; good places to look for birds "IDFG pays no attention to people like me who are only interested in birding"; information on lesser known species like trees, insects, amphibians, and bats")
   b. Involve public in planning and management process ("more public meetings/open forums")
   c. Inform users about hunting, fishing, and trapping opportunities ("move back access points so hunters are out of public eye; inform non-hunting recreationists that hunting license fees funded the WMA - bikers/hiker are antagonistic towards hunters; give priority to hunters and fisherman")
   d. Provide learning opportunities about the Department, the BRWMA, its wildlife and wildlife habitat ("offer more opportunities for volunteering besides planting bitterbrush; host events for public")
   e. Increase, maintain, or limit hunter opportunities/alter hunting season structure to reduce hunter crowding ("limit the total number of people hunting; increase the tag numbers for the late Unit 39 archery hunt to allow for more hunting opportunities;

allow hunting access for upland birds and geese to Hammer Flat portion; increase dog training season of 1 month")

f. Allow more/less motorized vehicle access on designated routes ("open more roads to vehicles; limit/eliminate vehicle use earlier in year/less ATV use, close roads to motorized vehicles; OHV access to all areas on designated routes/roads only; improve access for handicapped hunters")
g. Improve maintenance of designated routes ("make parking lot bigger and improve road to it/more parking for unloading OHVs and more places to park and access the WMA; improve roads on Charcoal Creek Segment)
h. Provide better maps, signage, and boundary markers ("increased/better boundary markings/communication; develop a more detailed map/more website info/make WMA visible to Garmin GPS; clearly marked signs showing rules of the WMA - camping, fires etc.; entrance signs explaining OHV use and noxious weeds)
i. Increase enforcement/staff presence to enforce laws and curtail illegal activity ("greater enforcement with dog owners and unleashed dogs especially during hunting season and wintering areas; clean up after people")
j. Reduce impact that human activities have on wildlife/allow non-wildlife based recreation/ ("more bike/hike trails closer to town; close BRWMA seasonally to protect big game/protect habitat; manage more for non-consumptive uses -not hunting and fishing; have non-hunters purchase a permit to cover operating expenses/user fee; low impact use only/multiple use when wildlife not using area; limit non-traditional uses; take into consideration other recreational needs beside wildlife-based; recreational opportunities for people should be the priority; should be mountain bike single track trails, like the ridges to rivers system").

BOISE RIVER WILDLIFE MANAGEMENT AREA'S 2012 VISITOR USE SURVEY RESULTS

156 Total Surveys (135 online and 33 paper)

Idaho Resident? YES – 150 NO – 6

Ever Visited WMA Before?	
Never Visited Before - 7	4.49%
Had Visited Before - 160	95.24%
No Response - 1	0.64%

Primary Reason	
Being outside - 6	3.85%
Biking – 9	5.77%
Birding – 19	12.18%
Camping – 1	0.64%
Dog training - 1	0.64%
Dog walking - 4	2.56%
Fishing – 10	6.41%
Hiking – 27	17.31%
Hunting/Scouting - 53	33.97%
None of the Above -2	1.28%
Other -8	5.13%
Picnicking -1	0.64%
Wildlife Viewing -7	4.49%
No Response -7	4.49%
Running -1	0.64%

Satisfied with Visit?	
Very Satisfied -61	39.10%
Satisfied -67	37.20%
Unsatisfied - 8	9.13%
Very Unsatisfied -5	5.07%
Neutral/No Response -15	9.50%

Visit Again?	
Very Likely - 104	66.67%
Likely -37	23.72%
Very Unlikely -1	0.64%
Unlikely -3	1.92%
Neutral/No Opinion -11	7.05%

Pay for WMA?	
State taxes -25	16.03%
Federal taxes -13	8.33%
F&G licenses -94	60.26%
Don't know -16	10.26%
Non-profit in-kind -3	1.92%
Private -1	0.64%
Fees -3	1.92%
City -1	0.64%

V. 2008-2013 ACCOMPLISHMENTS

Since the Boise River WMA plan was revised in 2008, these accomplishments have occurred.

Goal: Increase the capacity of habitat to support fish and wildlife.

Objective: Increase the amount and quality of winter cover and forage to improve mule deer and elk winter survival.

Accomplishments:

- Planted over 40,000 native shrub seedlings each year on the WMA
- Acquired over 1,000 acres of critical winter range for mule deer and elk
- Collected baseline data on plant species located on Hammer Flat and Sandy Point; developed management plan to increase winter cover and forage for mule deer and elk

Objective: Increase the size and distribution of upland game populations.

Accomplishment:

- Collected baseline data on plant species located on Hammer Flat and Sandy Point; developed management plan to increase cover for upland game species

Objective: Reduce the spread of noxious weeds.

Accomplishment:

- Surveyed and controlled the spread of new noxious weed infestations with herbicide treatments

Objective: Increase the quality and quantity of vegetation in areas affected by fire.

Accomplishment:

- Broadcasted seed and planted shrub seedlings with the assistance of volunteers in areas of the WMA that have been damaged by fire

Objective: Provide information, analysis, and recommendations to improve wildlife habitat and reduce impacts from development on surrounding lands.

Accomplishments:

- Provided technical assistance to the City of Boise and Ada/Boise County on the effects of human development to wildlife and habitat

- Assisted the City of Boise in updating the Foothills Open Space Management Plan

Goal: Sustain fish and wildlife recreation on public lands.

Objective: Assess the amount of recreational use on the BRWMA.

Accomplishment:

- Continued to collect and analyze data from trail and vehicle counters

Objective: Manage public access to increase or maintain wildlife habitat effectiveness.

Accomplishments:

- Encouraged proper use of the BRWMA by installing signage at access points
- Replaced, repaired, and installed gates on the Boise Front and Charcoal Creek Segment to increase habitat effectiveness

Goal: Increase opportunities for wildlife viewing and appreciation.

Objective: Increase public awareness of currently available wildlife viewing and appreciation opportunities.

Accomplishment:

- Provided presentations to public and private entities about the wildlife that utilize the BRWMA and volunteer opportunities

Goal: Increase public knowledge and understanding of Idaho's fish and wildlife.

Objective: Involve citizens and organizations in management activities on the BRWMA.

Accomplishments:

- Recruited and trained citizen-scientist volunteers to conduct wildlife, habitat, and visitor use monitoring on the WMA
- Posted informative signs and posters at access points with kiosks

Objective: Provide teaching and interpretive opportunities on the BRWMA.

Accomplishments:

- Provided wildlife habitat management projects and field trips to local schools and universities, scout groups, hunting organizations, and AmeriCorps
- Conducted visitor use surveys and interacted with WMA users

VI. VEGETATION

(*Selected Common Species; additional information available at www.idfg.idaho.gov*)

Common Name	Scientific Name	Common Name	Scientific Name
Shrubs		***Forbs (cont.)***	
Rocky Mountain Maple	*Acer glabrum*	Spotted Knapweed	*Centaurea stoebe*
Big Sagebrush	*Artemisia tridentata*	Rush Skeletonweed	*Chondrilla juncea*
Water Birch	*Betula occidentalis*	Larkspur	*Delphinium* spp.
Green Rabbitbrush	*Chrysothamnus viscidiflorus*	Buckwheat	*Eriogonum* spp.
Red-osier Dogwood	*Cornus sericea*	Crane's Bill	*Erodium cicutarium*
Hawthorn	*Crataegus* spp.	Wild Geranium	*Geranium viscosissimum*
Rubber Rabbitbrush	*Ericameria nauseosa* or *Chrysothamnus viscidiflorus*	Curlycup Gumweed	*Grindelia squarrosa*
Winterfat	*Krascheninnikovia lanata*	Tailcup Lupine	*Lupinus caudatus*
Syringa	*Philadelphus lewisii*	***Grasses***	
Black Cottonwood	*Populus balsamifera* ssp. *trichocarpa*	Crested Wheatgrass	*Agropyron cristatum*
Bittercherry	*Prunus emarginata*	Red Threeawn	*Aristida purpurea*
Chokecherry	*Prunus virginiana*	Mountain Brome	*Bromus marginatus*
Antelope Bitterbrush	*Purshia tridentata*	Cheatgrass	*Bromus tectorum*
Currant	*Ribes* spp.	Nebraska sedge	*Carex nebrascensis*
Woods' Rose	*Rosa woodsii*	Basin Wildrye	*Elymus cinereus*
Coyote Willow	*Salix exigua*	Bottlebrush Squirreltail	*Elymus elymoides*
Snowberry	*Symphoricarpos albus*	Idaho Fescue	*Festuca idahoensis*
Trees		Needle and Thread	*Hesperostipa comata*
Ponderosa Pine	*Pinus ponderosa*	Indian Ricegrass	*Oryzopsis hymenoides*
Douglas-fir	*Pseudotsuga menziesii*	Sandberg Bluegrass	*Poa secunda*
Forbs		Bluebunch Wheatgrass	*Pseudoroegneria spicata*
Western Yarrow	*Achillea millefolium*	Columbia Needlegrass	*Stipa columbiana*
Arrowleaf Balsamroot	*Balsamorhiza sagittata*	Medusahead	*Taniatherum caput-medusae*
Hoary Cress or Whitetop	*Cardaria draba*	Intermediate Wheatgrass	*Thinopyrum intermedium*

Rare and Threatened Plant Species of Boise River WMA
Report prepared by: Justin R. Fulkerson
Idaho Department of Fish and Game/Idaho Natural Heritage Program 2013

There are 22 rare plant and lichen species within 25miles of the Boise River WMA (Table VI-1). Of these, there are two occurrences of Simpson's hedgehog cactus (*Pediocactus simpsonii*) within the WMA and one historical occurrence of slickspot peppergrass (*Lepidium papilliferum*) that overlaps part of the WMA boundary. Slickspot peppergrass was last observed at the location in 1953 and searched for in 1993, but was not relocated. The population may still persist since slickspot peppergrass seed can often stay viable for decades.

It should be noted that while rare plant data from the Idaho Natural Heritage Program (IDNHP) may not currently indicate other rare or threatened plant species within the WMA boundary, it is not equivalent to non-presence. Generally, Department WMAs have not been extensively surveyed for all potential rare plants. Also due to funding and priority of other plant species, many of the botanical surveys by IDNHP or federal agencies are over 15 years old. There is a possibility that neighboring rare species within the 25-mile buffer of the WMA may be present. For example, Aase's onion (*Allium aaseae*) and Mulford's milkvetch (*Astragalus mulfordiae*) occurrences are approximately two miles northwest of the Boise River WMA. The Boise River WMA has some similar habitat and could potentially have an occurrence of Aase's onion or Mulford's milkvetch. Additionally, the shrub-steppe habitat of the WMA is suitable habitat for some of the rare lichen species such as wovenspore lichen (*Texosporium sancti-jacobi*) and compact earth lichen (*Catapyrenium congestum*). BRWMA staff will incorporate periodic population and habitat monitoring for these species; however, specific budget constraints within the current WMA operating budget may limit the ability to monitor these populations.

Table VI-1. Rare plants within 25 miles of Boise River WMA. Names in bold have been found within the WMA boundary.

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Aase's Onion	*Allium aaseae*	Packard's Buckwheat	*Eriogonum shockleyi var. packardiae*
Tall Swamp Onion	*Allium validum*	White-margined Wax Plant	*Glyptopleura marginata*
Mourning Milkvetch	*Astragalus atratus var. inseptus*	Spreading Gilia	*Ipomopsis polycladon*
Mulford's Milkvetch	*Astragalus mulfordiae*	Davis' Peppergrass	*Lepidium davisii*
Snake River Milkvetch	*Astragalus purshii var. ophiogenes*	**Slickspot Peppergrass**	***Lepidium papilliferum***
Crenulate Moonwort	*Botrychium crenulatum*	Sacajawea's bitterroot	*Lewisia sacajaweana*
Compact Earth Lichen	*Catapyrenium congestum*	**Simpson's Hedgehog Cactus**	***Pediocactus simpsonii***
Desert Pincushion	*Chaenactis stevioides*	Profuseflower Mesamint	*Pogogyne floribunda*
Shining Flatsedge	*Cyperus bipartitus*	Bugleg Goldenweed	*Pyrrocoma insecticruris*
Idaho Dwarf-primrose	*Douglasia idahoensis*	American Wood Sage	*Teucrium canadense var. occidentale*
Giant Helleborine	*Epipactis gigantea*	Wovenspore Lichen	*Texosporium sancti-jacobi*

VII. WILDLIFE SPECIES LIST

(*Selected Common Species; additional information available at www.idfg.idaho.gov*)

Common Name	Scientific Name	Common Name	Scientific Name
Birds		***Mammals***	
Chukar	*Alectoris chukar*	Pronghorn	*Antilocapra americana*
Ruffed Grouse	*Bonasa umbellus*	Coyote	*Canis latrans*
Great Horned Owl	*Bubo virginianus*	Elk	*Cervus elaphus*
California Quail	*Callipepla californica*	Mountain Lion	*Felis concolor*
Turkey Vulture	*Cathartes aura*	Bobcat	*Felis rufus*
Veery	*Catharus fuscescens*	River Otter	*Lontra canadensis*
Northern Flicker	*Colaptes auratus*	Vole	*Microtus* spp.
Dusky Grouse	*Dendragapus obscurus*	Weasel	*Mustela* spp.
American Kestrel	*Falco sparverius*	Myotis	*Myotis* spp.
Bald Eagle	*Haliaeetus leucocephalus*	Bushy-tailed Wood Rat	*Neotoma cinerea*
Bullock's Oriole	*Icterus bullockii*	Mule Deer	*Odocoileus hemionus*
Dark-eyed Junco	*Junco hyemalis*	Deer Mouse	*Peromyscus maniculatus*
Long-billed Curlew	*Numenius americanus*	Raccoon	*Procyon lotor*
Gray Partridge	*Perdix perdix*	Shrew	*Sorex* spp.
Black-billed Magpie	*Pica hudsonia*	Ground squirrel	*Spermophilus* spp.
Western Tanager	*Piranga ludoviciana*	Mountain Cottontail	*Sylvilagus nuttallii*
Black-capped Chickadee	*Poecile atricapillus*	Least Chipmunk	*Tamias minimus*
Yellow Warbler	*Setophaga petechia*	Red Squirrel	*Tamiasciurus hudsonicus*
Western Bluebird	*Sialia mexicana*	American Badger	*Taxidea taxa*
Chipping Sparrow	*Spizella passerina*	Black Bear	*Ursus americanus*
Mourning Dove	*Zenaida macroura*	Red Fox	*Vulpes vulpes*
Reptiles		***Amphibians***	
Western Rattlesnake	*Crotalus viridis*	Long-toed Salamander	*Ambystoma macrodactylum*
Gopher Snake	*Pituophis catenifer*	Western Toad	*Anaxyrus boreas*
Sagebrush Lizard	*Sceloporus graciosus*	Pacific Tree Frog	*Pseudacris regilla*
Western Fence Lizard	*Sceloporus occidentalis*	Northern Leopard Frog	*Rana pipiens*

VIII. OTHER MANAGEMENT PROGRAMS

Travel Plan

The Boise River WMA is open to public travel use with the following restrictions:

- Vehicles must remain on established, open designated routes
- No overnight camping is allowed
- Visitors may not harass wildlife during non-hunting seasons

Seven parking areas are provided throughout the WMA for visitor convenience: Council Springs (1), Highland Valley Road (2), White Ranch (1), Wilhite Creek (1), Deer Creek (1), and Charcoal Creek (1) (Figure 1).

Grazing Program

As the human population increased in Boise in the 19th century, the lands around the city were heavily grazed by a considerable number of cattle, horses, and sheep. The impact of grazing on the landscape was significant. Plant communities were degraded and soil erosion increased more rapidly than surrounding areas.

As the lands around the city became part of the BRWMA, grazing system improvements were established and incorporated into the management of the property. Initially, grazing on Department-owned lands was essentially "exchanged" for winter use by deer on neighboring privately-owned rangelands. As the Boise Front Segment of the WMA expanded in size, a rotational grazing system was more feasible. Therefore, in 1970 the Boise Front Coordinated Resource Management Plan (CRMP) was implemented to improve livestock grazing management. A rest-rotation grazing system was developed to control cattle use and distribution throughout this section of the property. Nine pastures are managed for moderate utilization by livestock, with each pasture rested every other year. In order to help distribute cattle and to keep them from exceeding desired utilization levels in the pastures, springs have been developed.

For the past several years, wildfires have disrupted the rest-rotation system because burned pastures must be taken out of the rotation and given additional rest. Burned pastures are rehabilitated with grass and forb seedlings and shrub plantings. These areas are protected from grazing for two to five years after treatment to allow the new plants to become established. As a result, the remaining unburned pastures are being used more frequently than the CRMP specifies.

Sheep graze a portion of the Boise Front Segment each spring and fall for a month. Spring grazing is utilized for noxious weed control throughout the area. For the past several years, sheep have only been grazed in the spring by the permittee although autumn grazing privileges remain in place.

Cattle are grazed in the Charcoal and South Fork Segments under exchange of use agreements with nearby private landowners. These agreements allow limited livestock grazing on WMA lands during summer in exchange for mule deer and elk use on the private lands during winter.

Grazing Rights on the Boise River WMA.

Grazing Rights			
Segment	Year	Species	AUMs
Boise Front	2012	Cattle	438
Boise Front	2009	Horses	10
Boise Front	2012	Sheep	87
Charcoal Creek	2006	Cattle	70
Charcoal Creek	2012	Cattle	180
Charcoal Creek	2013	Cattle	75
South Fork	2006	Cattle	100
		Total	960

IX. LAND ACQUISITIONS AND AGREEMENTS

Land Acquisitions				
Year	**Funds Used**	**Segment**	**Acres**	**Acquired From**
1943	PR		2227.64	Call, Skinner & Smith
1950	PR		80.00	Dewey Demarey
1956	PR	Boise Front	1193.61	Edgar Kirk
1956	PR		1479.12	Julius McDonald
1956			200.00	Edgar Kirk
1956	PR		120.00	Edgar Kirk
1956			640.00	Julius McDonald
1956			839.12	Florence Kesl
1957			2.00	Julius McDonald
1961	PR		1580.00	Lloyd Hansen
1965	F&G	Boise Front	2105.20	Dallas Harris
1966	BOR	Boise Front	1011.96	Dallas Harris
1967	BOR	Boise Front	1190.88	Edmond Palmatier
1967	F&G	Boise Front	120.00	Duff Estate
1968	PR	Boise Front	480.00	S ID Conf of 7th Day Adventist
1968	PR		2528.88	S ID Conf of 7th Day Adventist
1970	PR	Boise Front	343.73	Larry Smith
1970		Boise Front	1.51	Larry Smith
1973	PR	Boise Front	1133.35	John & Ester White
1975	NC	Boise Front	20.00	GSA
1977	F&G	Boise Front	76.60	J.D. McTaggart
1992	NC	Boise Front	686.78	USFS
1992	NC		400.00	USFS
1999	BPA	Boise Front	166.23	Krueger
2008		Boise Front	62.5	Larry & Alda Smith
2012	BPA	Boise Front	705.00	City of Boise
2012	BPA	Boise Front	140.00	RJ Highlands LLC
		Subtotal	19534.11	

Land Easement		
Year	**Acres**	**Acquired From**
1959	1.71	Jess Hatcher
Subtotal	1.71	

Cooperative Agreements			
Year	**Segment**	**Acres**	**Acquired From**
?	Boise Front	262.00	US Army Corps of Engineers
?		636.00	US Army Corps of Engineers
?		1592.00	US Army Corps of Engineers
1970	Boise Front	0.10	The Nature Conservancy
1982	Boise Front	1438.00	US Army Corps of Engineers
1982		510.00	US Army Corps of Engineers
1982		110.00	US Army Corps of Engineers
1982		2984.00	US Army Corps of Engineers
1982		1047.80	US Army Corps of Engineers
1982		1518.00	US Army Corps of Engineers
1989		46.00	US Army Corps of Engineers
1989		406.40	US Army Corps of Engineers
1994	Boise Front	640.00	IDL #6381
1998	Boise Front	270.00	IDL #6379
2004		1927.59	IDL
	Subtotal	13,387.89	

Other Lands Managed Cooperatively for Winter Range					
Segment	**Range**	**Township**	**Acres**	**Section**	**Landowner**
Boise Front	3E	3N	640.00	16	State Lands
Boise Front	3E	3N	576.00	36	State Lands
Boise Front			0	46	
Boise Front	3E	3N	560.00	24,25,26	State Lands
Boise Front	3E	3N	60.00	24	Uncontrolled
Boise Front	3E	3N	225.00	3,25	Highland Livestock
Boise Front	4E	3N	300.00	30	Nature Conservancy
Boise Front	4E	2N	80.00	8,9	Hahn
Boise Front	3E, 4E	3N, 2N	4597.43		BLM
			1209.00		
			1720.00		
	3E, 4E	3N	1303.00	2,1,5,6,7,8,12	USFS
			349.00		
			480.00		
			606.78		
			1013.00		
		Subtotal	13719.21		
		WMA Total	46,642.92		

X. INFRASTRUCTURE

Infrastructure	
Function	**Description**
Office	Modular office trailer (14 X 70 ft.)
Storage	Small wood frame equipment storage buildings (2)
Storage	Open-sided petroleum storage and containment shed
Storage	Metal building
Parking	Open-bay shelter
Shop and Parking	Open-bay shed with machine shop
Hay barn	South Fork Segment; large wood frame building on stone building
Fence	75 miles
Springs with tank	47
Pond	1

Water Rights	
Number	**Location of Point(s) of Diversion**
63-11394	SWSWNW Sec. 2, T3N, R3E SWSWNW Sec. 10, T3N, R3E NESENW Sec. 10, T3N, R3E SESENE Sec.4, T3N, R3E NWNWNE Sec. 10, T3N, R3E SESENE Sec.10, T3N, R3E ADA County
63-11395	SENENE Sec. 22, T3N, R3E NWSENE Sec. 22, T3N, R3E Lot 1 SESWSW Sec. 22, T3N, R3E NESESW Sec. 22, T3N, R3E SWNESE Sec. 22, T3N, R3E SESESE Sec. 22, T3N, R3E SWNENW Sec. 26, T3N, R3E NENENE Sec. 27, T3N, R3E NENWSE Sec. 27, T3N, R3E ADA County
63-11396	SENWSW Sec. 21, T3N, R3E ADA County
63-11434	NENESE Sec. 16, T3N, R3E SWNWSE Sec. 16, T3N, R3E NENWNW Sec. 22, T3N, R3E SENWSE Sec. 21, T3N, R3E SENESE Sec. 21, T3N, R3E SWSENE Sec. 21, T3N, R3E SENWSW Sec. 21, T3N, R3E ADA County
63-11435	SENESE Sec. 35, T3N, R4E SWNENE Sec. 35, T3N, R4E ELMORE County
63-12082	NWNENW Sec. 15, T2N, R4E ELMORE County
63-12083	NESWSE Sec. 13, T3N, R3E ADA County
63-12086	NWNESE Sec. 19, T3N, R4E ADA County

XI. BOISE RIVER WMA'S SPRINGS BY PASTURE

Name	Legal	GPS	Land
Low Pasture 1	Squaw Creek		
Intermediate Pasture 1	Picket Pin		
	Peak	N43 36.64 W116 05.14	BLM
	Jeep	N43 36.86 W116 04.98	BLM
	South Contour	N43 36.72 W116 05.62	BLM
	Sedge Spring	N43.35.772 W116 05.639	IDL
High Pasture 1	Warm Springs		
Low Pasture 2	Maynard Gulch		
High Pasture 2	Tower		
	Steep	N43 35.731 W116 05.670	BLM
Low Pasture 3	Queen's Mine		
	Arrowrock		
	Contour	N43 33.050 W116 03.279	IDFG
	Three Tank	N43 33.487 W116 04.053	IDFG
	Red	N43 33.601 W116 03.456	IDFG
	Rudd	N43 33.483 W116 03.309	IDFG
	Box Elder	N43 34.430 W116 03.354	IDL
	Queen's		BLM
	Highland		BLM
High Pasture 3	White Ranch		
	Orphan Calf		BLM
	Broken Jug		BLM
	Rattlesnake		IDFG
	Rockwall	N43 34.820 W116 02.450	IDFG
	No Name	N43 34.608 W116 01.820	IDFG
	Gabiola	N43 34.356 W116 02.537	IDFG
	Phil's		IDFG

XII. RECOMMENDATIONS BY THE IDAHO DEPARTMENT OF FISH AND GAME FOR THE MITIGATION OF HUMAN DEVELOPMENT

The Department provides technical assistance to the City of Boise and Ada/Boise counties on the potential effects that development may have on fish, wildlife, and habitats. Additionally, the Department makes recommendations on how any adverse effects might be mitigated. The following is a list of the most common suggestions that The Department provides to urban planners, developers, and area residents to minimize the adverse impacts to wildlife from housing and commercial development.

1. Known migration routes or movement corridors of big game animals should not be interrupted by development.
2. Consideration for wildlife corridors should be integrated into all land use projects with the goal of maintaining habitat connectivity.
3. Permeability through housing and commercial developments in the form of secondary wildlife corridors should be incorporated in all land use projects.
4. Disturbance to wildlife can be minimized through the clustering of homes, which results in a minimum of infrastructure development.
5. Native vegetation communities should be protected to the greatest extent possible. This should include native grasses, forbs, and shrubs.
6. Disturbed sites should be mitigated elsewhere on the property.
7. Privacy fences should be constructed around the perimeter of the development to deter deer from entering the subdivision. These fences should be solid, forming a visual barrier with no spaces between components, and at least six feet high, with a smooth top surface and in contact with the ground. Installing privacy fences on top of a berm or other elevated surface reduces the likelihood of deer attempting to jump the fence into the yard. The Department strongly recommends against any use of wrought iron or chain link fencing anywhere in the development with the exception of closed dog runs within a fenced back yard. Wrought iron and chain link fences have the potential to trap and injure deer, including impalement when deer attempt to jump over these fences.
8. Fences using horizontal wires or rails can result in negative encounters between deer and fencing. Such fences constructed as property boundaries or for aesthetic purposes should have spacing between horizontal wires or rails of at least 12 inches between the top two and 18 inches between the lower cross member and the ground, with a total height not exceeding 40 inches.
9. Homeowners should be aware of the potential for vegetation damage by wildlife, particularly from deer feeding on green lawns, gardens, flowers, ornamental shrubs, and trees in this subdivision. The Department recommends deer resistant landscaping to reduce landscape depredation and encourage homeowners to protect their vegetation by using fencing, netting, repellents, etc. in order to avoid problems.
10. Domestic stock such as horses, llamas, and cows should be fed in distinct, fenced enclosures that are off-limits to big game. All feed should be stored in sheds or enclosures out-of-sight of big game animals. If deer and elk can see it, they will attempt

to eat it! Domestic fowl should be housed in wildlife-proof homes since they are very vulnerable to predators such as coyotes and fox.

11. Pet foods and feeding dishes left outside and unsecured garbage will attract raccoons and other animals, which could pose a threat to property and pets.
12. Free-roaming dogs and cats pose a threat to many wildlife species. Pets should be confined or under owner's control.
13. When observing wildlife, maintain a safe distance. Do not disturb their normal activities. Resist the temptation to "save" baby animals, as their parent(s) are generally nearby.
14. Big game animals should not be fed under any circumstances unless specifically authorized by or in cooperation with the Idaho Department of Fish and Game.
15. Bird feeders should be routinely cleaned to prevent the spread of disease.
16. Any burning of trash or vegetation on properties adjacent to wildlands should be carefully monitored and under control at all times. Fireworks should be avoided.
17. High numbers of big game animals on limited winter range attract predators such as mountain lions and bears. Precautions that should be followed include a) making noise as you come and go in the morning and at night, b) installing outside lighting, c) make it difficult for predators to approach your house unseen by avoiding planting dense vegetation near your home, d) keep your pets under control and bring them indoors at night since they are easy prey for predators, e) place livestock in enclosed sheds or barns at night.

XIII. IDAHO DEPARTMENT OF FISH AND GAME HABITAT IMPROVEMENT PLAN FOR THE HAMMER FLAT AND SANDY POINT PROPERTIES

The Hammer Flat and Sandy Point properties are located between Highland Valley Road off of Warm Springs Avenue and State Highway 21 by Lucky Peak Dam in Boise, Idaho (Appendix Figure XIII-1). The properties are contiguous. The southern boundary is the Black Cliffs which contain some Bureau of Reclamation and Bureau of Land Management property, while the northern boundary is the Boise River Wildlife Management Area. The total acreage of these parcels is approximately 842 acres. Public access to these properties is located on Highland Valley Road.

Both properties were purchased by the Department using funds from the BPA and its partners to offset the loss of wildlife habitat as a result of construction of the Federal Columbia River Power System. The Department recognized that these two land acquisitions would provide additional critical winter range for migrating mule deer and elk, as well as a vast array of other wildlife species. Per an agreement with BPA, the Hammer Flat and Sandy Point Habitat Improvement Plan was created for these properties and focus on increasing their habitat capacity through rehabilitation efforts. This plan was also produced in an effort to rehabilitate the property after its most recent fire which occurred in June of 2013 (Appendix Figure XIII-2).

To effectively rehabilitate the area, it is beneficial to understand what the soil morphology of the area is, what type of vegetation can be found there, and the history of its use. This information can assist in the planning of restoration efforts. Fortunately this data had previously been collected.

Most of the property consists of Chilcott-Aldape complex soils and presently squirrel-tail, Sandberg bluegrass, and some bluebunch wheatgrass can be found there. Unfortunately, most of the property has been invaded by annual grasses such as cheatgrass and medusahead. In addition, noxious weeds such as rush skeletonweed, field bindweed, and hoary cress can be found on the property. According to records, there was a fire on the property in 2000 and the landowner did not rehabilitate the area afterwards. Livestock grazing was permitted a year after the fire, reducing the ability of the land to recover properly. Very little shrubs remain on the property dues to these activities.

Due to the degradation of the property from grazing and fires, as well as damage from the fire that occurred there in June 2013, the management plan for this property focuses on three priorities: 1) reducing the amount of noxious weeds, 2) providing palatable forage for wildlife, and 3) reducing the effects of fire by utilizing fire tolerant plant species and/or incorporating green stripping on the property.

This improvement plan employs a research project that will help determine the success of two rehabilitation techniques. The first technique consists of treating an area with an herbicide directly after a fire but prior to seeding to minimize the amount of noxious weeds. The second

technique, referred to as interseeding, does not utilize herbicides but uses a machine to prepare a shallow seedbed to incorporate seed into the ground directly after a fire.

The 285 acres damaged during the 2013 fire was divided into six smaller parcels. Three of these parcels were treated with herbicide while the other three did not have any treatment. Later, both techniques will be evaluated for their rate of seed or vegetation establishment.

In order to minimize the effect that wildfires may have on these experiments, greenstrips will be incorporated into the management of this property. Greenstripping is the creation of long, narrow bands of fire retardant vegetation that serve as natural fire breaks for an area. These greenstrips will be created around the boundaries of the property to protect the seed and any vegetation in the research parcels. Finally, monitoring of these two sites will be conducted throughout the year and data will be analyzed.

Rehabilitation Technique #1:

A treatment of Plateau, an aqueous solution that is mixed with water and an adjuvant and applied as a spray solution, was completed on approximately 125 acres of the Hammer Flat burn in October of 2013 by Ada County Weed, Pest, and Mosquito Abatement. Applying an herbicide in the fall provides the opportunity for desirable perennial plant seeds to establish before noxious weeds like cheatgrass and medusahead have the chance to compete for moisture. Due to residual activity (to have continued effect over time) of this herbicide, no seeding or planting will take place until the fall of 2014. Future herbicide treatments of these parcels may be necessary to deplete the noxious weed seed bank before seeding or planting can occur.

In the fall of 2014, desirable perennial seeds will be incorporated into the soil on the treated parcels. In addition, desirable shrub species will be planted on these parcels the following winter (March 2015). In addition to shrubs such as bitterbrush, silver sagebrush (*Artemisia cana*) will be used on the property because of its tolerance to drought as well as its strong sprouting response after a top-kill by fire. Once established, the silver sagebrush should re-sprout if another fire occurs on the property. This in turn should minimize the effort, time, and money needed to rehabilitate the property well into the future.

It may take numerous attempts over the next several years to establish the amount of desirable plant and shrub species needed to support wildlife for the long-term. Therefore, BRWMA staff will monitor these parcels, continue herbicide treatments if necessary, and incorporate seed into the ground. Over time, the establishment of these plants and shrubs on the WMA will provide critical forage big game need to survive the winter months. Furthermore, this vegetation will help hinder cheatgrass infestations and provide thermal cover and forage for a variety of other wildlife species including game birds.

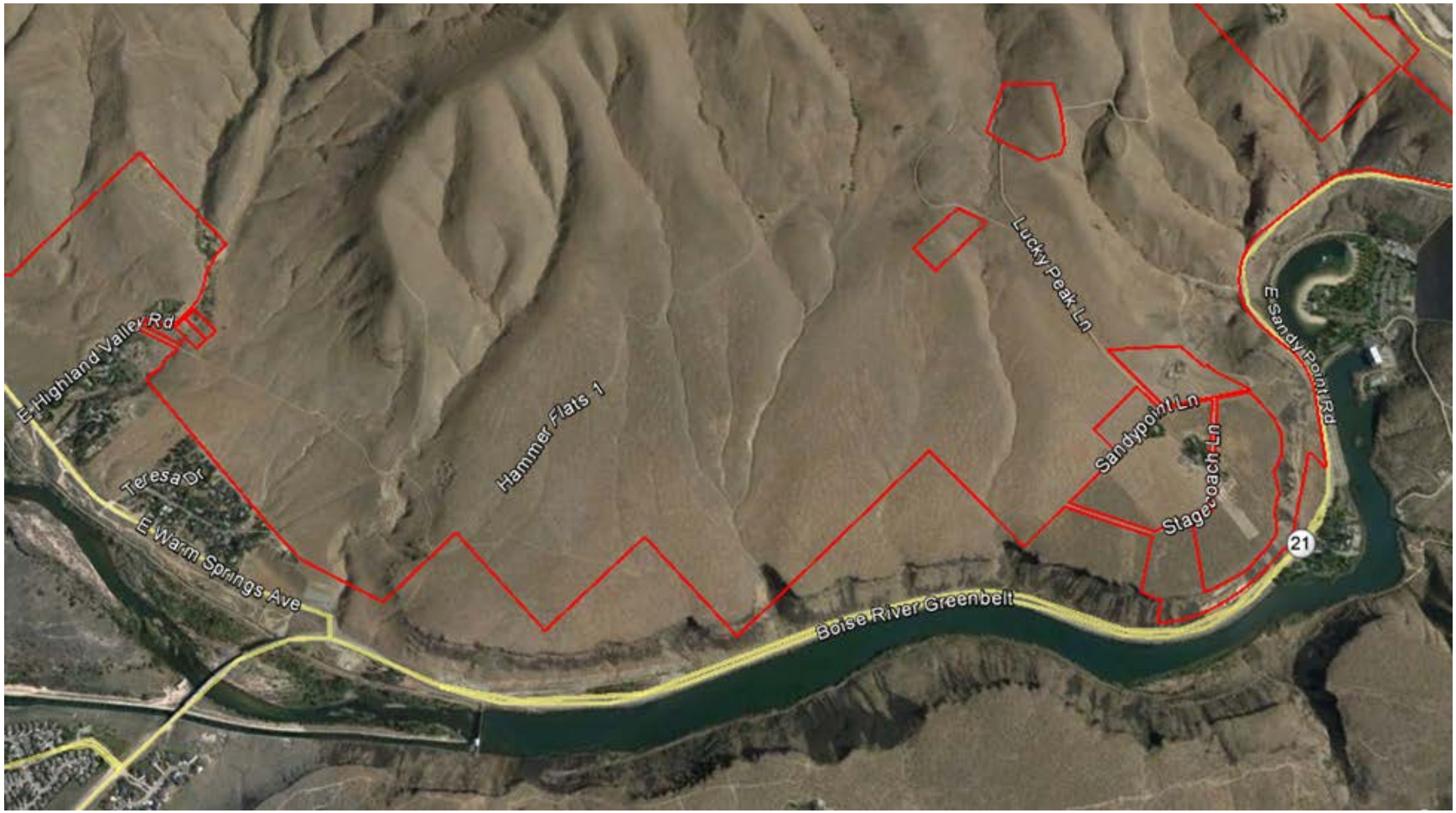
Rehabilitation Technique #2:

In 2014 during the month of January, interseeding was completed on approximately 160 acres of the Hammer Flat burn by BRWMA staff. This technique uses a machine to prepare a shallow

seedbed and incorporates seed into the ground directly after a fire; therefore no herbicides were used on these parcels. Unlike the first technique, interseeding is conducted over several years using a combination of seeds from select plant species that are best adapted to the site conditions. This process will eventually lead to the establishment of desirable plant species. Over time, noxious weeds like cheatgrass and medusahead will be unable to compete and their population will begin to decrease.

In March of 2014, desirable shrub species will be planted on these interseeded parcels. In addition to shrubs such as bitterbrush, silver sagebrush will be used on the property because of its tolerance to drought as well as its strong sprouting response after a top-kill by fire. Once established, the silver sage should re-sprout if another fire occurs on the property. This in turn should minimize the effort, time and money needed to rehabilitate the property well into the future.

It may take numerous attempts over the next several years to establish the amount of desirable plant and shrub species needed to support wildlife for the long term. Therefore, BRWMA staff will monitor these parcels and continue utilizing the interseeding technique. Over time, the establishment of these plants and shrubs on the WMA will provide critical forage big game need to survive the winter months. Furthermore, this vegetation will help hinder cheatgrass infestations and provide thermal cover and forage for a variety of other wildlife species including game birds.



Appendix Figure XIII-1. Map of Hammer Flat and Sandy Point properties of the Boise River WMA.

Appendix Figure XIII-2. Fire that occurred on Hammer Flat in June 2013. Approximately 285 acres of the Boise River WMA was damaged during this fire.

XIV. IDAHO STATE HIGHWAY 21 WILDLIFE CROSSING ACTIVITY

In October of 2010, a wildlife crossing under State Highway 21 was constructed by the Idaho Transportation Department. This area of the highway was one of five identified hot spots in southwest Idaho for wildlife-vehicle collisions. This structure allows wildlife, including mule deer and elk, to pass under the road. Motion sensing cameras were installed to monitor its effectiveness. The following tables show the number and what species of animals were using the underpass from November 2010 to December 2012. Images from the cameras are also provided.

Date	Species	Number	Date	Species	Number
11/05/10	Deer	3	11/30/10	Deer	8
11/08/10	Deer	2	12/02/10	Deer	2
11/09/10	Deer	1	12/04/10	Deer	4
11/13/20	Deer	7	12/06/10	Deer	2
11/15/10	Fox	1	12/07/10	Deer	1
11/17/10	Deer	3	12/08/10	Deer	2
11/21/10	Deer	1	12/12/10	Deer	1
11/23/10	Deer	4	12/14/10	Deer	1
11/24/10	Deer	4	12/18/10	Deer	2
11/24/10	Elk	2	12/19/10	Deer	5
11/25/10	Deer	7	12/20/10	Deer	5
11/26/10	Deer	11	12/26/10	Deer	4
11/27/10	Deer	9	12/27/10	Deer	2
11/28/10	Deer	4	12/28/10	Deer	1
11/29/10	Deer	4	12/29/10	Deer	6

Date	Species	Number	Date	Species	Number
01/03/2011	Coyote	1	05/09/2011	Cougar	1
01/05/2011	Deer	4	05/10/2011	Coyote	1
01/09/2011	Deer	1	05/11/2011	Deer	5
01/12/2011	Fox	1	05/11/2011	Coyote	2
01/12/2011	Coyote	3	05/12/2011	Deer	9
01/13/2011	Coyote	1	05/12/2011	Coyote	1
01/15/2011	Deer	2	05/12/2011	Elk	5
01/16/2011	Coyote	1	05/13/2011	Coyote	1
02/24/2011	Deer	2	05/13/2011	Deer	1
02/25/2011	Deer	4	05/14/2011	Coyote	1
02/26/2011	Deer	2	05/16/2011	Coyote	1
02/28/2011	Deer	4	05/17/2011	Coyote	1
03/07/2011	Deer	3	05/17/2011	Deer	2
03/08/2011	Deer	1	05/18/2011	Coyote	1
03/09/2011	Deer	2	05/18/2011	Deer	7
03/16/2011	Deer	1	05/19/2011	Coyote	1
03/18/2011	Deer	8	05/21/2011	Coyote	1
03/25/2011	Cougar	1	05/22/2011	Coyote	1
04/11/2011	Deer	2	05/24/2011	Coyote	1
04/16/2011	Deer	2	05/25/2011	Coyote	1
04/22/2011	Deer	19	05/27/2011	Coyote	1
04/23/2011	Deer	4	06/04/2011	Coyote	1
04/24/2011	Deer	8	06/10/2011	Deer	1
04/26/2011	Deer	8	06/13/2011	Deer	1
04/26/2011	Coyote	1	06/15/2011	Coyote	1
04/27/2011	Deer	11	06/17/2011	Coyote	2
04/28/2011	Deer	27	06/18/2011	Coyote	2
04/29/2011	Fox	1	06/24/2011	Coyote	2
05/01/2011	Deer	4	07/02/2011	Deer	4
05/02/2011	Deer	10	07/04/2011	Deer	3
050/2/2011	Elk	3	07/05/2011	Deer	1
05/03/2011	Deer	17	07/08/2011	Deer	2
05/04/2011	Deer	10	07/10/2011	Coyote	1
05/06/2011	Coyote	1	07/14/2011	Deer	3
05/06/2011	Deer	2	07/21/2011	Deer	1
05/07/2011	Coyote	1	07/27/2011	Deer	2
05/07/2011	Deer	1	08/02/2011	Deer	1
05/09/2011	Deer	5	08/03/2011	Deer	3
05/09/2011	Coyote	1	08/18/2011	Deer	6

Date	Species	Number	Date	Species	Number
08/31/2011	Deer	2	03/15/2012	Deer	2
09/07/2011	Deer	2	03/21/2012	Deer	6
09/27/2011	Quail	15	03/25/2012	Deer	4
11/19/2011	Deer	2	03/28/2012	Deer	3
11/21/2011	Deer	4	04/09/2012	Deer	16
11/22/2011	Deer	1	04/10/2012	Deer	2
11/23/2011	Deer	13	04/12/2012	Deer	13
11/24/2011	Deer	4	04/13/2012	Deer	3
11/28/2011	Deer	6	04/14/2012	Deer	2
11/29/2011	Deer	1	04/17/2012	Deer	5
12/01/2011	Deer	3	04/21/2012	Deer	2
12/02/2011	Deer	5	04/24/2012	Deer	3
12/03/2011	Deer	5	04/30/2012	Deer	7
12/04/2011	Deer	1	05/01/2012	Deer	5
12/06/2011	Deer	6	05/03/2012	Deer	4
12/07/2011	Deer	2	05/07/2012	Deer	1
12/09/2012	Deer	8	05/12/2012	Deer	1
12/12/2011	Deer	5	05/17/2012	Deer	2
12/13/2011	Deer	7	05/20/2012	Deer	5
12/14/2011	Deer	4	06/04/2012	Deer	2
12/18/2011	Deer	1	06/19/2012	Deer	2
12/21/2011	Deer	3	07/17/2012	Elk	2
12/23/2011	Deer	1	10/09/2012	Deer	4
12/25/2011	Deer	1	10/24/2012	Deer	5
12/27/2011	Deer	5	10/25/2012	Deer	4
12/28/2011	Deer	5	10/26/2012	Deer	5
12/29/2011	Deer	15	10/27/2012	Deer	1
12/30/2011	Deer	3	10/28/2012	Deer	15
02/09/2012	Deer	16	10/29/2012	Deer	6
02/10/2012	Deer	1	10/30/2012	Deer	12
02/14/2012	Deer	1	10/31/2012	Deer	14
02/16/2012	Deer	1	11/01/2012	Deer	7
02/22/2012	Deer	4	11/03/2012	Deer	3
02/24/2012	Deer	10	11/05/2012	Deer	9
02/26/2012	Deer	1	11/10/2012	Deer	2
02/29/2012	Deer	10	11/11/2012	Deer	2
03/02/2012	Deer	1	11/14/2012	Deer	1
03/12/2012	Deer	6	11/16/2012	Deer	10
03/13/2012	Deer	2	11/18/2012	Deer	5

Date	Species	Number	Date	Species	Number
11/20/2012	Deer	3	12/12/2012	Deer	6
11/23/2012	Deer	10	12/15/2012	Deer	8
11/24/2012	Deer	5	12/17/2012	Deer	4
11/27/2012	Deer	9	12/18/2012	Deer	7
11/28/2012	Deer	6	12/19/2012	Deer	3
11/30/2012	Deer	2	12/20/2012	Deer	5
12/01/2012	Deer	4	12/22/2012	Deer	11
12/02/2012	Deer	7	12/23/2012	Deer	4
12/06/2012	Deer	15	12/24/2012	Deer	22
12/09/2012	Deer	9	12/25/2012	Deer	2
12/10/2012	Deer	3	12/28/2012	Deer	1
12/11/2012	Deer	20			

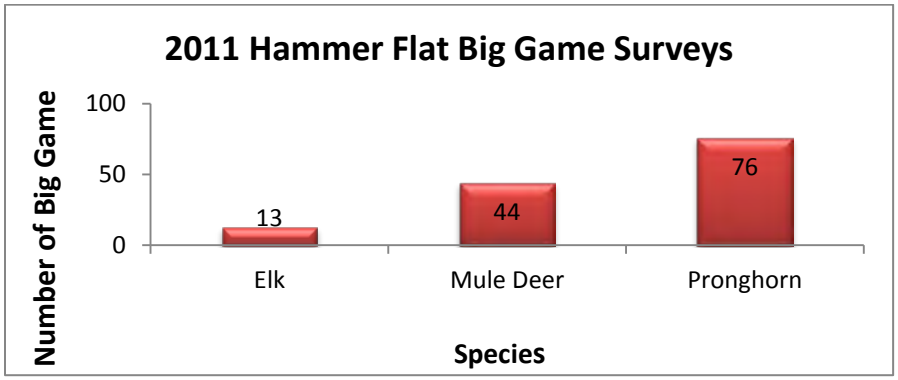
XV. HAMMER FLAT BIG GAME AND BIRD SURVEY RESULTS FOR THE BOISE RIVER WMA

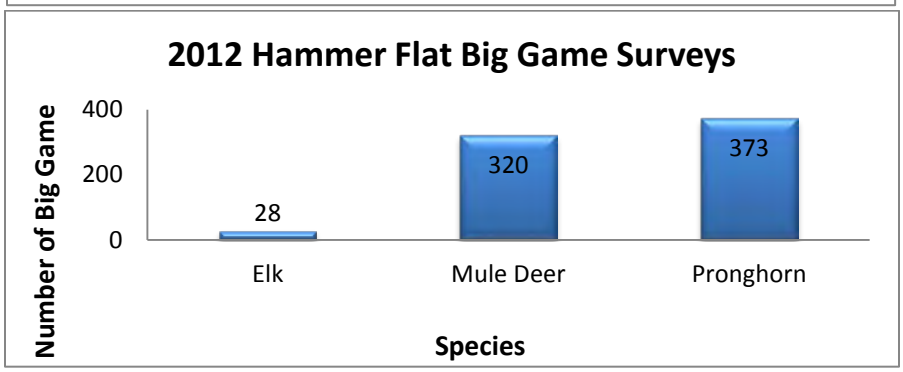
In 2011 and 2012, volunteers assisted BRWMA staff with wildlife monitoring on Hammer Flat. Volunteers conducted big game observational surveys from the months of November to March of each year. A species list as well as the number and type of behavior being conducted by birds on Hammer Flat was developed by volunteers. Observations of birds were only done in September of 2011 and July, August, and September of 2012. This data was collected only at the convenience of the volunteers. Therefore, the number of animals observed or counted does not represent the total number using the property every day, at all times. BRWMA staff would like to thank all volunteers for their time and commitment to these projects.

Big Game

2011 Survey	
Species	Number Observed
Elk	13
Mule Deer	44
Pronghorn	76

2012 Survey	
Species	Number Observed
Elk	28
Mule Deer	320
Pronghorn	373





Birds observed on Hammer Flat during September 2011.

2011 Species	Number	Behavior	2011 Species	Number	Behavior
American Goldfinch	6	Flyover	Mourning Dove	35	Flyover
American Kestrel	18	Perched	Northern Flicker	12	Calling
American Robin	12	Flyover	Northern Harrier	13	Flying
Barn Swallow	4	Flyover	Dark-eyed Junco	1	Perched
Black-billed Magpie	57	Calling	Raven	12	Flyover
Black-chinned Hummingbird	7	Flying	Red-tailed Hawk	27	Calling
Brewer's Blackbird	1		Robin	3	Flying
Bullock's Oriole	8		Rock Pigeon	5	Flyover
California Gulls	3		Rock Wren	2	Feeding
California Quail	199	Flyover	Ruby-crowned Kinglet	11	Foraging
Canada Goose	2		Savannah Sparrow	9	
Cassin's Finch	2		Says Phoebe	2	Perched
Chipping Sparrow	1		Sharp-shinned Hawk	1	Hunting
Cooper's Hawk	1	Foraging	Song Sparrow	7	Foraging
Double-crested Cormorant	1	Foraging	Sparrow	19	Flying
Dusky Flycatcher	1	Flyover	Spotted Towhee	4	Flying
Eastern Kingbird	1		Starling	16	Flyover
English Sparrow	6	Perched	Turkey Vulture	18	Flyover
European Starling	31	Flyover	Vesper Sparrow	5	Flushing
Goshawk	2	Flyover	Western Kingbird	11	Flyover
Gray Partridge	2		Western Meadowlark	95	Calling
Horned Lark	6	Flushed	Western Tanager	6	Foraging
House Finch	74	Flying	White-crowned Sparrow	48	Flying
House Sparrow	2	Feeding	Yellow Warbler	4	
House Wren	2				

Birds observed on Hammer Flat during July, August, and September 2012.

2012 Species	Number	Behavior	2012 Species	Number	Behavior
American Crow	4	Flyover	Lesser Goldfinch	3	Foraging
American Goldfinch	38	Foraging	Mourning Dove	89	Flying
American Kestrel	35	Flyover	Northern Flicker	26	Flyover
American Robin	37	Calling	Northern Harrier	3	Flyover
Bank Swallow	23	Flyover	Dark-eyed Junco	1	Foraging
Black-billed Magpie	36	Flyover	Prairie Falcon	1	Flyover
Black-chinned Hummingbird	5	Flyover	Red-tailed Hawk	33	Flyover
Brewer's Blackbird	1	Flyover	Red-winged Blackbird	5	Flyover
Bullock's Oriole	7	Foraging	Rock Wren	2	Foraging
California Quail	173	Calling	Ruby-crowned Kinglet	3	Foraging
Calliope Hummingbird	1	Flyover	Savannah Sparrow	2	Foraging
Canada Goose	11	Flyover	Say's Phoebe	3	Flyover
Chipping Sparrow	1	Foraging	Spotted Towhee	2	Foraging
Cliff Swallow	4	Flyover	Turkey vulture	4	Flyover
Common Raven	10	Calling	Unknown Swallow	12	Flyover
Cooper's Hawk	1	Foraging	Vesper's Sparrow	1	Foraging
Downey Woodpecker	1	Foraging	Violet-green Swallow	1	Flyover
European Starling	274	Flyover	Western Kingbird	13	Flyover
Horned Lark	15	Foraging	Western Meadowlark	33	Calling
House Finch	326	Flyover	Western Tanager	5	Foraging
House Sparrow	32	Flyover	White-crowned Sparrow	23	Flyover
House Wren	5	Foraging	Yellow Warbler	3	Foraging
Lazuli Bunting	1	Perched			

BOISE RIVER

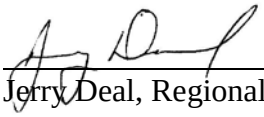
WILDLIFE MANAGEMENT AREA PLAN

Approval

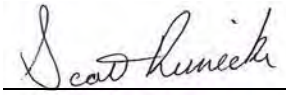
Submitted by:

Krista Muller, Habitat Biologist

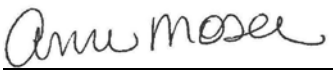
Reviewed by:



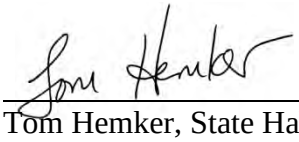
Jerry Deal, Regional Habitat Manager



Scott Reinecker, Regional Supervisor

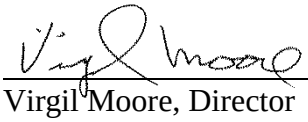


Ann Moser, Bureau of Wildlife



Tom Hemker, State Habitat Manager

Approved by:



Virgil Moore, Director