Big Cottonwood Wildlife Management Area

Management Plan 2014

Magic Valley Region

Big Cottonwood Wildlife Management Area

2014 – 2023 Management Plan

December 2014

Idaho Department of Fish and Game
Magic Valley Region
324 South 417 East, Suite #1
Jerome, Idaho 83338

Prepared By:
Mark Fleming, Regional Habitat Manager
Brad Lowe, Habitat Biologist, Minidoka District

Table of Contents

List of Tables

List of Figures

Executive Summary

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 Magic Valley 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 Magic Valley Region.

Wildlife Management Areas often abut other protected lands such as National Forests, Bureau of Land Management 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 Magic Valley Region manages six WMAs that collectively comprise 11,141 acres of land. Wildlife Management Area management focus is to maintain highly functional wildlife habitat and provide wildlife-based recreation. These WMAs include:

- Niagara Springs WMA, a combination of riparian and cliff habitats along the Snake River in Gooding County
- Hagerman WMA, a spring-fed wetland complex critical for wintering waterfowl in Gooding County
- Billingsley Creek WMA, which provides a mosaic of upland and wetland habitats in Gooding County
- Camas Prairie-Centennial Marsh WMA, a high prairie, seasonally-flooded wetland in Camas County
- Carey Lake WMA, a lake and upland complex in Blaine County
- Big Cottonwood WMA, a canyon landscape in the Big Cottonwood Creek drainage in Cassia County

Examples of at-risk species partially dependent on WMAs include Ute lady's tresses (*Spiranthes diluvialis*), northern leopard frog (*Rana pipiens*), greater sage-grouse (*Centrocercus urophasianus*), sandhill crane (*Grus canadensis tabida*), trumpeter swan (*Cygnus buccinator*), lesser scaup (*Aythya affinis*), northern pintail (*Anas acuta*), white-faced ibis (*Plegadis chihi*), long-billed curlew (*Numenius americanus*), and yellow-billed cuckoo (*Coccyzus americanus*).

All WMAs are funded through a combination of hunting license dollars and appropriations via the Wildlife and Sport Fish Restoration Programs. These federal programs collect excise taxes derived from the sale of ammunition, guns, archery equipment, and fishing and boating equipment and supplies, and distribute the revenue generated from the taxes to all of the states in the nation. The federal excise tax money received by the Department pays for a large portion of the management tab on WMAs. Hence, many operational activities on WMAs are designed to provide recreational opportunities for hunters and anglers and are considered a priority along with wildlife conservation priorities. Wildlife Management Areas also provide public access to other areas such as the Snake River and Federal and State lands that border Department-managed lands. Visitors to WMAs who do not hunt or fish also benefit from the varied wildlife resources on WMAs and enjoy non-consumptive activities such as horseback riding, wildlife photography, and bird watching.

The Big Cottonwood Wildlife Management Area (BCWMA) was purchased by the Department in 1993 for fish and wildlife conservation and federal land access. Prior to BCWMA's purchase, the property was privately owned and operated as a cattle ranch and farm for nearly 110 years. The property was sought by the Department because the area provided important habitats for reintroduced California bighorn sheep (*Ovus canadensis californiana*), introduced Rio Grande wild turkeys (*Meleagris gallopavo intermedia*), and one of the few remaining viable populations of native Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*) in southern Idaho. In addition, the acquisition secured public access to thousands of acres of adjacent federal lands.

To date, management emphasis on BCWMA has focused on maintaining, restoring, and rehabilitating habitats for a variety of wildlife species. Original management priorities included improving upland habitats for bighorn sheep and riparian/wetland habitats in Big Cottonwood Creek for cutthroat trout.

Big Cottonwood WMA is a popular destination for recreationists from Cassia, Minidoka, Jerome, and Twin Falls counties, collectively known as the Magic Valley. The primary uses of the management area include hiking/walking, mountain bike riding, horseback riding, plus hunting and fishing. The portion of the Big Cottonwood Creek trail (U.S. Forest Service [USFS] trail number 007) on BCWMA-deeded property has been closed to motorized vehicles since purchase of the property. All public access to BCWMA lands is by non-motorized means.

This document provides direction in the form of goals, objectives, and strategies for the management of BCWMA. The direction of BCWMA was determined after a series of public meetings. Issues pertaining to BCWMA were identified by the public and the Department (Appendix IV). These issues were developed into goals, objectives, and strategies consistent with the Department's Strategic Plan (*The Compass*).

This plan will serve as a guide for current and future managers in planning where to direct efforts and resources for maximum fish and wildlife benefits, public enjoyment, and efficient operations. As new information and technology become available, strategies may be modified to most effectively reach the goals and objectives in this plan. All goals, objectives, and strategies are dependent upon adequate funding, personnel, and public support.

Introduction

This management plan is designed to provide broad guidance for the long-term management of Big Cottonwood Wildlife Management Area (BCWMA). It replaces an earlier management plan written in 1999. This new 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, including:

- 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.

Big Cottonwood WMA Vision

Protect and manage the wildlife resources of the BCWMA, as mitigation for habitat losses elsewhere in the region, to ensure sufficient quantities of high quality upland and riparian habitats and secure habitat for big game, upland game, and for a wide variety of other game and nongame species. Provide high quality wildlife-based recreational opportunities compatible with this primary mission for the benefit of the public.

Modification of Plan

This plan provides broad, long-term management direction for BCWMA. 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 BCWMA, 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

The 814 deeded acres of the BCWMA are located approximately 6.5 miles northwest of Oakley and 22 miles southwest of Burley in south central Idaho (Figure 1). Big Cottonwood WMA is located in the northeast corner of the South Hills in Game Management Unit (GMU) 54 and borders private, state, and federal properties. The majority of habitat management on the BCWMA occurs on the 654 deeded acres situated at the mouth of Big Cottonwood Canyon. A detached parcel of 160 acres lies north of the WMA proper.

The BCWMA is situated at the mouth of Big Cottonwood Canyon. The majority of the management area lies within the Big Cottonwood Creek flood plain at elevations from 4,600 feet on the northern border to 4,800 feet on the southern border. The remaining portions occupy the toe to upper slopes of Big Cottonwood Canyon at elevations of 4,800-5,400 feet. This canyon area is characterized by steep talus slopes, some in excess of 60%, broken by numerous bedrock outcroppings. Prominent habitats found on BCWMA include juniper woodland, sagebrush-steppe, riparian woodland and shrubland, some small wetlands associated with irrigation activities, and small pastures consisting of grasses and forbs. More detailed information is presented in Appendix VI.

The average annual daily mean temperature for the area, as recorded at the Oakley, Idaho Weather Station, is 48^{o} F. The highest recorded temperature was 105^{o} F in July, 1933, and the lowest recorded temperature was -27^{o} F in February of 1933. The mean annual precipitation for the area is approximately 11 inches. Nearly 80% of annual precipitation is received from November through June. The growing season length at BCWMA is variable. The average frost-free period for the area is 120 days (UCC 2014).

Avian point count surveys conducted in 1995, 1996, and 1997 (IDFG, unpublished data) and incidental wildlife observations indicate the presence of at least 152 vertebrate species inhabiting BCWMA (Appendix VII). This includes 111 avian, 33 mammalian, seven reptilian, and one amphibian species.

The BCWMA provides habitat for California bighorn sheep and mule deer. California bighorn sheep were reintroduced in Big Cottonwood Canyon (including BCWMA) beginning in 1986 in an effort to reestablish a population in the Magic Valley Region. From 1986-1993, 50 bighorn sheep from southwestern Idaho were released in the Big Cottonwood drainage (IDFG 1996). Presently, bighorns frequent the irrigated agricultural lands on BCWMA in late fall and early winter and occupy the canyon portions of the management area during all seasons. The current status of bighorn sheep in Big Cottonwood Canyon is precarious. Recruitment rates and subsequent bighorn numbers in Big Cottonwood Canyon have steadily declined throughout the 1990s (IDFG 1998) and into the 21st century. Recent population estimates indicate fewer than 15 bighorn sheep remain in the South Hills (IDFG, unpublished data).

Mule deer (*Odocoileus hemionus*) are year-round residents of BCWMA and found primarily in association with juniper/sagebrush cover types in Big Cottonwood Canyon and the riparian cover

types along Big Cottonwood Creek. Mule deer hunting opportunity in GMU 54 is managed under a controlled permit system for center fire rifles and a general archery season.

The BCWMA also supports mountain lion (*Felis concolor*) in addition to numerous furbearers such as bobcat (*Felis rufus*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethica*), and mink (*Mustela vison*). The BCWMA supports huntable populations of ring-necked pheasants (*Phasianus colchicus*), gray partridge (*Perdix perdix*), California quail (*Callipepla californica*), and chukar partridge (*Alectoris chukar*).

In the late 1980s, Big Cottonwood Creek drainage (including BCWMA) was the top priority release site for wild turkeys in the Magic Valley Region (IDFG 1990). From 1988-2002, more than 160 wild Rio Grande turkeys have been released on BCWMA. Recent monitoring of turkey production and recruitment on BCWMA indicate the population maintaining itself on the WMA proper. Since the last release of turkeys in 2002, birds have dispersed throughout the South Hills, both on their own, and through a few small releases of nuisance birds trapped on private property in the Oakley area. The 2012 Minidoka Complex Fire burned more than 97,000 acres of public and privately owned lands in GMU 5. The impacts to turkey populations in the South Hills from this fire are still being evaluated.

Aquatic habitats on BCWMA are exclusively associated with the 2.5-mile reach of Big Cottonwood Creek that bisects the management area. Big Cottonwood Creek supports good numbers of Yellowstone cutthroat trout (YCT) in addition to a population of mottled sculpin (*Cottus bairdi*) (IDFG 1993).

In 1990, the Idaho Legislature declared the cutthroat trout as the state fish. The Snake River fine-spotted cutthroat trout (*Oncorhynchus clarkii* ssp.) (SRFCT) and the YCT may be the same fish. The SRFCT and YCT are listed as a Species of Special Concern with the Department while the SRVCT is listed as a Sensitive Species with the Bureau of Land Management (BLM) and USFS (Conservation Data Center 1994).

Prior to 1987, catchable rainbow trout were released by the Department in the headwaters of Big Cottonwood Creek. Because most hatchery rainbow trout were comprised of fall spawning stock, there is little likelihood of significant hybridization (F. Partridge, pers. comm.).

From August 5-7, 2012, the Cave Canyon Fire (later included in the Minidoka Complex Fire) swept across most of the BCWMA-deeded lands at the mouth of Big Cottonwood Canyon, the 280 acres of BLM property, and the majority of USFS lands up Big Cottonwood Canyon that are associated with the BCWMA. This lightning-caused fire eventually consumed approximately 97,600 acres in the northeast corner of the South Hills (GMU 54). The only portions of the BCWMA that did not burn were the northeast and northwest pastures, located on the north side of the Big Cedar Road.

No useable structures on the BCWMA were damaged or destroyed in this fire. However, the fire did consume the historic round corral that was below the residence. It also destroyed the old

cabin along with the juniper post corral that was located near the old apple orchard, slightly up the canyon from the primary diversion dam on Big Cottonwood Creek.

Riparian habitat was severely affected by the fire. Many of the old and mature cottonwood trees in the riparian zone were killed. In the future, many of these old trees will fall, possibly creating public safety hazards and obstructing the creek and the shared ditch from the dam to the Big Cedar Road.

Rehabilitation efforts were started in the fall of 2012. Where portions of pastures were severely burned over to bare earth, and where known infestations of undesirable annual plants or noxious weeds had been located, those areas (18 acres) were seeded to winter triticale to provide ground cover for the spring of 2013 and reduce the potential of further noxious weed or undesirable annual plant growth.

The fire also destroyed a significant portion of the post and pole fence that runs from the creek west along the Big Cedar Road then south to the trailhead. Reconstruction of this fence was completed during the summer of 2013.

The Department maintains a year-round fishing season and a two-fish bag limit for cutthroat trout on Big Cottonwood Creek. This fishery is popular with local Mini-Cassia area residents. For the past 10 years, 7% of public use on BCWMA has been for fishing.

Several species inhabiting the BCWMA proper and surrounding areas are listed as special-status species by the USFS and BLM. Many of these are relatively widespread but have specialized habitat needs. The following species fall into the sensitive species category according to those federal agencies: bald eagle (*Haliaeetus leucocephalus*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), merlin (*Falco columbarius*), northern goshawk (*Accipiter gentilis*), western burrowing owl (*Athene cunicularia*), Brewer's sparrow (*Spizella breweri*), Cassin's finch (*Haemorhous cassinii*), green-tailed towhee (*Pipilo chlorurus*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), sandhill crane (*Grus canadensis*), red-naped sapsucker (*Sphyrapicus nuchalis*), Lewis's woodpecker (*Melanerpes lewis*), sage thrasher (*Oreoscoptes montanus*), spotted sandpiper (*Actitis macularia*), willow flycatcher (*Empidonax traillii*), western small-footed myotis (*Myotis ciliolabrum*), and Townsend's big-eared bat (*Corynorhinus townsendii*).

The Department has identified Species of Greatest Conservation Need (SGCN) from a statewide management perspective. These include the bald eagle, Brewer's sparrow, ferruginous hawk, Lewis's woodpecker, long-billed curlew, merlin, sandhill crane, Swainson's hawk, Townsend's big-eared bat, and the western burrowing owl. In addition, the pygmy rabbit (*Sylvilagus idahoensis*), cliff chipmunk (*Neotamias dorsalis*), western toad (*Anaxyrus boreas*), long-eared myotis (*Myotis evotis*), and long-legged myotis (*Myotis volans*), all considered rare or sensitive, have distributions falling within the boundaries of BCWMA (Conservation Data Center 1994).

One fish species, the YCT, inhabiting Big Cottonwood Creek waters and BCWMA proper, is considered rare or sensitive by state and/or federal wildlife or land management agencies (Conservation Data Center 1994).

Historically, public use of BCWMA had centered on motorized vehicle access to Big Cottonwood trail. Motorized vehicle access to the trail (and the present day management area) has varied by landowner. Throughout the 1970s, the trail was accessible to full-sized motorized vehicles and access was unregulated. In 1979, because of concerns over soil erosion and sedimentation in Big Cottonwood Creek, the USFS conducted an environmental assessment (EA) to develop strategies to prevent further degradation. The EA attributed much of the erosion and sedimentation to old roads with ruts and vehicular use in Big Cottonwood Canyon. In 1982 the USFS, in cooperation with landowner Harold Cranney, removed a bridge that spanned the primary irrigation diversion from Big Cottonwood Creek. The removal of the bridge, in lieu of costly road reconstruction and rehabilitation, effectively limited motorized access to off-highway vehicles.

In the early 1980s, Harold Cranney began annually closing the trail to all motorized vehicles from March through May in response to increasing levels of vandalism and livestock harassment. The 2012 USFS travel map for the Cassia Division of the Sawtooth National Forest identifies Big Cottonwood trail on USFS-administered lands that are associated with BCWMA as closed to all motorized vehicles.

The 1.5-mile of trail on BCWMA has been closed to motorized vehicles since the Department assumed ownership and management of the property in 1993. From 2002-2012, the majority of visitors to BCWMA and those accessing Big Cottonwood Canyon via the trail were non-consumptive users versus consumptive users (76% vs. 24%, respectively). Hikers/walkers, hunters, mountain bikers, and horseback riders were the most numerous users of the trail as determined from sign-in sheets at three locations on BCWMA (Table 1). This pattern of user visitation has remained fairly consistent from year to year.

Table 1. Recreational use on Big Cottonwood WMA by activity, number of people, and percent of use from 2003-2012, as gathered from sign-in sheets.

Activity	**Number of People**	**Percent of Use**
Hiking/walking/running	1,796	46
Hunting	664	17
Mountain biking	508	13
Horseback riding	429	11
Fishing	273	7
Other: bird watching, picnic, photography, etc.	234	6
Totals	3,904	100

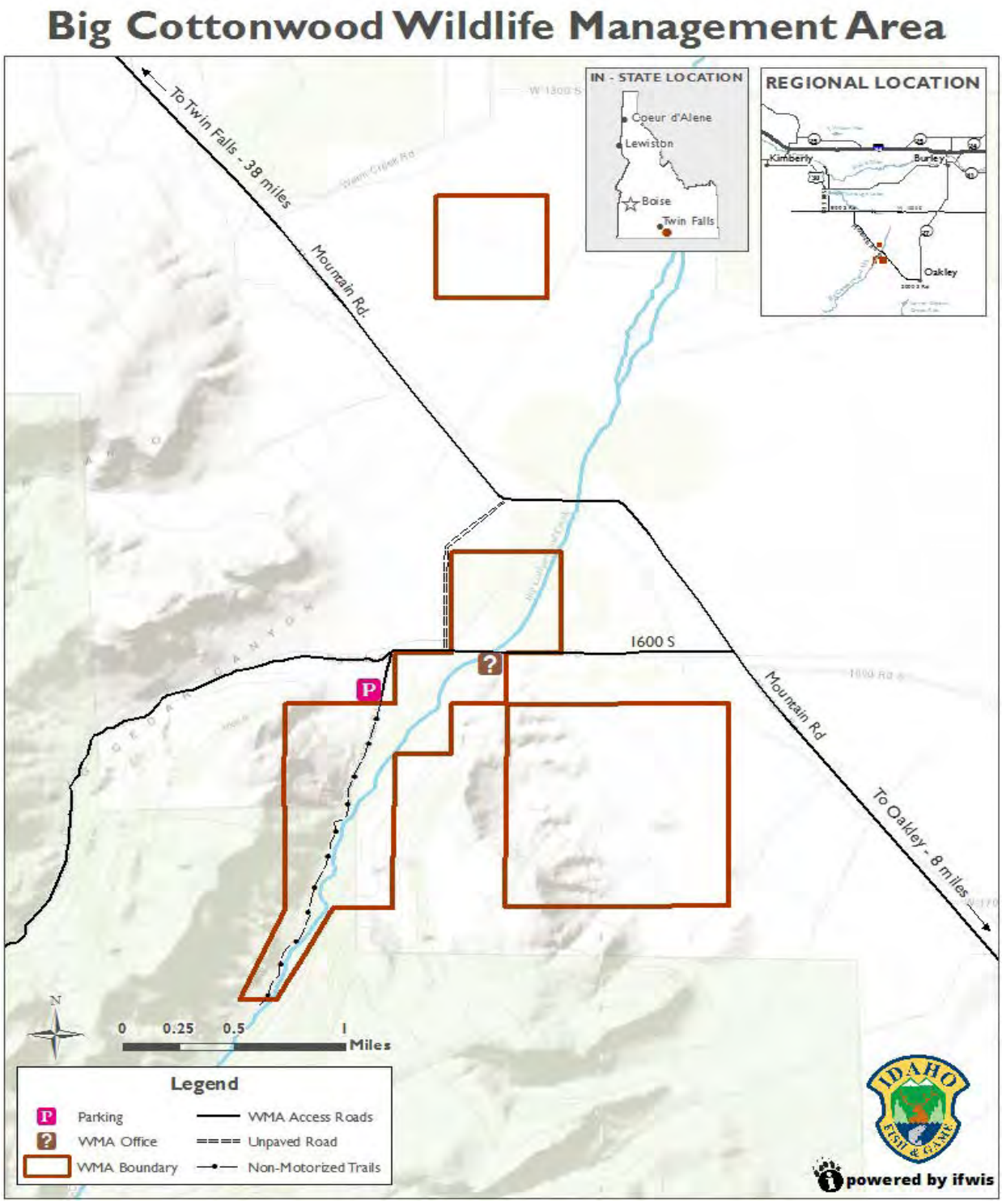


Figure 1. Map of Big Cottonwood Wildlife Management Area.

Management Issues

Regional habitat staff presented information on the WMAs and solicited input from the public at four big game season setting public meetings during March and April of 2012; a total of 120 people attended the four meetings. These meetings were held in Hailey, Burley, Jerome, and Hagerman. Regional habitat staff participated in each meeting and manned displays that highlighted the WMAs, the planning process, and management issues that we had identified prior to the meetings. We encouraged the attendees to give us written comments regarding management of the WMAs and any issues they felt we need to address in our future management. We directed attendees to the online survey available on the Department website and provided a form at the meetings for those wishing to provide written comments.

Throughout 2012 (Feb-Dec), an online survey form was available on the Department website. The survey allowed participants to answer questions and provide feedback on WMA management statewide and the management of specific WMAs. A news release was printed in several newspapers located in the Magic Valley Region inviting the public to take the online survey and to participate in the public meetings mentioned previously. This was repeated in spring 2014 when drafts of the WMA plans were made publicly available for comments.

We received 31 online surveys specific to BCWMA users during 2012. Many of the attendees at the public meeting opted to submit their comments via the online survey. Most of the respondents who filled out surveys were either satisfied (47%) or very satisfied (38%) with the current management of BCWMA. Online survey results in 2014 yielded 6 additional responses with 83% either satisfied or very satisfied with the WMA priorities. Additional information gathered from these surveys on visitor use trends is available in Appendix IV.

A list of issues was developed after public input and a complete summary of comments is provided in Appendix IV. The issues identified by the public were grouped based on similarity into three general categories: Habitat Management, Wildlife Management, and Public Use Management. Similar comments were then combined to form management issue statements under each category. In the section below, we summarize each management issue and discuss some potential management options on BCWMA.

Issues Identified By the Public

Habitat Management

1. **Noxious weeds are a concern on BCWMA.**

   Discussion: Several state-declared noxious weeds are present on BCWMA. The more abundant and persistent species are Canada thistle (*Cirsium arvense*), whitetop (*Cardaria draba*), houndstongue (*Cynoglossum officinale*), field bindweed (*Convolvulus arvensis*), and a small, confined outbreak of leafy spurge (*Euphorbia esula*). Each field season, the BCWMA manager and wildlife technician devote numerous hours and large amounts of

chemical herbicides on noxious weed eradication throughout the WMA. The Minidoka Complex Fire resulted in the removal of herbaceous vegetation throughout areas of the WMA. The resulting increase in bare ground may result in the outbreak and proliferation of more noxious weeds on BCWMA.

2. **Increase habitat for upland game.**

   Discussion: The Minidoka Complex Fire of August 2012 removed the majority of residual vegetation in both the southeast and southwest pastures. Vegetative response to the fire in both the southeast and southwest pastures has been significant, and both pastures offer large expanses of dense nesting cover. Areas that do not come back on their own will need to be rehabilitated with new grass and forb seed mixes and irrigated until they are established. Irrigated food plots also provide a source of nesting cover and forage.

Wildlife Management

1. **The Rio Grande turkey population on BCWMA needs to be maintained.**

   Discussion: Since the first release in 1988, at least 160 Rio Grande turkeys have been released on BCWMA. The Big Cottonwood drainage provides access to other areas of the South Hills that have suitable turkey habitat and the birds that have been released on the BCWMA have expanded to other areas in the South Hills (GMU 54). The successful release and subsequent population increase and distribution of turkeys have allowed for a sustained annual controlled turkey hunt in this unit since 2002. A small number of birds were trapped and moved by Department personnel as a result of depredation problems in the Oakley, Idaho area. The last release of birds at BCWMA was in 2001; there are no additional releases planned on the BCWMA at this time.

Public Use Management

1. **Maintain the non-motorized use policy for BCWMA.**

   Discussion: The majority of public use on BCWMA and associated lands is non-motorized and non-consumptive recreation, including hiking, horseback riding, and mountain biking. During the hunting season for upland birds and big game, consumptive recreation activities outpace non-consumptive. Public support for continuation of non-motorized access has been expressed by BCWMA visitors for years on sign-in sheets at the main trailhead. Public input gathered from online surveys also recommended the continuation of non-motorized access to BCWMA.

2. **Provide public education opportunities.**

   Discussion: The BCWMA maintains a diversity of plant and wildlife species that are made readily accessible by the presence of a hiking trail along the southwestern portion of the property. Taking advantage of these resources and offering guided nature hikes would be

ideal. Efforts have been made to initiate some of these opportunities, but have been unsuccessful. Department personnel have an interest in continuing to pursue these opportunities as well as providing information kiosks.

Issues Identified By the Department

Habitat Management

1. **The Minidoka Complex Fire eliminated the majority of the sagebrush uplands on BCWMA and severely impacted the majority of the riparian zone associated with the deeded properties of the WMA.**

   Discussion: In April of 2013, 339 volunteers and Department personnel planted Wyoming big sagebrush on approximately 40 acres of BCWMA that had been identified for rehabilitation and was readily accessible by foot. A total of 17,500 bare root sagebrush seedlings were planted to rehabilitate those upland acres that previously had healthy stands of big sagebrush.

   Volunteers also planted cottonwood poles along Big Cottonwood Creek that were obtained from unburned areas adjacent to the creek to replace those lost during the fire. A total of 30 sites have been identified along Big Cottonwood Creek on Department-deeded lands, from the Big Cedar Road to the dam/diversion, for cottonwood and willow reestablishment. Efforts to rehabilitate the riparian habitat along Big Cottonwood Creek will continue for the duration of this plan.

Wildlife Management

1. **Desert bighorn sheep numbers have declined in GMU 54 and on BCWMA proper for numerous years.**

   Discussion: The last release of bighorn sheep on the BCWMA was in 1993. Over the years, a total of 48 sheep were released on the WMA proper. Population numbers have never increased significantly to offer controlled hunts, as was the original intent. Although lamb natality was noted frequently, there has been little to no recruitment into the population. Annual survival rates from 1987 through 1997 ranged from 1.00 to 0.21. Since the Minidoka Complex Fire of August 2012, only three bighorn sheep (two rams and one ewe) have been observed on the BCWMA. Considering the fact that bighorn sheep numbers have never significantly increased on BCWMA or in GMU 54 in general, it is highly unlikely that further sheep introductions will be considered.

Big Cottonwood WMA Management Program

The Department is responsible for the preservation, protection, perpetuation, and management of all wildlife, fish, and plants in Idaho. Wildlife management areas allow the Department to directly affect habitat to maximize suitability for species in key areas. Management activities designed to restore and maintain important natural habitats, and create artificial habitats to enhance carrying capacity for selected wildlife species remains a key strategy on BCWMA. However, some of the most pervasive threats to WMA ecological integrity, such as noxious weeds, rural residential/commercial development, increased water diversion, and conflicting land uses on public lands often come from outside WMA boundaries. Therefore, WMA managers must recognize and create opportunities to participate in collaborative conservation and management programs within an expanded landscape, thus enabling broader influence to maintain the ecological functions that sustain WMA-dependent wildlife.

We propose that an effective way to enable a broader influence over the future of BCWMA is through the use of focal species management. According to Noss et al. (1999), focal species are those species used by planners and managers to determine the appropriate size and configuration of conservation areas. Conservation of species within landscapes used for other enterprises such as forestry, recreation, agriculture, grazing, and commercial development requires managers to determine the composition, quantity, and configuration of landscape elements required to meet the needs of the species present (Lambeck 1997). Since it is impractical to identify key landscape elements for all species associated with BCWMA, a carefully selected suite of focal species can act as a surrogate for the conservation of many species.

Identifying landscape-scale species priorities across ownership boundaries helps address wildlife related issues on the BCWMA more comprehensively, and creates a platform for conservation partnerships in the surrounding landscape. This step is also crucial for increasing the likelihood that WMA functions are resilient to inevitable changes in their associated landscapes.

The following six-step process was used to create the BCWMA management program described in this plan. Each of these steps is described in detail on the ensuing pages.

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

Summary of Management Priorities

Big Cottonwood WMA, like many other WMAs, was purchased for specific purposes and therefore has inherent management priorities. The BCWMA was created to provide public recreation, both consumptive and non-consumptive, reintroduce California bighorn sheep, introduce Rio Grande turkeys, and to maintain the population of YCT in the Big Cottonwood Creek drainage.

Additionally, 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 the state of 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.

Taking the biological and funding resources of BCWMA into consideration, in concert with these foundational priorities of BCWMA and statewide Department priorities, the Department developed the following list of broad-scale management priorities for the BCWMA.

Big Cottonwood WMA Management Priorities:

1. Big Game Habitat
2. Upland Game Bird Habitat
3. Special Status Species Habitat
4. Public Hunting, Fishing, and Wildlife-based Recreation Opportunity and Education

Focal Species Assessment

This section of the BCWMA Plan is an assessment of various conservation priority wildlife species on the BCWMA and the spring-fed Big Cottonwood Creek water drainage system in order to identify focal species to guide management. Table 2 evaluates taxa that are either flagship species (Groves 2003) and/or at-risk species identified by the Department in the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005) and key federal agencies.

Flagship species are popular, charismatic species that serve as symbols and catalysts to motivate conservation awareness, support, and action (Heywood 1995). Flagship species often represent a landscape or ecosystem (e.g., Big Cottonwood Creek water drainage system or cliff/canyon 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).

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 also considering a variety of at-risk species (Groves 2003); yielding a more comprehensive assessment that includes culturally and economically important species (e.g., waterfowl and upland game birds) along with formally designated conservation priorities (e.g., bald eagle). Categories of at-risk vertebrate species considered in this assessment are: 1) species designated as Idaho 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 Comprehensive Wildlife Conservation Strategy document is now referred to as the SWAP. Idaho's plan 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. The Big Cottonwood Creek water drainage system, including BCWMA is comprised of multiple land ownerships; BLM and USFS public lands are the dominate ownership, with Department-owned and managed lands constituting the remainder. The BLM and USFS are key partners in this landscape as their management actions can directly influence ecological function on BCWMA.

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 Regional Habitat, Fisheries, and

Wildlife 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.

Magic Valley Regional Habitat staff with assistance from regional staff estimated the suitability of assessed species as a focal species 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 2. Status of Conservation Priority Species on the Big Cottonwood WMA, including their potential suitability as focal species for management.

Species	Status Designation(s)	Occurrence Context in Big Cottonwood WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Big Cottonwood WMA
Mule Deer (*Odocoileus hemionus*)	Flagship	Widespread across BCWMA landscape and associated lands in GMU 54	Habitat loss from range fires, spread of noxious weeds, and illegal harvest.	Rehabilitate uplands and riparian areas on BCWMA from Minidoka Complex Fire impacts	Potentially suitable as a focal species. Mule deer are a culturally and economically important wildlife species in south central Idaho and are a species with great potential for developing conservation partnerships.
California Bighorn Sheep (*Ovis canadensis californiana*)	Flagship	Occasional sightings on BCWMA, but sheep spend the majority of their time outside the boundaries of BCWMA. Numbers of bighorn sheep have declined steadily in GMU 54 since the last sheep release in 1994.	Illegal harvest, road kill mortality, invasive weeds that outcompete woody plants, and the potential of disease transmission from domestic sheep herds	Monitor presence on BCWMA. Improve habitat conditions by planting shrubs and trees along Big Cottonwood Creek. Work with regional staff and local domestic sheep producer to limit contact between wild and domestic sheep.	Not suitable as a focal species, due to declining numbers, lack of recruitment and unlikelihood of further releases.
Upland Game Birds (Chukar, Gray Partridge, Ring-necked Pheasant, Rio Grande Wild Turkey, California Quail)	Flagship	BCWMA provides year-round habitat for these upland game bird species.	Habitat loss from range fires, spread of noxious weeds	Rehabilitate uplands and riparian areas on BCWMA from Minidoka Complex Fire impacts. Provide food plots and nesting habitat on BCWMA.	Potentially suitable as a focal species group, with emphasis on wild turkey.
Yellowstone Cutthroat Trout (*Oncorhynchus clarkii bouvieri*)	Flagship and At-risk Species, SGCN, USFS Sensitive, BLM Sensitive	An isolated population of YCT exists in the Big Cottonwood Creek drainage (IDFG 2007). Big Cottonwood Creek supports a strong population of YCT (Meyer et al. 2006). YCT currently inhabit about 63% of their historic range in Idaho. Populations monitored over last 10-20 years indicate stable densities (IDFG 2007).	Primary threats to the persistence of YCT include (1) non-indigenous species, (2) habitat degradation (e.g., surface water diversions, grazing, erosion, mineral extraction, timber harvest, and road building), and (3) global climate change (IDFG 2007).	Determine genetic purity and extent of hybridization in Big Cottonwood Creek. Continue monitoring genetic diversity in small isolated populations. Improve habitat conditions by planting shrubs and trees along Big Cottonwood Creek. Work with federal agencies, state agencies, and private landowners to preserve existing habitat, enhance degraded habitat, and explore opportunities for restoring connectivity lost due to stream diversions .	Potentially suitable as a focal species. YCT require well–oxygenated water; clean, well–sorted gravels, with minimal fine sediments for successful spawning; and a complexity of in-stream and riparian habitat. Therefore, their thriving presence is one indicator of a high functioning system.
Amphibian Guild†	At-risk Species, SGCN, BLM Sensitive	Northern Leopard Frog (*Rana pipiens*) was, at one time, the most commonly encountered amphibian in Twin Falls County. There are no contemporary (since 1969) records for this species in south-central Idaho. Nearest extant populations to the WMA are in Oneida County. The WMA is within the range of the Southern Rockies Distinct Population Segment of Western Toad (*Anaxyrus boreus*), which has been petitioned for listing under ESA. A Western Toad observation on the WMA was reported in 2000, but no other occurrences are known on surrounding lands. Suitable breeding habitat exists on the WMA, but status of Western Toad on the WMA is unknown.	Loss and degradation of wetland and riparian habitat is the most prevalent threat to populations. Introduced competitors and predators can cause amphibian population declines and losses. Disease is also a concern, particularly the chytrid fungus, *Batrachochytrium dendrobatidis*, which is the primary threat to Western Toad populations throughout the Southern Rocky Mountains. This is compounded by habitat alteration around wetlands and human-facilitated expansion of natural and introduced predators. Habitat fragmentation isolates breeding populations, which increases the effects of these widespread threats and the risk associated with other threats, such as local changes in water quality, timber harvest, livestock grazing, fire, and toxic chemicals.	Wetland protection and/or restoration of degraded sites, disease management, determining and monitoring population status, delineating important habitat, and protecting delineated habitat are beneficial to both Northern Leopard Frog and Western Toad, but will also benefit other amphibians (i.e., Boreal Chorus Frog, Tiger Salamander, and Sierran Chorus Frog). Continuation of flood irrigation on the WMA will enhance amphibian habitat.	Marginally suitable as a focal guild. Amphibians are an important indicator of healthy riparian and wetland systems in southern Idaho. Management for this guild would enhance habitat connectivity across an arid landscape and benefit multiple wetland/riparian-dependent species.

Species	Status Designation(s)	Occurrence Context in Big Cottonwood WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Big Cottonwood WMA
Lewis's Woodpecker (*Melanerpes lewis*)	At-risk Species, SGCN, BLM Sensitive	The WMA falls within a relatively small patch of predicted Lewis's Woodpecker breeding habitat in south-central Idaho (Idaho Gap Analysis). ACD shows one recent record for the species within 1.5 miles of the WMA. Preferred habitat for this unique bird is open cottonwood forest with large dead or decaying trees, a shrubby understory, and natural regeneration from bottomland flooding. Observations of Lewis's woodpecker are made frequently each year by field personnel at BCWMA.	Loss and degradation of suitable breeding habitats in deciduous riparian and dry pine forests. Reductions of large snags in breeding habitats may limit reproduction. Competition for cavity nests with non-native, invasive European Starling.	Management actions that maintain and restore open riparian woodland (cottonwood) forests with large snags and a well-developed understory will benefit Lewis's Woodpecker. Maintain and enhance natural spring flooding processes needed for cottonwood regeneration. Control nesting European Starlings, which compete with Lewis's Woodpeckers for nest cavities. Promote vegetative diversity and forest openings which produce abundant insect prey for this fly-catching specialist. Manage or exclude livestock grazing to promote cottonwood recruitment and understory shrub component.	Potentially suitable as a focal species. Lewis's Woodpecker is an excellent indicator of healthy cottonwood riparian forest - the WMA's namesake. The species is a highly desirable watchable wildlife species given its colorful plumage, unique foraging habits, and tie to the Lewis & Clark Expedition's scientific discoveries. WMA emphasis will provide habitat connectivity for this highly nomadic species between suitable habitat patches in Idaho and other western states. The demise of many cottonwood trees in the Big Cottonwood Creek drainage, as a result of the Minidoka Complex fire, may actually increase snag availability for this species.
Riparian Woodlands	SWAP Priority Habitat	Riparian woodlands comprise a significant feature of the WMA. In the arid Intermountain West, riparian areas comprise less than 1% of the landscape (woodlands even less), but they are the single most productive type of habitat. Low elevation riparian woodlands have declined significantly. Nearly half of Idaho's 242 species of breeding birds use riparian areas as their primary nesting habitat. Riparian forests act like a web across the landscape, to link patches of critical habitat along migration routes.	Drainage of wetlands, water diversions, and the competing demands for human uses of water pose the primary threats to riparian woodland systems. Loss of floodplain function limits recruitment and retention of cottonwood galleries.	Maintain multiple vegetation layers in woody riparian habitats. Ensure that cottonwoods and other woody species are stable or increasing, with all age-classes present. Manage for a variety of native plant species and eliminate non-natives. Consider potential disturbance to nesting birds when locating camping sites, picnic areas, and other areas of human activity.	Potentially suitable as a focal habitat type. Rare habitat type within southern Idaho landscape. Supports a diverse assemblage of fish and wildlife including, neo-tropical migratory birds, amphibians, bats, fish, small mammals, and mule deer. Favored habitat type for wildlife viewing, bird watching, and hiking.
Ferruginous Hawk (*Buteo regalis*)†	At-risk Species, SGCN, BLM Sensitive	WMA lies within core breeding range for Ferruginous Hawk in Idaho. ACD shows numerous breeding records for this species within a 10-mile radius of the WMA. Ferruginous Hawks likely use the open, shrub-steppe habitats of the WMA for foraging and may use trees or cliffs on or adjacent to the WMA for nesting. Species is locally abundant at the interface between pinyon-juniper and shrub-steppe environments for foraging and nesting. Ground squirrels comprise primary prey species.	Primary threats are agricultural development and cultivation of native grasslands. Population declines have been attributed to deleterious effects of cultivation, grazing, poisoning and control of small mammals (principally ground squirrels), mining, and fire in nesting habitats. Growing concern is the development of wind farms where hawks could potentially collide with turbines during spring and fall migration movements.	Enhancement of nest substrates, including natural (trees, cliffs) and artificial (nest platform) substrates. Maintain/enhance ground squirrel habitats/ populations. Mitigate development impacts from wind farm turbines, mining, pipeline construction, and urbanization.	Potentially suitable as a focal species. Ferruginous hawk could serve as a management indicator for upland, sage-steppe habitat type on the WMA. Consider blending Golden Eagle, Ferruginous Hawk, and Swainson's Hawk into a sagebrush-steppe-associated raptor guild; ecology and conservation actions are compatible between these three species. Desirable watchable wildlife species.
Swainson's Hawk (*Buteo swainsoni*)†	At-risk Species, SGCN, BLM WatchList	WMA lies within core breeding range for Swainson's Hawk in Idaho. ACD shows a few records within three miles of the WMA. During the breeding season, species is strongly associated with agricultural areas with scattered trees. In migration, species is found in open, grass-dominated sage-steppe habitats. On breeding grounds, main prey items are small mammals, such as young ground	Primary threat is vulnerability of species where it congregates on wintering grounds in S. America (pesticides). On breeding grounds, conversion of native grasslands to woody perennial crops and urban development is detrimental. Wind farms are a growing concern during spring and fall migrations.	Maintain and/or restore native grasslands to retain adequate foraging and nesting habitats. Maintain and/or restore tree and shrub components near riparian areas, which are preferred nesting sites of Swainson's Hawk. Adhere to best management practices for rodent/pest control to avoid secondary poisoning of Swainson's Hawks from rodenticides, pesticides, or lead bullet fragments.	Potentially suitable as a focal species; probably does not occur in high enough densities to warrant its singular focus. Consider blending Golden Eagle, Ferruginous Hawk, and Swainson's Hawk into a sagebrush-steppe-associated raptor guild; ecology and conservation actions are compatible between these three species. Desirable watchable wildlife species.

Species	Status Designation(s)	Occurrence Context in Big Cottonwood WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Big Cottonwood WMA
		squirrels and pocket gophers. Swainson's Hawks do nest and breed on this WMA.			
Golden Eagle (*Aquila chryasaetos*)	Flagship	ACD records show numerous records for Golden Eagle in the WMA vicinity. A 2011 comprehensive survey for Golden Eagles in southern Idaho found 64% of Golden Eagle territories (107 of 168) in the BLM Burley Field Office. Primary nesting areas are cliff habitats associated with the Snake River corridor and tributary canyons.	Renewable energy development, particularly collisions with wind turbines and electrocution. Human disturbance during the nesting season. Secondary poisoning from lead or rodenticides.	Identify migratory corridors and monitor breeding territories to identify potential energy development impact "hot spots", develop mitigation strategies, and enable a more proactive approach to review and evaluation of energy development projects. Minimize human disturbance at nest sites. Properly site and construct transmission lines and infrastructure to minimize bird strikes and electrocutions. Apply best management practices for rodent/pest control to avoid secondary poisoning of Golden Eagles from rodenticides, pesticides, or lead bullet fragments.	Potentially suitable as a focal species. Golden Eagle could serve as a management indicator for canyon, upland, and sage-steppe habitat types on the WMA. Consider blending Golden Eagle, Ferruginous Hawk, and Swainson's Hawk into a sagebrush-steppe-associated raptor guild; ecology and conservation actions are compatible between these three species. Desirable watchable wildlife species.

† Information about species occurrence and threats were obtained from the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005).

Selection of Conservation Targets

The biodiversity of BCWMA is represented by numerous vertebrates, invertebrates, plants, and ecological communities. It is impractical to evaluate and plan for the conservation of all these elements. Therefore, Conservation Targets, a sub-set of species and communities, were selected to represent the biodiversity of BCWMA for management and conservation, while still reflecting the management priorities of BCWMA.

Conservation Targets for the BCWMA Management Plan were selected from species ranked as potentially suitable focal species in Table 2. Conservation Targets could also include habitats that effectively represent suites of the flagship and special status species evaluated in Table 2, regardless of their potential suitability as a focal species. A final consideration in the selection of Conservation Targets was the best professional judgment of the Magic Valley Regional Habitat Manager and BCWMA staff. Effective Conservation Targets cannot be selected based solely on species assessments. They must reflect regional threats, priorities, existing conservation partnerships, and the limitations of WMA personnel and funding.

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

1. Mule Deer (Big Game Habitat)
2. Rio Grande Turkey (Upland Game Bird Habitat)
3. Yellowstone Cutthroat Trout / Riparian Woodland Habitat (Special Status Species Habitat)
4. Raptor Guild (Special Status Species Habitat)

Mule Deer

Mule deer were selected as a Conservation Target to represent big game habitat on BCWMA because:

- Mule deer are a flagship species and are found year-round throughout the BCWMA-deeded properties and associated BLM, USFS, state, and private lands.
- There has been a significant amount of mule deer research completed within this landscape, enabling a fairly complete delineation of their seasonal habitats and migration patterns.
- Mule deer rely on a broad array of habitat components including aspen forest, riparian habitat, streams, mountain shrub, grasslands, and sagebrush to thrive within the BCWMA landscape. Therefore, efforts to sustain deer herds by conserving these varied habitat components will benefit a wide range of other species.

Rio Grande Turkey

Rio Grande turkey was selected as a Conservation Target to represent upland game bird habitat on BCWMA because:

- The BCWMA was purchased with the intent of introducing Rio Grande turkeys into the South Hills, GMU 54.
- Rio Grande turkeys fulfill all criteria for suitability as a focal species.
- The Rio Grande turkey population on BCWMA is the only one of strictly Rio Grande turkey stock in the state of Idaho.
- Rio Grande turkeys use a wide range of various habitats on the BCWMA and in the South Hills in general, including grasslands, sage-steppe, mountain shrub, and riparian communities. Therefore, efforts to sustain Rio Grande turkey by conserving these varied habitat components will benefit a wide range of other species.

Raptor Guild

The raptor guild was selected due to the diversity and abundance of birds of prey on the BCWMA, year-round and seasonally:

- Raptors occurring on the BCWMA include both diurnal and nocturnal species.
- An abundant mammalian and passerine prey base sustain the raptor guild.
- Birds of prey provide non-consumptive, watchable wildlife opportunities for visitors to BCWMA.
- A total of 12 diurnal and seven nocturnal birds of prey may be found on the BCWMA.

Yellowstone Cutthroat Trout

Yellowstone cutthroat trout and riparian woodland habitat were selected as Conservation Targets to represent Special Status Species and Habitats on BCWMA because:

- Both garner special status at either the state and/or federal level.
- The YCT are also flagship species that are a popular game fish on BCWMA.
- High quality YCT habitat is an indicator of highly functioning riparian and aquatic ecosystems.
- Seventy-five percent of the species evaluated in Table 2 will benefit from efforts to protect and restore riparian habitat. Riparian protection and restoration is the primary recommended beneficial management and conservation action for the majority of the species evaluated.
- Riparian woodland habitat restoration reaches can be efficiently monitored by BCWMA staff.
- Given the high species value of riparian habitats—particularly of priority species such as mule deer, Rio Grande turkey, YCT, songbirds, raptors, nongame mammals, and amphibians, 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 3). We evaluated each of the Conservation Targets to determine which species from Table 2 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. Our results indicate that the selected Conservation Targets on BCWMA provide substantial, but variable habitat benefits for all of the assessed 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.” Fortunately, the management actions for the selected Conservation Targets on BCWMA are expected to leave little, if any, gaps in habitat benefits for those remaining species. The specific management actions are described in detail in the following Management Program Table (pages 36-40).

Table 3. Analysis of Conservation Target coverage and identification of conservation needs.

	Conservation Targets[a]				
Species Assessed in Table 1	**Yellowstone Cutthroat Trout**	**Rio Grande Turkey**	**Mule Deer**	**Raptor Guild**	**Conservation Need**
Mule Deer	X	X	X		
California Bighorn Sheep			X		
Upland Game Bird Guild	X	X	X	X	
Yellowstone Cutthroat Trout	X	P			
Amphibian Guild	X	P			
Lewis's Woodpecker	X	X			
Riparian Woodlands	X	X	X	X	
Ferruginous Hawk		P		X	
Swainson's Hawk	X	P		X	
Golden Eagle	P	X	P	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 Selected Focal Species/Habitat Landscapes

Each of the focal species selected as Conservation Targets for BCWMA also utilize habitats off of the WMA to meet their annual needs. In the case of the Riparian Woodlands Conservation Target, the species that will benefit from improved riparian habitats also are found off of BCWMA. Therefore, it is crucial that we actively participate in habitat conservation efforts on lands located beyond the borders of the WMA if we are to maximize the potential benefits of management actions on the WMA. For example, management of non-Department managed lands in the upper Big Cottonwood Creek drainage can impact riparian habitats on BCWMA which are located at the bottom of the drainage. Management actions on adjacent lands that improve surface water infiltration, reduce soil erosion, and provide shading vegetation along Big Cottonwood Creek can impact the quality and quantity of water throughout the entire reach of the creek.

The following sections describe the methods used to define spatial landscapes for each of our BCWMA Conservation Targets. We used the best data available (i.e., professional knowledge from Department biologists and Conservation Officers who were familiar with waterfowl movements on BCWMA, feeding patterns, foraging flight movement data, and other ecological data from peer reviewed scientific literature, and local knowledge) to construct these Conservation Target-specific landscapes. These landscapes are then utilized in the Management Program Table (pages 36-40) to identify Conservation Target-specific Management Directions, Performance Targets, and Strategies for both BCWMA and for the delineated landscape.

Mule Deer Landscape

Movements by mule deer to and from BCWMA are known to occur. The number of mule deer observed on BCWMA varies seasonally, but typically during late fall thru early spring is the time period when mule deer numbers are at their highest on the WMA. Big Cottonwood WMA is located within mule deer winter range in GMU 54.

The home ranges for mule deer that utilize BCWMA, seasonally or year-round, have not been fully determined. Generally we know that mule deer migrate between summer and winter ranges based on environmental conditions; as snow depths increase at higher elevations, mule deer migrate to lower elevations. The limited radio telemetry data we have collected from mule deer in GMU 54 suggests a mean distance between summer and winter ranges of 14.3 km (Hurley, unpublished data). Personal observations by Department staff have documented that resident mule deer move to and from BCWMA, sometimes on a daily basis. Big game aerial surveys conducted during the winter have also documented mule deer on BCWMA, as well as on public lands directly adjacent to the WMA.

Trapping and placing GPS collars on mule deer wintering on BCWMA and then tracking their movements throughout the year would be one method of collecting data that could help determine their distribution and movements on the landscape as it relates to BCWMA.

Though we lack sufficient data to derive a home range estimate for mule deer that use the BCWMA, we have buffered BCWMA by the mean distance between summer and winter ranges (14.3 km) to identify the mule deer landscape (Figure 2). Management recommendations for lands outside the BCWMA are addressed in the landscape section of the Management Program Table.

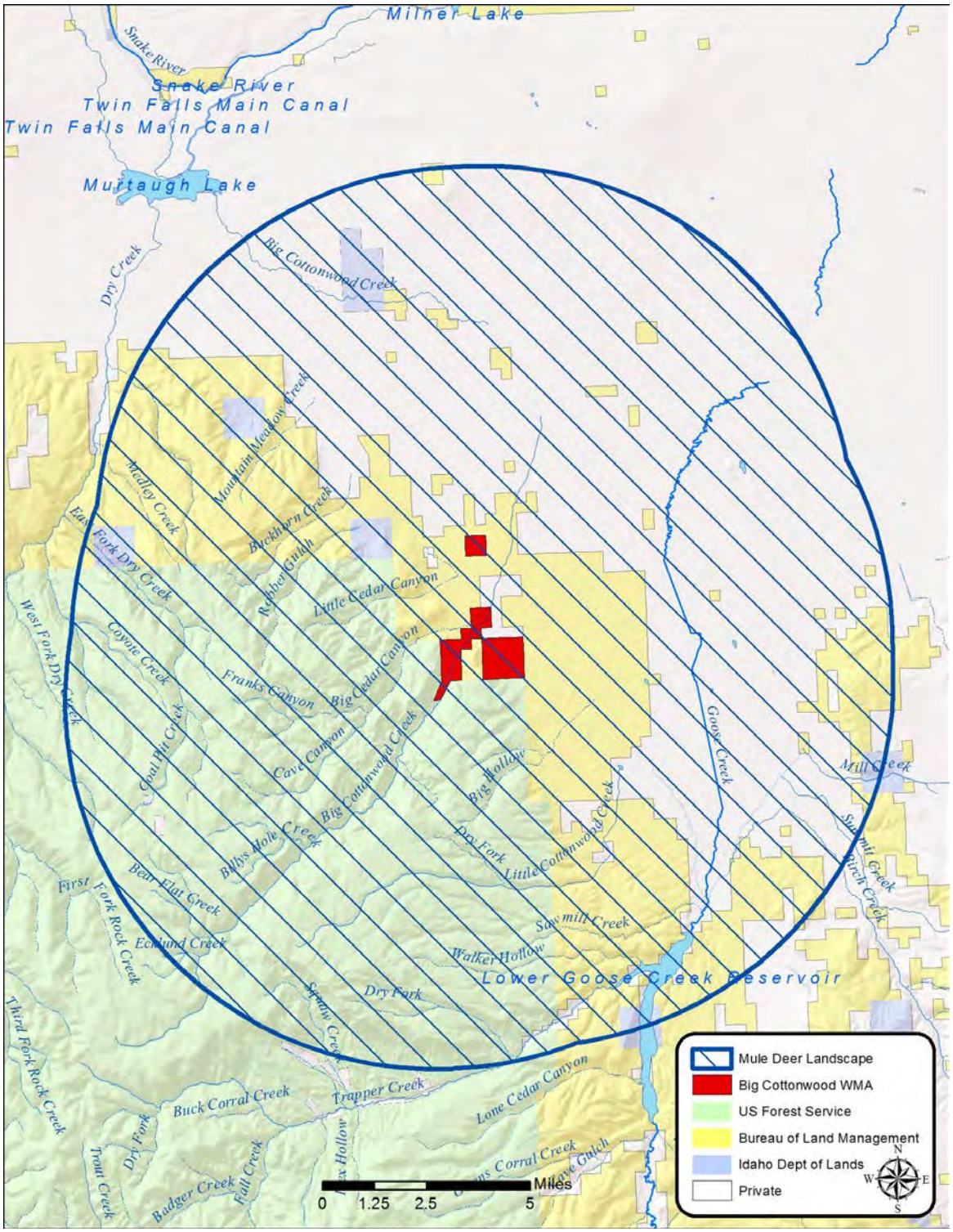


Figure 2. Big Cottonwood WMA mule deer landscape.

Rio Grande Turkey Landscape

There have been multiple releases of Rio Grande turkeys on BCWMA. These releases have resulted in the successful establishment of turkeys throughout a considerable portion of the South Hills area of GMU 54.

The BCWMA regularly winters approximately 50 turkeys. Some of these birds remain on the WMA year-round, but the majority of birds move off the WMA during the spring as they move up the Big Cottonwood Creek drainage and also disperse into adjacent drainages.

Turkeys that use the WMA also use habitats outside the WMA boundaries, which warrant management consideration at the landscape level. The Rio Grande turkey landscape was defined by buffering the BCWMA using an average annual movement of 12 km as reported in the literature (Thomas et al. 1966, Phillips 2004, Holdstock et al. 2006; Figure 3). Management recommendations for lands outside the BCWMA are addressed in the Rio Grande turkey landscape section of the Management Program Table.

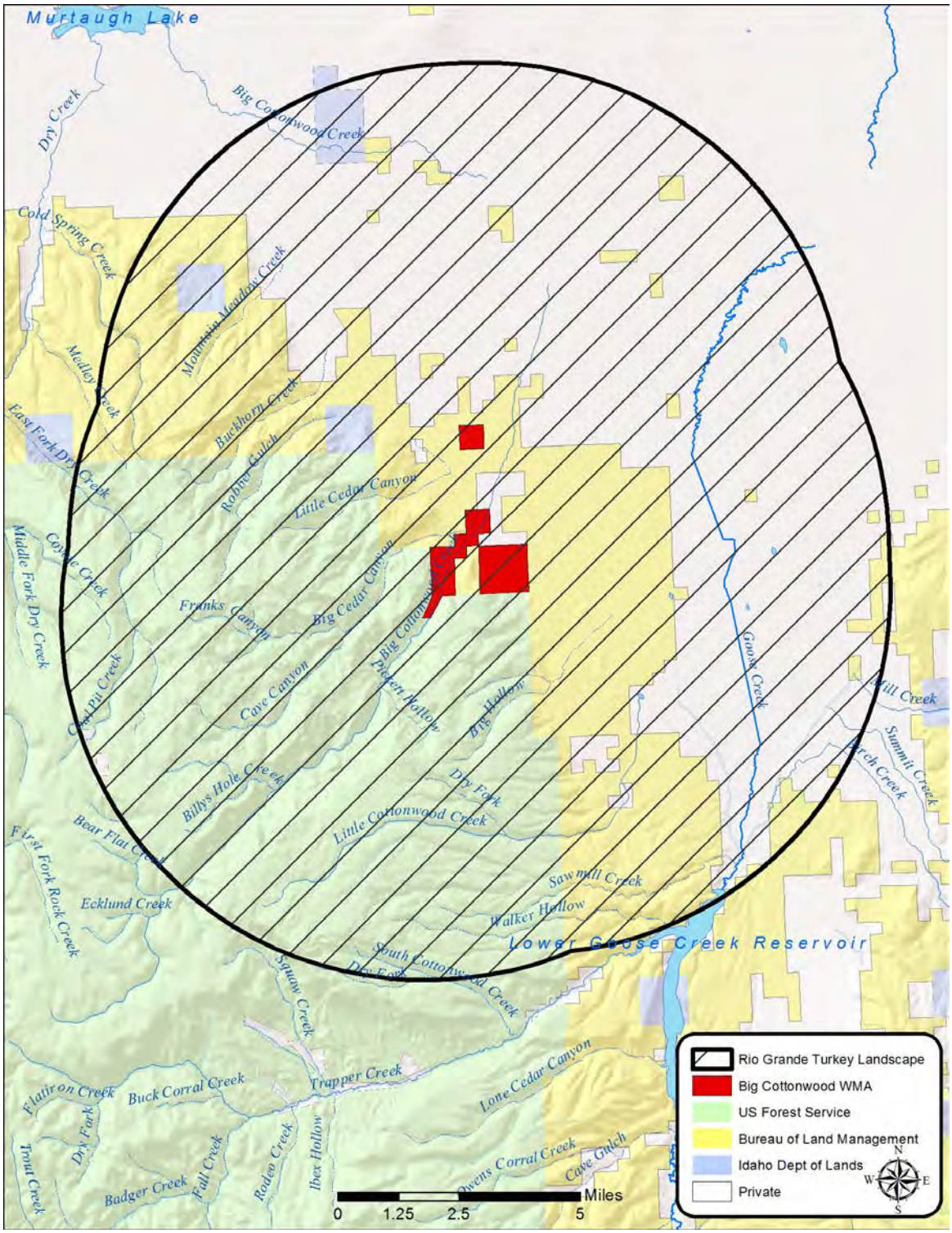


Figure 3. Big Cottonwood WMA Rio Grande turkey landscape.

Raptor Guild Landscape

A total of 12 diurnal and seven nocturnal birds of prey may be found on the BCWMA throughout the year. Some of these species are present for only short periods of time as they move through the area during their spring and fall migrations.

Due to the diversity of birds of prey species that can be present on the BCWMA and the differences in their home ranges, a landscape map for the raptor guild was not included in this plan. However, the raptor species that use the WMA also use habitats outside the WMA boundaries that warrant management consideration at the landscape level. Management recommendations for lands outside the BCWMA are addressed in the landscape section of the Management Program Table.

Yellowstone Cutthroat Trout Landscape

The YCT population in Big Cottonwood Creek is an isolated population. Only the lower reach of Big Cottonwood Creek is located on the WMA. Springs, seeps, and surface run-off water (mostly from snowmelt) within the Big Cottonwood Creek drainage are the primary sources of water for the creek. Riparian woodland vegetation, also dependent on this hydrology of the watershed for growth and reproduction, are important to maintaining appropriate conditions for YCT in this drainage.

Most years, a substantial portion of Big Cottonwood Creek on the WMA will dry up in the summer months and will start to run water again in the fall. During years of plentiful snowpack, the creek can maintain water levels that will support a trout population on the WMA throughout the year.

The fact that the YCT population is isolated to Big Cottonwood Creek and impacts to the creek are driven by what happens within the Big Cottonwood Creek drainage, it is possible to determine a landscape area for this species. In this plan, the landscape area is the Big Cottonwood Creek watershed (Figure 4).

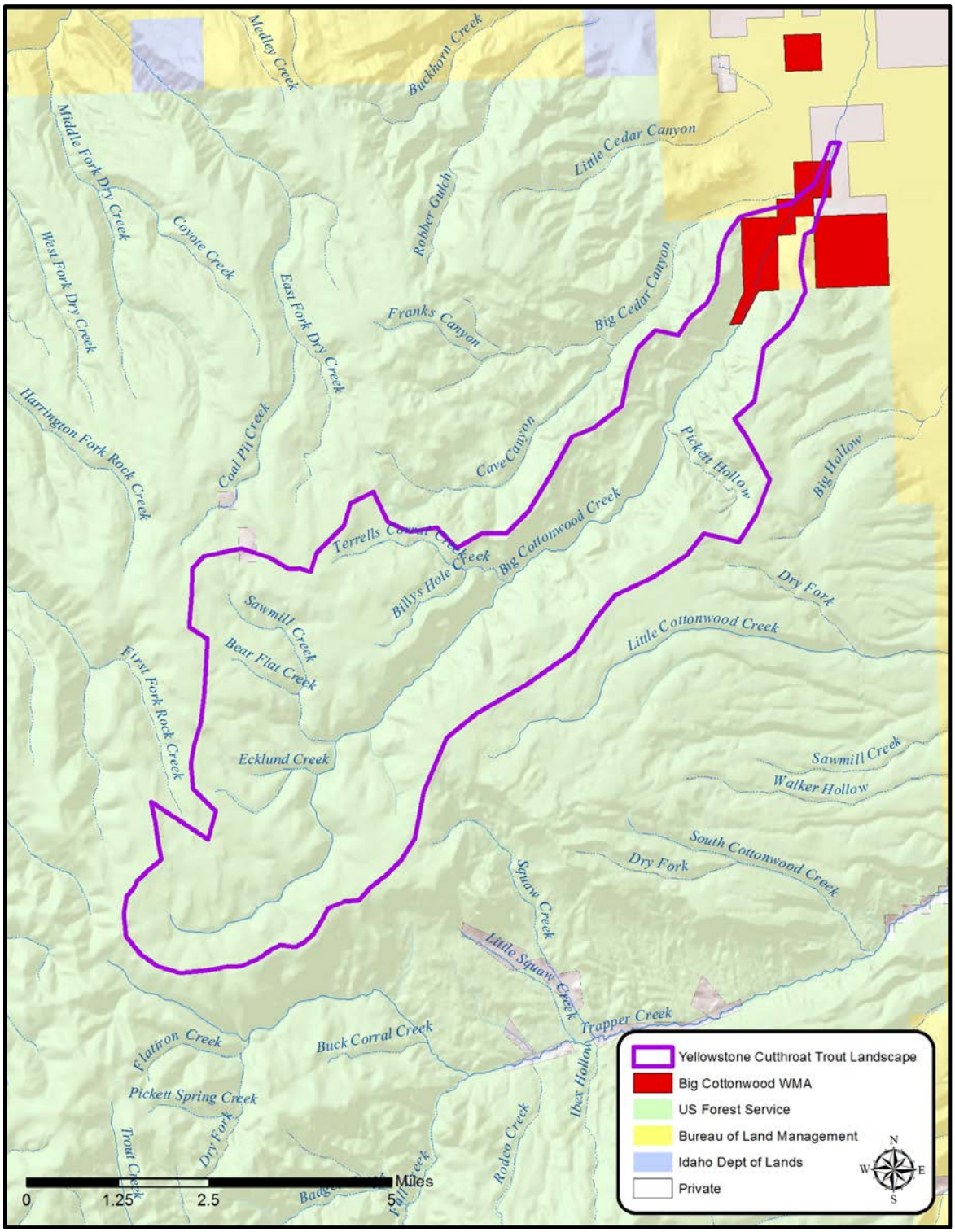


Figure 4. Big Cottonwood WMA Yellowstone cutthroat trout landscape.

Big Cottonwood WMA Management Program Table

The following table outlines the Management Directions, Performance Targets, Strategies, and Outcome Metrics BCWMA staff will use to manage for the Conservation Targets selected (page 26) to represent each BCWMA Priority (page 20) at both the BCWMA 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 3). 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					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BCWMA	Provide high quality, secure year-round habitat for mule deer	Maintain at least 50 acres of new or standing annual forage for mule deer	Maintain the SE, SW, NW pastures, and the riparian portion of the NE pasture, in a grass/forb mix for forage and security cover	Acres maintained	A, B, C, E, F, H, M
			Flood irrigate pastures and food plots during the growing season as water availability allows		
			Purchase a new 4x4 tractor with bucket/front end loader to improve habitat management		
			Establish a rotational and mosaic mowing system within each pasture to remove residual vegetation and promote regrowth		
		Improve and/or actively manage at least 50 acres of mule deer perennial forage annually to maintain vigor and palatability	Create GIS layer of the current vegetation on BCWMA by September 2015	Acres improved or actively managed	
			Flood irrigate pastures during the growing season as water availability allows		
			Continue sagebrush rehabilitation/replanting efforts on deeded lands within the canyon bottom from the dam/diversion to the south boundary		
			Establish successful (i.e., survive at least two growing seasons) sagebrush and bitterbrush shrub plantings to create habitat interspersion, winter forage, and cover in burned over shrub-steppe areas		
			Use chemical, mechanical, cultural, and biological methods to control noxious weed infestations and limit the spread of noxious weeds on BCWMA		
		Manage motorized human access to minimize mule deer energy expenditure and harassment	Maintain complete motorized vehicle closure on BCWMA deeded properties and those BLM and USFS lands immediately adjacent to the WMA	Trespass incidents documented	
			Ensure proper signage is in place at all access points to BCWMA to help prevent motorized trespass		
		Manage motorized human access to minimize mule deer energy expenditure and harassment	Maintain weekly BCWMA personnel presence during the spring and summer to report travel violations to management or enforcement personnel		
		Improve at least 50 acres of spring-fall habitat each year for resident mule deer	Rebuild the entire south property boundary fence in a wildlife-friendly configuration with metal posts and wire. Verify the property boundary with USFS	Acres improved	A, B, C, E, F, H
			Replace dome on Cottonwood Ridge guzzler. Perform periodic fence maintenance needs and overall serviceability of guzzler		
			Rebuild the south boundary fence of the IDL section, from south access gate to SE corner of section, to a wildlife-friendly configuration with metal posts and wire		

WMA Priority: Big Game Habitat					
Conservation Target: Mule Deer					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Mule Deer Landscape	Provide high quality, secure year-round habitat for mule deer.	Provide technical assistance on 100% of public land travel planning projects	Provide all available wildlife use data to the USFS and BLM for their travel planning projects	Projects with technical assistance provided	A, B, C, D, J, K
			Assist public land managers in developing winter human entry, cross-country travel, or motorized travel restrictions to promote security for wintering elk and mule deer		
		Work with county, state and federal land managers in the landscape area to improve or enhance at least 100 acres of mule deer habitat on their lands annually	Coordinate wildfire rehabilitation plantings on public lands in GMU 54.	Acres improved, protected, or actively managed	
			Assist the USFS in developing, funding, and implementing projects to improve summer or transition range habitat.		
			Assist the USFS in developing, funding, and implementing projects to improve winter range habitat on public lands		
			Work with local planning and zoning committees to reduce the impacts of development on mule deer winter ranges.		
			Participate in cooperative noxious weed control programs and events on public lands with BCWMA personnel and equipment.		
			Use landowner assistance programs (e.g., HIP, MDI) to help private landowners provide or improve winter range habitat		
WMA Priority: Upland Game Bird Habitat					
Conservation Target: Rio Grande Turkey					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BCWMA	Provide high quality, year-round habitat for Rio Grande turkeys	Maintain at least 100 acres of turkey nesting and brood rearing habitat each year	Maintain vigor and diversity in perennial grass/forb pastures with periodic mowing disturbance	Acres maintained	A, B, C, E, F, H, M
			Flood irrigate pastures and food plots as water availability allows		
			Purchase a new flail mower for improved management of pastures		
			Implement management actions in perennial stands (i.e., grass, grass/forb, alfalfa) on a rotational basis to maintain diversity, heterogeneity, and adequate grass height-density for nesting across the landscape		
			When possible, conduct vegetation disturbances outside of the nesting and early brood rearing seasons (mid-April to 1 August)		
			Control noxious weeds in nesting and brood rearing habitat		
			Provide at least four acres of food plots (wheat, barley, sorghum, milo, millet, etc.) annually		
			Rotate food plots so that at least one to the north and one to the south on BCWMA provides forage each year		
			Open and improve NE pasture primary, secondary and tertiary feeder ditches with associated laterals for irrigation to improve existing cover		
			Construct aprons on guzzlers in NW and SE pastures		
			Document turkey production each spring through brood observations		

WMA Priority: Upland Game Bird Habitat					
Conservation Target: Rio Grande Turkey					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Rio Grande Turkey Landscape	Provide high quality, secure year-round habitat for Rio Grande turkeys.	Provide technical assistance on 100% of public land travel planning projects	If available, provide succinct and quantifiable wildlife use data to the USFS and BLM for their travel planning projects	Technical assistance provided	A, B, C, D, J, K
			When applicable, assist public land managers in developing cross-country travel, or motorized travel restrictions as it relates to potential impacts to all wildlife.		
		Work with County, State and Federal land managers in the landscape area to improve or enhance at least 100 acres of turkey habitat on their lands annually	Coordinate wildfire rehabilitation plantings on public lands in GMU 54 that benefit turkeys.	Acres improved, protected, or actively managed	
			Work with private landowners who winter turkeys on their properties to minimize problems caused by turkey flocks.		
			Assist the USFS in developing, funding, and implementing projects to improve turkey habitat on USFS lands		
			Work with local planning and zoning committees to reduce the impacts of development on turkey habitats.		
			Participate in cooperative noxious weed control programs and events on public lands with BCWMA personnel and equipment.		
			Utilize landowner assistance programs (e.g., HIP, MDI) to help private landowners provide or improve turkey habitat on their properties.		
WMA Priority: Special Status Species Habitat					
Conservation Target: Raptor Guild					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BCWMA	Provide high quality, secure year-round habitat for raptors.	Maintain perching and nesting structures	Maintain at least 25% of the standing cottonwood snags resulting from the Minidoka Complex Fire	Number of snags and established trees	B, C, F, G, H
			Implement narrowleaf cottonwood planting projects where natural reestablishment is not occurring		
		Establish and maintain a diversity of habitats to support a variety of prey species availability	Plant and maintain at least 50 acres of fruiting shrubs (e.g., blackberries, currants, raspberries, serviceberries, etc.).	Acres planted or maintained	
			Provide at least four acres of food plots (wheat, barley, sorghum, milo, millet, etc.) annually		
Raptor Guild Landscape	Provide high quality, secure year-round habitat for raptors.	Partner with USFS, BLM, USFWS, and other stakeholders to identify and monitor raptor populations and their habitat use across the landscape	Conduct at least one survey annually to identify areas used by raptors and the associated habitat	Raptor use areas	
		Partner with USFS, BLM, and other stakeholders to ensure adequate availability of habitat for a variety of raptor species	When available, provide succinct and quantifiable raptor use data to stakeholders to inform land use decisions	Technical assistance provided	

WMA Priority: Special Status Species and Habitat					
Conservation Target: Yellowstone Cutthroat Trout / Riparian Woodland Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BCWMA	Provide functioning riparian woodland habitat in good to excellent ecological condition to benefit a wide range of fish and wildlife species, including YCT.	Restore at least 50% of non-functioning riparian woodland habitat in poor to fair ecological condition to functioning and good to excellent condition by 2023, increase the canopy cover to ≥ 25% and 30% survival of narrowleaf cottonwood trees within 10 years in restored stream reaches; evidence of natural tree and shrub reproduction should be present	Implement narrowleaf cottonwood, willow, and other native shrub planting projects, focusing on degraded riparian areas identified by the riparian assessment, incorporate treatments to stabilize banks and elevate incised channel beds to their former floodplain as necessary	Percent of stream reach with degraded riparian woodland habitat restored; canopy cover and survival of narrowleaf cottonwoods	A, B, C, H, J, L
			Translocate beaver to fill suitable, unoccupied beaver habitat identified by the beaver suitability map		
			Control noxious weed and other undesirable invasive non-native species in riparian habitat		
		Conduct at least three projects to increase our knowledge of riparian condition, function, and methodology to improve riparian habitats by 2023	Implement a riparian habitat inventory, assessment, and monitoring program (utilizing Idaho Master Naturalists if possible) to survey all riparian habitats on BCWMA and document riparian condition and function, noxious weed infestations, beaver activity, and target species occupancy	Projects completed	
			Create spatial database of riparian function and condition, weed infestations, beaver activity, trout densities, and other target species occupancy.		
			Develop spatial data layer of beaver habitat suitability to prioritize and inform beaver translocation efforts.		
			Explore, implement, and document alternative methods for translocating beavers to BCWMA to increase site fidelity and survival of released beaver		
		Remove trespass cattle from BCWMA as quickly as possible (at a maximum, within the timeframe outlined in the Idaho State Trespass of Animals [Title 25, Chapter 22] or Estrays [Title 25, Chapter 23] Laws, whichever is applicable)	Work with neighboring landowners or livestock lessees of state and federal grazing permits to quickly address fencing and cattleguard problems and to quickly remove trespass cattle from riparian areas.	Days livestock were present and number of livestock removed	
Yellowstone Cutthroat Trout and Riparian Woodland Habitat Landscape	Provide functioning riparian woodland habitat in good to excellent ecological condition to benefit a wide range of fish and wildlife species, including YCT.	Partner with USFS to implement watershed-scale inventory, assessment, and monitoring of riparian and in-stream condition, function, and species occupancy	Work cooperatively with Department and USFS staff to design and implement a watershed-scale riparian inventory and assessment project to estimate riparian and in-stream habitat conditions and fish/wildlife occupancy throughout the watershed	Projects completed	A, B, C, H, J, K
			Work with Department Bureau of Wildlife staff (e.g., Diversity Program, Wetland/Riparian Ecologist) to ground-truth and refine existing spatial data products related to riparian condition and function in the landscape		
		Partner with USFS and other stakeholders to improve the function and restore the condition of 50%of degraded riparian habitat on private or public lands by 2023	Implement fencing or other projects to exclude livestock from riparian habitat and spring sources		
			Conduct planting projects to re-establish native vegetation (e.g., willows, aspens, cottonwoods, etc.)in degraded riparian habitats identified by watershed-scale GIS and field assessments		
			Work with public and private land managers to treat noxious weeds and undesirable non-native invasive species in riparian habitats		

WMA Priority: Wildlife-based Recreation and Education					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
BCWMA	Provide opportunity for consumptive and non-consumptive wildlife-based recreation and education	Provide favorable recreational hunting and fishing opportunity consistent with the BCWMA mission	Maintain the non-motorized access rule for all BCWMA deeded property, BLM and USFS lands associated with the WMA	Percent of visitors reporting positive experiences as recorded on sign-in boxes	E, F, G, H, K, M
		Provide favorable non-consumptive wildlife-based recreation and education opportunities consistent with the BCWMA mission	Maintain six kestrel and 15 bluebird boxes on BCWMA deeded lands	Number of boxes maintained and miles of trail maintained/improved	
			Maintain/improve the trail from trailhead to south property boundary		
		Maintain signage, 1.5 miles of recreational trail and BCWMA-managed roads to facilitate recreation and education	Keep non-motorized rule signs posted at all BCWMA access sites	Facilities, Signage, or Roads/Trails Maintained or Improved	
			Maintain BCWMA-managed roads in a useable, but low maintenance state		
			Post previous year's visitation report at trailhead each January		
			Develop an interpretative site at the trailhead that highlights and explains the history of the Cottonwood Creek water diversion attempt in 1913 for Goose Creek Reservoir by 2017		

Monitoring

Monitoring and reporting are critical for tracking accomplishment of performance targets identified in the WMA 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 BCWMA 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, monitoring efforts have been sporadic and have not been uniformly distributed across the WMA. For instance, riparian vegetation monitoring, using established USFS protocol, was conducted in 2000 at nine permanent transects along Big Cottonwood Creek. In addition, avian point-count surveys were conducted in 2000 at permanent locations along Big Cottonwood Creek. Limited use of photo plots established at former shrub planting sites has provided some information about success in rehabilitation efforts following fires on BCWMA.

In Table 4, future monitoring needs associated with performance targets and strategies identified in the BCWMA 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 WMA 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. Baseline data typically includes:

- Distribution and extent of cover types, including mapping of vegetation cover types
- 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.

For at least the past decade, sign-in boxes have been placed at entry points into BCWMA and have provided information about the types of users, dates of use, and the hometown of users.

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, BCWMA 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 4. Biological monitoring for Big Cottonwood WMA, 2014-2023.

Performance Target	**Survey Type**	**Survey Frequency**
Conduct at least three projects to increase our knowledge of riparian condition, function, and methodology to improve riparian habitats by 2016	Assess entire reach of Big Cottonwood Creek in WMA using Department riparian rapid function and condition assessment method (includes mapping of noxious weeds and beaver activity)	Within next 2 years; repeat every 5 years
Restore at least 50% of non-functioning riparian woodland habitat in poor to fair ecological condition to functioning and good to excellent condition by 2023, increase the canopy cover to > 25% and 30% survival of narrowleaf cottonwood trees within 10 years in restored stream reaches; evidence of natural tree and shrub reproduction should be present	Re-conduct nine permanent riparian vegetation transects established in 2000 (USFS protocol), add more transects if necessary to measure effectiveness of recent restoration; includes photopoints, measurement of canopy cover, and reproduction, estimate % survival and condition of marked narrowleaf cottonwoods planted during restoration	Within next 2 years; repeat every year for first 3 years after restoration then at years 5, 7, and 10 after restoration
	Measure cover and density of map area occupied by noxious and highly invasive non-native species for effectiveness of control efforts	Annually
	Population census of beaver; estimate % survival of translocated beaver	Annually
Increase YCT population to a density of 0.2 fish/m^2 and restore aquatic habitat condition on at least 75% of sites identified to be lacking necessary habitat characteristics required by YCT	Measure aquatic habitat variables using established Department protocols	Within next 2 years; repeat every year for first 3 years after restoration then at years 5, 7, and 10 after restoration
	Electrofishing population census of YCT	Within next 2 years; repeat every year for first 3 years after restoration then at years 5, 7, and 10 after restoration
Remove trespass cattle from BCWMA as quickly as possible	Count and location of cattle present on WMA	Weekly to monthly during grazing season, as needed

References

Boothe, W. R. 1963. A history of the latter-day saint settlement of Oakley, Idaho. M.S. Thesis. Brigham Young University. Provo, Utah.

Cassia County. 1943*a*. Quitclaim Deed #145514. Recorder's Office, Cassia County Courthouse, Burley, Idaho.

Cassia County. 1943*b*. Warranty Deed #145886. Recorder's Office, Cassia County Courthouse, Burley, Idaho.

Cassia County. 1965. Warranty Deed #161868. Recorder's Office, Cassia County Courthouse, Burley, Idaho.

Conservation Data Center. 1994. Rare, threatened, and endangered plants and animals of Idaho. Third edition. Idaho Department of Fish and Game, Boise.

General Land Office. 1934. Patent No. 863179. U.S. Department of Interior, Bureau of Land Management.

Groves, C. 2003. Drafting a Conservation Blueprint: A Practitioner's Guide to Planning for Biodiversity. Island Press, Washington, D.C.

Heywood, V. H. 1995. Global biodiversity assessment. Cambridge University Press, Cambridge.

Holdstock, D. P., M. C. Wallace, W. B. Ballard, J. H. Brunjes, R. S. Phillips, B. L. Spears, S. J. Demaso, J. D. Jernigan, R. D. Applegate, P. S. Gipson. 2006. Male Rio Grande turkey survival and movements in the Texas panhandle and southwestern Kansas. Journal of Wildlife Management. 70:904-913.

Idaho Department of Fish and Game. 1990. Upland Game Species Management Plan 1991-1995. Idaho Department Fish and Game, Boise.

Idaho Department of Fish and Game. 1993. Regional Fisheries Management Investigations. Federal Aid in Fish Restoration. Job Performance Report. Project F-71-R-15. Idaho Department of Fish and Game, Boise.

Idaho Department of Fish and Game. 1996. Bighorn Sheep Job Progress Report. Project W-170-R-20. Idaho Department of Fish and Game Boise.

Idaho Department of Fish and Game. 1998. Bighorn Sheep Job Progress Report. Project W-170-R-22. Idaho Department of Fish and Game, Boise.

Idaho Department of Fish and Game. 2005. Idaho Comprehensive Wildlife Conservation Strategy. Idaho Conservation Data Center, Idaho Department of Fish and Game, Boise. https://fishandgame.idaho.gov/public/wildlife/cwcs/ [Accessed March 3, 2014].

Idaho Department of Fish and Game. 2007. Management plan for conservation of Yellowstone cutthroat trout in Idaho. Idaho Department Fish and Game, Boise.

Karl, J. W., J. M. Scott, and E. Strand. 2005. An assessment of Idaho's wildlife management areas for the protection of wildlife. Natural Areas Journal 25:36-45.

Lambeck, R. J. 1997. Focal Species: A Multi-Species Umbrella for Nature Conservation. Conservation Biology. Volume 11, Issue 4, pages 849–856, August 1997.

Meyer, K. A., D. J. Schill, J. A. Lamanksy, Jr., M. R. Campbell, and C. C. Kozfkay. 2006. Status of Yellowstone cutthroat trout in Idaho, Transactions of the American Fisheries Society 135:1329-1347.

Noss, R. F., E. Dinerstein, B. Gilbert, M. Gilpin, B. J. Miller, J. Terborgh, and S. Trombulak. 1999. Core areas: where nature begins. *In* J. Terborgh and M. Soule, eds., Continental Conservation: Scientific Foundations of Regional Reserve Networks, pp. 92-128. Washington D.C.: Island Press.

Phillips, R. S. 2004. Movements, survival, and reproduction of Rio Grande wild turkeys in the Texas panhandle. Thesis, Texas Tech University, Lubbock.

Pickett, D. F. 1995. Cottonwood Water Agreement. Recorder's Office, Cassia County Courthouse, Burley, Idaho.

Simberloff, D. 1998. Flagships, umbrellas, and keystones: Is single-species management passé in the landscape era? Biological Conservation 83:247-257.

Thomas, J. W., C. Van Hoozer, R. G. Marburger. 1966. Wintering concentrations and seasonal shifts in range in the Rio Grande turkey. Journal of Wildlife Management. 30:34-49.

U.S. Department of Interior. 1957. Patent No. 1171036. U. S. Department Interior, Bureau of Land Management.

U.S. Fish and Wildlife Service. 2005. The U.S. Fish and Wildlife Service's Focal Species Strategy for Migratory Birds Measuring success in bird conservation. http://www.fws.gov/migratorybirds/CurrentBirdIssues/Management/FocalSpecies/The%20Focal%20Species%20Fact%20Sheet%20and%20Table.pdf [Accessed December 6, 2012].

Utah Climate Center [UCC]. 2014. UCC homepage. <http://climate.usurf.usu.edu/reports/freezeDates.php>. Accessed 30 Jan 2014.

Veríssimo, D., I. Fraser, R. Bristol., J. Groombridge, and D. MacMillan. 2009. Birds as tourism flagship species: A Case Study on Tropical Islands. Animal Conservation 12:549-558.

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

Native Americans (Shoshone) inhabited the Oakley Valley area and used it as hunting and gathering grounds. They primarily gathered pinyon pine (*Pinus edulis*) nuts in the fall in the City of Rocks area (Boothe 1963). The first Euro-American explorers and trappers entered the area in late 1811 (ibid). In the mid-1800s, thousands of emigrants passed through on their way to California. Cattle were first brought into the area in 1871 and 1872. In 1870, William Oakley established the pony express and stage station two miles west of the present town of Oakley. The earliest settlers of the Cottonwood area were James and John Iverson and Peter Anderson in approximately 1870.

In 1934, Charles W. Bariger acquired 80 acres of land adjacent to Big Cottonwood Creek (the southwestern portion of BCWMA) from the General Land Office under the 1862 Homestead Act (General Land Office 1934). In 1943, Weyley and Mattie Cooper (daughter of John Iverson) purchased 134 acres, including the above 80 acres, from Charles and Bessie Larson for $700 (Cassia County 1943*a*). Two months later, Bariger quitclaimed the same 134 acres to the Coopers (Cassia County 1943*b*). In 1957, the Coopers claimed an additional 80 acres of BLM land along the western border of BCWMA (USDI 1957). In 1965, Harold and Kerma Cranney purchased 814 acres (present day BCWMA) from the Cooper's (Cassia County 1965). In 1993, The Conservation Fund (a Virginia non-governmental organization) purchased the 814 acres from the Cranneys and subsequently sold the property to the Department.

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 BCWMA lands. Certain activities are prohibited from funding with Federal Aid funds, and all provisions of Federal Aid funding will be followed.

Other federal and state laws also affect management of BCWMA. 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 BCWMA lands and waters. Under the National Historic Preservation Act, the Department must ensure that historic properties are protected on BCWMA.

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.

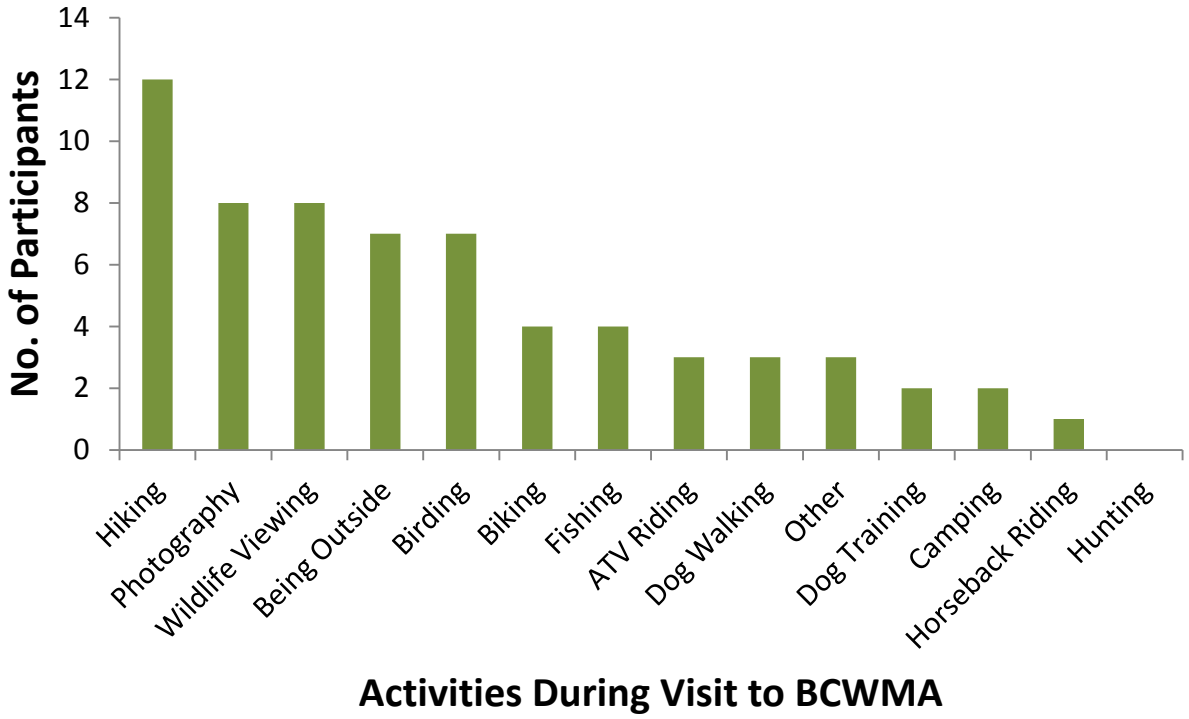
The Department is required by Idaho Code 63-602A to pay a fee-in-lieu of taxes (FILT) for lands that are owned by the Department and meet certain code requirements. These fees are submitted annually to affected counties based on the number of qualifying acres and agricultural tax rates.

The Department maintains an 8.8 cubic feet per second (cfs) water right on BCWMA (Appendix VIII). The water rights purchased with BCWMA are dictated by water rights law, but delivered by the local water master. The method of delivery to BCWMA and its neighbors was reaffirmed in 1995 (Pickett 1995).

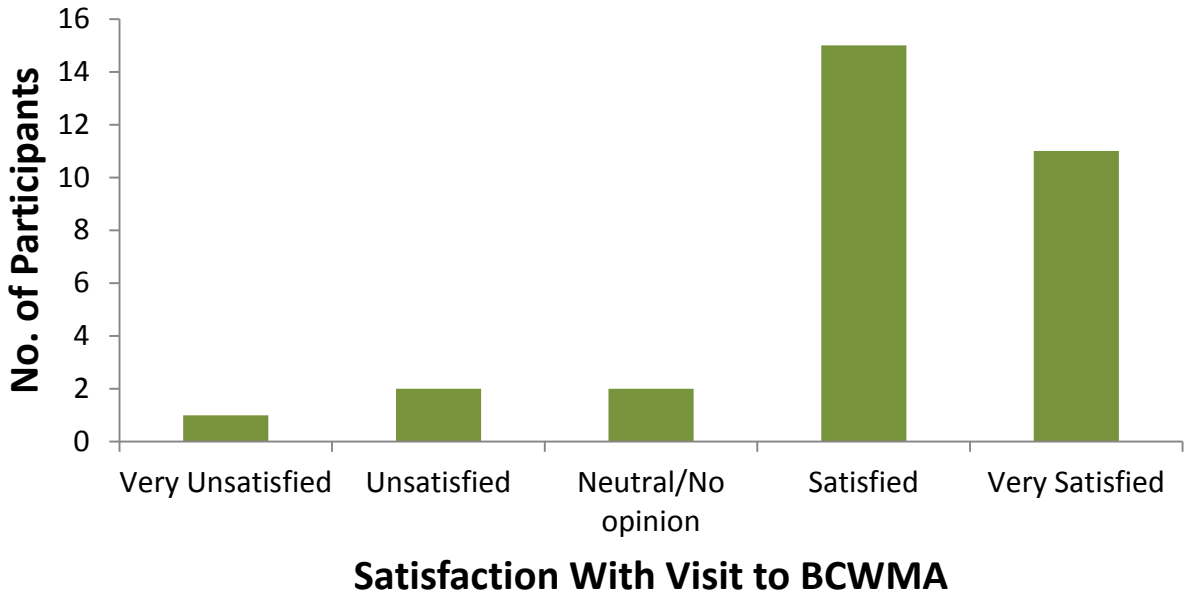
All water rights are filled when Big Cottonwood Creek flow reaches 3,482 inches. Any water above 3,482 inches is allotted to the Oakley Canal Company. The 3,482 inches does not include the 40 inches decree from Big Cedar Canyon, a tributary to Big Cottonwood Creek. Water is delivered by date of claim, oldest right filed first.

IV. PUBLIC INPUT SUMMARY

The following public use data were collected during big game season setting public meetings held in March and April of 2012 as well as from online surveys of BCWMA made available during 2012 and again in spring 2014. Survey participants were asked questions about which WMAs they visit, what activities they participate in while visiting WMAs (Appendix Figure IV-1), their level of satisfaction with WMAs (Appendix Figure IV-2), as well as opportunities to provide suggestions or comments (Appendix Table IV-1) on how WMAs are managed and how best to fund them. Though comments provided during the 2014 survey have been included below, results of questions related to activities during WMA visits and the level of satisfaction with WMA management were not incorporated into the figures to avoid inflating values resulting from individuals who provided information during both survey periods.



Appendix Figure IV-1. Activities conducted by 2012 WMA survey participants on Big Cottonwood WMA. Participants were asked to provide the three most important activities.



Appendix Figure IV-2. Level of satisfaction described by 2012 WMA survey participants.

Appendix Table IV-1. Comments and suggestions provided by 2012 and 2014 survey participants.

Comments/Suggestions
Build more ATV trails
Control off-road vehicles
Less vehicle access
Better wolf management
Increase turkey habitat
Improve riparian vegetation
Establish more food plots
Provide camping and ATV trails
Do not allow ATVs, mountain bikes, or horses
Like it as it is
More pheasant
Get rid of the wolves
Allow grazing
Establish more cover on lower end/north side of Mountain Road
Do not consider users outside of sportsmen

V. 1999-2013 ACCOMPLISHMENTS

Since the BCWMA plan was written in 1999, these accomplishments have occurred relative to the Goals and Objectives contained in that plan.

Goal: Establish a permanent self-sustaining winter food source and nesting cover for 100-200 Rio Grande wild turkeys.

Objective: Develop nesting habitat along Big Cottonwood Creek.

Accomplishments:

- Construction and installation of ATV-proof gate at trailhead
- Replacement of fence along west end of IDL southern boundary
- Installation of post and pole fence at shop compound, along Big Cedar Road, and to trailhead
- Installation of woven wire fence along IDL northern boundary
- Willow planting along Big Cottonwood Creek
- Shrub plantings
- Installation of signage kiosk
- Eighty-two acre restoration of cheatgrass infested agricultural land
- Drill seeded grass/forb mix into 20 acres of IDL property

Objective: Provide self-sustaining permanent fall/winter habitat for 100-200 Rio Grande wild turkeys.

Accomplishments:

- Pinyon pine, crabapple, and burr oak orchard plantings and subsequent rehabilitation

Objective: Monitor Rio Grande wild turkey population parameters.

Accomplishments:

- Radio-marked five turkeys. Monitored movements for one year.

Goal: Maintain and improve quality riverine habitat in Big Cottonwood Creek for Yellowstone cutthroat trout.

Objective: Improve Yellowstone cutthroat trout habitat in Big Cottonwood Creek.

Accomplishments:

- Released beaver along Big Cottonwood Creek

Objective: Decrease cutthroat trout mortality in irrigation diversion ditch.

Accomplishments:

- Installed improved metal dam
- Annually electrofished downstream of diversion and returned fish well above the diversion

Objective: Monitor movements, habitat use, survival, and production.

Accomplishments:

- Surveyed stream and collected DNA samples

Goal: Manage Big Cottonwood Creek for a mosaic of early to mid seral stages characterized by native tree and shrub overstories and native grass and forb understories.

Objective: Provide for the establishment and growth of native riparian and wetland woody and herbaceous vegetation.

Accomplishments:

- Sagebrush plantings throughout Big Cottonwood Creek drainage
- Volunteer riparian improvement projects

Objective: Monitor riparian vegetation trend quantitatively and qualitatively.

Accomplishments:

- Vegetation surveys were conducted in 1994 and again in 2000 to monitor riparian vegetation trends following Department management
- Photopoints were set up following riparian vegetation

Goal: Restore the non-irrigated agricultural lands to provide a diverse mix of native grasses, forbs, and shrubs benefitting a wide variety of wildlife species.

Objective: Restore/rehabilitate 80+ acres of non-irrigated agricultural lands using established range restoration techniques.

Accomplishments:

- Non-irrigated agricultural lands were originally planted with a native seed mix
- Basin wild rye and a variety of wheatgrasses were planted in the pastures near Big Cottonwood Creek

- Noxious and invasive non-native vegetation is controlled annually with chemical applications
- Bio-controls for Canada thistle were used

Goal: Establish/maintain permanent reliable nesting, brood-rearing and winter habitat for local and migrating populations of upland birds.

Objective: Develop nesting/brood-rearing habitat for ring-necked pheasants on irrigated pasture.

Accomplishments:

- Pastures are irrigated annually using a ditch irrigation system and gated pipe
- Sharecrop agreements were used in the late 1990s and incorporated practices to provide nesting cover and avoid harvest during nesting periods

Objective: Develop winter food and cover for ring-necked pheasants.

Accomplishments:

- Approximately 10 acres in four areas along Big Cottonwood Creek have been planted into food plots annually using a variety of grass and forb species.

Objective: Develop a self-sustaining California quail population.

Accomplishments:

- California quail were released in 1996

Objective: Develop and enhance California quail nesting, brood-rearing, and winter habitat.

Accomplishments:

- Food plots are planted with attention paid to providing forage for California quail

Objective: Provide brood-rearing, late-summer/fall habitat for sage-grouse.

Accomplishments:

- Pastures and food plots are irrigated annually
- Sagebrush seedlings have been planted along the uplands

Objective: Develop winter food and cover for gray partridge.

Accomplishments:

- Food plots are planted annually and provide ample forage for gray partridge

Goal: Maintain and/or improve upland vegetation at quality levels to provide forage for 50 California bighorn sheep.

Objective: Provide unobstructed free ranging habitat for California bighorn sheep.

Accomplishments:

- All netwire fence was removed from BCWMA

Objective: Provide additional forage opportunities.

Accomplishments:

- Multiple guzzlers were installed throughout BCWMA
- Irrigated pastures and food plots have been established that provide a diversity of grasses and forbs
- Riparian restoration efforts have established a variety of shrub species
- Fruit trees were planted on the southern portion of BCWMA

Objective: Develop secure and undisturbed habitat.

Accomplishments:

- Motorized travel restrictions have been put in place on BCWMA

Objective: Monitor movements, habitat use, survival, and production.

Accomplishments:

- Twenty-seven California bighorn sheep have been radio collared and monitored from their release in 1988 to present

Goal: Maintain and/or improve upland vegetation in good palatable quality to provide year-round forage and security for 200 mule deer.

Objective: Provide additional forage opportunities.

Accomplishments:

- Irrigated pastures and food plots provide a variety of grasses and forbs

- Sagebrush and riparian plantings have been conducted

Goal: Provide non-motorized recreational opportunities.

Objective: Eliminate unauthorized motorized vehicle traffic within the boundaries of BCWMA.

Accomplishments:

- Signage installed at information kiosk at the trailhead
- ATV-proof gates were installed at the trailhead

Objective: Encourage non-motorized public access on and through BCWMA.

Accomplishments:

- Signs have been installed along US Highway 30, State Highway 27, and along Mountain Road

Goal: Provide watchable wildlife opportunities.

Objective: Provide additional mountain bluebird habitat.

Accomplishments:

- Bluebird boxes were constructed and installed throughout BCWMA

Objective: Provide neotropical migrant and year-round resident passerine habitat.

Accomplishments:

- American kestrel boxes were constructed and installed throughout BCWMA
- Riparian vegetation plantings and shrub plantings

Objective: Provide amphibian and reptile year-round habitat.

Accomplishments:

- Beaver have been transplanted to BCWMA
- Riparian vegetation plantings conducted to maintain water quality and temperature

Objective: Develop a wildlife management area brochure (Target date: 1999).

Accomplishments:

- A brochure for BCWMA was developed and published in 2001

Goal: Protect and maintain significant cultural resources.

Objective: Maintain, protect, and preserve, if financially feasible, all cultural and historic resources present on BCWMA.

Accomplishments:

- Grave site, "round corral," and standing structures were maintained until the Minidoka Complex Fire destroyed them. The grave site is still intact and has been fenced.

VI. VEGETATION

There are five major habitat types present on BCWMA: agricultural, juniper woodland, sagebrush-steppe, riparian woodland, and riparian shrubland. The agricultural cover type includes irrigated and non-irrigated lands totaling approximately 360 acres. The irrigated portions are characterized by alfalfa (*Medicago sativa*), common sainfoin (*Onobrychis viciifolia*), creeping woodsorrel (*Oxalis corniculata*), quackgrass (*Elymus* (syn. *Agropyron*) *repens*), orchard grass (*Dactylis glomerata*), bulbous bluegrass (*Poa bulbosa*), and smooth brome (*Bromus inermis*) with portions invaded by cheatgrass (*Bromus tectorum*) and wild oat (*Avena fatua*). The non-irrigated agricultural lands are in an early-seral condition (from historic intensive livestock use and drought) and include mixes of rabbitbrush (*Chrysothamnus* and *Ericameria* spp.), cheatgrass, kochia (*Bassia* (syn. *Kochia*) *scoparia*), tumblemustard (*Sisymbrium altissimum*), greasewood (*Sarcobatus vermiculatus*), and halogeton (*Halogeton glomeratus*). The potential natural vegetation of the non-irrigated lands is sagebrush-steppe.

The juniper woodland and sagebrush-steppe habitats total approximately 407 acres. Sagebrush-steppe was generally in late-seral stage until the Minidoka Complex Fire of August 2012. The majority of these habitats occupy the toe to mid-slope regions of Big Cottonwood Canyon and are characterized by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) or a Utah juniper (*Juniperus osteosperma*) and Wyoming big sagebrush overstory with a bluebunch wheatgrass (*Pseudoroegneria* (syn. *Agropyron*) *spicata*), Thurber's needlegrass (*Achnatherum* (syn. *Stipa*) *thurberianum*), needle and thread (*Hesperostipa* (syn. *Stipa*) *comata*), squirreltail (*Elymus elymoides*), Sandberg bluegrass (*Poa sandbergii*), Indian paintbrush (*Castilleja* spp.), scarlet globemallow (*Sphaeralcea coccinea*), tapertip onion (*Allium acuminatum*), milkvetch (*Astragalus* spp.), and cheatgrass understory.

A portion of the sagebrush-steppe habitat, adjacent to Big Cottonwood Creek, historically received intensive winter grazing pressure from domestic livestock. These areas are dominated by a Wyoming big sagebrush overstory and a crested wheatgrass (*Agropyron cristatum*), alfalfa, sweetclover (*Meliotus officianalis*), and cheatgrass understory.

The riparian woodland and shrubland habitats, associated exclusively with 2.5 miles of Big Cottonwood Creek, encompass approximately 45 acres. Predominant species in the riparian habitats include narrowleaf cottonwood (*Populus angustifolia*), red-osier dogwood (*Cornus sericea*), yellow willow (*Salix lutea*), greenleaf willow (*Salix lucida*), sandbar willow (*Salix exigua*), Booth's willow (*Salix boothii*), Geyer's willow (*Salix geyeriana*), water birch (*Betula occidentalis*), Woods' rose (*Rosa woodsii*), skunkbush sumac (*Rhus trilobata*), golden currant (*Ribes aureum*), sedges (*Carex* spp.), and Kentucky bluegrass (*Poa pratensis*). Western clematis (*Clematis ligusticifolia*) exists throughout the upland and riparian portions of the WMA.

VII. WILDLIFE SPECIES LIST

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

Common Name	Scientific Name	Common Name	Scientific Name
Birds		***Birds (cont.)***	
Cooper's Hawk	*Accipiter cooperii*	Lark Sparrow	*Chondestes grammacus*
Northern Goshawk	*Accipiter gentilis*	Common Nighthawk	*Chordeiles minor*
Sharp-shinned Hawk	*Accipiter striatus*	American Dipper	*Cinclus mexicanus*
Spotted Sandpiper	*Actitis macularius*	Northern Harrier	*Circus cyaneus*
Saw whet Owl	*Aegolius acadicus*	Northern Flicker	*Colaptes auratus*
Red-winged Blackbird	*Agelaius phoeniceus*	Rock Dove	*Columba livia*
Chukar Partridge	*Alectoris chukar*	Western Wood-Pewee	*Contopus sordidulus*
Mallard	*Anas platyrhynchos*	American Crow	*Corvus brachyrhynchos*
Golden Eagle	*Aquila chrysaetos*	Common Raven	*Corvus corax*
Black-chinned Hummingbird	*Archilochus alexandri*	Steller's Jay	*Cyanocitta stelleri*
Great Blue Heron	*Ardea herodias*	Western Flycatcher	*Empidonax occidentalis*
Short-eared Owl	*Asio flammeus*	Willow Flycatcher	*Empidonax traillii*
Long-eared Owl	*Asio otus*	Horned Lark	*Eremophila alpestris*
Burrowing Owl	*Athene cunicularia*	Brewer's Blackbird	*Euphagus cyanocephalus*
Ruffed Grouse	*Bonasa umbellus*	Prairie Falcon	*Falco mexicanus*
Great Horned Owl	*Bubo virginianus*	American Kestrel	*Falco sparverius*
Red-tailed Hawk	*Buteo jamaicensis*	MacGillivray's Warbler	*Geothlypis tolmiei*
Rough-legged Hawk	*Buteo lagopus*	Common Yellowthroat	*Geothlypis trichas*
Ferruginous Hawk	*Buteo regalis*	Sandhill Crane	*Grus canadensis*
Swainson's Hawk	*Buteo swainsoni*	Cassin's Finch	*Haemorhous cassinii*
California Quail	*Callipepla californica*	House Finch	*Haemorhous mexicanus*
Wilson's Warbler	*Cardellina pusilla*	Purple Finch	*Haemorhous purpureus*
Turkey Vulture	*Cathartes aura*	Bald Eagle	*Haliaeetus leucocephalus*
Hermit Thrush	*Catharus guttatus*	Barn Swallow	*Hirundo rustica*
Canyon Wren	*Catherpes mexicanus*	Yellow-breasted Chat	*Icteria virens*
Sage-grouse	*Centrocercus urophasianus*	Bullock's Oriole	*Icterus bullockii*
Killdeer	*Charadrius vociferus*	Dark-eyed Junco	*Junco hyemalis*

Common Name	Scientific Name	Common Name	Scientific Name
Birds (cont.)		***Birds (cont.)***	
Loggerhead Shrike	*Lanius ludovicianus*	Rock Wren	*Salpinctes obsoletus*
Belted Kingfisher	*Megaceryle alcyon*	Say's Phoebe	*Sayornis saya*
Western screech Owl	*Megascops kennicottii*	Broad-tailed Hummingbird	*Selasphorus platycercus*
Lewis's Woodpecker	*Melanerpes lewis*	Rufous Hummingbird	*Selasphorus rufus*
Rio Grande Turkey	*Meleagris gallopavo intermedia*	Yellow-rumped Warbler	*Setophaga coronata*
Song Sparrow	*Melospiza melodia*	Yellow Warbler	*Setophaga petechia*
Northern Mockingbird	*Mimus polyglottos*	Townsend's Warbler	*Setophaga townsendii*
Brown-headed Cowbird	*Molothrus ater*	Mountain Bluebird	*Sialia currucoides*
Townsend's Solitaire	*Myadestes townsendii*	Red-naped Sapsucker	*Sphyrapicus nuchalis*
Long-billed Curlew	*Numenius americanus*	Yellow-bellied Sapsucker	*Sphyrapicus varius*
Sage Thrasher	*Oreoscoptes montanus*	American Goldfinch	*Spinus tristis*
Orange-crowned Warbler	*Oreothlypis celata*	Brewer's Sparrow	*Spizella breweri*
House Sparrow	*Passer domesticus*	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Lazuli Bunting	*Passerina amoena*	Eurasian collared dove	*Streptopelia decaocto*
Gray Partridge	*Perdix perdix*	Western Meadowlark	*Sturnella neglecta*
Cliff Swallow	*Petrochelidon pyrrhonota*	European Starling	*Sturnus vulgaris*
Common Poorwill	*Phalaenoptilus nuttallii*	Tree Swallow	*Tachycineta bicolor*
Ring-necked Pheasant	*Phasianus colchicus*	Violet-green Swallow	*Tachycineta thalassina*
Black-headed Grosbeak	*Pheucticus melanocephalus*	House Wren	*Troglodytes aedon*
Black-billed Magpie	*Pica hudsonia*	American Robin	*Turdus migratorius*
Downy Woodpecker	*Picoides pubescens*	Eastern Kingbird	*Tyrannus tyrannus*
Hairy Woodpecker	*Picoides villosus*	Western Kingbird	*Tyrannus verticalis*
Green-tailed Towhee	*Pipilo chlorurus*	Barn Owl	*Tyto alba*
Spotted Towhee	*Pipilo maculatus*	Warbling Vireo	*Vireo gilvus*
Western Tanager	*Piranga ludoviciana*	Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Black-capped Chickadee	*Poecile atricapillus*	Mourning Dove	*Zenaida macroura*
Blue-gray Gnatcatcher	*Polioptila caerulea*	***Mammals***	
Vesper Sparrow	*Pooecetes gramineus*	Moose	*Alces alces*
Bushtit	*Psaltriparus minimus*	Pronghorn	*Antilocapra americana*
Golden-crowned Kinglet	*Regulus satrapa*	Coyote	*Canis latrans*
Bank Swallow	*Riparia riparia*	Beaver	*Castor Canadensis*

Common Name	Scientific Name	Common Name	Scientific Name
Mammals (cont.)		***Mammals (cont.)***	
Elk	*Cervus elaphus*	Great Basin Pocket Mouse	*Perognathus parvus*
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Canyon Mouse	*Peromyscus crinitus*
Ord's Kangaroo Rat	*Dipodomys ordii*	Deer Mouse	*Peromyscus maniculatus*
Porcupine	*Erethizon dorsatum*	Raccoon	*Procyon lotor*
Mountain Lion	*Felis concolor*	Western Harvest Mouse	*Reithrodontomys megalotis*
Bobcat	*Felis rufus*	Mountain Cottontail	*Sylvilagus nuttalli*
Black-tailed Jackrabbit	*Lepus californicus*	American Badger	*Taxidea taxus*
Yellow-bellied Marmot	*Marmota flaviventris*	Northern Pocket Gopher	*Thomomys talpoides*
Striped Skunk	*Mephitis mephitis*	Red Fox	*Vulpes vulpes*
Montane Vole	*Microtus montanus*	Western Jumping Mouse	*Zapus princeps*
Meadow Vole	*Microtus pennsylvanicus*	***Amphibians & Reptiles***	
Long-tailed Weasel	*Mustela frenata*	Racer	*Coluber constrictor*
Mink	*Mustela vison*	Western Rattlesnake	*Crotalus viridis*
Small-footed Myotis	*Myotis ciliolabrum*	Western Skink	*Eumeces skiltonianus*
Bushy-tailed Wood Rat	*Neotoma cinerea*	Gopher Snake	*Pituophis catenifer*
Mule Deer	*Odocoileus hemionus*	Pacific Tree Frog	*Pseudacris regilla*
Muskrat	*Ondatra zibethicus*	Sagebrush Lizard	*Sceloporus graciosus*
Northern Grasshopper Mouse	*Onychomys leucogaster*	Western Fence Lizard	*Sceloporus occidentalis*
California Bighorn Sheep	*Ovis Canadensis californianus*	Western Terrestrial Garter Snake	*Thamnophis elegans*

VIII. LAND ACQUISITIONS AND AGREEMENTS

Land Acquisitions – Fee Title				
Year	**Funds Used**	**Segment**	**Acres**	**Acquired From**
1993	HB530	WMA	814	Harold & Kerma Cranney Family

Easements		
Owner	**Type**	**Description**
Jared Mitton	Pipeline	In 2004, the Department granted an easement to bury an irrigation pipeline across the WMA for pressurized water. As part of the easement agreement, Mr. Mitton is required to plant a minimum of five acres of food plots in designated sites no later than April 15 of each year. This includes field preparation (plowing and/or disking), seeding, and corrugating the specified food plot sites. Mr. Mitton's last year of obligation for this easement grant is 2014.

Allotments			
Agency	**Acres**	**Allotment Name**	**Comments**
USFS	16,500	Cottonwood	The allotment lies immediately adjacent to BCWMA and extends approximately seven miles southwest of BCWMA. The eastern border follows the Cottonwood Canyon rim and the western border extends 1.5 to three miles west of Big Cottonwood Creek.
U.S. spp.	280	Pickett-Wake (a share thereof)	The allotment is situated along the southeastern border of BCWMA and lies between BCWMA and a section of land owned by Idaho Department of Lands. The allotment share consisted of 37 animal unit months (AUMs) of cattle use. The BLM has retired the 37 AUMs.
IDL	640	#M7088	The Department holds a miscellaneous surface lease for this IDL property. This was part of the previous owner's grazing allotments. This lease authorizes the Department to use this land as a wildlife management area.

Water Rights				
Number	**Priority Date**	**Rate (cfs)**	**Inches**	**Source**
45-13584	3-31-1872	1.9	95	Big Cottonwood Creek
45-00437	4-30-1882	0.8	40	Big Cottonwood Creek
45-00426	4-12-1982	1.6	80	Big Cottonwood Creek
45-12437	4-12-1892	3.7	185	Big Cottonwood Creek
45-02012	1-25-1907	0.8	40	Big Cedar Canyon Creek
	Totals	8.8	440	

IX. INFRASTRUCTURE

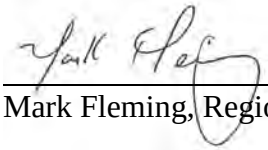
Infrastructure
❖ Office and seasonal housing building (1,650 ft^2) original construction in 1975, but was renovated following a roof fire in 2006
❖ 1.5 miles of wire fence line
❖ 0.75 miles of post & pole wood fence
❖ Open bay wooden storage shed
❖ Open bay wooden loafing shed
❖ Workshop (960 ft^2) constructed in 2010

BIG COTTONWOOD CREEK

WILDLIFE MANAGEMENT AREA PLAN

Approval

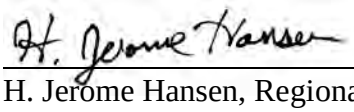
Submitted by:



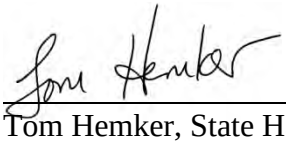
Mark Fleming, Regional Habitat Manager

Brad Lowe, Regional Habitat Biologist

Reviewed by:

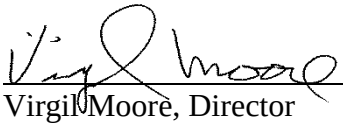


H. Jerome Hansen, Regional Supervisor



Tom Hemker, State Habitat Manager

Approved by:



Virgil Moore, Director