Camas Prairie Centennial Marsh Wildlife Management Area

Management Plan
2014

Magic Valley Region

Camas Prairie
Centennial Marsh
Wildlife Management Area

2014 – 2023 Management Plan
December 2014

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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

All regional wildlife areas (WMAs, WMUs, and WCAs) are funded through a combination of hunting license dollars, appropriations from federal excise taxes derived from the sale of ammunition, and funding provided by the Bonneville Power Administration and Bureau of Reclamation to mitigate habitat loss from construction of various dams in the region. Hunters pay a large portion of the management tab, and they are rewarded with habitat management areas that sustain many of the region's big game herds and provide consistent waterfowl and upland game bird production and hunting opportunities. Non-hunters also benefit from the broad range of recreational opportunities and conservation values provided by Department WMAs.

Camas Prairie Centennial Marsh Wildlife Management Area (Centennial Marsh) is located in south-central Idaho 14 miles west of Fairfield (Figure 1). Centennial Marsh covers 6,240 acres, providing aquatic and upland habitats for breeding, nesting, and feeding waterfowl and shorebirds. The uplands also provide breeding and rearing habitats for sage-grouse, pronghorn, mule deer, and elk. In 1987, through the combined efforts of the Department, Ducks Unlimited, and The Nature Conservancy, the initial acquisitions were made. Six more acquisitions were made over the next 19 years (Appendix IX).

Centennial Marsh is a seasonally flooded wetland. It is inundated by water from mid-April to mid-July and 70% of Centennial Marsh is covered by one foot or less of water. The large expanse of shallow water is a complex mix of emergent vegetation that is dominated by common spikerush (*Eleocharis palustris*), Nebraska sedge (*Carex nebrascensis*), Baltic rush (*Juncus balticus*), common camas (*Camassia quamash*), and nodding groundsel (*Senecio bigelovii*). The dense emergent vegetation attracts large numbers of waterfowl and other water-based birds. Many of these birds stay on the area to nest and raise broods. The seasonality of the water creates a shortage of early summer brood-rearing habitat. To alleviate this problem, 18 two-and-one-half-acre brood ponds and a well water delivery system were constructed. The wells supply water to the ponds in late July and August. Historically, the marsh would re-flood in mid-October to early November from water moving down the Camas Creek drainage. These re-flooding events rarely occur today. When they do, it is only on the west end of the property. By early to mid-November, the marsh starts to freeze up and stays snow covered until mid-April.

The majority of the public use on the WMA occurs during the Camas Lily bloom, in late May. Bird watchers utilize the area throughout the spring and summer. Due to the early freeze-up, waterfowl hunting is limited.

The primary purpose of Centennial Marsh is to provide quality wetland and upland habitat to meet the needs of migratory and resident wildlife resources. This will be accomplished through protection and restoration of the Centennial Marsh wetlands. Centennial Marsh will also provide quality recreational opportunities consistent with the primary purpose.

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

Management Priorities, Management Directions, Performance Targets, and Strategies was offered for public inspection and comment in July 2013.

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

Introduction

This management plan is designed to provide broad guidance for the long-term management of Camas Prairie Centennial Marsh Wildlife Management Area (Centennial Marsh). It replaces an earlier management plan written in 1999 and was developed in 2012 and 2013 with extensive public input. This plan is tiered off other Idaho Department of Fish and Game (Department) plans and policies summarized below.

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

Department Mission

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

Department Strategic Goals

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

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

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

Statewide WMA Vision

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

Camas Prairie Centennial Marsh WMA Vision

The Camas Prairie Centennial Marsh Wildlife Management Area will be managed to provide high quality, diverse wetland and upland habitat. The area will also provide public access for multiple outdoor recreational activities that do not adversely impact the integrity of the habitat or the wildlife resources.

Modification of Plan

This plan provides broad, long-term management of Centennial Marsh and has a 10-year life span. It will be evaluated every five years to determine if adjustments are warranted. The plan will be modified as needed to accommodate changing conditions and goals and to incorporate available advancements in management knowledge, tools, and techniques.

Other Considerations

All strategies proposed in this plan are bound by the contractual agreements between cooperating agencies, the mission of Centennial Marsh, 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 properties acquired for Centennial Marsh (see Figure 1 and Appendix IX) have a long history of waterfowl and shorebird use. At the time of acquisition, this area supported thousands of breeding and summering waterfowl. Spring waterfowl were so numerous in the area that biologists had named it Duck Heaven. The acquisition and management of these properties has ensured that these flocks of waterfowl and shorebirds would continue to have breeding and brooding areas. Centennial Marsh currently provides breeding habitat for approximately 150 pairs of geese, 500 pairs of ducks, and numerous other waterbirds annually. The marsh also provides habitat for thousands of migrating waterfowl and shorebirds each spring.

Centennial Marsh is located 14 miles west of Fairfield, Idaho on State Highway 20. This is in south-central Idaho approximately 100 miles east of Boise, Idaho. The area is a high elevation valley (average elevation of 5,000 ft.) lying between the Smoky Mountains to the north and the Bennett Hills to the south. It is a gently-sloped basin drained by Camas Creek and its tributaries. The marsh lies at an elevation of 5,058 feet on the east side and five miles west at 5,063 feet. The upland segment of Centennial Marsh rises to 6,200 feet.

The Rocky Mountains partly shield the Camas Prairie from strong Arctic winds, thereby protecting this region from the severe blizzards that sweep east of these mountains (USDA 1981). During the summer, Pacific Ocean winds are partly blocked by the coastal range; days are hot, but nights are cool. The average winter temperature recorded at Hill City, Idaho is 20°F and the average daily minimum is 9°F (USDA 1981). The record low temperature of -58°F occurred on December 22, 1991. During the summer, the average temperature is 63°F and the average daily maximum is 82°F (USDA 1981). The record high temperature of 101°F occurred on July 23, 1959 (USDA 1981). Average annual precipitation as recorded in Hill City is 15.7 inches with 31% of the precipitation falling during the growing season (Apr-Sep). Average cumulative snowfall is 93 inches. The greatest recorded snow depth at any one time was 68 inches (USDA 1981).

Vegetation on the area is diverse with good interspersion of different habitat types. The seasonal wetlands encompass approximately 4,500 acres. Mountain big sage and mixed shrub community encompass about 600 acres on the south end of the property. There are 300 acres of silver sage, with a grass/forb understory, that surround the wetlands in a thin band. Of the nearly 800 acres of historical cropland, about 500 acres have been converted back into permanent herbaceous cover, generally a mix of perennial forbs and bunch grasses (Appendix VI). About 300 acres remain in agricultural production to serve as an attractant and high quality spring/summer forage for elk, mule deer, and sage-grouse.

In 1999, 426 acres were enrolled in the USDA Conservation Reserve Program (CRP). These acres were in two signups, CP23 at 279 acres which expires in 2014 and CP4D at 147 acres which expired in 2012. These CRP acres accounted for a large portion of the dense nesting cover plantings on Centennial Marsh.

Noxious weeds continue to be controlled by a variety of methods. This protects wildlife habitat from invasion by undesirable plant species.

Centennial Marsh is home to a variety of migratory and resident mammals, birds, reptiles, and amphibians. A description of the wildlife present on Centennial Marsh can be found in Appendix VII.

Centennial Marsh WMA is open for recreational uses throughout the snow-free season and is visited by thousands of people each year. Visitors come to enjoy the birding, camas lilies, hunting, and other nature-based activities offered on the WMA (Appendix IV). The greatest number of visits occur in late May to early June to observe the Camas Lily bloom. Approximately 1,000 people visit the marsh during this time period. Bird watchers visit throughout the spring, summer, and fall. Annual tours of Centennial Marsh are conducted for kindergarten and elementary through college students. Nature photographers utilize Centennial Marsh throughout the spring and summer. During the hunting seasons, elk, pronghorn, and sage-grouse are harvested on the WMA every year. During waterfowl season, there is limited hunting depending upon when freeze up occurs.

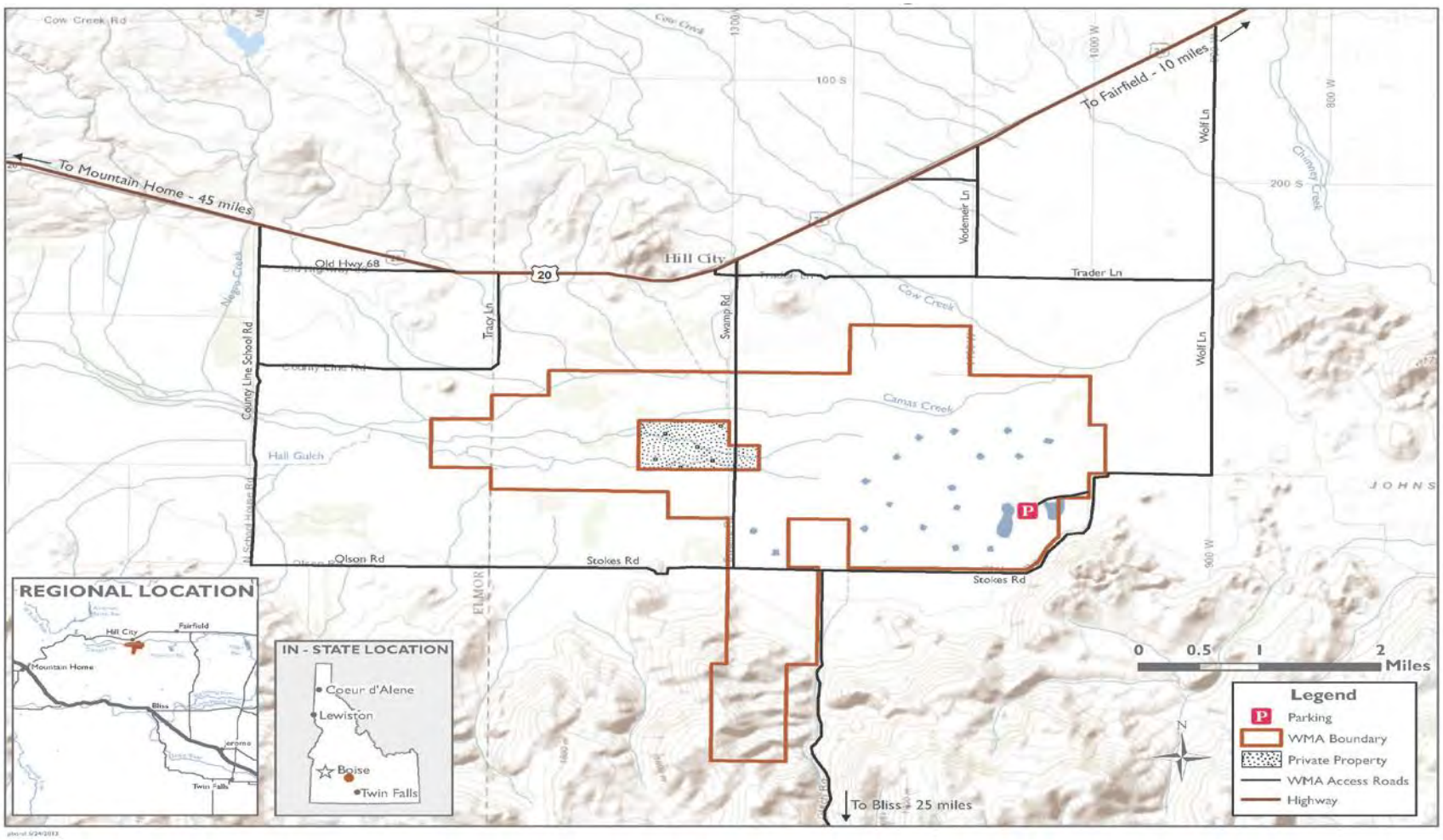

Figure 1. Camas Prairie Centennial Marsh Wildlife Management Area.

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.

We received 61 online surveys specific to Centennial Marsh WMA. Most of those who participated in the surveys were either satisfied or very satisfied with the current management of Centennial Marsh WMA (80%). We accumulated 207 comments from our users on Centennial Marsh WMA sign-in sheets during 2011 and 2012. Additional information gathered from these surveys on visitor use trends is available in Appendix IV.

The following is a list of all management issues mentioned by members of the public during this survey process; Department policy direction and WMA staff management experience also helped shape the list of current issues. The issues identified 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 Centennial Marsh WMA.

Issues Identified By the Public and/or Department

Habitat Management

1. **Emergent wetlands can develop decadent unproductive vegetation and soils over time.**

   Discussion: Stable water levels over several years can negatively impact emergent wetland communities and impact the quality of wildlife habitat. Water level management should include periodic partial (moist-soil management) or complete drawdowns. Drawdowns allow decomposition of aquatic vegetation, freeing nutrients for plant and animal production, and expose mudflats that allow germination of diverse emergent vegetation. When re-flooded, the

nutrient and plant rich communities provide an abundant insect and seed food source for waterfowl.

Complete drawdowns will be conducted on each of the 15 constructed brood ponds, as well as the 18 acres of natural ponds, annually. Throughout the summer, partial drawdowns of the brood ponds produces an abundance of moist soil plants for waterfowl food and increase in invertebrate production. We have no control over the water in the main portion of the marsh. The water delivery is completely dependent on the winter snow pack. As the inflow decreases, anywhere from early June to mid-July, the marsh gradually dries up. This is the natural systems drawdown for the majority of the marsh.

2. **The presence and spread of noxious weeds can decrease the quality of habitat on Centennial Marsh.**

   Discussion: An integrated noxious weed control program is employed annually on the WMA and will continue to be high priority. One temporary technician spends a significant portion of their time actively treating noxious weeds with chemical and mechanical control methods. Management staff participates on the local Weed Management Area Advisory Board to secure funding, information, and resources to implement successful weed control on the WMA and with public and private landowners in Camas County.

3. **The grasslands on the WMA should have a higher component of native grass and forb species.**

   Discussion: Sections of grassland will be targeted for replanting to native grass/forb species. Different sections will be treated over the years due to the amount of time and level of maintenance required for native grass species to become established. Once the weed species and non-native grasses are reduced or eliminated, a native grass/forb mix will be seeded into the sites. Providing high quality wildlife habitat is the primary goal of Centennial Marsh. The Management Program we have outlined in the following section is designed to achieve this goal.

4. **Centennial Marsh WMA needs to be expanded through land acquisitions.**

   Discussion: The Department has an active land acquisition program for Centennial Marsh. Since the original lands were set aside for wildlife in the late 1980s, the Department has acquired almost 3,000 acres of adjoining land to expand Centennial Marsh's boundaries. We will continue to seek opportunities to add to the WMA when properties and funds are available

5. **Prevent livestock from accessing Centennial Marsh WMA.**

   Discussion: No livestock grazing is currently permitted on Centennial Marsh although trespass cattle from neighboring private and Bureau of Land Management (BLM) lands often

gain access to the WMA. Each year, we actively work to maintain fences between the WMA and neighboring grazed areas. We also work with neighboring landowners to get trespass cattle removed from the WMA as quickly as possible.

Wildlife Management

1. **Wetlands should be managed for waterfowl and shorebird nesting and brood rearing.**

   Discussion: Wetlands will be managed with waterfowl and shorebird reproduction as a primary goal. Water levels will be managed for nesting conditions in the spring (high water levels) and brood rearing in the summer (receding water levels for food availability and loafing areas). Upland nesting habitat will be protected and maintained. Artificial nesting structures will be employed when natural conditions are not sufficient.

   Wetland management will include periodic drawdowns to maintain dynamic and productive wetland habitat. Drawdowns on the 18 constructed and natural brood ponds across the WMA will be conducted on a rotational basis to provide a diversity of wetland habitat in any one year.

2. **Wetlands should be managed for migrating waterfowl and shorebirds.**

   Discussion: Wetlands will be managed to support migrating waterfowl and shorebirds and provide abundant food sources and resting areas. Water levels in the areas that can be manipulated will be maintained at high levels in the spring and periodically throughout the summer. Water levels in some ponds in the fall may be below full pool to provide an abundant food source for dabbling ducks and wading shorebirds.

   The use of the WMA during spring migration is solely dependent on spring thaw. This is when the marsh turns from snow and ice to water. When this event occurs is entirely out of our control. With an early mid-March thaw, as we saw in 2013, the WMA had approximately 3,000 northern pintails, 1,000 snow geese, and 500 tundra swans. The marsh normally turns to water in mid- to late April and we do not see these early migrants. The shorebirds generally migrate through this area in early to mid-May and are able to take full advantage of the marsh.

3. **Manage Centennial Marsh to benefit all native wildlife species, not just game species.**

   Discussion: Centennial Marsh WMA was created to provide high quality wetlands for waterfowl. Therefore, these species will remain priorities for Centennial Marsh management. Fortunately, waterfowl have varied habitat needs that overlap the habitat needs of many other native wildlife species, including a variety of wading shorebirds. Additionally, the Conservation Target approach used to develop this plan has helped us better identify the needs of Species of Greatest Conservation Need (SGCN) and plan accordingly. The Centennial Marsh Management Program outlined in the following section considers the needs of a wide variety of native wildlife species, identifies species that have habitat needs

that are not being addressed under the Conservation Target management system, and identifies monitoring or management actions to address these needs.

4. **Manage Centennial Marsh to improve the greater sage-grouse population.**

   Discussion: Centennial Marsh WMA and the sagebrush landscape to the south of the marsh historically supported an abundant population of greater sage-grouse. However, the greater sage-grouse population in this area has declined like most other populations in the western U.S. Currently, birds occupy at least five leks within two miles of the WMA. Habitat improvements on and around the WMA could influence these populations. This plan includes management actions to protect and improve greater sage-grouse habitat on Centennial Marsh and within the Centennial Marsh landscape.

Public Use Management

1. **Improve public facilities.**

   Discussion: The area where the majority of the public visit has one older outhouse, a few shade trees, and a picnic table. Two comments were received to improve this facility. Three comments were received to leave it as it is. A new outhouse was installed in 2013. One comment was received to improve the lack of shade. Additional trees were planted in 2013. Maintenance and development of access facilities may be improved in alignment with public desires when compatible with wildlife habitat goals. Public input on access needs and development will be sought through public use surveys and visitor contacts.

2. **Provide interpretive signs.**

   Discussion: A kiosk is currently being designed that will provide information on the Native American use of the marsh, waterfowl, and wetland ecology. A bird species list has been created for the marsh and is currently being updated and prepared for reprinting.

Camas Prairie Centennial Marsh WMA Management Program

The Department is responsible for the conservation, protection, perpetuation, and management of all wildlife, fish, and plants in Idaho. Wildlife Management Areas enable the Department to directly affect habitat to maximize suitability for species in key areas and are an integral component in the Department's approach to fulfill its legal mandate in Idaho. Management to restore and maintain important natural habitats and create hyper-productive habitats that enhance carrying capacity for selected wildlife species remain key strategies on Centennial Marsh. However, 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, typically come from outside the WMA's boundary. Therefore, WMA managers must recognize and create opportunities to collaborate with adjacent landowners, expanding our collective conservation efforts for WMA-dependent wildlife.

We propose that an effective way to enable a broader influence over the future of Centennial Marsh is through the use of Conservation Targets to guide management. Conservation Targets can be either a focal species or a habitat-type that benefits numerous species. According to Noss et al. (1999), focal species are those used by resource 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 dependent on Centennial Marsh, a carefully selected suite of Conservation Targets can help provide for the conservation needs of many species. Additionally, identifying landscape-scale Conservation Targets across ownership boundaries helps address wildlife-related issues on Centennial Marsh and creates a platform for conservation partnerships on the surrounding landscape.

The following six-step process was used to create the Centennial Marsh 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) Selection of Conservation Targets
4) Viability Assessment of Selected Conservation Targets
5) Spatial Delineation of Conservation Target Landscapes
6) Creation of Management Program Table

Summary of Management Priorities

Management of Centennial Marsh WMA is bound to certain legal requirements and obligations imposed by the Bonneville Power Administration (BPA) regarding the use of wildlife mitigation funds for acquisition and long-term maintenance of the WMA. These constraints are summarized below and discussed in more detail in Appendix III.

BPA Wildlife Mitigation Funds

As a condition of accepting funds provided by BPA, the Department is obliged to meet the requirements and objectives defined in the Anderson Ranch Wildlife Management Plan Final Environmental Assessment (Meuleman et al. 1987). These requirements are specified in Appendix III.

Centennial Marsh WMA Management priorities (in order of priority):

1. Enhance and Maintain Palustrine Wetland Habitat
2. Enhance and Maintain Grassland Habitat
3. Enhance and Maintain Sagebrush-steppe Habitat
4. Provide for Wildlife-based Recreation and Education

Focal Species Assessment

This section of the Centennial Marsh Plan is an assessment of various wildlife species on Centennial Marsh in order to identify Conservation Targets to guide management. Table 1 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, 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). Waterfowl is an example of a group that meets the criteria as a flagship species. In addition, they are a culturally and economically important species in Idaho and represent a founding priority for establishment of Centennial Marsh. Therefore, waterfowl is an important flagship species group considered in the Centennial Marsh assessment.

A principal limitation of the flagship species concept is that by focusing limited management resources on culturally and economically important species, more vulnerable species may receive less or no attention (Simberloff 1998). To overcome this limitation, we are explicitly considering a wide variety of at-risk species (Groves 2003); yielding a more comprehensive assessment that includes culturally and economically important species (e.g., mule deer and elk) along with formally designated conservation priorities (e.g., bald eagle and greater sage-grouse). 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 U.S. Forest Service (USFS); and 3) species designated as Sensitive by the Idaho State Office of the BLM.

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

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

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

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

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

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

Table 1. Status of Conservation Priority Species on the Camas Prairie Centennial Marsh WMA including their Potential Suitability as Focal Species for Management.

Species	Status Designation(s)	Occurrence Context in Centennial Marsh WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Centennial Marsh WMA
American Avocet (*Recurvirostra americana*)	SGCN	American Avocet is known to breed on Centennial Marsh. Suitable breeding and foraging habitat is present.	The loss of wetland and riparian habitats is a pervasive threat.	A focus of American Avocet conservation populations should be the stabilization and rehabilitation of habitat for extant breeding populations. Emphasis is needed in riparian restoration to increase available wetland habitat	**Unsuitable as a focal species**. Nomadic ecology makes population monitoring difficult. Limited information on distribution on the WMA. Unknown distribution limits potential management feedback
Black Tern (*Chlidonias niger*)	BLM Sensitive, SGCN	Breeding population on the WMA.	Greatest threat is loss of marsh habitat.	Protect and maintain suitable shallow marsh habitat with emergent vegetation.	**Unsuitable as a focal species.** Limited information on distribution on the WMA.
Black-necked Stilt (*Himantopus mexicanus*)	SGCN	Black-necked are very common on Centennial Marsh. Documented breeding occurs on the WMA	Greatest threat is loss of marsh habitat.	Protect and maintain suitable shallow marsh habitat with emergent vegetation.	**Unsuitable as a focal species**. Nomadic ecology makes population monitoring difficult. Limited information on distribution on the WMA. Unknown distribution limits potential management feedback
Burrowing Owl (*Athene cunicularia*)	SGCN	Documented breeding has occurred on Centennial Marsh	Burrowing owls breed in open, well-drained grasslands, prairies, farmlands, steppes, and may have some association with irrigated agriculture. In Idaho, burrowing owls typically use burrows excavated by badgers. Loss of nesting habitat through urbanization and agricultural conversion is a serious threat throughout Idaho. Pesticides are a potentially significant threat to this species as it often nests close to agricultural fields.	Many of the recommended conservation actions In Idaho's SWAP relate to statewide population assessments or monitoring to better understand threats. However, management that identifies nesting areas, limits human disturbance in known nesting areas and reduces exposure to pesticides will benefit nesting burrowing owls on Centennial Marsh.	**Unsuitable as a focal species**. Limited occurrence on Centennial Marsh limits potential management feedback.
Columbia Spotted Frog (*Rana luteiventris*)	BLM Sensitive, USFS Sensitive, SGCN	Columbia Spotted Frog is known to breed on Centennial Marsh WMA. Suitable breeding and foraging habitat is present.	The loss of wetland and riparian habitats is a pervasive threat. Considered as independent units, small populations are susceptible to breeding failure and other catastrophic events. Possible susceptibility to *Batrachochytrium dendrobatidis*.	A focus of Columbia spotted frog conservation populations should be the stabilization and rehabilitation of habitat for extant breeding populations. Emphasis is needed in stream and riparian restoration to increase available wetland habitat and restore connective corridors among occupied habitats (IDFG 2005).	**Unsuitable as a focal species**. Limited occurrence on Centennial Marsh limits potential management feedback.
Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus*)	BLM Sensitive, USFS Sensitive, SGCN	There have been two unconfirmed sightings on the WMA. Searches have been conducted and no birds have been located.	Population declines are related to habitat loss and degradation. Breeding habitats are dominated by relatively dense herbaceous (grass and forbs) cover and shrubs. Broods depend on areas with abundant forbs and insects, often with high shrub diversity. Sharp–tailed grouse often rely on riparian areas or deciduous hardwood shrub stands during winter, although agricultural fields may be used in milder conditions.	Identify, protect and maintain key breeding and wintering habitats, avoid disturbance to breeding complexes (lands within 9.2 km radius of occupied leks), monitor breeding populations.	**Unsuitable as a focal species.** Limited information on distribution on the WMA.
Elk (*Cervus elaphus*)	Flagship	Centennial Marsh is important spring, summer and fall range for elk within Department game management unit 45.	Conflicts with agricultural producers and depredations Potential for increased conflicts with loss of CRP contracts. Rural residential/commercial development in the Camas Creek watershed; habitat fragmentation from conflicting land uses on adjacent public and private lands; loss of aspen habitat.	Work collaboratively with BLM and USFS to maintain adequate elk security cover; provide technical assistance to private landowners to expand tolerance and available habitat on private lands; provide technical assistance to county planning and zoning staffs to minimize loss or degradation of habitat.	**Potentially suitable as a focal species.** Elk are a culturally and economically important wildlife species in central Idaho.

Species	Status Designation(s)	Occurrence Context in Centennial Marsh WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Centennial Marsh WMA
Greater Sage-grouse (*Centrocercus urophasianus*)	Flagship; Candidate for listing under ESA, BLM Sensitive, USFS Sensitive, SGCN	The Camas Creek watershed was historically occupied habitat for sage-grouse. BLM and the Department ranked this area as *Key Habitat* (areas of generally in-tact sagebrush {2010 Idaho Sage-grouse Habitat Planning Map}). Currently there are five perennially active leks in close proximity to the Centennial Marsh and many historic leks whose current status is unknown.	Loss, degradation, and fragmentation of sagebrush habitat are the major threats to the greater sage–grouse in Idaho. Habitat degradation factors include alteration of historical fire regimes, conversion of sagebrush habitat, water developments, use of herbicides and pesticides, invasive species, urbanization, energy development, mineral extraction, and recreation.	Identify, protect, and maintain existing sagebrush seasonal habitats particularly breeding and brood-rearing habitats. Identify new lek/breeding habitats in the Centennial Marsh vicinity. Where possible, restore damaged and lost sage-steppe habitat. Manage projects to significantly reduce fragmentation of existing sagebrush habitats and to reduce human disturbance.	**Potentially suitable as a focal species.** Greater sage-grouse have a high conservation need and are representative of a group of species sharing similar conservation needs. They have a high level of current Department program effort and are a species with potential to stimulate partnerships.
Sandhill Crane (*Grus canadensis*)	Flagship, SGCN	Sandhill cranes in Centennial Marsh and vicinity are part of the Rocky Mountain Population (RMP). The area provides breeding habitat for sandhill cranes. At least ten pairs nest on or in close proximity of Centennial Marsh.	Loss and degradation of wetland/riparian breeding habitat is also an issue..	Protect and restore wetland/riparian habitat for breeding sandhill cranes. Document breeding locations on the WMA, including nesting brooding locations.	**Potentially suitable as a focal species.** Species is important indicator of riparian and wetland systems in southern Idaho. Continued persistence in the drainage would help guide priorities for riparian and wetland conservation.
Lewis's Woodpecker (*Melenerpes lewis*)	SGCN; IWJV	Lewis's woodpecker habitat exists on Centennial Marsh within, riparian groves. Nesting has been documented on the WMA. This species is nomadic, therefore, suitable breeding habitat may be unoccupied in some years.	The loss of riparian wooded corridors. This species rely on large snags in relatively open habitats. In general, a reduction of large snags in breeding habitats may limit reproduction.	Actions that result in maintaining and enhancing riparian wooded corridors will likely benefit this species.	**Unsuitable as a focal species**. Nomadic ecology makes population monitoring difficult. Limited information on distribution on the WMA. Unknown distribution limits potential management feedback.
Long-billed Curlew (*Numenius americanus*)	SGCN	Documented breeding occurs on Centennial Marsh.	The greatest threat to long-billed curlews in Idaho is loss of habitat. Conversion of grasslands to croplands, residential development, and increasing recreational use have all resulted in the loss of suitable habitat in Idaho.	Protect habitat areas that are >42 ha (104 ac) (enough habitat for at least 1 breeding pair.) Protect nesting areas from detrimental human disturbance.	**Unsuitable as a focal species**. Limited information on distribution in on the WMA. Unknown distribution limits potential management feedback.
Mule Deer (*Odocoileus hemionus*)	Flagship	Centennial Marsh is important spring, summer and fall range for mule deer within Department game management unit 45.	Rural residential/agricultural development in the Camas Creek watershed, habitat fragmentation from conflicting land uses on adjacent public and private lands, loss of aspen habitat. Conflicts with agricultural producers and potential for increased conflicts with loss of CRP contracts.	Support management that increases aspen on the landscape; work collaboratively with BLM and USFS to maintain thriving mule deer herds on the landscape. Provide technical assistance to private landowners to expand tolerance and available habitat on private lands; provide technical assistance to county planning and zoning staffs to minimize loss or degradation of habitat.	**Potentially suitable as a focal species.** Mule deer are a culturally and economically important wildlife species in central Idaho.
Peregrine Falcon (*Falco peregrinus*)	Flagship, SGCN, USFS Sensitive, BLM Sensitive	Peregrines are seen on the Centennial Marsh almost every year. Suitable foraging habitat is present.	Loss, degradation, and fragmentation of grasslands and wetland habitats, residential development, and increasing recreational use, have all resulted in the loss of suitable habitat in Idaho. Because of their hunting techniques peregrines in proximity to roads and power lines are potentially subject to high mortality due to vehicle and wire collisions.	A peregrine hacking program has been in place on Centennial Marsh for 12 years. This program has raised and released 25 peregrines. Of these 22 have left the marsh alive and well.	**Potentially suitable as a focal species.** Species is important indicator of riparian, wetland and grassland systems in southern Idaho.
Prairie Falcon (*Falco mexicanus*)	SGCN, BLM Sensitive	Prairie falcons can be found regularly on Centennial Marsh during spring , summer and fall. Suitable foraging and breeding habitat is present.	Loss, degradation, and fragmentation of grasslands and wetland habitats, residential development, and increasing recreational use, have all resulted in the loss of suitable habitat in Idaho	Support management that increases high quality CRP and agricultural habitat on the landscape; provide technical assistance to county planning and zoning staffs to minimize loss or degradation of habitat; provide technical assistance to private landowners to protect grassland habitats.	**Unsuitable as a focal species**. Nomadic ecology makes population monitoring difficult. Limited information on distribution on the WMA. Unknown distribution limits potential management feedback

Species	Status Designation(s)	Occurrence Context in Centennial Marsh WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Centennial Marsh WMA
Pronghorn Antelope (*Antilocapra americana*)	Flagship	Centennial Marsh is important spring, summer and fall range for Pronghorn within Department game management units 44 and 45. They occur throughout the greater Camas Creek landscape.	Rural residential/commercial development in the Camas Creek watershed; Conflicts with agricultural producers and potential for increased conflicts with loss of CRP contracts.	Support management that increases high quality CRP and agricultural habitat on the landscape; provide technical assistance to county planning and zoning staffs to minimize loss or degradation of habitat; provide technical assistance to private landowners to expand tolerance and available habitat on private lands.	**Potentially suitable as a focal species.** Pronghorn Antelope are a culturally and economically important wildlife species in central Idaho.
Pygmy Rabbit (*Brachylagus idahoensis*)	At-risk Species; SGCN; USFS Sensitive; BLM Sensitive	No historic or recent records of Pygmy Rabbit exist for the WMA. Populations have been recently documented in the Mormon Reservoir vicinity. The WMA falls within predicted range of Pygmy Rabbit and the upland portions of the WMA likely support suitable habitat for Pygmy Rabbit. The species can be secretive and is often confused with other rabbits/hares, thus, targeted surveys for this species would be beneficial.	Loss, degradation, and fragmentation of sagebrush habitat from alteration of historic fire regimes, conversion of native habitats to farming or intensive livestock forage production, water developments, use of herbicides and pesticides, establishment of invasive species, urbanization, energy development, mineral extraction, and recreation. Efforts are needed to evaluate spatial connectivity among populations of Pygmy Rabbits at local, regional, and ecosystem scales.	Minimize disturbance to occupied habitat and retain stands of mature sagebrush-steppe. Initiatives benefiting the conservation of Greater Sage-grouse may provide general guidance for conserving sagebrush habitats and associated sagebrush obligates such as Pygmy Rabbit and Brewer's Sparrow.	**Unsuitable as a focal species.** Limited information on distribution on the WMA.
Short-eared Owl (*Asio flammeus*)	SGCN	Short-eared owls are known to breed on Centennial Marsh. Suitable breeding and foraging habitat is present.	As ground-nesters (often in loose colonies), the short-eared owl is particularly vulnerable to habitat loss and degradation, and human disturbance. Residential, commercial, transportation, utility, and agricultural development of suitable nesting habitats are key factors in local short-eared owl population declines. Timing of agricultural activities such as tilling, mowing, burning, etc. can adversely affect short-eared owls breeding in agricultural areas.	This species benefits from any actions or projects that protect, enhance, or restore potentially suitable foraging and breeding habitats. Projects designed to benefit other grassland and shrub-steppe species (e.g., sage-grouse sharp-tailed grouse, mule deer) also will benefit short-eared owls. Monitoring for use of agricultural lands prior to ground disturbing actions also would benefit the short-eared owl.	**Unsuitable as a focal species**. Nomadic ecology makes population monitoring difficult. Limited information on distribution on the WMA. Unknown distribution limits potential management feedback
Swainson's Hawk (*Buteo swainsoni*)	SGCN	Swainson's hawk is very common and breeds annually on the Centennial Marsh.	Main threats are vulnerability of this species as it congregates in large numbers during migration and on the wintering grounds (e.g., Argentina). On breeding grounds, conversion of native grasslands to crops can degrade or eliminate nesting habitat. Development of wind farms may cause direct mortality if migrating hawks collide with turbines during spring and fall migration.	Maintain and/or restore native grasslands in order to retain adequate foraging and nesting habitats. Avoid disturbance to nest trees during breeding. Migration corridors should be identified and important stopover habitat protected. Better data on mortality rates of migrating Swainson's hawks (and other raptors) as a result of wind farm development are needed.	**Unsuitable as a focal species**. Occurrence on Centennial Marsh does not reflect the main threats to Swainson's hawk (e.g., vulnerability on migration and wintering grounds). Nomadic ecology makes population monitoring difficult. Unknown distribution limits potential management feedback.
Waterbird Guild	Flagship or At-risk Species; SGCN; USFS Sensitive; BLM Sensitive	Centennial Marsh supports a diversity of waterbirds from April-July, including several SGCN species. IBIS surveys conducted in spring/summer have also documented Eared and Pied-billed Grebes, American Coot, Sora, Virginia Rail, and American Bittern. WMA is a designated Important Bird Area and Site SW31 of the Idaho Birding Trail.	Drought, low water levels, and/or diversion of water from existing marsh/wetland/riparian habitat can result in temporary or permanent abandonment of traditional nesting sites. Some waterbirds forage extensively in agricultural fields, increasing their exposure to pesticides.	Monitoring water quality and reducing drastic water level fluctuations during the breeding season at key sites is recommended. Closing off important breeding areas to recreational activities during the nesting period helps to alleviate disturbance pressures. Continue IBIS 3-year monitoring plan to assess status of WMA populations.	**Potentially suitable as a focal guild.** Species are a good indicator of quality wetland and riparian systems. Waterbirds are a notable watchable wildlife group due to their showy courtship displays, conspicuous vocalizations, and colonial behavior.

Species	Status Designation(s)	Occurrence Context in Centennial Marsh WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for Centennial Marsh WMA
Waterfowl Guild	Flagship, Northern Pintail and Lesser Scaup SGCN	Twenty species of this guild utilize Centennial Marsh. Suitable breeding and rearing habitat occurs for most of these species on the marsh.	Loss, degradation, and fragmentation of grasslands and wetland habitats, residential development, and increasing recreational use, have all resulted in the loss of suitable habitat in Idaho.	Protect and restore wetland/riparian habitat for breeding and rearing. Protect and enhance grassland habitats. Protect nesting areas from detrimental human disturbance.	**Potentially suitable as a focal species.** Species are important indicators of riparian and wetland systems in southern Idaho. Continued persistence in the drainage would help guide priorities for riparian and wetland conservation.
Western Toad (*Anaxyrus boreas*)	Southern Rockies Population Petitioned ESA, USFS Sensitive, BLM Sensitive	Camas Creek watershed at one time had abundant populations. On Centennial Marsh WMA it is thought that the winter of 1992, with no snow cover and temperatures of -58 F, decimated the population. It is slowly making a comeback. Current distribution and status in watershed is poorly documented.	Chytrid fungus, *Batrachochytrium dendrobatidis*, is the primary threat to western toad populations throughout the Southern Rocky Mountains. This is compounded by habitat alteration around wetlands. Habitat fragmentation isolates breeding populations, which increases the effects of these widespread threats and the risk associated with other threats.	Managing disease, cataloging and monitoring population status, delineating important habitat, and protecting delineated habitat, and identifying and protecting current breeding sites from habitat degradation (Keinath and McGee 2005).	**Unsuitable as a focal species**. Limited information on distribution on Centennial Marsh. Unknown distribution limits potential management feedback.

Selection of Conservation Targets

The biodiversity of Centennial Marsh 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 Centennial Marsh for management and conservation; while still reflecting the management priorities of Centennial Marsh. Conservation Targets may also be habitats that effectively represent suites of the flagship and special status species evaluated in Table 1, regardless of their potential suitability as a focal species.

Conservation Targets for the Centennial Marsh Management Plan were selected from species ranked as potentially suitable focal species in Table 1. 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. Sensitive plants are not included in this assessment due to practical considerations including lack of data and funding.

The focal species assessment identified eight species or guilds that are potentially suitable focal species for management on the Centennial Marsh. We selected three habitat types to represent the following focal species: mule deer, elk, greater sage-grouse, waterfowl guild, peregrine falcon, sandhill crane, pronghorn, and waterbird guild.

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

1. Palustrine Wetland Habitat (Enhance and Maintain Palustrine Wetland Habitat)
2. Grassland Habitat (Enhance and Maintain Grassland Habitat)
3. Sage-steppe Habitat (Enhance and Maintain Sagebrush-steppe Habitat)

Palustrine Wetland Habitat

We chose to designate palustrine wetland habitat as a Conservation Target for management on Centennial Marsh due to the number of focal species that are dependent on functional wetland habitat. All of the focal species selected utilize the wetlands during some time of the year. Providing quality wetland functions and values on Centennial Marsh is of high priority for the Department and the cooperative management agency, BPA. A multitude of wildlife species rely on wetlands for all or a portion of their life requirements, including waterfowl game species and many other focal species chosen here.

Our vision for wetland areas on the WMA is that they will support an array of physical, chemical, and biological processes that provide a mosaic of habitat components including shallow water shoreline, grassland nesting areas near water, herbaceous emergent wetlands, shallow wetlands, and mudflats. We envision the wetlands will provide resting and refueling areas for breeding and migrating waterfowl and wading shorebirds.

Grassland Habitat

We chose to designate grassland habitat as a Conservation Target as it provides important nesting habitat for bird species, including ground nesting waterfowl (mallard, lesser scaup, northern pintail), and other grassland nesting birds. Grassland areas provide brood-rearing habitat for some waterfowl and upland game bird species, such as Canada goose and greater sage-grouse. A multitude of other species find forage and cover in grasslands, including species such as elk, deer, pronghorn, and sandhill cranes.

Our vision for grassland habitat is that it will include native grass species, with a native forb component. It will have complex structure and healthy rigor, and support diverse insect populations. Improving or maintaining highly functional grassland habitat has the potential to directly benefit many species of wildlife.

Sage-steppe Habitat

We chose to designate sage-steppe habitat as a Conservation Target as it provides important habitat features for sage-grouse, elk, mule deer, and many other sagebrush-dependent species.

Sagebrush habitats have high structural diversity, thus more places to forage, hide, and build nests. The sage-steppe habitat provides cover and browse for mule deer, elk, black bears, pronghorn, and other species. Avian species associated with sagebrush include greater sage-grouse, ferruginous hawk, loggerhead shrike, sage sparrow, Brewer's sparrow, and sage thrasher. Pygmy rabbits, which often burrow along the interface where low sagebrush mixes with mountain big sagebrush, are also dependent on healthy sage-steppe habitat.

Our vision for sage-steppe habitat is that it will occur in continuous sections large enough to provide cover and travel corridors for wildlife. Healthy sage-steppe habitat will provide browse for big game throughout the year, nesting habitat for many bird species and provide habitat connectivity throughout the Bennett Hills.

Viability Assessment of Selected Conservation Targets

Some analysis of the amount of coverage that a Conservation Target provides toward conservation of other species is essential to determining if the selected targets are viable. For this analysis, each of the three Conservation Targets was carefully evaluated to determine what other species would benefit from management actions taken to conserve the target. Table 2 indicates that the suite of species and habitats selected for Conservation Targets on Centennial Marsh satisfy beneficial management and conservation actions and address threats for a number of species examined as potential focal species.

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

	Conservation Targets[a]			
Species Assessed in Table 1	**Palustrine Wetland Habitat**	**Grassland Habitat**	**Sage-steppe Habitat**	**Conservation Need**
Mule Deer	P	P	P	
Elk	P	P	P	
Pronghorn Antelope	P	P	P	
Greater Sage-grouse	P	P	P	
Sandhill Crane	P	P	P	
Long-billed Curlew	X	X		
Waterfowl Guild	X	X		
Burrowing Owl		X	X	
Peregrine Falcon	P	P	P	
Short-eared Owl	X	X		
Black Tern	X			
Prairie Falcon	P	P	P	
American Avocet	X			
Western Toad	X	X	X	
Colombia Spotted Frog	X	X		
Waterbird Guild	X	X		
Pygmy Rabbit			X	
Lewis's Woodpecker				Yes
Swainson's hawk	P	P	P	
Black-necked Stilt	X			
Sharp-tailed Grouse		P	P	

[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 Centennial Marsh utilize habitats off of Centennial Marsh to meet their annual needs. In the case of the Wetland Habitat Conservation Target, species that will benefit from improved wetland habitats rarely range off of Centennial Marsh, other than during their migratory periods. Therefore, maintaining the integrity of the WMA is not dependent on what occurs within the surrounding landscape.

This section describes the methods used to define spatial landscapes for each of our Centennial Marsh Conservation Targets. We used the best data available (i.e., species survey data utilizing Centennial Marsh, scientific literature, species ecology data from the scientific literature, and local knowledge) to construct these Conservation Target-specific landscapes. These landscapes are then utilized in the Management Program Table (pages 32-34) to identify Conservation Target-specific Management Directions, Performance Targets, and Strategies for both Centennial Marsh and the landscape for each Conservation Target. All GIS operations were constructed with ArcGIS 10 unless otherwise specified.

Each of the focal habitats for Centennial Marsh WMA (Palustrine Wetland, Grassland Habitat, and Sage-steppe Habitat) is associated with the Camas Creek drainage. Together, they provide a spectrum of habitat features, from open water to wetland herbaceous cover, sage, and grassland cover. Other than mule deer, elk, and raptors, very few of the wildlife species that occur on the WMA utilize any areas outside the WMA boundaries, except during migration.

Palustrine Wetland

The wetlands on the WMA are primarily contained within the WMA boundary. A small number of both waterfowl and shorebirds use isolated wetlands and creeks within the Camas Creek drainage. These are all on private land and do not contribute significantly to the wetland habitat within the WMA (Figure 2).

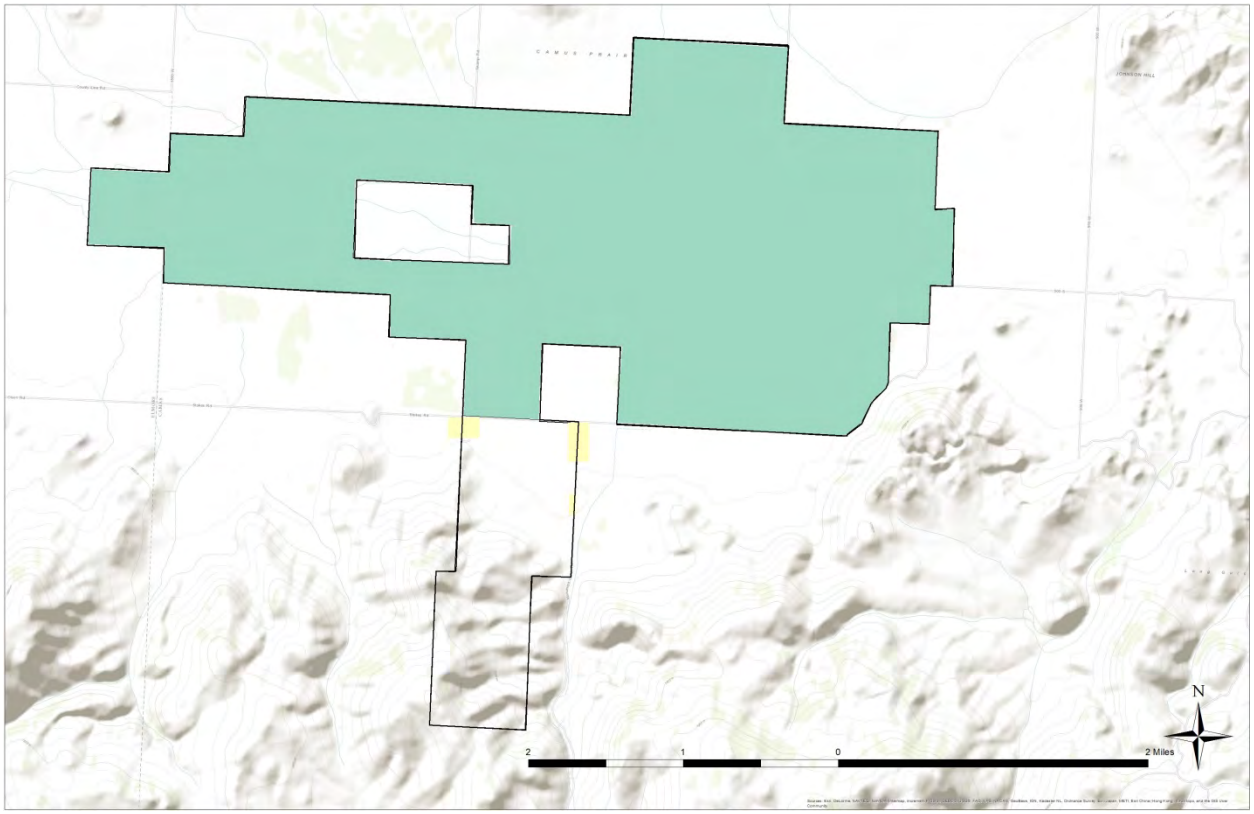

Figure 2. Centennial Marsh Palustrine Wetland as the landscape scale for focal habitat consideration for Camas Prairie Centennial Marsh WMA.

Grassland Habitat

There are 600 acres of permanent grassland and 300 acres of agricultural ground on the WMA. Depending on the crop and time of year, these agricultural acres also serve as a temporary grassland. This agricultural ground is frequently utilized by a number of the focal species. There are also approximately 600 acres, in five parcels, of Conservation Reserve Program lands that border the WMA. These are planted to a grass/forb mix and must remain in place until 2023. The private agricultural grounds extend for miles in most directions around the WMA. We have chosen a distance of two miles around the WMA, to be included within the landscape of this Conservation Target (Figure 3).

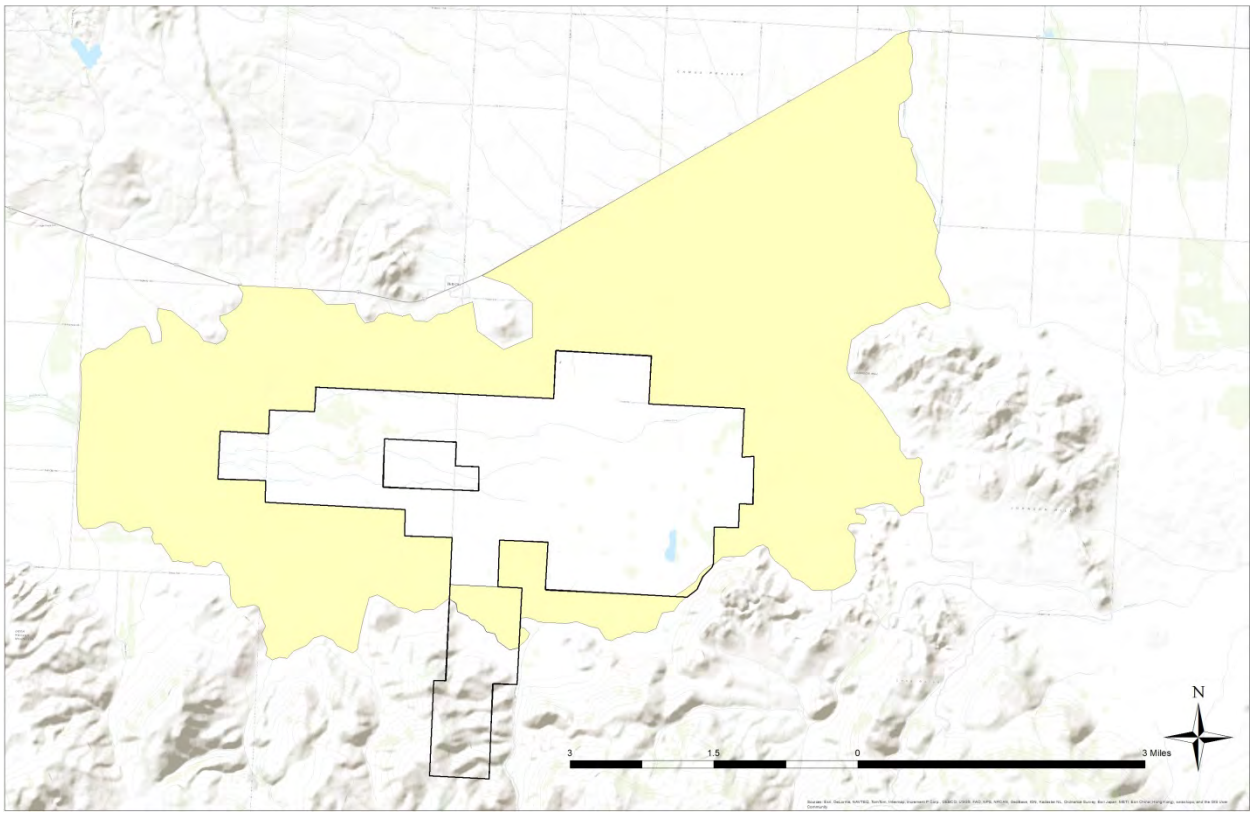

Figure 3. Centennial Marsh Grassland as the landscape scale for focal habitat consideration for Camas Prairie Centennial Marsh WMA.

Sage-steppe Habitat

The WMA contains approximately 600 acres of sage-steppe habitat. It is located on the northern boundary of the Bennett Hills. The Bennett Hills comprise 500,000 acres of sage-steppe. The WMA parcel is located in a higher elevation zone, which means more precipitation and fewer invasive plant species. The WMA parcel occupies 1/10 of 1% of the Bennett Hills landscape. It has private property on two sides and BLM on the third, which is the southern boundary. Because we have no management control over the private parcels on either side of us and very little input on the BLM to the south, other than an allotment assessment once every ten years, we are going to confine the Conservation Target to only the sage-steppe habitat within the WMA (Figure 4).

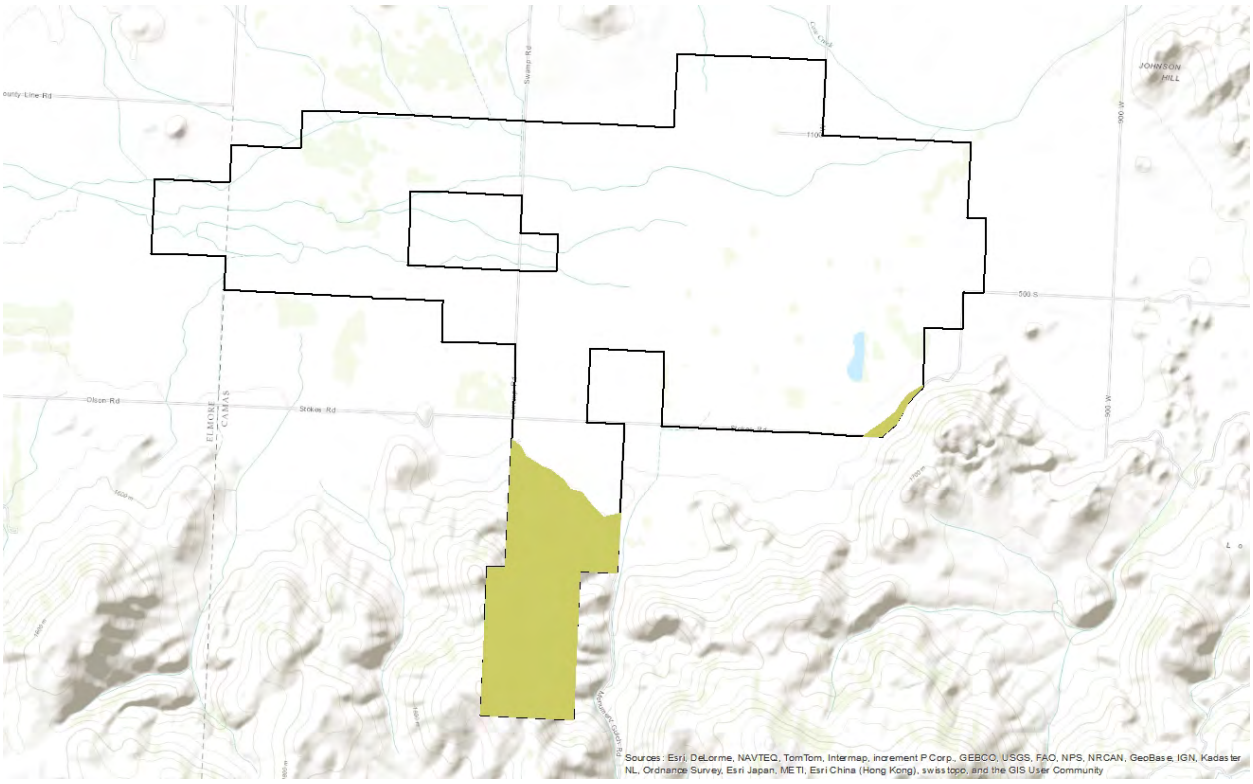

Figure 4. Centennial Marsh sage-steppe as the landscape scale for Focal Habitat consideration for Camas Prairie Centennial Marsh WMA.

Camas Prairie Centennial Marsh WMA Management Program Table

The following table outlines the Management Directions, Performance Targets, Strategies, and Outcome Metrics Centennial Marsh staff will use to manage for the Conservation Targets selected (page 25) to represent each Centennial Marsh Priority (page 19) at both the Centennial Marsh and Conservation Target-specific landscape scale. The last section of the table outlines strategies that will be used to increase our knowledge of the Conservation Needs identified in the Conservation Target coverage assessment (Table 2). The Compass Objective column links the Management Directions in this table to the objectives of the Department's strategic plan, *The Compass* (Appendix I).

WMA Priority: Enhance and Maintain Palustrine Wetland Habitat					
Conservation Target: Palustrine Wetland Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Centennial Marsh WMA	Provide high quality and functioning wetland habitat to benefit a wide range of wildlife species	Maintain a diverse wetland habitat across 4,500 acres of seasonally flooded wetlands annually. This includes17, 2.5- acre and one, 10- acre brood ponds. Treat 10 acres of wetland and upland waterfowl nesting habitat annually to improve ecological condition of habitat from poor-fair category to good-excellent category, as measured by floristic quality objectives, including increasing native richness by 10% and decreasing noxious weeds by 50%.	Manage water levels across the WMA to provide areas of deep open water, shallow open water, shallow emergent vegetation, and mudflats when appropriate to provide habitat for a variety of wildlife and species' life stages	Acres of wetland improved and/or maintained	A, B, C, E, F, G, H
			Maintain three pumps, 18,000 ft. of underground pipeline and 8,000 ft. of ditch.		
			Manage shoreline and marsh vegetation to provide nesting habitat for waterfowl and black terns.		
			Manage water levels during the spring and fall to provide resting and feeding habitat for migrating waterfowl		
			Utilize chemical and biological methods to control noxious weed infestations and limit the spread of noxious weeds on Centennial Marsh		
			Plant native wetland vegetation that provides a food source to migrating and breeding waterfowl		
		Control the invasive grass Garrison Creeping Meadow Foxtail. Remove 5 acres annually without harming the native understory.	Set up experimental plots with different herbicides and application methods to determine the most effective combination.	Acres Removed	
Camas Creek Drainage	Provide high quality and functioning wetland habitat to benefit a wide range of wildlife species	Work with private landowners and land management agencies to create and enhance 100 acres of wetland habitat in five years.	Work with private landowners through HIP and prioritize projects that provide dense nesting cover and forage for waterfowl and upland game birds	Acres Improved	
			Where possible, provide technical assistance and funding to cooperating agencies on projects that affect CRP within the Camas Creek Drainage.		
		Continue acquisition of wetland habitat	Work adjacent landowners to acquire additional wetland properties. Continue to search for funding sources for these acquisitions.	Acres Acquired	

WMA Priority: Enhance and Maintain Grass/Forb Habitat					
Conservation Target: Grassland Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Centennial Marsh WMA	Provide healthy grassland/forb habitat to benefit a wide range of wildlife species	Maintain the health and vigor of 600 acres of current grassland habitat to provide nesting cover and forage for wildlife annually.	Incorporate grassland disturbance regimes (mechanical treatment, burning, haying, or grazing) in areas that need to be rejuvenated	Acres Improved and/or Maintained	A, B, C, E, F, G, H
			Utilize chemical and biological methods to control noxious weed infestations and limit the spread of noxious weeds on Centennial Marsh		
			In candidate areas for replanting, follow a several year process of cultivating the acreage for several years to allow for weed management and soil preparation		
		Convert 50 acres in ten years, of monocultures rhizomatous grass to native stands	Remove rhizomatous grasses with a combination of tillage and herbicides and reseed to native grasses and forbs		
		Maintain a forb component in the grassland cover	Incorporate native forb species into new grassland plantings after weed control is accomplished	Acres of forbs planted	
			Manage weeds through mechanical methods such as mowing		
Camas Creek Drainage	Provide healthy grassland/forb habitat to benefit a wide range of wildlife species	Work with private landowners and land management agencies to enhance CRP grassland stands that provide quality habitat for wildlife species on 100 acres in ten years.	Provide technical assistance to private landowners through private, state and federal conservation programs to provide grassland cover for nesting and forage for upland game birds and waterfowl on private lands	Acres Improved and/or Maintained	
			Where possible, provide technical assistance and funding to cooperating agencies on projects that effect grassland stands within the Camas Creek drainage.		
WMA Priority: Enhance and Maintain Sagebrush-steppe Habitat					
Conservation Target: Sagebrush-steppe Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Centennial Marsh WMA	Provide high quality sage-steppe habitat to benefit a wide range of wildlife species	Maintain or enhance 600 acres of sage-steppe habitat through implementation of vegetation improvement projects	Plant native shrub species	Acres Improved and/or Maintained	A, B, C, E, F, G, H
			Utilize chemical and biological methods to control noxious weed infestations and limit the spread of noxious weeds on Centennial Marsh		
			Protect from trespass livestock grazing		
			Protect natural regeneration of native shrub species		
			Follow the metrics outlined by Connelly et al. (2000) or more recent comparable guidelines, when planning the desired future condition of project sites.		
Camas Creek Drainage	Provide high quality sage-steppe habitat to benefit a wide range of wildlife species	Work with private landowners and land management agencies to create and enhance sage-steppe habitat on 100 acres in ten years.	Work with private landowners through private, state and federal conservation programs to provide sage-steppe cover and forage for upland game birds and waterfowl on private land	Projects identified incorporating habitat needs, landowners contacted and projects implanted.	
			Where possible, provide technical assistance and funding to cooperating agencies on projects that affect scrub-shrub habitat in the Camas Creek Drainage. Work with SGI biologist and the NRCS to create high quality sage-steppe habitat within the drainage.		

WMA Priority: Provide for Wildlife-based Recreation and Education					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
Centennial Marsh WMA	Provide for public access and recreational use compatible with wildlife and habitat management objectives	Annually provide recreational opportunity to 2,000 consumptive and 3,000 non consumptive users, consistent with the Centennial Marsh mission.	Manage fall water levels to provide quality waterfowl hunting opportunities	User Days	E, F, G, H, K
			Provide vehicle access to handicapped big game hunters on Centennial Marsh		
		Provide access to Native Americans	Allow harvest by hand of Common Camas with the WMA		
		Provide access and improve visitor facilities and educational opportunities	Provide and maintain parking, bathroom and picnic facilities		
			Provide marsh tours to schools, birding groups, artists groups and interested members of the public		
			Provide interpretive signage explaining Native American use of the marsh, wetland and waterfowl ecology. Provide bird list of Centennial Marsh	Facilities provided	
			Encourage private landowners to participate in the Access Yes Program to allow public recreational access		
			Educate and foster communication and understanding between hunters and landowners on desires and concerns of each party		

Monitoring

Monitoring and reporting are critical for tracking accomplishment of performance targets identified in the Centennial Marsh 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 Centennial Marsh WMA 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, Centennial Marsh WMA monitors habitat, habitat treatments, spatial, and temporal use of the WMA by a variety of bird species, weed infestations, Canada goose production, and habitat use. The Habitat Evaluation Procedure (HEP) analysis is conducted at five-year intervals on Centennial Marsh as part of the Department monitoring obligation to BPA. The Northwest Power Planning Council endorsed the use of HEP in its Columbia River Basin Fish and Wildlife Program to evaluate wildlife benefits and impacts associated with the development and operation of the federal Columbia River basin hydroelectric system. The Anderson Ranch Interagency Work Group used HEP in 1987 to evaluate wildlife habitat losses attributed to the Anderson Ranch hydroelectric facility (Meuleman et al. 1987).

Photo points are established on the WMA to monitor habitat changes over time and repeat photographs are taken at least every five years, or more often, during late July to early August.

In Table 3, future monitoring needs associated with performance targets and strategies identified in the Centennial Marsh WMA Management Program Table are summarized. The goal is to

measure success or effectiveness of strategies that are implemented to reach performance targets. 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 Centennial Marsh WMA.

Reporting

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

Table 3. Biological monitoring for Camas Prairie Centennial Marsh WMA, 2014-2023.

Performance Target	Survey Type	Survey Frequency
Enhance or restore 100 acres of seasonal waterfowl habitat through moist soil and shallow water management by 2023	Vegetation monitoring (cover, frequency of species) for desired establishment	Before project initiation and twice within five years after project
Create or enhance 200 acres of upland nesting habitat for waterfowl and shorebirds	Vegetation monitoring (cover, frequency of species) for desired establishment	Before project initiation and twice within five years after project
Create or improve at least 200 acres of sagebrush habitat, including at least 50 acres of sage-grouse brood-rearing habitat by 2023	Vegetation monitoring (cover, frequency of species) for desired establishment	Before project initiation and twice within five years after project
Experiment with different methods of converting undesirable grasses to native or functional species. Implement treatments on 20 acres by 2019.	Vegetation monitoring (cover, frequency of species) for desired establishment	Before project initiation and twice within five years after project
Gather visitor use data and information to help guide Centennial Marsh WMA management	Visitor use surveys	Annually

*Note - This monitoring table focuses on conversion, restoration, or enhancement projects, not standard annual Centennial Marsh WMA management practices

Current Monitoring Efforts

Weed Monitoring/Mapping

Areas on the WMA that have been priority weed treatment areas have been mapped. Mapping occurred prior to weed control efforts and then mapped again after control treatments. The weed mapping efforts document abundance, species, and percent cover of weed species. These mapping efforts are then compared to one another to detect change of weed species and abundance over time. These comparisons give managers an idea as to what treatments are working and what species of weeds are being best controlled.

Traffic Counters

One traffic counter was located at the only Department entry point on the area. Monthly readings were taken throughout the spring, summer, and fall to establish traffic use patterns. The data was not an accurate representation of actual use. Many visitors do not utilize this entry point; they simply stay on the county road or stop along the road. The counter stopped working and was removed.

User Surveys

User survey forms were developed to establish public use trends. These user forms are filled out and collected throughout the year. Area personnel interview users as they are encountered. These user surveys inform managers as to what activities Centennial Marsh WMA is being used for by the public.

Wildlife Population Surveys

Surveys are conducted annually for eagles, sandhill cranes, greater sage-grouse, trumpeter swans, mourning doves, and pronghorn on Centennial Marsh WMA and the surrounding area. These surveys are conducted by Centennial Marsh WMA staff and volunteers. In addition, surveys are conducted as resources and needs dictate for water and shorebirds, colony nesting waterbirds, and other nongame species.

Recommended Future Monitoring Efforts Not Identified in Monitoring Table

Waterfowl Breeding and Production Survey

An in depth and statistically valid breeding waterfowl survey would be very informative for management of Centennial Marsh WMA. This survey should be conducted every five to seven years in order to monitor waterfowl breeding trends on Centennial Marsh WMA.

Wetland Vegetation Monitoring

Periodically, a thorough monitoring effort should be implemented across the wetland habitats on Centennial Marsh WMA to evaluate changes and function of the wetland communities associated with the WMA. This effort would evaluate the wetland values that Centennial Marsh provides to different wildlife species and evaluate the effectiveness of some of the management activities implemented on Centennial Marsh.

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Appendices

I. THE COMPASS – THE DEPARTMENT'S STRATEGIC PLAN

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

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

II. HISTORY

Cultural History

Before Anglo-European settlement, the Camas Prairie (CP) was a principal camas root gathering area and summer hunting grounds for the Native Americans of the middle Snake River region (Statham 1982). Bannock, Shoshoni, and Northern Paiute family bands were the most common tribes that congregated on the prairie in spring and early summer to hunt and dig camas bulbs.

In 1820, Donald Mackenzie (USDA 1981), a Northwest Company fur trader, was the first white man to enter the CP. He passed through while returning from a trapping expedition in the Lost River area. Trappers subsequently used this route between Fort Hall and Fort Boise.

In 1852, a wagon route was established through the CP and used by pioneers heading for Oregon (Statham 1982). This route became known as the Emigrant Road and was used primarily as a migration route to gold mining claims in the South Fork of the Boise River area, Montana, and later the Wood River Valley. This route was used by sheep and cattle operators to reach rail shipping areas in the Wyoming territories.

By the 1860s, the miners and livestock operators demanded removal of all Native people from southwestern Idaho. The governor of Idaho Territory, D.W. Ballares, arranged to put the Boise and Bureau Shoshoni on the new reservation at Fort Hall in 1866. The treaty allowed them access to the CP. In 1868, an army detachment from Fort Boise was dispatched to the CP to protect the Indians from some troublesome settlers who were out to steal their horses. For the next decade, the Shoshoni-Bannock Indians from Fort Hall came regularly to the CP.

During the late 1870s, hog producers of south-central Idaho discovered common camas to be an ideal source of feed (Statham 1982). Hogs were trailed up in the early spring to feed on the camas bulbs and grasses through the summer and returned south for the winter. Competition for the camas resulted in an uprising of the Indians known as the Bannock Wars. The result of the uprising was the exclusion of Native Americans from the CP.

Agricultural History

With the Indians largely gone, white settlement started on the CP in 1880. The settlement started as part of a promotion plan by the association of Rice and Foster, of the Hailey Land Office. In 1881, the first land claims were filed under provisions of the Desert Land Act of 1877. These first immigrants to the CP were not informed about the short growing season, cold winters, killing frosts, and other drawbacks. Most settlers left because of the weather hardships.

The second influx of settlers started about 1902 when Twin Lakes Reservoir Company was formed and a dam constructed on McKinney Creek. Most of the settlers of this irrigation project were members of the Church of Latter Day Saints from Utah. As a result, the reservoir was called Mormon Reservoir. About this same time, farmers from the Palouse area of eastern Washington settled the dryland areas of the CP. These people were successful at dryland farming

and by 1897, most of the good land had been claimed. In 1909, the town site of Prairie, renamed Hill City in 1912, was established. Early settlers discovered that small grains and legumes could be grown without irrigation. Initially, winter wheat (*Triticum* spp.) was the main cash crop grown under a crop-fallow system. Native grass was cut for hay from the wet meadows of the CP.

The Oregon Shortline Railroad, later taken over by the Union Pacific, ran from Richfield to Hill City and was completed in 1911. The line was operated until 1983, when it was abandoned and removed.

In the early years, the livestock industry was probably evenly split between sheep and cattle. At one point, Hill City was known as the largest single sheep shipping point for the nation. Due to declining demand, sheep production is significantly reduced in the area today. A few sheep bands still graze the Sawtooth National Forest during the summer, with residual crop grazing during the fall on the CP. Today, the dominant livestock operation is cow-calf, with very few cattle being wintered on the CP, because of snow conditions and costly feeding requirements.

The agricultural landscape began to change by 1950. The change came because of declining agricultural yields, snow mold problems with winter wheat, government crop reduction programs, and higher demand for alfalfa (*Medicago sativa*) hay. Today, alfalfa is the leading agricultural commodity within the Camas Creek watershed. Crops which can be grown in the area include winter and spring wheat, barley (*Hordeum vulgare*), and oats (*Avena sativa*).

From the 1880s through about 1935, all farming was done with horses. From 1935 through 1938, farmers converted to track-type tractors. By 1965, most farmers had converted to wheel tractors to perform tillage and planting. Mechanization reduced tillage time, making more time available to farmers. Farm size tended to get larger, while the human population was getting smaller. The marsh itself was never intensively farmed due to the period of time it was inundated with water. The sedges and grasses were cut for hay and the entire area was heavily grazed by cattle, sheep, pigs, and horses (CCSCD 1994).

III. MANAGEMENT REQUIREMENTS AND AUTHORITIES

Federal funds, including those derived from the Booneville Power Administration and USFWS Federal Aid Program, have been used in part to acquire and manage Centennial Marsh 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 the Centennial Marsh. 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 Centennial Marsh lands and waters.

Under the National Historic Preservation Act, the Department must ensure that historic properties are protected on the Centennial Marsh.

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

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

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

IV. PUBLIC INPUT SUMMARY

Survey Results

Sixty-one Responses:

Unsatisfied	1	Wanted to ride ATVs, not enough roads on WMA
Neutral	2	
Satisfied	25	
Very Satisfied	24	
Reason for visit	32	Birding
1st choice	17	Photography
	11	Wildlife Viewing

Things to Improve the Visit:

- More interpretive signs
- Encourage native flora and fauna, discourage exotic species
- My visits are always great
- Leave it the way it is
- Provide list of birds to see during each season
- Provide well-marked maintained trails to water's edge
- Improve the picnic area
- Improve restrooms
- I like it just the way it is
- Protect species of concern; encourage native species; discourage non-native/invasive species

Results from Sign-in Sheets on Centennial Marsh WMA in 2011 and 2012:

		Reason For Visit[a]					
Year	Total Signed In	Birding	Sightseeing / Viewing Wildlife	Photography	Camas Lily	Picnic	Hunt
2011	126	65	32	8	31	2	6
2012	81	42	12	13	12	4	3

[a] Many of the entries had listed multiple reasons for being there.

Some of the Comments:

Wonderful, Fantastic, COOL, What a Gem, Peaceful, WOW!!!, Words Can't Describe It, Amazing, National Treasure, Powerful, Another Slice of Idaho Heaven

We received two comments about the need for interpretive signs; One requesting a viewing platform; Two complaining about water over roadway; One complaining about the condition of outhouse.

V. 1999-2013 ACCOMPLISHMENTS

Since the Centennial Marsh WMA plan was revised in 1999, the following accomplishments relative to the Goals and Objectives of the 1999 plan have occurred. All the accomplishments listed below were completed by Department personnel, with one exception. The harvest of crops from the 250 acres of agricultural ground was completed by sharecroppers.

Goal: Develop habitat improvement projects.

Objective: Plant and maintain wood cover projects.

Accomplishments:

- Three thousand willows were planted to stabilize bank erosion on Camas Creek.
- One hundred aspens and 30 each of service berry, chokecherry and Woods' rose were planted at a degraded spring site. These aspens, willows, and shrubs will provide habitat for all riparian dependent species

Objective: Plant and maintain food plots.

Accomplishments:

- Forty-three acres of annual food plots are planted and maintained.
- Two hundred and fifty acres of agricultural ground is split into two parcels and planted in a rotation of small grains or alfalfa.

Objective: Plant and maintain dense nesting cover.

Accomplishment:

- Five hundred acres of dense nesting cover were planted and maintained.

Objective: Manipulate water levels in the brood ponds to optimize emergent vegetation and invertebrate production.

Accomplishment:

- The water levels in 18 brood ponds were managed annually from late spring through mid-summer.

Objective: Maintain 12 miles of fence to prevent trespass grazing on the WMA.

Accomplishment:

- The occurrence of trespass cattle has been greatly reduced over the years as a result of spending more man hours maintaining fence.

Objective: Construct, maintain, and monitor nesting structures.

Accomplishments:

- Approximately 100 goose boxes are maintained and monitored annually. All mallard nesting structures were removed because of lack of use and ice damage every year.

Goal: Use cooperative farming agreements to enhance wildlife habitat in areas where either manpower or lack of equipment would make it impossible for the Department to develop the area.

Objective: Design agreements so that Centennial Marsh habitat is enhanced.

Accomplishment:

- Over the past 14 years, numerous farming agreements have been in place. These agreements have cleaned up weedy fields and provided food sources for elk, mule deer, pronghorn, and greater sage-grouse.

Objective: Ensure that the Department receives equitable compensation for any farming or grazing done on the WMA.

Accomplishment:

- The Department normally receives between 33 and 40 percent of the sale value of the crop. These funds are then used for other habitat projects.

Goal: Control Canada thistle, knapweed, rush skeleton weed, and other noxious weeds on Centennial Marsh.

Objective: Use available resources to control noxious weeds through chemical, biological, and mechanical means.

Accomplishment:

- An annual effort is made to control thistle, knapweed, rush skeleton, and other noxious weeds through spraying and mowing.

VI. VEGETATION

The Camas Prairie Centennial Marsh WMA consists of the following vegetation types:

Palustrine Persistent Emergent Seasonally Flooded Wetland (Cowardin et al. 1979)

This is the largest habitat type on Centennial Marsh occurring on approximately 4,500 acres. The wetland vegetation type is a complex mix of emergent vegetation that is dominated by common spikerush (*Eleocharis palustris*), Nebraska sedge (*Carex nebrascensis*), Baltic rush (*Juncus balticus*), common camas (*Camassia quamash*), and nodding groundsel (*Senecio bigelovii*). The majority of this area is typically covered with 10 to 12 inches of water from snow melt in mid-April until mid-July. Once the water recedes, the plants will stay green until mid-August when they go dormant.

Scrub-shrub Broad-leaved Evergreen Seasonally Flooded Wetland (Cowardin et al. 1979)

This cover type completely surrounds the seasonally flooded wetland and occurs on approximately 300 acres. This vegetation type defines the line between upland and wetland, growing right to the water's edge. The predominant overstory cover is silver sagebrush (*Artemisia cana*). The understory consists of basin wildrye (*Leymus cinereus*), Idaho fescue (*Festuca idahoensis*), Kentucky bluegrass (*Poa pratensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and bulbous bluegrass (*Poa bulbosa*).

Sagebrush-grass, Deciduous Shrubland, and Quaking Aspen cover types

There are approximately 600 acres of upland on the southern segment of Centennial Marsh. This is occupied by mountain big sagebrush (*Artemisia tridentata vaseyana*) and antelope bitterbrush (*Purshia tridentata*) with patches of deciduous shrublands characterized by chokecherry (*Prunus virginiana*), bitter cherry (*Prunus emarginata*), and snowbrush ceanothus (*Ceanothus velutinus*), and small stands of quaking aspen (*Populus tremuloides*). The understory consists of basin wildrye (*Leymus cinereus*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), and a wide variety of native forbs.

Scrub-shrub Broad-leaved Deciduous Seasonally Flooded Wetland (Cowardin et al. 1979)

The channels and the adjacent area are dominated by coyote (*Salix exigua*), Geyer (*S. geyeriana*) and Booth's willow (*S. boothii*) overstory. The understory is reed canarygrass (*Phalaris arundinacea*), Garrison creeping meadow foxtail (*Alopecurus arundinaceus*), and other grasses. This vegetation type covers about 25 acres.

Dense Nesting Cover

Approximately 75 acres of wetland that were formerly farmed in barley (*Hordeum vulgare*) have been planted to dense nesting cover. The primary species planted include basin wildrye, Altai wildrye (*Leymus angustus*), tall wheatgrass (*Elytrigia elongata*), reed canarygrass, and Garrison creeping meadow foxtail. Annual spring floods encourage some reestablishment of native sedge, Juncus, and silver sage onto newly seeded sites. An additional 426 acres of dryland barley and alfalfa (*Medicago sativa*) were enrolled in the Conservation Reserve Program. These were

planted in the fall of 1999 and 2000, to a similar grass mix with the addition of alfalfa, lupine (*Lupinus* spp.), blue flax (*Linum lewisii*), Woods' rose (*Rosa woodsii*), golden currant (*Ribes aureum*), silver sagebrush, and mountain big sagebrush.

Agricultural Ground

There are 290 acres of agriculture ground on the WMA. In the southern segment, there are 250 acres that was a very old alfalfa field when the property was acquired in 2008. This 250 acres was divided into 100- and 150-acre parcels. The 100 acres has been in small grains and legume cover crops to control weeds and improve soil fertility. Once it is cleaned up, it will go back to alfalfa and the same process will take place on the 150-acre parcel. Northwest of headquarters there is 40 acres of agriculture ground that has been kept in small grains as wildlife food plot.

VII. WILDLIFE AND FISH SPECIES LIST

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

SPECIES		RELATIVE ABUNDANCE[a]			
		Spring	Summer	Fall	Winter
Mammals					
Coyote	*Canis latrans*	C	C	C	C
Wolf	*Canis lupus*	R	R	R	R
Beaver	*Castor canadensis*	C	C	C	-
Columbian ground squirrel	*Citellus columbianus*	C	A	R	-
Porcupine	*Erethizon dorsatum*	U	U	U	R
White-tailed jackrabbit	*Lepus townsendii*	C	C	C	C
Bobcat	*Lynx rufus*	R	R	R	R
Striped skunk	*Mephitis mephitis*	C	C	C	O
Mink	*Mustela vison*	O	O	O	R
Bushy-tailed wood rat	*Neotoma cinerea*	C	C	C	-
Mule deer	*Odocoileus hemionus*	A	A	A	-
Muskrat	*Ondatra zibethicus*	C	C	C	
Great Basin pocket mouse	*Perognathus parvus*	O	O	O	-
Deer mouse	*Peromyscus maniculatus*	O	C	C	-
Mountain lion	*Puma concolor*	R	R	R	R
Shrew	*Sorex* sp.	O	O	O	-
Nuttall's cottontail	*Sylvilagus nuttallii*	O	O	O	O
Least chipmunk	*Tamias minimus*	C	C	C	-
American badger	*Taxidea taxus*	O	O	O	-
Northern pocket gopher	*Thomomys talpoides*	O	C	C	-
Western jumping mouse	*Zapus princeps*	C	C	C	-
Birds					
Cooper's hawk	*Accipiter cooperii*	U	O	U	-
Northern goshawk	*Accipiter gentilis**	R	R	R	-
Sharp-shinned hawk	*Accipiter striatus*	O	O	O	-
Western grebe	*Aechmophorus occidentalis**	U	U	R	-
Red-winged blackbird	*Agelaius phoeniceus*	A	A	O	-
Northern pintail	*Anas acuta**	C	C	C	-
American widgeon	*Anas americana*	A	A	A	-
Green-winged teal	*Anas carolinensis*	A	A	A	-
Northern shoveler	*Anas clypeata*	A	A	A	-
Cinnamon teal	*Anas cyanoptera*	A	A	A	-
Blue-winged teal	*Anas discors*	O	U	U	-
Mallard	*Anas platyrhynchos*	A	A	A	-
Gadwall	*Anas strepera*	O	U	U	-
Golden eagle	*Aquila chrysaetos*	U	U	U	U
Black-chinned hummingbird	*Archilochus alexandri*	C	C	C	-
Great blue heron	*Ardea herodias*	A	A	O	-
Short-eared owl	*Asio flammeus**	C	C	C	-
Long-eared owl	*Asio otus*	R	R	R	-

SPECIES		RELATIVE ABUNDANCE[a]			
		Spring	Summer	Fall	Winter
Birds (cont.)					
Burrowing owl	*Athene cunicularia**	U	U	U	-
Cedar waxwing	*Bombycilla cedrorum*	O	R	C	-
Canada goose	*Branta canadensis*	A	A	A	-
Great horned owl	*Bubo virginianus*	U	U	U	U
Common goldeneye	*Bucephala clangula*	U	U	U	-
Red-tailed hawk	*Buteo jamaicensis*	C	C	O	R
Rough-legged hawk	*Buteo lagopus*	R	R	R	O
Ferruginous hawk	*Buteo regalis*	O	O	O	R
Swainson's hawk	*Buteo swainsoni**	C	C	C	-
Western sandpiper	*Calidris mauri*	C	O	R	-
Turkey vulture	*Cathartes aura*	C	O	O	R
Sage-grouse	*Centrocercus urophasianus**	R	R	R	-
Killdeer	*Charadrius vociferous*	C	C	O	-
Snow goose	*Chen caerulescens*	O	R	R	-
Black tern	*Chlidonias niger**	A	A	O	-
Northern harrier	*Circus cyaneus*	C	C	O	-
Northern flicker	*Colaptes auratus*	C	C	C	R
Rock dove	*Columba livia*	C	C	C	O
American crow	*Corvus brachyrhynchos*	C	U	O	-
Common raven	*Corvus corax*	C	C	C	U
Steller's jay	*Cyanocitta stelleri*	O	O	O	-
Trumpeter swan	*Cygnus buccinator**	R	R	R	-
Tundra swan	*Cygnus columbianus*	O	U	U	-
Brewer's blackbird	*Euphagus cyanocephalus**	A	A	O	-
Merlin	*Falco columbarius**	R	R	R	-
Prairie falcon	*Falco mexicanus**	C	C	C	-
Peregrine falcon	*Falco peregrines**	O	O	O	R
American kestrel	*Falco sparverius*	A	A	A	-
American coot	*Fulica americana*	A	A	A	-
MacGillivray's warbler	*Geothlypis tolmiei*	C	C	R	-
Sandhill crane	*Grus canadensis**	O	O	R	-
Cassin's finch	*Haemorhous cassinii*	U	R	R	-
Bald eagle	*Haliaeetus leucocephalus**	U	U	U	U
Black-necked stilt	*Himantopus mexicanus**	A	A	U	-
Barn swallow	*Hirundo rustica*	O	O	O	-
Northern shrike	*Lanius excubitor*	R	R	O	R
Loggerhead shrike	*Lanius ludovicianus**	O	R	R	R
California gull	*Larus californicus**	A	A	O	-
Ring-billed gull	*Larus delawarensis*	A	A	O	-
Gray-crowned rosy finch	*Leucosticte tephrocotis*	R	R	R	-
Lewis's woodpecker	*Melanerpes lewis**	U	U	U	-
Song sparrow	*Melospiza melodia*	C	C	C	-
Common merganser	*Mergus merganser*	R	R	R	-
Brown-headed cowbird	*Molothrus ater*	R	U	R	-

SPECIES		RELATIVE ABUNDANCE[a]			
		Spring	Summer	Fall	Winter
Birds (cont.)					
Long-billed curlew	*Numenius americanus**	A	A	O	-
Black-crowned night heron	*Nycticorax nycticorax*	O	O	O	-
House sparrow (English)	*Passer domesticus*	R	R	R	-
Gray partridge	*Perdix perdix*	U	U	U	U
Cliff swallow	*Petrochelidon pyrrhonota*	A	A	O	-
Black-billed magpie	*Pica hudsonia*	C	C	C	C
Hairy woodpecker	*Picoides villosus*	U	U	U	-
Green-tailed towhee	*Pipilo chlorurus*	C	C	C	-
White-faced ibis	*Plegadis chihi**	O	O	R	-
Eared grebe	*Podiceps nigricollis*	A	A	O	-
Pied-billed grebe	*Podilymbus podiceps*	A	A	O	-
Black-capped chickadee	*Poecile atricapillus*	C	U	C	C
Vesper sparrow	*Pooecetes gramineus*	C	C	C	-
American avocet	*Recurvirostra americana**	A	A	U	-
Calliope hummingbird	*Selasphorus calliope*	C	C	O	-
Rufous hummingbird	*Selasphorus rufus*	C	C	C	-
Yellow-rumped warbler	*Setophaga coronata*	C	C	R	-
Yellow warbler	*Setophaga petechia*	C	C	R	-
Mountain bluebird	*Sialia currucoides*	C	C	C	-
American goldfinch	*Spinus tristis*	R	C	C	-
American tree sparrow	*Spizella arborea*	O	O	R	-
Chipping sparrow	*Spizella passerina*	C	U	C	-
Western meadowlark	*Sturnella neglecta*	C	C	U	-
European starling	*Sturnus vulgaris*	A	A	A	R
Tree swallow	*Tachycineta bicolor*	C	C	O	-
Violet-green swallow	*Tachycineta thalassina*	A	A	O	-
House wren	*Troglodytes aedon*	C	C	R	-
American Robin	*Turdus migratorius*	A	C	A	-
Barn owl	*Tyto alba*	R	R	R	-
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	A	A	O	-
Mourning dove	*Zenaida macroura*	C	C	U	-
White-crowned sparrow	*Zonotrichia leucophrys*	U	R	C	-
Bats					
Big brown bat	*Eptesicus fuscus*	O	O	O	-
Western small-footed myotis	*Myotis ciliolabrum**	O	O	O	-
Long-eared myotis	*Myotis evotis**	O	O	O	-
Little brown myotis	*Myotis lucifus*	O	O	O	-
Yuma bat	*Myotis yumanensis**	O	O	O	-
Amphibians & Reptiles					
Long-toed salamander	*Ambystoma macrodactylum*	R	R	R	-
Western toad	*Anaxyrus boreas**	O	O	O	-
Rubber boa	*Charina bottae*	O	O	O	-
Racer	*Coluber constrictor*	O	C	O	-

SPECIES		RELATIVE ABUNDANCE[a]			
		Spring	Summer	Fall	Winter
Amphibians & Reptiles (cont.)					
Western rattlesnake	*Crotalus viridis*	O	C	O	-
Western skink	*Eumeces skiltonianus*	O	O	O	-
Night snake	*Hypsiglena torquata**	O	O	O	-
Short-horned lizard	*Phrynosoma douglasii*	O	O	O	-
Gopher snake	*Pituophis catenifer*	O	C	O	-
Pacific tree frog	*Pseudacris regilla*	O	O	O	-
Columbia spotted frog	*Rana luteiventris**	R	R	R	-
Sagebrush lizard	*Sceloporus graciosus*	O	C	O	-
Western terrestrial garter snake	*Thamnophis elegans*	O	C	O	-
Common garter snake	*Thamnophis sirtalis*	O	C	O	-
Fish					
Brown bullhead	*Ameiurus nebulosus*	A	A	A	A
Channel catfish	*Ictalurus punctatus*	C	C	C	C
Bluegill	*Lepomis marcochirus*	A	A	A	A
Large mouthed bass	*Micropterus salmoides*	A	A	A	C
Yellow perch	*Perca flavescens*	A	A	A	A

[a] Spring (Mar-May), Summer (Jun-Aug), Fall (Sep-Nov), Winter (Dec-Feb). * - Indicates SGCN or federal sensitive species. A-Abundant, a species which is very numerous. C-Common, certain to be seen or heard in suitable habitat. U-Uncommon, present but not certain to be seen. O-Occasional, seen only a few times during the season. R-Rare, seen at intervals of two to five years.

VIII. NOXIOUS WEED CONTROL

Noxious weeds have been actively controlled on Centennial Marsh since its acquisition in 1988. Control measures include proper land use practices, mechanical control, chemical control, and biological control. The four main weed species being controlled are Canada thistle (*Cirsium arvense*), spotted knapweed (*Centaurea stoebe*), rush skeltonweed (*Chondrilla juncea*), and field bindweed (*Convolvulus arvensis*). Reeds canarygrass (*Phalaris arundinacea*) and Garrision creeping meadow foxtail (*Alopecurus arundinaceus*) are not classified as noxious weeds, but control is beginning on Centennial Marsh because these plants tend to out-compete native vegetation and form monocultures.

Chemical control is primarily used on infestations found along roadways and heavily used areas, and on new infestations. Milestone® (aminopyralid) is the most commonly used herbicide on Centennial Marsh, although other chemicals (e.g., 2,4-D and Roundup®) are also used for specific applications. Herbicides are applied with a blue dye and delivered with a 200-gallon sprayer, 25-gallon ATV sprayer, or backpack sprayer. Rapid revegetation of disturbed soil after noxious weed control is the preferred management option at Centennial Marsh. Establishment of desirable plants minimizes reinfestation of the noxious weeds.

The most common methods of weed movement onto and within the WMA are vehicles, animal movements (e.g., wildlife and trespass cattle), and wind/water borne seed. Weed monitoring plots have been established throughout the area for permanent monitoring of infestations. Stem counts or ocular patch size are conducted annually to determine effectiveness of control measures.

IX. LAND ACQUISITIONS AND AGREEMENTS

Land Acquisitions				
ACNO	**Name**	**Acquired From**	**Acres**	**Date Acquired**
20-0915	Camas Prairie Centennial Marsh WMA	Gwinn Rice Ranch, Inc.	161.13	3/11/2002
13-0226	Camas Prairie Centennial Marsh WMA	The Nature Conservancy	530.00	10/13/1989
13-0227	Camas Prairie Centennial Marsh WMA	Idaho Transportation Department	19.80	10/8/1991
13-0228	Camas Prairie Centennial Marsh WMA	The Nature Conservancy	200.00	11/21/1990
13-0229	Camas Prairie Centennial Marsh WMA	Herman Petrick	360.00	6/11/1987
13-0230	Camas Prairie Centennial Marsh WMA	Kelly Thomason	1,442.00	8/17/1987
13-0231	Camas Prairie Centennial Marsh WMA	The Nature Conservancy	520.00	11/23/1988
13-0914	Camas Prairie Centennial Marsh WMA	Gwinn Rice Ranch, Inc.	1,204.68	3/15/2002
13-0987	Camas Prairie Centennial Marsh WMA	Faulkner Land and Livestock, Inc.	1,481.94	3/19/2008
13-0988	Camas Prairie Centennial Marsh WMA	Bliss Point Cattle, Inc.	320.00	3/19/2008
		Total	6,239.55	

Water Rights

Surface Water Rights

After the spring flood waters subside, the only standing water through mid-summer occurs in a nine-acre pond in the southeast corner of Centennial Marsh. The water remains for only a few months. No surface water rights existed with Centennial Marsh when the property was acquired.

An application for surface water rights was submitted to the Idaho Department of Water Resources (IDWR) on May 12, 1989. The water right was received on May 17, 1990, which resulted in 220 acre feet of surface water that is used in the 18 brood ponds.

In 2002 with the acquisition of the Rice property, the Department acquired a surface water right of 20 cfs. This water right has a priority date of 1976 and has yet to come through adjudication for this basin.

Ground Water Rights

Two wells have been drilled and a third was improved. Water rights for the wells provide 4 cfs. of ground water. This water is used to maintain the brood ponds into the summer.

There are six stock water wells located on the property. The largest is .2 cfs, the others are .02 cfs. Three of these are used to provide brood pond water on small wetland sites into the summer.

Hydrology

From 1945 until the early 1960s, private landowners removed willows (*Salix* spp.) and straightened channels along Camas Creek and its tributaries. This work was an attempt to reduce flooding, drain wetlands, and increase farmable acres. These channel alterations have accelerated runoff and erosion, lowered the water tables, and reduced artesian flows.

As snow melt and runoff water enter the gently sloping valley floodplain, it spreads out creating temporary wetlands (Cowardin et al. 1979). The temporary wetlands slow the flows of Camas Creek which result in a lower peak discharge. The western end of the valley is inundated with water for as much as four months each spring. The flows of Camas Creek generally stop about mid-July and the marsh waters gradually recede. Near the end of October or early November, Camas Creek starts flowing again re-flooding the marsh, but to a lesser degree than in the spring. In the fall of 1995, a complete re-flooding of the marsh occurred for the first time in eight years. The marsh partially re-flooded in 1996, but not in 1997. This re-flooding has become a rare event since 1996 and only occurs on the far west end of the WMA. The high flows occur from March through May with the peak usually occurring in April. Nearly 50% of the watershed lies at an elevation between 5,000 to 5,200 feet. An example of a winter flood occurred February 13, 1963. A flow of 9,200 cfs was recorded where Camas Creek empties into Magic Reservoir. The 100 year peak flow rate at the point where Camas Creek leaves Centennial Marsh is 7,050 cfs (CCSCD 1994). Due to flatness of the terrain, the velocity is only two fps.

Geology

Camas Creek occupies a broad, east-west mountain valley referred to as Camas Prairie. The valley is bounded on the south by the Bennett Hills which rise to an elevation of 6,806 feet and on the north by the Solider Mountains which reach 10,095 feet in elevation. The elevation of the valley floor ranges from 5,000 to 5,100 feet. The mountains to the north are composed of granitic igneous rocks of the Cretaceous Age, Idaho Batholith and Eocene Age, and Challis Volcanic (CCSCD 1994). The Bennett Hills to the south are formed from late Cenozoic Age basalt and rhyolite volcanic flows which cover and surround weathered Idaho Batholith granitics (CCSCD 1994). Valley fill deposits are unconsolidated Quaternary Age alluvial and lacustrine sediments of clay to boulder size. The sediments are generally coarser on the north side of the valley. A 90 ft. thick clay layer exists in the valley fill at about 120-ft. depth over much of the valley. This layer acts as an aquitard to ground water movements through the unconsolidated fill (CCSCD 1994).

Soils

Soils on the Camas Prairie are segregated into five categories established by the Natural Resource Conservation Service (USDA 1981). All five soil types are characterized by clay loam, silty clay loam, and/or sand loam to a depth of 38 to 47 inches. Below this depth, sand loam, gravelly sand, and/or course sand is prevalent. The majority of the Centennial Marsh is classified as Type 27-houk silty clay loam, which includes silty clay loam from the surface to 13 inches depth, clay or clay loam form 13 to 46 inches, and sandy clay loam to gravelly sand below 46 inches.

Excavated test pits have shown the soils in the Centennial Marsh can be generally classified as either relatively impermeable or highly permeable. The impermeable areas are either clay or silt and clay mix from the surface to a depth that varies from approximately 44 to 57 inches. Below this depth, sand loam, gravelly sand, and/or coarse sand are prevalent. The permeable areas are dominated by sand at or near the surface to a depth of four to five feet (USDA 1981). The water table measured in August 1989 was 66 inches or more below the surface. In August of 1996, the water table was at approximately 40 inches.

X. INFRASTRUCTURE

Building/structures
50’ x 60’ wooden steel sided shop, half of the shop is insulated and heated
30’ x 96’ wooden steel sided open storage shed
20’ x 42’ wooden steel sided horse and hay shed
1 - 3 bedroom 2,000 ft^2 residence built in 1921 with additions in 1954 and 1971
10’ x 12’ wooden pressure tank shed

Earth structures
18 man-made ponds
2 miles of water transport ditch
8 earthen/rock check-dams

Water improvements
3 - wells of 1cfs or greater
6 - wells less than 0.2 cfs
18,000’ of 10” buried pipe in the water delivery system
4,000’ of 6” buried pipe in the water delivery system

Roads and trails
3.5 miles of roads maintained by the Department with 7 miles of roads maintained by Camas County

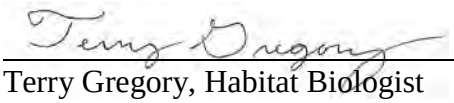
Fences
4 miles of 3 or 4 strand barbwire let-down
8 miles of 4-strand barbwire

Peregrine Hack Tower
Peregrine falcon hack tower in the North central portion of Centennial Marsh WMA

CAMAS PRAIRIE CENTENNIAL MARSH WILDLIFE MANAGEMENT AREA PLAN

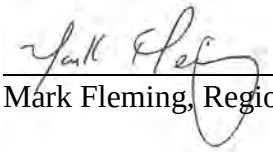
Approval

Submitted by:

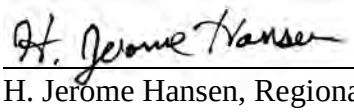


Terry Gregory, Habitat Biologist

Reviewed by:

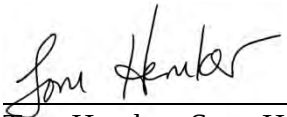


Mark Fleming, Regional Habitat Manager



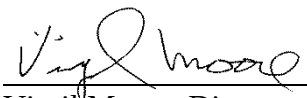
H. Jerome Hansen, Regional Supervisor

Tim Weekley, Bureau of Wildlife



Tom Hemker, State Habitat Manager

Approved by:



Virgil Moore, Director