McArthur Lake
Wildlife Management Area

Management Plan
2014

Panhandle Region

McArthur Lake
Wildlife Management Area

2014 – 2023 Management Plan
December 2014

Idaho Department of Fish and Game
Panhandle Region
2885 West Kathleen Avenue
Coeur d'Alene, Idaho 83815

Prepared by:
Colleen Trese
Habitat Biologist

Table of Contents

List of Tables

List of Figures

Executive Summary

Idaho Department of Fish and Game (Department) manages 32 Wildlife Management Areas (WMAs). Researchers from the University of Idaho and The Nature Conservancy evaluated the value of Idaho's WMAs to wildlife. They found the WMA network, created to support game species, "also conserves the full range of Idaho's wildlife and other ecological features" (Karl et al. 2005). Surveys and monitoring work conducted by Department biologists on Panhandle 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 Panhandle 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 Panhandle Region manages seven WMAs that collectively comprise 54,987 acres of land, which consists of 27,910 deeded acres and another 27,077 acres managed under cooperative agreement or lease. Wildlife Management Area management focus is to maintain highly functional wildlife habitat and provide wildlife-based recreation. Starting in the north and working south across the Panhandle Region these areas include:

- Boundary Smith Creek WMA: This 2,072-acre WMA consists of farmland that was converted back into a mosaic of wetlands and associated Kootenai River flood plain historic habitats.
- McArthur Lake WMA: One of the oldest WMAs in the state; the 1,891 acres of shallow lake, marshes, and adjacent upland forests/ meadows are primarily managed for waterfowl production and hunting.
- Pend Oreille WMA: Primarily acquired as mitigation for Albeni Falls Dam, it consists of 7,432 acres of scattered parcels of critical delta and riverine wetland habitats within the Pend Oreille River watershed.

- Farragut WMA: Another of our oldest WMAs, Farragut was originally a U.S. Navy base and gifted to the Department in 1950. The 1,418 acres is currently cooperatively managed with the Idaho Department of State Parks for public recreation and wildlife.
- Coeur d'Alene River WMA: This WMA consists of 7,538 acres of wetlands and low lying terrestrial habitats throughout the lower Coeur d'Alene and St. Joe River basins. It is primarily managed for waterfowl production and hunting.
- St. Maries WMA: A 2,344-acre mix of forest and meadow habitats, the St. Maries WMA is primarily managed for big game.
- Snow Peak WMA: A very remote, roadless back country WMA located in the upper St. Joe River drainage. The 32,292 acres are cooperatively managed with the U.S. Forest Service for elk habitat and back country hunting opportunity.

There are several outlying land parcels within the Panhandle, previously tied to fishing and boating access sites, that have significant wildlife habitat resources. For management purposes, these parcels will now be included as part of the best-associated WMA, and management priorities will be directed by the WMA plan.

The Panhandle WMAs are managed for a wide diversity of both game and sensitive species. Examples of at-risk species partially dependent on WMAs include black-backed woodpecker, red-naped sapsucker, olive-sided flycatcher, long-eared myotis, northern goshawk, northern pygmy-owl, spotted sandpiper, Vaux's swift, Cassin's finch, common garter snake, Columbia spotted frog, and western toad. Examples of sensitive plants include water howellia, maidenhair spleenwort, purple meadowrue, water pygmy weed, black snake-root, arrowleaf sweet coltsfoot, yellow sedge, and bristle-stalk sedge.

Regional WMAs are funded through a combination of hunting license dollars, appropriations from federal excise taxes derived from the sale of ammunition and firearms (Pittman-Robertson Act), and/or funding provided by the Bonneville Power Administration (BPA) to mitigate habitat loss from construction of the Albeni Falls dam. All of the Panhandle WMAs, with the exception of Snow Peak WMA, have the common management themes of wetland management for waterfowl and waterbird production; terrestrial habitat management for big game, with some emphasis on upland game species; and riparian management for water quality and all species. The WMAs provide important wildlife-based recreation and are used heavily by waterfowl and big game hunters, as well as non-consumptive users such as birdwatchers, hikers and naturalists. The abundance of water resources also attracts water-based activities such as kayaking and fishing.

The McArthur Lake WMA (MLWMA) was originally acquired in 1942 to provide waterfowl breeding, nesting, and summer-fall use areas to replace marshlands converted to farmland in the nearby Kootenai River Valley. This was the Department's first land purchase made specifically for the purpose of protecting and enhancing waterfowl habitat. An important aspect of the MLWMA is providing the public with opportunities for waterfowl and big game hunting, fishing, and wildlife viewing.

This document provides direction in the form of Priorities, Conservation Targets, Management Direction, and Public Use. The Priorities for MLWMA were determined through a combination of public and staff input, and Department statewide priorities identified in "*The Compass.*" A draft version of the MLWMA Management Priorities, Management Directions, Performance Targets, and Strategies was offered for public inspection and comment in July 2013.

Management priorities for MLWMA are palustrine wetland habitat; Northern Rocky Mountain lower montane riparian woodland and shrubland ecological system; Northern Rocky Mountain mesic montane mixed conifer forest ecological system; Northern Rocky Mountain lower montane, foothill, and valley grassland ecological system; and wildlife based recreation and education.

Conservation Targets, a sub-set of species and communities, were selected to represent the biodiversity of MLWMA for management and conservation; while still reflecting the management priorities of MLWMA. The Conservation Targets selected to guide management on MLWMA are palustrine wetland habitat, Northern Rocky Mountain lower montane riparian woodland and shrubland, Northern Rocky Mountain mesic montane mixed conifer forest, and Northern Rocky Mountain lower montane, foothill, and valley grassland.

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 goals and objectives in this plan. All goals, objectives, and strategies are dependent on adequate funding, personnel, and public support.

Introduction

This management plan is designed to provide broad guidance for the long-term management of McArthur Lake Wildlife Management Area (MLWMA). It replaces an earlier management plan written in 1999. This updated plan was completed during 2012 and 2013 with extensive public input. This plan is tiered off other Idaho Department of Fish and Game (Department) plans and policies summarized below:

- State Wildlife Action Plan (2005)
- Statewide waterfowl management plan (1991)
- Statewide upland game management plan (1991)
- Statewide management plans for:
    - mule deer (2010)
    - white-tailed deer (2005)
    - elk (2014)
    - moose (1991)
- Statewide big game depredation management plan (1988)
- Statewide furbearer management plan (1991)
- 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* objectives and strategies relevant to WMAs 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.

McArthur Lake WMA Vision

The primary purpose of MLWMA is for waterfowl management, to support production and migratory resting habitat. The MLWMA is managed for waterfowl, wildlife habitat, and to provide public access for hunting, fishing, and other recreational pursuits. Management activities focus on wetland management, forest management, establishing native vegetative communities, and promoting compatible public recreation.

This Plan will include the management of three additional land parcels owned by the Department, although not a part of MLWMA; Bonner Lake, Dawson Lake, and Freeman Lake access sites. The primary purpose for these sites is to provide for public fishing access to these small local lakes. Department ownership, however, also includes wetland and upland habitats which will be managed with wildlife habitat goals and objectives set within this Plan.

Modification of Plan

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

Other Considerations

All strategies proposed in this plan are bound by the contractual agreements between cooperating agencies, the mission of MLWMA, 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 MLWMA is located adjacent to U.S. Highway 95, approximately 18 miles north of Sandpoint, Idaho and 13 miles south of Bonners Ferry, Idaho (Figure 1). The majority of the WMA is in Boundary County with the remainder in Bonner County. The nearest population centers are Sandpoint and Bonners Ferry.

The MLWMA is 1,271 acres with a 600-acre shallow reservoir created by a dam constructed on Deep Creek. Deep Creek flows into the reservoir from the south and Dodge Creek enters from the northwest. From the concrete dam, Deep Creek flows north to join the Kootenai River, which eventually joins the Columbia River. The dam height is adjustable with the placement/removal of boards, allowing management of lake water levels.

This Plan includes management of additional habitat resources on 320 acres at three outlying Department properties; Bonner Lake, Dawson Lake, and Freeman Lake access sites (Figure 2). The Bonner Lake site, east of Moyie Springs, includes 20 forested acres and access to a boat slip onto the lake. Dawson Lake, northwest of Moyie Springs, consists of approximately 37 acres open water and wetlands, and 164 acres of upland timber surrounding the lake. Dawson Lake provides a boat dock, fishing dock, restrooms and picnic areas. Freeman Lake is located approximately three miles north of Oldtown, Idaho. Department ownership on Freeman Lake includes approximately 32 acres of open water and shoreline wetlands on the southwest corner of the lake and 67 acres of timber along the west side. Freeman Lake offers a boat dock, restroom, and camping.

Geographic Features and Climate

The McArthur Lake reservoir lies at an elevation slightly over 2,000 feet in a glacial depression left by the ice sheet that occupied and formed the Purcell Trench approximately 10,000 years ago. Soils on both sides of the reservoir and associated wetlands are primarily well drained, fine sand loams. The wetlands surrounding the lake have deep layers of peat. The reservoir is shallow, no more than 10 feet at its greatest depth.

The area has a typical maritime-influenced inland Pacific Northwest climate of cool, wet springs, dry, moderate summers, cool, wet autumns, and relatively long winters. Temperatures range from 100º F to 40º F. Snow depths of up to eight feet have been recorded, but two feet is normal. The growing season is approximately 80 days. The annual precipitation is roughly 25 inches – about half-received during the winter. Freeze-up of the lake usually occurs the first part of November. “Ice-out” occurs in March or early April. Ice depths are at least eight inches.

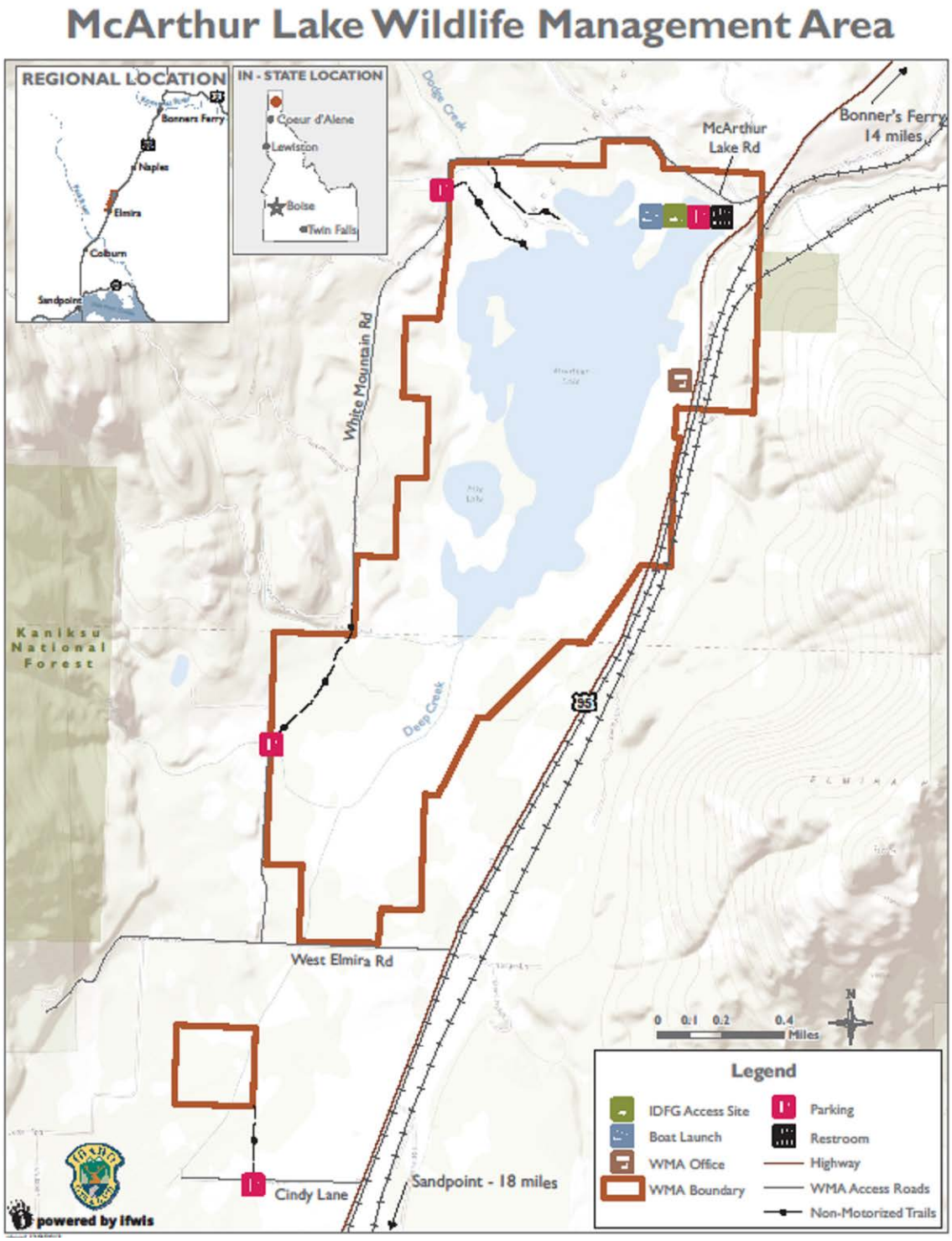


Figure 1. Map of McArthur Lake Wildlife Management Area.

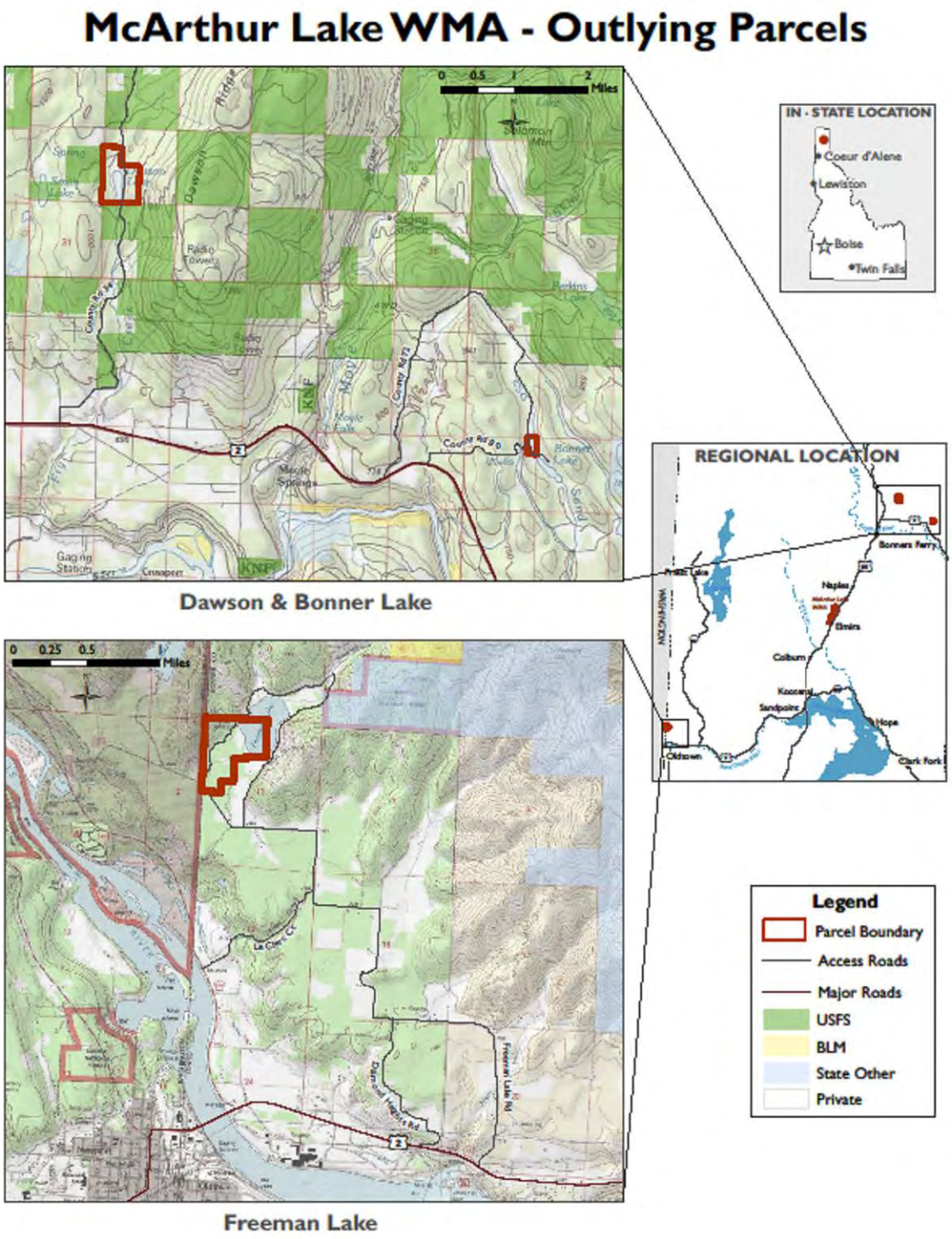


Figure 2. Outlying Department-owned Public Access Sites managed under the McArthur Lake WMA.

Vegetation

The predominant current vegetative cover types (Macrogroup Level) on the MLWMA include 298 acres of Northern Rocky Mountain Lower Montane and Foothill Forest, 346 acres of open water, 427 acres Western North American Montane Wet Meadow and Low Shrubland (includes the peatlands present at MLWMA), 116 acres Rocky Mountain and Great Basin Flooded and Swamp Forest, and 32 acres Northern Rocky Mountain-Vancouverian Montane and Foothill Grassland and Shrubland (Appendix V).

The predominant current vegetative cover types (Macrogroup) on the outlying access sites (Bonner, Dawson, and Freeman lake) are 218 acres of Northern Rocky Mountain Lower Montane and Foothill Forest, 50 acres of open water, 10 acres Western North American Montane Wet Meadow and Low Shrubland, nine acres Rocky Mountain and Great Basin Flooded and Swamp Forest, and two acres Northern Rocky Mountain-Vancouverian Montane and Foothill Grassland and Shrubland.

McArthur Lake WMA wetlands include emergent marshes dominated by cattail (*Typha latifolia*), bulrushes (*Schoenoplectus* spp.), sedges (*Carex* spp.), rushes (*Juncus* spp.), and spikerushes (*Eleocharis* spp.); and submerged aquatic vegetation characterized by pondweeds (*Potamogeton* spp.), waterweed (*Elodea* spp.), coontail (*Ceratophyllum demersum*), milfoil (*Myriophyllum* spp.), and yellow pond-lily (*Nuphar lutea* ssp. *polysepala*). Due to the shallowness of McArthur Lake, it is almost entirely vegetated with aquatic plant species. Grassy shorelines include reed canarygrass (*Phalaris arundinacea*), managrasses (*Glyceria* spp.), and redtop (*Agrostis stolonifera*). Streams entering the reservoir are lined with alder (*Alnus* spp.), redosier dogwood (*Cornus sericea*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), willow (*Salix* spp.), and birch (*Betula* spp.). Tree species found within the MLWMA boundaries include Ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), western red-cedar (*Thuja plicata*), Engelmann spruce (*Picea engelmannii*), black cottonwood, and quaking aspen (*Populus tremuloides*).

McArthur Lake has been identified as one of the 45 significant peatland sites in the Idaho Panhandle (Lichthardt 2004). Peatlands on Dawson and Bonner Lake are also one of the 45 significant peatlands identified by Lichthardt (2004); however, they may not occur on Department property. Peatlands are generally defined as wetlands with water logged substrates and at least 30 cm of peat (undecomposed organic matter) accumulation.

The McArthur Lake peatlands have been classified as a marsh-like cattail/sedge rich fen occurring on floating mats. This peatland is rich in nutrients and dominated by sedges, primarily beaked sedge (*Carex utriculata*) and wiregrass sedge (*Carex lasiocarpa*), cattail, bulrush, true mosses, and shrubs (e.g., rose spiraea, *Spiraea douglasii*). Rare plant species associated with McArthur Lake's peatlands include small yellow lady's slipper (*Cypripedium parviflorum* var. *pubescens*), bristle-stalked sedge (*Carex leptalea*), lake-bank sedge (*Carex lacustris*), green-keeled cottongrass (*Eriophorum viridicarinatum*), swamp birch (*Betula pumila*), swamp willow-weed (*Epilobium palustre*), and bulb-bearing waterhemlock (*Cicuta bulbifera*).

Wildlife

The MLWMA supports significant wildlife resources (Appendix VI) including big game, upland game, waterfowl, furbearers, and nongame species. White-tailed deer and moose are abundant, occupying the WMA year-round. Elk frequent the WMA during the winter. Black bear are frequent visitors in the spring. Furbearer species include muskrats, beaver, otter, and mink. Ruffed grouse, snowshoe hare, and wild turkeys also occur on the WMA.

The MLWMA provides habitats necessary for dabbling and diving ducks and a variety of shorebirds. Migrating waterfowl are abundant during spring and fall migration until the lake freezes over. Up to 3,000 migratory ducks visit the WMA each spring and fall; primarily tundra swans, Canada geese, mallards, pintails, American widgeon, and ring-necked ducks. Seventeen species of ducks are known to breed on the WMA. Shorebirds begin to utilize McArthur Lake in mid to late July as the reservoir is drawn down. Common shorebirds include spotted, solitary, and western sandpipers, killdeer, long-billed dowitchers, and greater yellowlegs.

Fisheries

McArthur Lake provides a popular fishery for yellow perch, bluegill, pumpkinseed sunfish, black crappie, large-mouth bass, and rainbow and brook trout. Fishing is available from a fishing dock and from boat. A fish ladder on the dam allows trout and other species to access the lake. A spawning run of rainbow trout from the Kootenai River and lower Deep Creek continues to migrate over the dam and through the reservoir each spring heading for the upper reaches of both Deep and Dodge Creeks.

Public Access

The MLWMA is open to public use all year. Access on the WMA off the public roads is non-motorized only. Mowed maintenance roads are used by the public for foot travel and biking, or any other non-motorized means of travel. A public use survey conducted in 2003-2004 estimated a total of 15,058 annual visitor days to the WMA, with 66% of those visits for the primary purpose of fishing or hunting. Seasonally, visits to the WMA begin in March, peak in June, and extend through December; the WMA is used very little during January and February.

Management Issues

This list of issues was developed after review by natural resources professionals and extensive public input. Two general groups provided input, MLWMA users and neighboring landowners. Department policy direction and MLWMA 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. Each issue is summarized and some potential management options discussed.

Issues Identified by the Public

Habitat Management

1. **The presence and spread of noxious weeds can decrease the quality of habitat on MLWMA.**

   Discussion: Control of noxious weeds is an MLWMA priority. Performance targets and strategies include employing an integrated noxious weed control program annually on the WMA and will continue to be high priority. 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 Boundary and Bonner counties.

Wildlife Management

1. **Waterfowl production and nesting success varies due to changes with vegetation succession and with the frequency of water level and moist soil management projects.**

   Discussion: Wetlands will be managed with waterfowl reproduction as a primary goal. Water levels will be managed for nesting conditions in the spring and brood rearing in the summer. 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.

   The MLWMA Management Priority 1, Wetland Habitat, focuses on creating diverse and resilient wetland habitat. Performance targets and strategies include water level management, including occasional drawdowns, to mimic the natural hydrograph and create hemi-marsh conditions.

Public Use Management

1. **There is limited parking and access sites to many of the MLWMA parcels for the public.**

   Discussion: Maintenance and development of access facilities will 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. The MLWMA Management Priority 5, Provide for Wildlife-based Recreation and Education, focuses on providing access and visitor facilities for wildlife-based recreation, education, and non-consumptive uses.

2. **There is a need to encourage and provide additional youth and mobility-impaired hunting and other recreational opportunities.**

   Discussion: Hunting and non-consumptive use opportunities on the MLWMA will be advertised and signage on the WMA will be available. Mentored youth hunts may be developed if hunter demand is available. Infrastructure for mobility-impaired hunting opportunities will be sought. The MLWMA Management Priority 5, Provide for Wildlife-based Recreation and Education, focuses on providing hunting, fishing, and trapping opportunities on the WMA.

3. **There is a lack of access infrastructure and opportunities for non-consumptive users, such as kayakers and birders, across the MLWMA.**

   Discussion: The public will be consulted on desires for improvements to MLWMA access facilities. Access on the MLWMA will be managed to remain in line with wildlife habitat goals. The MLWMA Management Priority 5, Provide for Wildlife-based Recreation and Education, focuses on providing access and visitor facilities for non-consumptive uses.

Issues Identified by the Department

Habitat Management

1. **A majority of the 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 drawdown of the lake. 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.

When the lake is completely drawn down, the resident fishery is heavily depleted. However, some individuals of most fish species find refuge in the original channels of Dodge and Deep creeks and in the deepest areas of the lake. When the lake is re-flooded, the remnant populations utilize the open and abundant resources and the fishery recovers.

Complete drawdowns will be conducted at McArthur Lake once every five to 10 years. The lake will be re-flooded in the fall or following early spring to prevent impacting nesting waterfowl. Partial drawdowns to produce moist soil plants for waterfowl food will be employed periodically in interim years when floristic monitoring indicates management of the plant community is appropriate to meet desired conditions.

The MLWMA Management Priority 1, Palustrine Wetland Habitat , focuses on creating diverse and resilient wetland habitat. Performance targets and strategies include water level management, including occasional drawdowns, to mimic the natural hydrograph and create hemi-marsh conditions.

2. **There is a lack of conifer stand and forest health information to properly manage the forested acres on the MLWMA.**

   Discussion: The MLWMA Management Priority 3, Mixed Conifer Forest, focuses on managing the forested acres on the WMA. A forest inventory and assessment on the WMA is needed to determine forest habitat type, composition, condition, and trend. This will provide the information to develop forest management plans to address wildlife resource objectives relative to the identified habitat types.

3. **Scrub-shrub wetland communities are decadent and have low forage value to big game species.**

   Discussion: The MLWMA Management Priority 2, Riparian Woodland and Shrublands, focuses on providing high quality shrubland habitat. The presence of beaver populations on the lake contribute to scrub-shrub rejuvenation in areas of beaver browse activity. In areas of decadent scrub-shrub communities not accessible or utilized by beavers, mechanical cutting or fire may be used to create re-sprouting and quality browse for big game species.

Wildlife Management

1. **MLWMA serves as an important linkage corridor for large carnivores, large ungulates, and many other species between the Selkirk and Cabinet mountain ranges and is shrinking over time.**

   Discussion: Habitat on the MLWMA will be managed to provide security cover for wildlife movement. Public access on the WMA will be limited to non-motorized travel to protect the value of the wildlife travel corridor. The conservation of wildlife travel corridor habitat within the landscape will be a high priority and partnerships with public and private landowners will be pursued.

Efforts to protect dispersing wildlife from automobile and railway collisions will also be high priority. Efforts will be coordinated with the local communities, local and federal agencies, and railway companies.

2. **There is a lack of large diameter trees along the marshes and rivers resulting in low natural nesting cavities available for cavity-nesting waterfowl species.**

   Discussion: The MLWMA Management Priority 3, Mixed Conifer Forest, includes strategies to retain snags and employ artificial nest boxes for cavity-nesting waterfowl. Large diameter trees and snags in the forested wetlands will be retained and protected from beaver damage. Density of large diameter trees and snags within the mixed coniferous forest on the WMA will be maintained for cavity-nesting waterfowl and raptor and bald eagle nest/perch trees.

3. **There is a lack of adjacent grass lands with good residual vegetation for mallard nesting.**

   Discussion: Much of the perimeter of McArthur Lake is riparian forest and shrublands or peatlands and not conducive to grassland nesting birds. Grassland habitat is available on the northeast and northwest shorelines. This grassland habitat will be protected and managed for healthy grasslands. Disturbance during the nesting period will be minimized. The MLWMA Management Priority 4, Grasslands, focuses on maintaining the health and vigor of the grasslands on the WMA.

McArthur Lake 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 mandate in Idaho Code. 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 MLWMA. 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 MLWMA is through the use of Conservation Targets to guide management. Conservation Targets could 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 MLWMA, 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 MLWMA and creates a platform for conservation partnerships on the surrounding landscape.

The following six-step process was used to create the MLWMA 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

McArthur Lake WMA, like many other WMAs, was created for a specific purpose and therefore has inherent management priorities incorporated in the cooperating agency agreements and

landownerships that formed the WMA. McArthur Lake WMA was created by the procurement of several land parcels over time put together to protect and manage the wildlife resources to ensure sufficient quantities of high quality and secure habitat for waterfowl, shorebirds, and other wetland obligate species and for a wide variety of other game and nongame species. The MLWMA is also managed in response to public desires, including providing high quality wildlife-based recreational and educational opportunities for the benefit of the public.

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

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

All strategies proposed in this plan are bounded by the contractual agreements between cooperating agencies, the mission of MLWMA, 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.

Taking into consideration the public desires, biological resources, and funding resources of MLWMA, in concert with these foundational priorities of MLWMA and statewide Department priorities, the Department developed the following list of broad-scale MLWMA Management Priorities.

McArthur Lake WMA Management Priorities (listed in order of priority):

1. Palustrine Wetland Habitat.
2. Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland Ecological System.
3. Northern Rocky Mountain Mesic Montane Mixed Conifer Forest Ecological System.
4. Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland Ecological System.
5. Provide for Wildlife-based Recreation and Education.

Focal Species Assessment

This section of the MLWMA Plan is an assessment of various fish and wildlife species on MLWMA 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 (e.g., Willow Creek watershed or foothills ecotone), a threat (e.g., habitat loss or climate change), organization (e.g., state government or non-government organization) or geographic region (e.g., protected area, Department Region or state; Veríssimo et al. 2009). Waterfowl are an example of a group that fits the criteria as both focal and flagship species. In addition, they are a culturally and economically important species in Idaho and represent a founding priority for establishment of the MLWMA. Therefore, waterfowl is an important flagship species group considered in the WMA 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 sage-grouse). Categories of at-risk vertebrate species considered in this assessment are: 1) species designated as Idaho Species of Greatest Conservation Need (SGCN); 2) species designated as Sensitive by Region 4 (Intermountain Region) of the U.S. Forest Service (USFS); and 3) species designated as Sensitive by the Idaho State Office of the Bureau of Land Management (BLM).

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

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.

The Intermountain West Joint Venture (IWJV) also maintains a list of priority species. The IWJV has identified 40 priority species from which to base conservation planning.

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

Suitability of assessed species as a focal species were estimated by Panhandle 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 McArthur Lake WMA including their potential suitability as focal species for management.

Species	Status Designation(s)	Occurrence Context in McArthur Lake WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for McArthur Lake WMA
Mammals					
Moose (*Alces alces*)	Flagship	Occur on the MLWMA and surrounding landscape throughout the year with highest use on the WMA during spring and summer within the aquatic habitat.	Loss of habitat from rural residential/commercial development within the landscape. Habitat fragmentation from conflicting land uses on adjacent public and private lands. Mortality rates from automobile and railway train collisions.	Protect and manage forest, grasslands, and scrub/shrub for moose forage and hiding cover. Work with the local community and ITD to decrease the number of big game automobile collisions on Hwy 95.	**Potentially Suitable as a focal species.** Moose are a relatively abundant animal in the McArthur Lake landscape and are dependent on habitat types that are represented on MLWMA.
Elk (*Cervus canadensis*)	Flagship	Use the MLWMA mostly in the winter in forest and scrub/shrub habitat, infrequent use the rest of the year. Occur in the surrounding landscape yearlong.	Loss of habitat from rural residential/commercial development within the landscape. Habitat fragmentation from conflicting land uses on adjacent public and private lands. Mortality rates from automobile and railway train collisions.	Protect and manage winter cover (forest) and forage (scrub/shrub) for elk. Work with the local community and ITD to decrease the number of big game automobile collisions on Hwy 95.	**Potentially Suitable as a focal species.** Elk are a culturally and economically important wildlife species in northern Idaho and are a species with a good potential for developing conservation partnerships.
White-tailed Deer (*Odocoileus virginianus*)	Flagship	Common on the MLWMA and surrounding landscape yearlong.	Loss of habitat from rural residential/commercial development within the landscape. Habitat fragmentation from conflicting land uses on adjacent public and private lands. Mortality rates from automobile and railway train collisions.	Protect and manage forest, grasslands, and scrub/shrub for deer forage and hiding cover. Work with the local community and ITD to decrease the number of big game automobile collisions on Hwy 95.	**Potentially Suitable as a focal species.** Elk are a culturally and economically important wildlife species in northern Idaho and are a species with a good potential for developing conservation partnerships.
Black Bear (*Ursus americanus*)	Flagship	Frequently occur on the MLWMA during the spring. Occur in the surrounding landscape during the spring, summer and fall.	Loss of habitat from rural residential/commercial development within the landscape and potential for increased conflict with landowners. Habitat fragmentation from conflicting land uses on adjacent public and private lands.	Protect and manage forest and meadow habitat for black bear security and forage habitat. Work collaboratively with federal and private landowners within the MLWMA Landscape to protect habitat with the McArthur Lake Wildlife Travel Corridor for black bear movements.	**Potentially Suitable as a focal species.** Black bear are a culturally and economically important wildlife species in northern Idaho. The McArthur Lake Wildlife Corridor is an important area for black bear dispersal, along with many other large carnivore species, and are representative of a broader group of species sharing the same or similar conservation needs.
Grizzly Bear (*Ursus arctos*)	ESA Threatened, USFS Sensitive, SGCN	Grizzly bear occur in the Selkirk and Cabinet Mountains. Known observations occur in the McArthur Lake landscape area, suggesting they use the narrowest connection between the two mountain ranges at McArthur Lake as a travel corridor.	Threats to populations include human persecution, habitat alteration, human-caused displacement, and long-term genetic implications of inbreeding. Human-caused mortality may result from mistaken identity by black bear hunters, intentional poaching, self-defense, and conflicts associated with livestock, food storage, and garbage disposal. Brown bears do not generally tolerate high human density.	Necessary conservation actions include limiting road densities on federal land within recovery zones, and limiting displacement and human-caused mortalities. Minimize habituation of bears to humans and human-related foods. In particular, the proper management of sanitary landfills is important for reducing conflicts with humans. Additionally, the conservation of habitat and important food resources is essential to the maintenance of viable populations and the avoidance of human bear conflicts.	**Unsuitable as a focal species.** Although the MLWMA and lands within the WMA Landscape are important to protecting linkage habitat for the grizzly bear, infrequent use of the WMA would not provide feedback to managers.
Fisher (*Martes pennant*)	USFS Sensitive, BLM Sensitive, SGCN	Fishers occur in the Selkirk and Cabinet Mountains. Known observations (IDFG 2005) occur in the McArthur Lake landscape area, suggesting they use the	Habitat loss and degradation threatens populations. Loss of forested habitat, particularly old-growth forests, to fire and timber harvest results in the reduction and	Protection and restoration of important habitat may be necessary. Forest management that maintains a balance of old growth and early seral-stage forests and	**Unsuitable as a focal species.** Although the MLWMA and lands within the WMA Landscape are important to protecting linkage habitat for the fisher, infrequent use of the

Species	Status Designation(s)	Occurrence Context in McArthur Lake WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for McArthur Lake WMA
		narrowest connection between the two mountain ranges at McArthur Lake as a travel corridor.	fragmentation of suitable habitat. Small, isolated populations may lose genetic diversity and have a higher probability of extinction.	protects riparian habitat may be required to sustain viable populations. Information is also needed with regard to inter-relationships between habitat fragmentation, movement patterns, and the genetic composition of populations.	WMA would not provide feedback to managers.
Lynx (*Felus lynx*)	ESA Threatened, BLM Sensitive, SGCN	Although rare, observations of lynx have occurred in both the Selkirk and Cabinet Mountains. Lynx are wide-ranging mammals and may potentially use the McArthur Lake landscape as a travel corridor between mountain ranges.	Habitat degradation, fragmentation, and loss are the primary threats to lynx populations. Fire suppression and timber management practices have affected landscape-scale characteristics of vegetation composition and structure. Increasing road densities causes habitat fragmentation and also leads to increased human disturbance.	Timber management practices designed to maintain or enhance habitat for the snowshoe hare and other prey may help sustain lynx populations. Management practices, such as prescribed burns, that increase habitat complexity at landscape scales by creating a variety of seral stages, may also improve habitat. Management of road densities and human disturbance is needed in occupied habitat.	**Unsuitable as a focal species.** Although the MLWMA and lands within the WMA Landscape are important to protecting linkage habitat for the lynx, infrequent use of the WMA would not provide feedback to managers.
North American Wolverine (*Gulo gulo luscus*)	ESA Candidate, USFS Sensitive, BLM Sensitive, SGCN	Wolverines occur in the Selkirk and Cabinet Mountains. Known observations (IDFG 2005) occur in the McArthur Lake landscape area, suggesting they use the narrowest connection between the two mountain ranges at McArthur Lake as a travel corridor.	Recent genetic studies suggest that populations are fragmented in the southern portion of their range. Fragmentation may isolate populations, reduce genetic diversity, and increase the risk of population extirpation. Human disturbance is among the most important causes of habitat fragmentation and degradation in wolverine habitat. Areas of disturbance create barriers to movement, reduce winter foraging opportunities, and may affect reproductive success.	Monitor the status of populations in Idaho, including whether populations in Idaho are self-sustaining or dependent on dispersers from Canada, which is relevant to assessing range fragmentation and protecting corridors and core habitats, especially den sites. Limiting disturbance to occupied habitat, particularly habitat associated with den sites, is critical to the long-term persistence of the species in the state.	**Unsuitable as a focal species.** Although the MLWMA and lands within the WMA Landscape are important to protecting linkage habitat for the wolverine, infrequent use of the WMA would not provide feedback to managers.
Northern Bog Lemming (*Synaptomys borealis*)	USFS Sensitive, BLM Sensitive, SGCN	Potential habitat occurs in the peatland and wet meadows on the MLWMA.	Loss of sphagnum or other bog mats and corridors for inter-patch movement might affect population viability. Habitat disturbance may be caused by timber harvest, livestock grazing, road-construction, or snowmobiling.	Basic information on the distribution and status of populations and habitat associations is needed. Protection of bogs and fens where this species occurs is also important for the conservation of this species.	**Unsuitable as a focal species.** Limited information on distribution in the project area.
Pygmy Shrew (*Sorex hoyi*)	SGCN	Potential habitat occurs in the moist forest and riparian habitat on the MLWMA.	The apparent rarity of this species may be indicative of small populations or may be an artifact of past sampling effort. The lack of information regarding the distribution and habitat requirements has precluded the consideration of this species in resource management decisions.	Surveys are needed to determine the distribution, current status, and habitat associations of populations.	**Unsuitable as a focal species.** Limited information on distribution in the project area.
Red-tailed Chipmunk (*Neotamias ruficaudus*)	SGCN	Potential habitat occurs in mesic coniferous forest on the MLWMA and surrounding landscape.	Changes in habitat quality may be the biggest concern for red-tailed chipmunks. The species requires habitat containing both late and early successional forest tracts. Forest practices or fires that eliminate brush piles, coarse woody debris, and standing dead and live trees may be detrimental.	Prescribed fires, selective timber harvest, and other management actions that maintain a juxtaposition of seral stages may be necessary to sustain populations. Limiting disturbances that result in a homogeneous environment may also help protect the species.	**Unsuitable as a focal species.** Limited information on distribution in the project area.

Species	Status Designation(s)	Occurrence Context in McArthur Lake WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for McArthur Lake WMA
Birds					
Bald Eagle (*Haliaeetus leucocephalus*)	ESA Delisted, USFS Sensitive, BLM Sensitive, SGCN	Breeding and migrating populations occur on the MLWMA.	Greatest threat to birds in Idaho is disturbance during the nesting period from activities such as forestry, human recreation, and construction projects.	Disturbance around nest sites should be minimized or avoided altogether, especially during late–winter/early–spring when eagles are initiating territory establishment and breeding activities.	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Continued use of the MLWMA would help guide priorities for wetland management.
Flammulated Owl (*Psiloscops flammeolus*)	USFS Sensitive, BLM Sensitive, SGCN	Potential habitat occurs in the upland forest on the MLWMA and surrounding landscape.	Direct habitat loss from timber harvest practices; fire exclusion resulting in altered forest structure, stocking rates, and species composition; pesticides; and cutting of dead trees for firewood.	Monitoring programs for nocturnal birds are needed to refine population estimates and trend data for this species. Research on factors influencing clustered spatial distribution of breeding sites is warranted to investigate why large areas of presumably suitable habitat remain unoccupied.	**Unsuitable as a focal species.** Limited information on distribution in the project area.
Merlin (*Falco columbarius*)	SGCN	Individuals observed hunting on the MLWMA. Foraging habitat and potential breeding habitat occurs in the surrounding area.	An increase in agricultural lands has caused losses of both nest sites and prey species for merlins.	There are currently too few breeding merlins in Idaho to implement habitat management activities designed specifically to benefit this species; and wintering numbers are sufficiently stable to suggest that few local problems exist.	**Unsuitable as a focal species.** Limited information on distribution in the project area.
Black Tern (*Chlidonias niger*)	BLM Sensitive, SGCN	Potential breeding habitat occurs on the MLWMA in emergent marsh vegetation.	Greatest threat is loss of marsh habitat.	Protect and maintain suitable shallow marsh habitat with emergent vegetation.	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Although they have not been observed on the MLWMA, potential habitat does exist and there are breeding populations in the surrounding counties.
American White Pelican (*Pelecanus erythrorhynchos*)	BLM Sensitive, SGCN	Nomadic subadult groups of up to 150 pelicans forage on the MLWMA during July through September.	Habitat loss due to either flooding or draining areas can destroy foraging areas. Additional threats identified pertain to the two breeding colonies in Southern Idaho.	Protect and maintain wetland habitats and water levels on forage and breeding grounds.	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Continued use of the MLWMA as forage grounds would help guide priorities for wetland management.
Trumpeter Swan (*Cygnus buccinator*)	BLM Sensitive, SGCN	Rare observations of migrating birds on the MLWMA.	Periodic drought, crowded wintering grounds, and low local productivity threaten Idaho's swan population. Disturbance to nesting habitat from fishing, hiking, and off road vehicles threatens overall swan productivity.	Habitat improvement projects to increase the number of suitable breeding sites within their breeding range. Monitoring of collared birds to document winter distribution and habitat use.	**Unsuitable as a focal species.** Infrequent use of the MLWMA would not provide feedback to managers.
Common Loon (*Gavia immer*)	USFS Sensitive, SGCN	Rare, non-breeding occurrence on the MLWMA. Limited breeding occurs on lakes within the county.	Degradation of habitat through shoreline development, campsites, human recreational use of nesting and nursery sites may force loons into marginal, less protected nesting sites.	Artificial nesting platforms were placed in Upper Priest, Priest, Pend Oreille, and Coeur d'Alene Lakes in northern Idaho as part of the Idaho Bird Inventory and Survey program. While none have been used to date, efforts are being made to monitor the loons during the breeding and non–breeding season.	**Unsuitable as a focal species.** Infrequent use of the MLWMA would not provide feedback to managers.
Hooded Merganser (*Lophodytes cucullatus*)	SGCN	Breeding and migrating populations occur on the MLWMA.	Hooded merganser populations have suffered on both breeding and wintering grounds from habitat alteration, mostly associated with changing forestry practices and especially snag removal.	Primary actions should focus on setting forest management goals that include the establishment and conservation of cavity–producing trees (>100 years old, >12 inches diameter at breast height) as well as the	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Continued use of the MLWMA as breeding and migrating grounds would help guide priorities for wetland management.

Species	Status Designation(s)	Occurrence Context in McArthur Lake WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for McArthur Lake WMA
				maintenance of riparian forested corridors and forests located within one mile of suitable brood habitat.	
Lesser Scaup (*Aythya affinis*)	SGCN	Breeding and migrating populations occur on the MLWMA.	Degradation of wetland habitat has shown to alter migration routes and use of breeding and wintering areas in other part of this species' range.	Primary actions should continue to focus on restoring wetlands through cooperative joint ventures.	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Continued use of the MLWMA as breeding and migrating grounds would help guide priorities for wetland management.
Northern Pintail (*Anas acuta*)	SGCN	Breeding and migrating populations occur on the MLWMA.	Wetland habitat degradation, such as wetland draining and agricultural alterations, on both breeding and wintering grounds.	Primary actions should focus on restoring wetlands and integrating waterfowl management with farming practices.	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Continued use of the MLWMA as breeding and migrating grounds would help guide priorities for wetland management.
Red-necked Grebe (*Podiceps grisegena*)	SGCN	Breeding observations on the MLWMA. Migration foraging and resting habitat on the WMA.	Draining of wetlands and/or drought are potentially serious issues for this species in Idaho. They are susceptible to disturbance by recreationists during nesting. Highly susceptible to pollutants, as heavy metals are often detected in adults, eggs, and young	Closing off important breeding areas to recreational activities during the nesting period would help alleviate disturbance pressures. Grebes can become acclimated to human presence if disturbance is minimized during incubation and early brooding. Red–necked grebes readily use artificial wetlands, and would likely respond favorably to wetland restoration.	**Potentially suitable as a focal species.** Species is an indicator of wetland systems. Although occurrences are rare on the MLWMA, habitat does exist and use of the WMA would help guide priorities for wetland management.
Western Grebe (*Aechmophorus occidentalis*)	SGCN	Occasional, nonbreeding observations on the MLWMA. Migration foraging and resting habitat on the WMA.	Two of the main issues for grebes nesting in Idaho are water quality and water level fluctuations. Nesting colonies also are sensitive to disturbance by humans, causing adults to leave nests, exposing eggs to increased risk of depredation. Increased boat traffic through foraging and brood–rearing habitat can elevate chick mortality.	Monitoring water quality and reducing drastic water level fluctuation during the breeding season at key sites is recommended, however, some water level fluctuation is necessary to provide suitable nesting habitat (16+ inches water depth in emergent). Closing off important breeding areas to recreational activities during the nesting period would help alleviate disturbance pressures.	**Unsuitable as a focal species.** Infrequent use of the MLWMA would not provide feedback to managers.
Transitional Waterbird Guild (*Upland Sandpiper is of special concern)	*SGCN	Occasional observations of Transitional Waterbird Guild species on the MLWMA. Migration foraging and resting habitat for Transitional Waterbird Guild species occur on the WMA.	*The biggest factor in upland sandpiper decline is the loss of habitat to agriculture and urban development. In northern Idaho, grassland habitat in the Rathdrum Prairie area has been largely lost to housing and commercial developments	*The upland sandpiper has been eradicated from the state. Any remaining habitat for the upland sandpipers in Idaho should be extensively surveyed, and if any are discovered in the area, extreme efforts should be taken to work with landowners to protect remaining habitat.	**Potentially suitable as a focal species.** Transitional Waterbird Guild species are an indicator of wetland systems. Continued use of the MLWMA as migrating and forage grounds would help guide priorities for wetland management.
White-headed Woodpecker (*Picoides albolarvatus*)	USFS Sensitive, BLM Sensitive, SGCN	Potential habitat may occur in forests on the MLWMA or within the McArthur Lake landscape.	Habitat conversion, including certain logging practices (i.e., clearcutting, even-aged stand management, and snag removal), changes in ecological processes such as fire suppression (which favors the replacement of fir species over ponderosa pine), and forest fragmentation have contributed to local declines of this species in Idaho. The primary threat to this species is the loss of live and dead large-diameter ponderosa pine.	Many basic aspects of this species' natural history remain virtually unknown, especially with respect to demography and populations. Metapopulation delineation, determination of reproductive success, and studies of the effects of changing forest tree species composition, stand age, and stature on populations are needed	**Unsuitable as a focal species.** Limited information on distribution in the project area.

Species	Status Designation(s)	Occurrence Context in McArthur Lake WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for McArthur Lake WMA
Reptiles					
Northern Alligator Lizard (*Elgaria coerulea*)	BLM Sensitive, SGCN	Potential habitat occurs in the upland forest on the MLWMA and surrounding landscape. No known occurrence in the surrounding area.	Habitat suitability can be affected by surface disturbance from activities such as rock quarrying, timber harvest, and urban or agricultural development. Changes to the invertebrate prey base from habitat alteration, pest control, or non–native species introductions could have negative consequences.	Activities causing surface disturbance should be regulated so that impact to occupied habitat is avoided. Studies assessing distribution, abundance, and population trend are needed.	**Unsuitable as a focal species.** Limited information on distribution in the project area.
Amphibians					
Northern Leopard Frog (*Rana pipiens*)	BLM Sensitive, SGCN	In northern Idaho, the species was found in the Kootenai, Pend Oreille, and Clark Fork rivers prior to 1955, but populations may no longer persist in this region.	Loss and degradation of wetland and riparian habitat is thought to be the most prevalent threat. Urban and agricultural development, pollution from agricultural runoff, mining and mineral processing, water diversion, and livestock wastes and trampling of habitat are the most pervasive stressors to wetland systems. Introduced competitors and predators, such as bullfrogs and sport fishes, can cause amphibian population declines and losses. Disease is also a concern, particularly the chytrid fungus, Batrachochytrium dendrobatidis.	A comprehensive understanding of population status throughout the state is needed. Investigation of the cause of declines may be warranted and would be a priority if regional or state–wide declines are demonstrated. Wetland protection and restoration of degraded sites may be needed.	**Unsuitable as a focal species.** Due to their extirpation from northern Idaho, would not provide feedback to managers.
Western Toad (*Anaxyrus boreas*)	USFS Sensitive, BLM Sensitive	Potential habitat occurs on the MLWMA	Chytrid fungus, Batrachochytrium dendrobatidis, is the primary threat to western toad populations. This is compounded by habitat alteration around wetlands and human-facilitated expansion of natural and introduced predators. Habitat fragmentation, local changes in water quality, timber harvest, livestock grazing, fire, and toxic chemicals are other threats.	Managing disease, cataloging and monitoring population status, delineating important habitat, protecting delineated habitat, and identifying and protecting current breeding sites from habitat degradation.	**Unsuitable as a focal species.** Limited information on distribution in the project area. Unknown distribution limits potential management feedback.
Wood Frog (*Lithobates sylvaticus*)	BLM Sensitive, SGCN	In Idaho, the species was found historically at three sites in Boundary and Bonner counties. No record has been reported since 1970, and these Idaho populations may have been extirpated.	Threats to any populations that may persist in the State are unknown.	Surveys are needed to determine if the species persists in Idaho. If a population is extant, a habitat protection and monitoring plan should be developed.	**Unsuitable as a focal species.** Due to their extirpation from northern Idaho, would not provide feedback to managers.
Gastropods					
Fir Pinwheel (*Radiodiscus abietum*)	SGCN	Potential habitat occurs on the MLWMA	Much of their habitat has been lost to logging, grazing, roads, and forest fires.	Surveys are needed throughout the known range of this species, particularly in and near historically occupied sites, to determine the current status of this species in the state.	**Unsuitable as a focal species.** Limited information on distribution in the project area.

Species	Status Designation(s)	Occurrence Context in McArthur Lake WMA Landscape	Threats	Beneficial Management and Conservation Actions	Suitability as a Focal Species for McArthur Lake WMA
Pygmy Slug (*Kootenaia burkei*)	SGCN	Potential habitat in upland coniferous forest near water on the MLWMA and surrounding landscape. Endemic to northern Idaho. Known observations in the Selkirk Mountains.	Threats have not been assessed, but may include logging, housing, industrial development, roads, grazing, hiking, and biking.	Surveys to determine population numbers, range, ecology, habitat status, threats, conservation measures, and trends are needed.	**Unsuitable as a focal species.** Limited information on distribution in the project area.
Sheathed Slug (*Zacoleus idahoensis*)	SGCN	Potential habitat occurs in the upland coniferous forest near water on the MLWMA and surrounding landscape. Known observations in the Selkirk Mountains.	Surveys are needed to assess the current status of Idaho populations and to identify site-specific threats and conservation needs.	This species has a propensity for diverse, intact, and moist habitats and is absent from sites disturbed by timber harvest and livestock grazing. Logging and grazing are prevalent activities throughout the known range and are potential threats.	**Unsuitable as a focal species.** Limited information on distribution in the project area.

Selection of Conservation Targets

The biodiversity of MLWMA 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 MLWMA for management and conservation; while still reflecting the management priorities of MLWMA.

Conservation Targets for the MLWMA Management Plan were selected from species ranked as potentially suitable focal species in Table 1. Sensitive plants are not included in this assessment due to practical considerations including lack of data and funding. Conservation Targets could also include 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. A final consideration in the selection of Conservation Targets was the best professional judgment of the Panhandle Regional Habitat Manager and MLWMA staff. Effective Conservation Targets cannot be selected based solely on species assessments. They must reflect regional threats, priorities, existing conservation partnerships, and the limitations of MLWMA personnel and funding.

The focal species assessment identified four flagship species and nine special status species that are potentially suitable focal species for management on the MLWMA.

The Conservation Targets selected to guide management on MLWMA are:

1. Palustrine Wetland Habitat
2. Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland
3. Northern Rocky Mountain Mesic Montane Mixed Conifer Forest
4. Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland

Palustrine Wetland Habitat

We chose to designate palustrine wetland habitats as a focal habitat for management on MLWMA due to the number of focal species that are dependent on functional wetland habitat (black tern, American white pelican, hooded merganser, lesser scaup, northern pintail, red-necked grebe, western grebe, and upland sandpiper), as well as numerous rare plants and amphibians.

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

Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland

We chose to designate riparian woodland and shrubland habitat as a focal habitat as it provides important life requirements for the focal species, moose, elk, deer, bald eagle, and hooded merganser. It provides cover and year-round browse, most importantly winter browse, for white-tailed deer, moose, elk, and beaver. The bald eagle relies on large old-growth trees in stands greater than 10 acres for nest/perch trees. The hooded merganser requires snags for nest cavities, optimally in old-growth trees within one mile of suitable brood habitat. It also provides nesting, foraging, and security cover for many passerine birds.

Our vision for riparian woodland and shrubland habitat is healthy and functioning tree and shrub-dominated wetlands that support large old-growth trees, snags, and a shrub layer that provides browse for moose, elk, and white-tailed deer. Selecting forested and scrub-shrub wetlands as a focal habitat serves as an umbrella for conservation and has a high probability of improving habitat for a large number of species.

Northern Rocky Mountain Mesic Montane Mixed Conifer Forest

We chose mixed conifer forest as a focal habitat as it provides winter thermal cover for white-tailed deer, moose, and elk near winter browse of scrub-shrub habitat. Mixed conifer forest provides security cover and forage opportunities for black bear, large trees for nesting raptors, and snags for cavity nesters and insectivores. Improving or maintaining highly functional mixed conifer forests has the potential to directly benefit many species of wildlife.

Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland

We chose to designate grassland habitat as a focal habitat as it provides important nesting habitat for bird species, including ground nesting waterfowl (lesser scaup, northern pintail), and other grassland nesting birds. Grassland areas provide brood-rearing habitat for some waterfowl and upland game birds species, such as the Canada goose and ring-necked pheasant. Many raptor species hunt in grasslands. A multitude of other species find forage and cover in grasslands, including big game species such as bear, moose, elk, and deer.

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

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 four 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 MLWMA satisfy

beneficial management and conservation actions and address threats for a number of species examined as potential focal species.

This assessment identified several guilds for which there is little or no management action being taken and/or where further data would be useful to inform the next planning process. These management voids merit attention and broad strategies are identified in the following Management Program Table (pages 35-39) that further conservation for these species.

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

	Conservation Targets[a]				
Species Assessed in Table 1	**Palustrine Wetland Habitat**	**Riparian Woodland and Shrubland Habitat**	**Mixed Conifer Forest Habitat**	**Grassland Habitat**	**Conservation Need**
Moose	X	X	X	X	
Elk		X	X	X	
White Tailed Deer		X	X	X	
Black Bear		X	X	X	
Bald Eagle	X	X	X	X	
Flammulated Owl		X	X	X	
Merlin		X	X	X	
Black Tern	X				
American White Pelican	X				
Trumpeter Swan	X				
Common Loon	X				
Hooded Merganser	X	X			
Lesser Scaup	X			X	
Northern Pintail	X			X	
Red-necked grebe	X				
Western Grebe	X				
Upland Sandpiper	X				
White-headed Woodpecker			X		
Fisher					Yes
Grizzly Bear					Yes
Lynx					Yes
North American Wolverine					Yes
Northern Bog Lemming		X			
Pygmy Shrew		X	X		
Red-tailed Chipmunk			X		
Northern Alligator Lizard			X		
Northern Leopard Frog	X				
Western toad	X	X	X		
Wood frog	X	X	X		
Fir Pinwheel			X		
Pygmy slug			X		
Sheathed slug			X		

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

Spatial Delineation of Selected Focal Species/Habitat Landscapes

Each of the focal species selected as Conservation Targets for MLWMA also utilize habitats off of MLWMA to meet their annual needs (Figure 3). Therefore, it is crucial that we actively participate in habitat conservation efforts within the landscape, beyond the borders of the MLWMA, if we are to maintain the integrity of the WMA itself.

This section describes the methods used to define spatial landscapes for each of our MLWMA Conservation Targets. We used the best data available (i.e., species survey data utilizing the MLWMA, 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 35-39) to identify Conservation Target-specific Management Directions, Performance Targets, and Strategies for both MLWMA and the landscape.

The landscape of interest for MLWMA is the upper watershed of Deep Creek, above its confluence with Trail and Fall Creek. Deep Creek originates just above McArthur Lake with many channels creating the vast flooded swamp forest feeding into the reservoir. Below the McArthur Lake dam, Trail Creek from the east and Fall Creek from the west feed into Deep Creek near Naples, Idaho. Deep Creek continues to flow north to its confluence with the Kootenai River. To the south of MLWMA and the origin of Deep Creek, the Trout Creek watershed flows south into Lake Pend Oreille.

The east and west boundaries of the upper Deep Creek watershed include the foothills of the Selkirk Mountains to the west and foothills of the Cabinet Mountains to the east. The McArthur Lake area is the narrowest distance between these two mountain ranges and has been identified as an important linkage corridor for many high elevation wildlife species, including the special status species fisher, grizzly bear, lynx, and North American wolverine.

Our landscape of interest was delineated using ArcGIS and near Walsh Lake at Samuels, Idaho at the south boundary, is bounded by the Selkirk and Cabinet Mountains to the east and west, and terminates near Naples, Idaho at the north boundary.

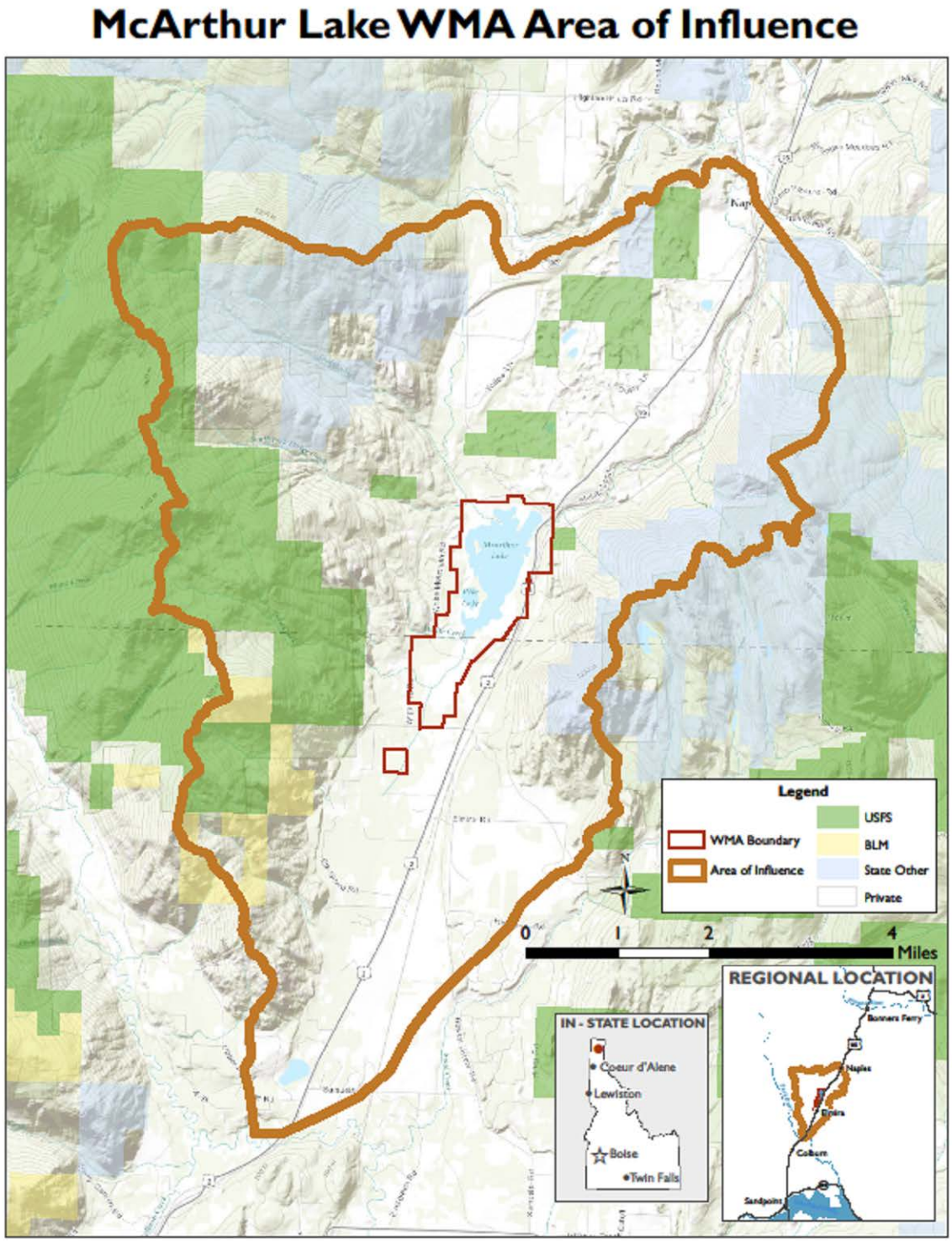


Figure 3. The landscape scale for Focal Habitat consideration for McArthur Lake WMA.

McArthur Lake WMA Management Program Table

The following table outlines the Management Directions, Performance Targets, Strategies, and Outcome Metrics MLWMA staff will use to manage for the Conservation Targets selected (page 29) to represent each MLWMA Priority (page 20) at both the MLWMA and Conservation Target-specific landscape scale. 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 1: Palustrine Wetland Habitat					
Conservation Target: Palustrine Wetland Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Provide high quality cover and food sources for migrating and breeding waterfowl, waterbirds, shorebirds, and other wildlife, while maximizing potential water quality, ecosystem support, and rare plant habitat functions	Annually, fluctuate water levels on the 600 acre reservoir to mimic the natural hydrograph (spring flooding, summer drawdown, fall re-flood) and once within 10 years completely drawdown the lake	Manage the dam outflow to create high spring water levels followed by receding summer water levels and re-flooding in the fall to mimic the natural hydrograph.	Seasonal water level elevation	B, C
		During next 10 years, implement shallow water short-emergent marsh and seasonally flooded wet meadow management (e.g., flooding and periodic drawdowns) at the appropriate times and frequency, in all shallow marsh and wet meadow habitat to improve ecological condition including: increase floristic diversity by 10%, decrease % of flora comprised of non-native species by 10%	Use mechanical disturbance, fire, and other treatments where appropriate to increase diversity and productivity of wet meadow and shallow marsh vegetation, specifically with the objective of decreasing cover of reed canarygrass and improving nesting and brood-rearing habitat for waterfowl and black terns.	Percentage of mapped shallow water emergent marsh and wet meadow habitat managed; floristic quality index metrics based on species composition	
			Manage water levels during spring and fall to provide areas of shallow open water, shallow emergent vegetation, and mudflats when appropriate to provide habitat for a variety of wildlife and species' life stages and maximize invertebrate production		
		During next 10 years, treat all deep water marsh habitat at least once to approach an approximate 60:40 ratio of open water to productive tall marsh vegetation (e.g., cattail- bulrush) for the benefit of waterfowl breed pairing, brood rearing, and other functions	Critical to marsh habitat maintenance, incorporate full drawdowns and partial drawdowns over the years to provide for very wet years and drought years over time	Percentage of deepwater marsh treated; ratio of open water to tall marsh vegetation; diversity of tall marsh vegetation	
			Use herbicide applications, mechanical treatments, and fire to rejuvenate stands of depauperate, unproductive marsh vegetation and maintain an approximate 60/40 mix of open water and marsh vegetation with diverse and productive plant foods for waterfowl and other waterbirds		
			Install artificial nesting structures for Canada goose and cavity-nesting ducks if present conditions do not support plentiful, quality nesting conditions	Number of artificial nest structures occupied by nesting waterfowl	
		During next 10 years, maintain existing extent of peatlands within MLWMA and at Bonner and Dawson Lake Access sites	Utilize Department Botany and Wetland staff to conduct peatland inventory including mapping of existing peatland extent, rare plants, and peatland plant associations on Department properties using GPS	Acreage mapped as peatlands	
			Protect peatlands from human disturbance by limiting foot or vehicle access and restricting infrastructure development (e.g., docks), mechanical vegetation treatment, or any other soil disturbance or hydrological alteration to non-peatland areas		
			Investigate opportunities for peatland restoration in areas impacted by historical drainage and ditching		

WMA Priority 1: Palustrine Wetland Habitat					
Conservation Target: Palustrine Wetland Habitat					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA Landscape	By coordinating with partners, increase the amount of high quality, functioning wetland habitat managed for waterfowl, waterbirds, shorebirds, amphibians, and other wildlife, while enhancing productivity, diversity, and functions (e.g., water quality improvement)	During next 10 years, work with at least one willing landowner and/or land management agency to restore or enhance wetland habitat quality and improve management on at least 50 acres (e.g., flooding and periodic drawdowns at the appropriate times and frequency)	Work with partners (private landowners, federal agencies, Idaho Dept. of Environmental Quality, Ducks Unlimited, etc.) to fund (e.g., through Department programs such as HIP or other conservation programs) wetland restoration or enhancement for breeding and/or migrating waterfowl	Number of willing landowners assisted who are implementing improved wetland management or habitat restoration, and/or acreage of wetland habitat with improved management or habitat restoration	B, C
			Provide technical assistance to willing landowners on the implementation of wetland management techniques to increase diversity, condition, structure, and function of wetlands		
WMA Priority 2: Riparian Woodland and Shrubland Habitat					
Conservation Target: Riparian Woodland and Shrubland Species					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Provide high quality, functioning riparian woodland and shrubland habitat to benefit a wide range of wildlife species	During next 10 years, protect 20 acres of existing riparian woodland and shrubland habitat with the goal of minimizing browse on regenerating trees and shrubs	Protect natural regeneration of native hydrophytic tree and shrub species from big game browsing, fire, herbicides, and other disturbance to allow woody species to get established and spread; control noxious and invasive weed species	Acres of regeneration protected	B, C
		During next 10 years, restore and/or enhance 25% of decadent woodland and shrubland habitat through implementation of vegetation improvement projects (e.g., aim for canopy cover >50% with evidence of natural shrub reproduction and increased shrub canopy and young shoot density in stands) for moose, elk, and deer forage, and other wildlife use	Manage habitat for a stable beaver population for promoting shrub browsing and rejuvenation	Shrub canopy cover, number of young shoots, regeneration evidence, etc.	
			Mechanically treat decadent shrub cover on individuals not affected by beaver activity (e.g., cutting, fire, etc.)		
		During next 10 years, maintain or increase the density of large diameter trees and snags for cavity-nesting birds/mammals and bald eagle nest/perch sites (2/acre)	Protect large diameter trees and snags	Density of large diameter trees and snags in riparian woodland habitat	
			Create snags where needed if tree densities allow.		
			Employ artificial nest boxes for cavity-nesting species if snag density is low	Number of artificial nest boxes occupied by cavity-nesting birds	
MLWMA Landscape	Provide high quality riparian woodland and shrubland habitat to benefit a wide range of wildlife species	During next 10 years, work with private landowners and land management agencies to maintain, restore, and/or establish a diverse mix of riparian species in riparian woodland and scrub-shrub wetland stands, increase cover of native trees and shrubs, and decrease non-native invasive species (at least 20 acres; 1 landowner contact per year)	Work with private landowners through private, state, and federal conservation programs to create and restore riparian woodland and shrubland cover and forage for upland game birds, songbirds, waterfowl, native ungulates, and other wildlife on their land (e.g., riparian native tree and shrub planting projects; weed control)	Number of projects successfully implemented	
			Where possible, provide technical assistance and funding to cooperating agencies on projects that restore or enhance riparian woodland and shrubland habitat (e.g., riparian native tree and shrub planting projects; weed control)	Number of contacts and implemented projects	

WMA Priority 3: Mixed Conifer Forest Habitat					
Conservation Target: Mixed Conifer Forest Habitat Species					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Provide mixed conifer forest habitat in good to excellent ecological condition to benefit a variety of wildlife species.	Complete a Forest Inventory and Assessment in three years on all MLWMA upland forests (including outlying Public Access Sites); Complete a Forest Management/Stewardship Plan in five years	Conduct a forest composition and structure inventory and health assessment, including a map of habitat types and seral stages, using established protocols	Completion of forest inventory and assessment, including habitat type map	B, C
			Based on assessment results, develop strategies and methods within a Forest Stewardship/Management Plan to improve mixed conifer forest health where appropriate	Completion of Forest Stewardship Management Plan	
		During next 10 years, protect and maintain all late-seral/old growth mixed conifer forest that is within the range of historical variation (e.g., primarily mesic stands of western red-cedar and western hemlock)	Protect late seral/old growth stands from fire and human disturbance	Percentage of mapped late seral/old growth stands protected	
			Maintain forest canopy to maximize winter cover for moose, elk and deer		
		Based on forest inventory and assessment results, enhance or restore health of mixed species conifer stands that are outside the range of historical variation to create a mix of early to mid-seral Douglas-fir - grand fir stands; (at least 1 project in 10 years, with affected acreage to be determined)	Use pre-commercial and commercial thinning to restore stands to historical conditions and reduce wildfire threat. Use small direct sales if necessary.		
			Control invasive and noxious weed species in disturbed forest openings		
			Maintain as many large diameter (>20 inch dbh) trees and snags as possible for wildlife		
MLWMA Landscape	Provide mixed conifer forest habitat in good to excellent ecological condition to benefit a variety of wildlife species.	Work with private landowners and land management agencies to protect mixed conifer forest stands from development, conserve old growth western red-cedar and western hemlock stands, promote retention of large diameter trees and snags on the landscape, and restore the natural disturbance regime to Douglas-fir- grand fir mixed conifer forest (at least 20 acres; 1 landowner contact each year)	Provide technical assistance and funding when possible to cooperating agencies and private landowners on projects that affect the health of mixed conifer forest in the landscape	Number of projects successfully implemented which conserve or restore mixed conifer stands	
			Assist USFS and private corporate timber landowners in the landscape in developing forest management planning which promotes conservation and protection of old growth cedar-hemlock and large diameter trees and snags		
			Work with private landowners through private, state and federal conservation programs to protect mixed conifer forest lands from development within the McArthur Lake Wildlife Corridor		
WMA Priority 4: Grassland Habitat					
Conservation Target: Grassland Species					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Provide a mosaic of diverse, productive grassland habitat dominated by native species, with a forb component, to benefit a wide range of wildlife species	Treat approximately 10% of upland grassland and mesic meadow waterfowl nesting and songbird foraging habitat each year during the next 10 years to maintain health and vigor (as measured by floristic quality objectives, including: increase native species richness by 10%, decrease noxious/invasive weed cover by 50%, decrease % of flora comprised of non-native species by 10%, increase native forb cover to 10%)	Incorporate grassland disturbance regimes (mechanical treatment, burning, haying, or grazing) in areas that need to be rejuvenated	Percentage of mapped upland grassland and mesic meadow habitat area treated per year; floristic quality index metrics based on species composition; cover of noxious and highly invasive weeds species	B, C
			Maintain or increase the forb component in grassland habitat by interseeding/planting appropriate native forbs in areas lacking diversity		
			Employ an integrated weed management program (chemical, biological, mechanical) to control noxious and highly invasive weeds		

WMA Priority 4: Grassland Habitat					
Conservation Target: Grassland Species					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA Landscape	Provide a mosaic of diverse, productive grassland habitat dominated by native species, with a forb component, to benefit a wide range of wildlife species	During next 10 years, work with private landowners and land management agencies to enhance grassland stands that provide quality habitat for wildlife species (at least 20 acres; l landowner contact each year)	Work with private landowners through private, state and federal conservation programs to create or restore grassland cover for nesting and forage for upland game birds and waterfowl on private lands (e.g., native grass seeding projects)	Number of successfully implemented projects	
			Communicate and work with surrounding landowners on weed management issues and implementation	Number of contacts maintained	
			Participate in the local Cooperative Weed Management Area program	Number of meetings attended	
WMA Priority 5: Provide for Wildlife-based Recreation and Education					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Provide for public access and recreational use compatible with wildlife and habitat management objectives	Provide full season opportunities for hunting, fishing and trapping opportunities on the MLWMA	Manage fall water levels to provide quality trapping and waterfowl hunting opportunities	Acres of fall season wetland	E, F, G, H, K
			Maintain and improve hunter access and handicap hunter opportunities	Access Points	
			Maintain and improve boat ramp and fishing dock for boating and fishing recreation	N/A	
		Provide access and visitor facilities (maintain 4 parking/access sites and 1 bathroom facility)	Maintain and improve parking, bathroom and picnic facilities	Number of facilities	
			Provide non-motorized access across the MLWMA through maintenance of trails	Miles of trails	
			Increase access and non-consumptive use opportunities based on public needs and requests	Number of projects	
MLWMA Landscape	Promote public access for recreational use on private land	When working with landowners, encourage landowners to allow public access for recreation in a manner suitable for them	Work with private landowners within available private, state and federal conservation programs and advocate for public recreational access as part of these programs.	Number of projects with public access	F, G, I
			Encourage private landowners to participate in the Access Yes Program to allow public recreational access	N/A	
			Educate and foster communication and understanding between hunters and landowners on desires and concerns of each party	N/A	
WMA Priority: Control Noxious Weeds					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Control weed infestations on the MLWMA to avoid displacing desirable vegetation	Annually employ an integrated weed management program (chemical, biological, mechanical) on the MLWMA to control noxious weeds (300 acres each year)	Treat established weed infestations annually to restrict the spread of noxious weeds on the MLWMA	Acres Treated for Noxious Weeds; control success measured by % cover and/or density of weeds	B, C
			Eradicate newly invading weed species to keep them from becoming established	Number of new invader species populations successfully controlled	

WMA Priority: Control Noxious Weeds					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Prevent weed dispersal between neighboring properties and the MLWMA	Limit the level of weed infestations and dispersal throughout the surrounding landscape	Participate in the local Cooperative Weed Management Area program	N/A	B, C
			Work with adjoining landowners with cooperative weed control projects		
			Communicate and work with surrounding landowners on weed management issues		
			Maintain equipment in good and safe operating condition	Number of maintenance actions	

WMA Priority: Information Gaps					
Scope	**Management Direction**	**Performance Target**	**Strategy**	**Metric**	**Compass Objective (Appendix I)**
MLWMA	Develop strategies to address gaps identified in the viability assessment	Amphibian and Reptile Guild	With Diversity staff lead, develop an amphibian and reptile monitoring protocol	Plans in development stage	E, F, G, H, J, K, M
			With Diversity staff lead, organize volunteers to conduct amphibian and reptile monitoring		
		Gastropod Guild	With Diversity staff lead, develop a plan to ensure that management considers gastropod guild habitat requirements		
			With Diversity staff lead, recruit volunteers to monitor gastropod populations and to develop a species list.		
			With Diversity staff lead, identify areas of high concentrations of gastropods and identify habitat use.		
		Forest Dependent Species	Manage forested areas for diversity of overstory and understory vegetation types by addressing the effects of forest succession	Acres improved	
			Manage forested areas to more historic species composition consisting of dry forest site habitat of ponderosa pine, western larch and western white pine.		
			Manage forested areas to favor mountain shrub and grass/forb regeneration		
IDL, IDPR, USFS and BLM adjacent lands	Develop strategies to address gaps identified in the viability assessment	Forest Dependent Species	Work with USFS, IDL, IDPR, and BLM to re-introduce fire into the landscape, and to manage forested areas to pre-fire suppression species composition of ponderosa pine, western larch and western white pine. Treatment options include pre-commercial thinning, timber harvest and prescribed fire.	Acres improved	E, F, G, H, J, K, M
			Work with USFS, IDL, IDPR, and BLM to maintain a complex understory in forested areas		
			Work with USFS, IDL, IDPR, and BLM to maintain a canopy mosaic of age and species structure in forest management at a landscape level.		

Monitoring

Monitoring and reporting are critical for tracking accomplishment of performance targets identified in the MLWMA 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 MLWMA 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.

Current wildlife monitoring on MLWMA has included waterfowl migration surveys (since 2005), Canada goose nest counts (since 1972), duck breeding pair counts (1992), duck brood counts (1992), wood duck nest box surveys (1992), mallard nesting tunnel surveys (2005), waterfowl banding (2001), waterfowl check stations (2002), and hunter surveys (2006/2007 season).

Habitat monitoring on the MLWMA includes weekly water level monitoring from the staff gauge on the dam spillway, and permanent photo points and repeat air photos established on the WMA are taken at least every five years, or more often, during late-July to early August.
In Table 3, additional future monitoring needs associated with performance targets and strategies identified in the MLWMA Management Program Table are summarized. The goal is to measure success or effectiveness of strategies that are implemented to reach performance targets. A detailed monitoring plan including specific techniques will be completed for the WMA by December 31, 2014.

Table 3. Biological monitoring for McArthur Lake WMA, 2014-2023.

Performance Target	Survey Type	Survey Frequency
By 2023, treat all deep water marsh habitat at least once to approach an approximate 60:40 ratio of open water to productive tall marsh vegetation (e.g., cattail-bulrush)	Map all habitats/vegetation types, including peatlands	Every five years starting within next three years
During next 10 years, maintain existing extent of peatlands within MLWMA and at Bonner and Dawson Lake Access sites		
Provide large tree and snags for cavity-nesting birds/mammals and bald eagle nest perch sites	Forest stand assessment and inventory, including density of large diameter trees and snags, may be completed if funding is available	Once per 10 years or as needed
Maintain a forb component in the grassland cover	Department vegetation monitoring protocol (cover, frequency)	3 years post-planting for initial establishment and again at five and 10 years
Employ an integrated weed management program (chemical, biological, mechanical) on the MLWMA to control noxious weeds	Map and monitor weed distribution and control efforts on the MLWMA	Annually

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

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

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

Public Use Monitoring

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

Public use of MLWMA was assessed in 2006/2008 and currently in 2012/2013. Results of the 2006/2008 survey was summarized in the report McArthur Lake Wildlife Management Area 2006-2008 Public Use Survey (IDFG 2008). To estimate total use of the WMA, visitor interviews were conducted and traffic counter data was collected.

To estimate total use of the MLWMA, visitor interviews were conducted and traffic counter data collected. From March to fall freeze-up in 2006 and 2007, Department personnel conducted visitor interviews on site whenever they encountered a willing respondent and at mandatory waterfowl check stations. The remainder of the year was excluded due to the perceived lack of use and the relative inaccessibility of the WMA. A minimum of 10 user surveys per month were attempted, with a minimum of 250 interviews conducted annually.

During visitor interviews, MLWMA users were asked to identify their primary trip activity and given an opportunity to list subordinate activities planned for the outing. To determine the economic activity generated by public use of the WMA, we asked parties how much money they spent on non-vehicle related expenditures for the current trip and how many one-way miles they drove from their home to the WMA. To obtain information on heavy use periods, we attempted to obtain interviews on at least one weekend per month, and during the opening days for the waterfowl, archery deer/elk/black bear, and general deer hunting seasons.

Reporting

Each WMA will produce a five-year report on implementation of this WMA plan in 2019, including a summary of accomplishments and progress towards meeting performance targets. During the five-year review, MLWMA 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.

References

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

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

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

Idaho Department of Fish and Game. 2008. McArthur Lake Wildlife Management Area 2006-2008 Public Use Survey.

Karl, J. W., J. M. Scott, and E. Strand. 2005. An Assessment of Idaho's Wildlife Management Areas for the Protection of Wildlife. Natural Areas Journal 25:36-45.

Lambeck, R.J. 1997. Focal species: A multi-species umbrella for nature conservation. Conservation Biology 11:849–856.

Lichthardt, J. 2004. Conservation strategy for Idaho Panhandle peatlands. Report prepared for the Idaho Panhandle National Forests. Idaho Department of Fish and Game, Idaho Conservation Data Center, Boise.

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

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

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

Veríssimo, D., I. Fraser, R. Bristol., J. Groombridge, and D. MacMillan. 2009. Birds as tourism flagship species: A case study on tropical islands. Animal Conservation 12:549-558.

Appendices

I. THE COMPASS – THE DEPARTMENT'S STRATEGIC PLAN

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

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

II. HISTORY

Before settlement by Americans of European descent, McArthur Lake was a natural wetland with peatlands situated at the confluence of Deep and Dodge creeks. Following completion of the Great Northern Railroad in 1892, an influx of loggers, miners, and homesteaders led to the development of the McArthur settlement and school for which McArthur Lake was later named. By 1933, the McArthur Lake wetland had been drained for hay and crop production.

The first land acquisition by the Department was completed in 1942 in response to large scale wetland loss due to dike construction for flood control, and wetland drainage for agricultural production in the Kootenai Valley. The original property consisted of a wetland dissected by meandering channels of Deep Creek and Dodge Creek. Development activities began in 1944 with the construction of an earthen dam and a wooden spillway that created a 200 acre reservoir.

Further land acquisitions in 1964 enabled the Department to replace the original dam with a larger structure. In 1965, the dike was raised and a major concrete dam, spillway, and fish bypass was constructed. This increased the potential impoundment area of the reservoir to its present size of 600 acres. In order to maximize water storage capabilities, additional lands and flowage easements were purchased through 1974. In 1972, 268 acres immediately across the county road north of the management area were traded away. The Department's WMA ownership presently consists of 1,271 acres.

In addition to land owned, flowage easements have been acquired on 37.1 acres in three different perimeter areas. Twenty cubic feet per second of water right has been secured from Dodge and Deep creeks. There is 4,800 acre-feet of water storage certified by the Department of Water Resources for the impoundment. Highway, railroad, natural gas pipeline, electric transmission lines, county roads, and private access right-of-ways have been granted by the Department along with limited multiple use easements. A lifetime, non-transferable agreement was issued to a neighbor for use of a well near the headquarters.

In 1977, a new shop and storage building were completed. A new residence for the MLWMA manager was built in 1981. Major repairs to the concrete dam, spillway, and fish bypass were completed in 1988 and 1994. Other developments include a boat ramp and dock, fishing dock, and toilets.

About 500 feet of ditch was blasted around the edge of the lake in the early 1950s. In 1973, 2,600 feet of channel was dug with a dragline through the wetland in the north end. More than a half-mile of channels were excavated along the northwest margin of the reservoir, creating thirty-two 20 x 40 feet islands in 1965 and 1967, to provide nesting islands for waterfowl. These channels have degraded over time and few of the islands remain above water.

III. MANAGEMENT REQUIREMENTS AND AUTHORITIES

Federal Pittman-Robertson funds have been used to acquire and manage MLWMA 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 MLWMA. 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 MLWMA lands and waters. Under the National Historic Preservation Act, the Department must ensure that historic properties are protected on the WMA.

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 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. 1999-2013 ACCOMPLISHMENTS

Since the previous MLWMA plan was written in 1999, these accomplishments have occurred.

Goal: Develop and manage wetlands for waterfowl production.

Objective: Maintain stable water levels during the nesting period to prevent flooding nests.

Accomplishment:

- Water levels have been raised to high annual levels between February 15 and May 31 each year to maximize flooding in shoreline areas for Canada goose nesting and other breeding waterfowl.

Objective: Provide and maintain good quality upland nesting habitat adjacent to wetlands. Reseed upland duck nesting habitat when necessary.

Accomplishment:

- Grassland nesting habitat on the MLWMA has been maintained. Noxious weed occurrence has been controlled through an annual integrated noxious weed program.

Objective: Maintain 125 goose nesting structures and monitor nesting Canada geese through an annual nest census.

Accomplishment:

- Most goose boxes have been maintained although some boxes have deteriorated or cannot be found and were not replaced. There are currently approximately 60 goose nest boxes. Nest monitoring is conducted mid-April each year. Each year, the majority of the nest boxes are used and approximately 5-15 natural nests are observed. The number of natural nest observed indicates that natural nesting habitat is plentiful.

Objective: Maintain 45 wood duck nest boxes and inspect them for nesting success.

Accomplishment:

- Wood duck nest boxes have been maintained and nest monitoring is conducted each year in August after the nesting period. Nest monitoring entails checking the boxes and counting the number of hatched, predated, or non-hatched eggs for each cavity-nesting waterfowl species. The majority of nest boxes are used each year by wood ducks, common golden-eye, and hooded mergansers.

Objective: Maintain approximately 25 acres of goose pasture to provide secure feeding areas for breeding geese and their broods. Reseed grass/legumes pastures when necessary.

Accomplishment:

- Approximately 25 acres of goose pasture has been maintained each year through mowing from April to mid-July. Canada geese and broods are observed in the pastures on a regular basis each year. Grass and legume composition has remained at ideal levels throughout the years.

Objective: Continue annual noxious weed control program.

Accomplishment:

- An integrated noxious weed program is implemented each year, incorporating chemical, mechanical, and biological control methods when appropriate. Weed infestations are monitored and mapped, treated, and control efforts tracked over time. New infestations receive high priority to prevent establishment.

Objective: Prohibit fishing from boats from March 15 to June 30 to prevent disturbance of breeding geese and their broods.

Accomplishment:

- The spring boat restrictions on McArthur Lake have been administered each year until 2011 when the restrictions were removed. The regulations were originally established to protect Canada goose nesting when Canada goose numbers across the country were extremely low. Since Canada geese have recovered over the decades, it was felt that the boat restrictions were not as imperative as they once were. Considering the low level of boat use on McArthur Lake, the restrictions were lifted to allow quality bass fishing before the aquatic vegetation becomes very heavy.

Goal: Provide wildlife-related recreation, particularly public hunting, fishing, and wildlife observation.

Objective: Maintain access site facilities – parking area, outdoor restroom, fishing docks, and boat ramp.

Accomplishment:

- Access sites have been maintained throughout the years. Signs, fences, and gates have been maintained, parking areas have been mowed and treated for shrub and weed control. A new boat dock was installed in 2011 and maintenance was completed on the boat ramp in 2012.

Objective: Randomly monitor hunters and anglers for regulation compliance and hunting/fishing success.

Accomplishment:

- Hunters and anglers on the MLWMA are contacted and licenses checked. Wildlife Management Area staff inquire about hunting and fishing success and any topics/issues the public may have. A formal Public Use Survey was conducted on MLWMA in 2006-2008 and is reported in McArthur Lake Wildlife Management Area 2006-2008 Public Use Survey (IDFG 2008).

Goal: Enhance and manage wetland and upland habitats for a variety of nongame wildlife species.

Objective: Maintain secure nesting conditions for bald eagles and ospreys.

Accomplishment:

- There is one bald eagle nest on MLWMA and an osprey nest occurs approximately ¼ mi from the WMA boundary. A buffer around these nests is protected from disturbance and management activities. Large diameter trees and snags have been retained and protected for potential nest/perch sites. During power-line company right-of-way clearance maintenance, large trees posing a threat to the power line are topped off rather than completely removed to retain a snag when possible.

Objective: Monitor bald eagle nesting success.

Accomplishment:

- Bald eagle nest monitoring has been conducted under the guidance of the Panhandle Nongame Biologist as part of a state-wide monitoring program. The bald eagle nest on MLWMA has been monitored since 1988 for every year up until 2010, at which point surveys will be completed every five years. Known nest sites are visited by ground during the pre/egg-laying (3/1-3/15), incubation (3/15-5/1), nesting (5/1-6/20), and fledgling (6/20-7/20) periods and information on eagle activity and nest success is reported to the Panhandle Nongame Biologist.

Objective: Allow a gradual, partial drawdown of the reservoir in late summer to produce and concentrate invertebrates used by migrating shorebirds as a food source.

Accomplishment:

- Water levels of the lake are managed to mimic the natural hydrograph for wetlands in the area of high spring water levels until June, with receding levels throughout the summer, and increasing levels in the winter from rain and snow events. Normal year water level

management consists of seven boards in the dam from February 15 to May 31 to create high spring water levels and flooded vegetation for waterfowl nesting habitat. One board (6 inches) is removed in June and another in July to create gradual summer water level recession and concentrate food items at the soil/water interface for duck broods. In mid-September, one board is replaced and another in mid-February to gradually increase water levels through the fall and winter for migrating waterfowl and to lead to high spring levels the following spring.

Objective: Conduct timber harvest activities to maintain or improve wildlife habitat.

Accomplishment:

- It is unclear what past forest management activities have occurred on MLWMA. Private forest grounds adjacent to the WMA on the west side of the lake were logged in 2010, creating forest openings at landings and light stocked stands. An assessment of the forest type, condition, and trend of the forests on the WMA is needed to assist in developing future forest management plans to accomplish wildlife habitat goals.

Goal: Provide habitat for migrating waterfowl.

Objective: Fill the reservoir each spring to maximize the flooded area.

Accomplishment:

- Water levels are raised to high spring level from February through May 31 to maximize the flooded area for spring migrating waterfowl and nesting waterfowl.

Objective: Allow a gradual, partial drawdown of the reservoir in late summer and early fall to produce and concentrate invertebrates for a food source, and provide duck loafing areas.

Accomplishment:

- Water levels are lowered six inches in June and six inches in July to initiate the gradual summer recession of water levels to concentrate food sources at the soil/water interface and provide loafing areas for waterfowl.

Objective: Monitor MLWMA for waterfowl disease outbreaks.

Accomplishment:

- Avian influenza sampling has been conducted on MLWMA through coordination and financing from the USFWS until 2012 when funding was terminated.

Goal: Provide habitat for white-tailed deer, moose, black bear, and elk.

Objective: Include plant species palatable to big game in mixtures for reseeding upland duck nesting habitat.

Accomplishment:

- Grassland seedings have included species palatable to big game.

Objective: Limit motorized access to minimize big game disturbance or displacement.

Accomplishment:

- Motorized access on MLWMA is limited to public roads and parking areas. All trail access is non-motorized access.

Objective: Continue annual noxious weed control program.

Accomplishment:

- An integrated noxious weed program is implemented each year, incorporating chemical, mechanical, and biological control methods when appropriate. Weed infestations are monitored and mapped, treated, and control efforts tracked over time. New infestations receive high priority to prevent establishment.

Objective: Conduct timber harvest activities to maintain or improve wildlife habitat.

Accomplishment:

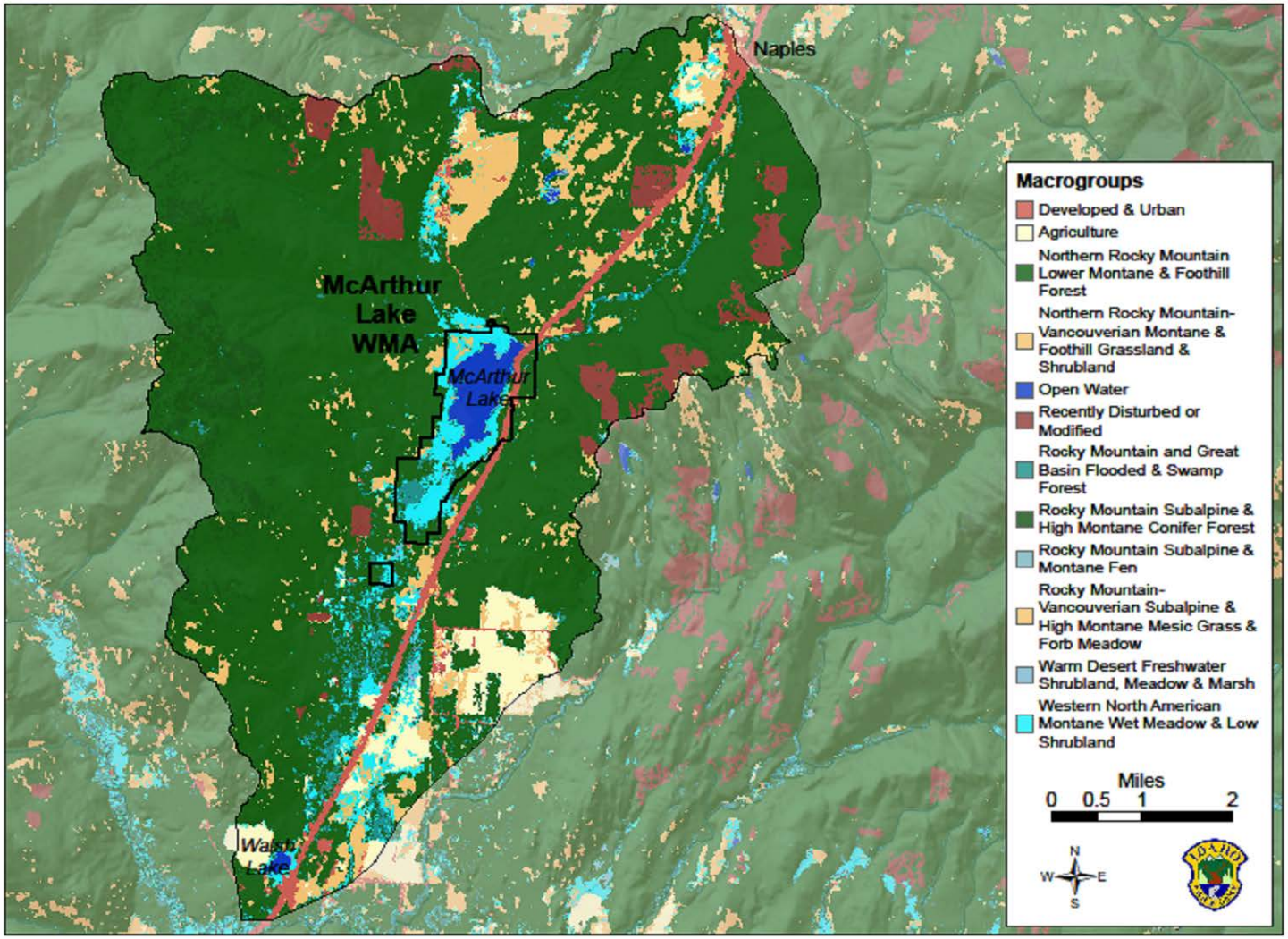
- It is unclear what past forest management activities have occurred on MLWMA. Private forest grounds adjacent to the WMA on the west side of the lake were logged in 2010, creating forest openings at landings and light stocked stands. An assessment of the forest type, condition, and trend of the forests on the WMA is needed to assist in developing future forest management plans to accomplish wildlife habitat goals.

V. VEGETATION

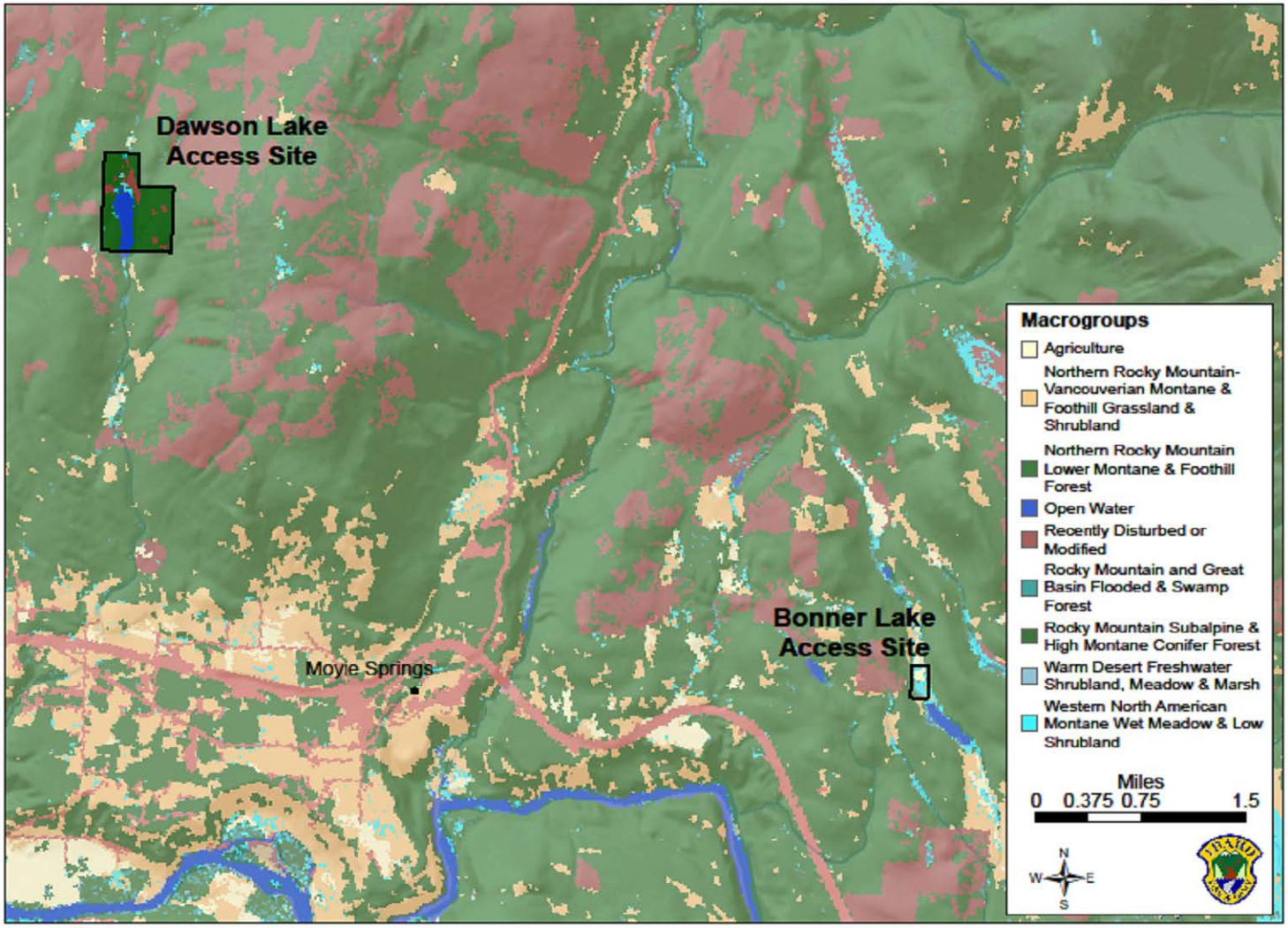
Area of various vegetation types for McArthur Lake WMA, access sites, and surrounding area of influence. Data is from Northwest Regional Gap Analysis Program which delineates vegetation communities from satellite imagery and is not ground-truthed.

Formation	Macrogroup	Ecological System	Bonner Lake Access Site	Dawson Lake Access Site	Freeman Lake Access Site	McArthur Lake WMA	MLWMA Area of Influence
Agriculture	Agriculture	Cultivated Cropland					591.79
		Pasture/Hay	3.78				528.41
Cool Temperate Forest	Northern Rocky Mountain Lower Montane & Foothill Forest	Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest	0.67	53.60	18.24	58.49	8,323.56
		Northern Rocky Mountain Mesic Montane Mixed Conifer Forest	2.89	87.40	47.37	208.38	10,426.74
		Northern Rocky Mountain Ponderosa Pine Woodland and Savanna	0.67	1.78	1.33	31.36	2,337.14
	Rocky Mountain Subalpine & High Montane Conifer Forest	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland		1.56			87.62
		Rocky Mountain Aspen Forest and Woodland					9.56
		Rocky Mountain Lodgepole Pine Forest					855.77
		Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland		1.11			181.47
		Rocky Mountain Subalpine Mesic Spruce-Fir Forest and Woodland		1.78			269.10
Developed & Urban	Developed & Urban	Developed, High Intensity					4.00
		Developed, Low Intensity				20.24	452.57
		Developed, Medium Intensity				0.44	49.82
		Developed, Open Space				42.25	390.30
Recently Disturbed or Modified	Recently Disturbed or Modified	Harvested Forest - Grass/Forb Regeneration		3.78			267.54
		Harvested Forest - Northwestern Conifer Regeneration		11.79			776.16

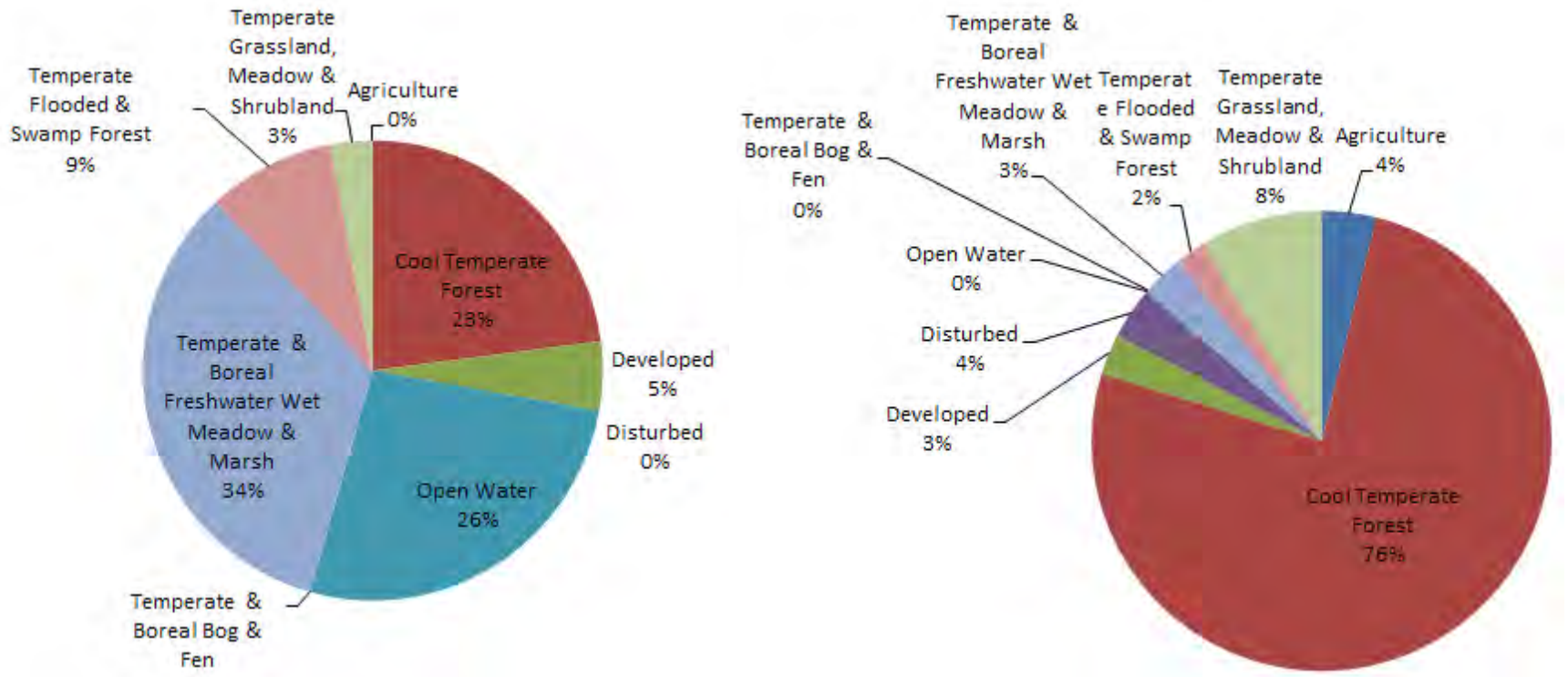
Formation	Macrogroup	Ecological System	Bonner Lake Access Site	Dawson Lake Access Site	Freeman Lake Access Site	McArthur Lake WMA	MLWMA Area of Influence
		Harvested Forest-Shrub Regeneration		1.11			12.68
Open Water	Open Water	Open Water (Fresh)		30.69	19.57	345.60	389.64
Temperate & Boreal Bog & Fen	Rocky Mountain Subalpine & Montane Fen	Rocky Mountain Subalpine-Montane Fen			6.67		9.79
Temperate & Boreal Freshwater Wet Meadow & Marsh	Warm Desert Freshwater Shrubland, Meadow & Marsh	North American Arid West Emergent Marsh	0.44	2.00	0.89	11.34	56.71
	Western North American Montane Wet Meadow & Low Shrubland	Rocky Mountain Alpine-Montane Wet Meadow	6.67	1.78	1.33	426.55	1,229.62
Temperate Flooded & Swamp Forest	Rocky Mountain and Great Basin Flooded & Swamp Forest	Northern Rocky Mountain Conifer Swamp				0.67	43.59
		Northern Rocky Mountain Lower Montane Riparian Woodland and Shrubland	3.78	2.67	2.22	115.42	689.87
Temperate Grassland, Meadow & Shrubland	Northern Rocky Mountain-Vancouverian Montane & Foothill Grassland & Shrubland	Northern Rocky Mountain Lower Montane, Foothill and Valley Grassland	0.89		0.89	28.69	2,093.62
		Northern Rocky Mountain Montane-Foothill Deciduous Shrubland				3.11	263.98
		Northern Rocky Mountain Subalpine Deciduous Shrubland					60.94
		Northern Rocky Mountain Subalpine-Upper Montane Grassland					31.58
	Rocky Mountain-Vancouverian Subalpine & High Montane Mesic Grass & Forb Meadow	Rocky Mountain Subalpine-Montane Mesic Meadow			0.22	6.67	104.53
Total Acres			19.79	201.04	98.74	1,299.23	30,538.10



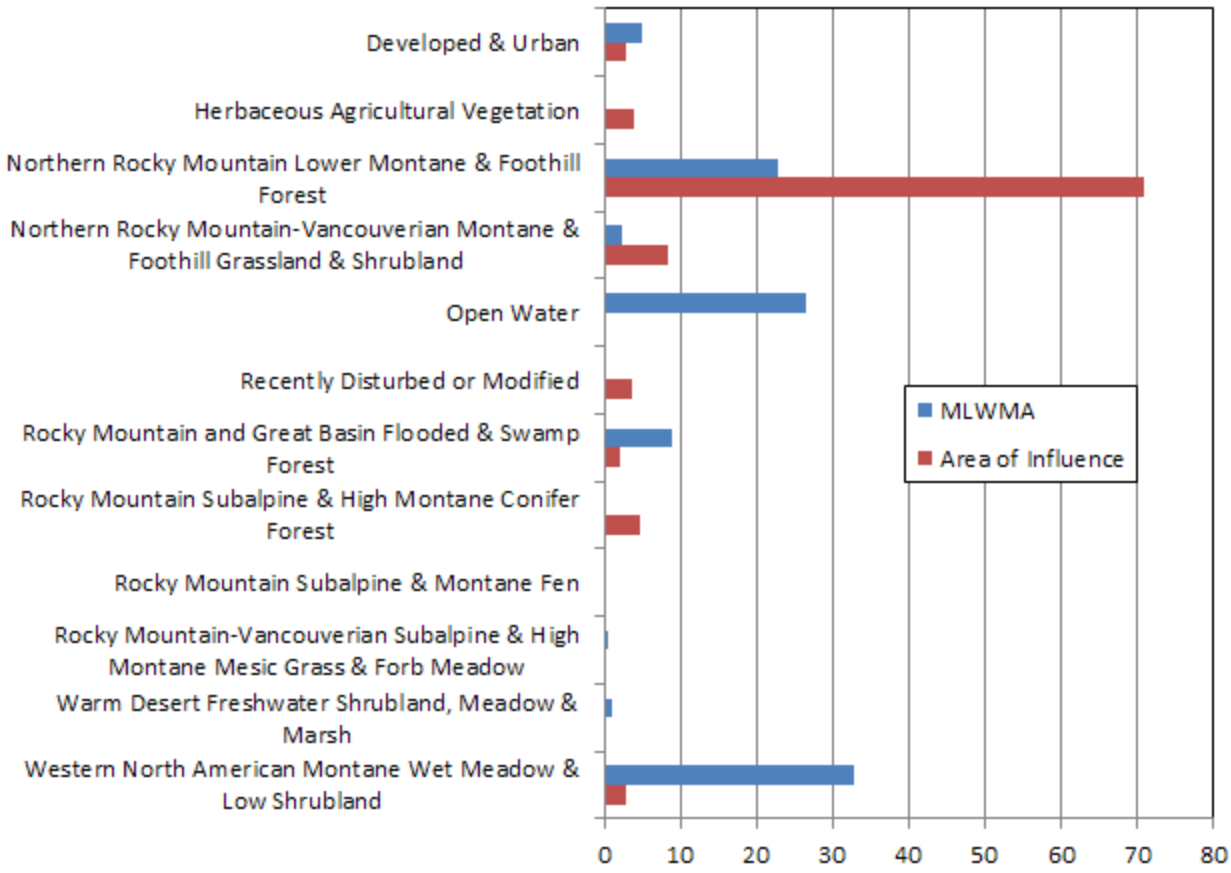
Re-gap vegetation analysis macro group map for McArthur Lake WMA.



Re-gap vegetation analysis macro group map for McArthur Lake WMA outlying parcels.



Distribution of Formation level vegetation types in McArthur Lake WMA (left) as compared to the surrounding Area of Influence (right).



Percent of Macrogroup level vegetation types in McArthur Lake WMA as compared to the surrounding Area of Influence.

Plant Species List

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

Common Name	Scientific Name	Common Name	Scientific Name
Forbs		***Trees***	
Pearly-everlasting	*Anaphalis margaritacea*	Grand Fir	*Abies grandis*
Spreading Dogbane	*Apocynum androsaemifolium*	Paper birch	*Betula papyrifera*
Wild sarsaparilla	*Aralia nudicaulis*	Western Larch	*Larix occidentalis*
Wild Ginger	*Asarum caudatum*	Lodgepole Pine	*Pinus contorta*
Prince's Pine	*Chimaphila umbellata*	Western White Pine	*Pinus monticola*
Western Goldthread	*Coptis occidentalis*	Ponderosa Pine	*Pinus ponderosa*
Bunchberry	*Cornus canadensis*	Black cottonwood	*Populus balsamifera* ssp. *trichocarpa*
Willow-weed	*Epilobium* spp.	Douglas-fir	*Pseudotsuga menziesii*
Field horsetail	*Equisetum arvense*	Western Redcedar	*Thuja plicata*
Woods Strawberry	*Fragaria vesca*	Western Hemlock	*Tsuga heterophylla*
Northern Bedstraw	*Galium triflorum*	***Shrubs***	
Orange Hawkweed	*Hieracium aurantiacum*	Rocky Mountain Maple	*Acer glabrum*
Slender Hawkweed	*Hieracium gracile*	Western Serviceberry	*Amelanchier alnifolia*
Common St. John's Wort	*Hypericum perforatum*	Kinnikinnick	*Arctostaphylos uva-ursi*
Prickly Lettuce	*Lactuca serriola*	Creeping Oregon Grape	*Berberis repens*
Oxeye Daisy	*Leucanthemum vulgare*	Black Hawthorn	*Crataegus douglasii*
False Solomon's Seal	*Maianthemum racemosum*	Ocean-spray	*Holodiscus discolor*
Starry Solomon's Seal	*Maianthemum stellatum*	Twinflower	*Linnaea borealis*
Arrow-leaved Coltsfoot	*Petasites sagittatus*	Nootka Rose	*Rosa nutkana*
Pinedrops	*Pterospora andromedea*	Western Thimbleberry	*Rubus parviflorus*
Climbing nightshade	*Solanum dulcamara*	White spiraea	*Spiraea betulifolia*
Yellow Salsify	*Tragopogon dubius*	Common Snowberry	*Symphoricarpos albus*
White Trillium	*Trillium ovatum*		
Mullein	*Verbascum thapsus*		

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Grasses		***Ferns***	
Redtop	*Agrostis stolonifera*	Oak-fern	*Gymnocarpium dryopteris*
Mana grasses	*Glyceria spp.*	Bracken Fern	*Pteridium aquilinum*
Reed Canarygrass	*Phalaris arundinacea*		

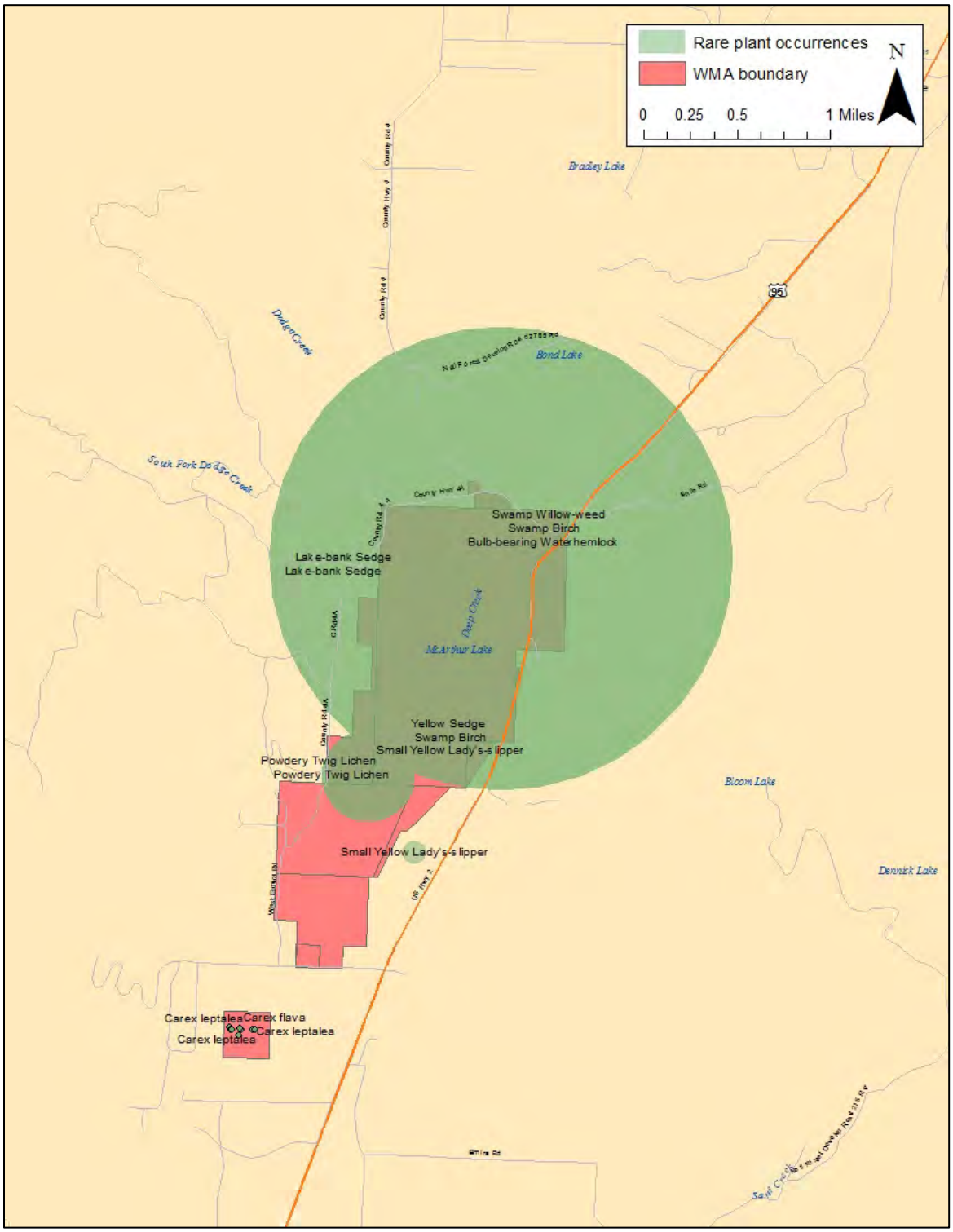
Rare Plants of McArthur Lake WMA

Eleven rare plant species have been found within the boundary of MLWMA, and 75 have been found within 25 miles of the boundary. It is unknown if MLWMA has been thoroughly surveyed for rare plants. Species found within the 25-mile buffer, or other species, have the potential to exist on the WMA.

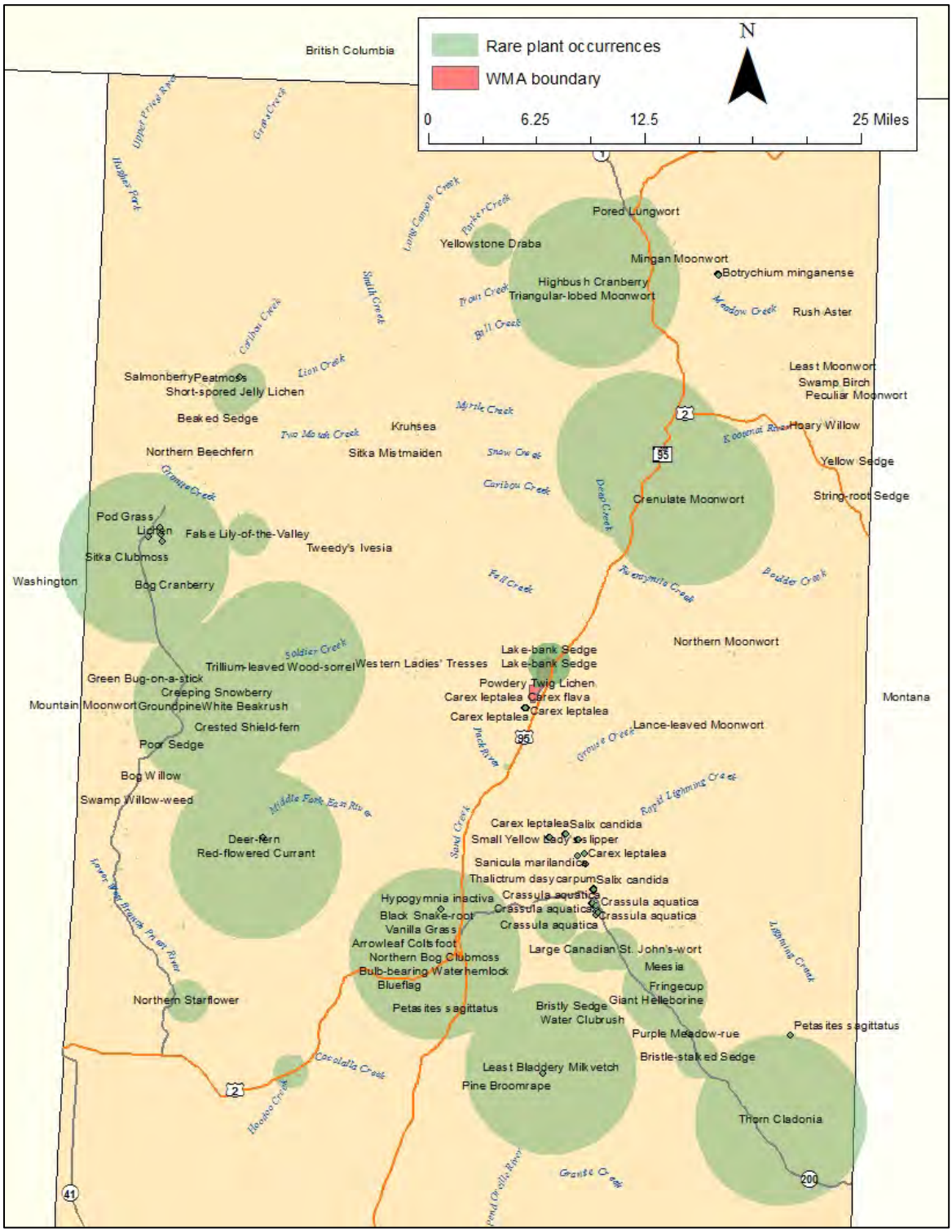
Rare plant species within 25 miles of the McArthur Lake WMA. Bold species occur within WMA boundaries.

Common Name	Scientific Name
Bog-rosemary	*Andromeda polifolia*
Least Bladdery Milkvetch	*Astragalus microcystis*
Swamp Birch	***Betula pumila***
Deer-fern	*Blechnum spicant*
Triangular-lobed Moonwort	*Botrychium ascendens*
Crenulate Moonwort	*Botrychium crenulatum*
Triangle Grape-fern	*Botrychium lanceolatum*
Lance-leaved Moonwort	*Botrychium lanceolatum* var. *lanceolatum*
Mingan Moonwort	*Botrychium minganense*
Mountain Moonwort	*Botrychium montanum*
Peculiar Moonwort	*Botrychium paradoxum*
Northern Moonwort	*Botrychium pinnatum*
Least Moonwort	*Botrychium simplex*
Lichen	*Buellia chloroleuca*
Green Bug-on-a-stick	*Buxbaumia viridis*
String-root Sedge	*Carex chordorrhiza*
Bristly Sedge	*Carex comosa*
Yellow Sedge	***Carex flava***
Lake-bank Sedge	***Carex lacustris***
Bristle-stalked Sedge	***Carex leptalea***
Pale Sedge	*Carex livida*
Poor Sedge	*Carex magellanica ssp. irrigua*
Beaked Sedge	*Carex rostrata*
Bulb-bearing Waterhemlock	***Cicuta bulbifera***
Thorn Cladonia	*Cladonia uncialis*
Short-spored Jelly Lichen	*Collema curtisporum*
Water Pygmyweed	*Crassula aquatica*
Small Yellow Lady's-slipper	***Cypripedium parviflorum* var. *pubescens***
Yellowstone Draba	*Draba incerta*
Crested Shield-fern	*Dryopteris cristata*
Swamp Willow-weed	***Epilobium palustre***
Giant Helleborine	*Epipactis gigantea*
Green Keeled Cotton-grass	***Eriophorum viridicarinatum***
Creeping Snowberry	*Gaultheria hispidula*
Vanilla Grass	*Hierochloe odorata*

Common Name	Scientific Name
Large Canadian St. John's Wort	*Hypericum majus*
Inactive Tube Lichen	*Hypogymnia inactiva*
Blueflag	*Iris versicolor*
Tweedy's Ivesia	*Ivesia tweedyi*
Pored Lungwort	*Lobaria scrobiculata*
Northern Bog Clubmoss	*Lycopodiella inundata*
Groundpine	*Lycopodium dendroideum*
Sitka Clubmoss	*Lycopodium sitchense*
False Lily-of-the-Valley	*Maianthemum dilatatum*
Meesia	*Meesia longiseta*
Pine Broomrape	*Orobanche pinorum*
Trillium-leaved Wood-sorrel	*Oxalis trilliifolia*
Arrowleaf Coltsfoot	***Petasites sagittatus***
Northern Beechfern	*Phegopteris connectilis*
Braun's Sword-fern	*Polystichum braunii*
Pseudocyphellaria Lichen	*Pseudocyphellaria anomala*
Powdery Twig Lichen	***Ramalina pollinaria***
White Beakrush	*Rhynchospora alba*
Red-flowered Currant	*Ribes sanguineum*
Sitka Mistmaiden	*Romanzoffia sitchensis*
Salmonberry	*Rubus spectabilis*
Hoary Willow	*Salix candida*
Bog Willow	*Salix pedicellaris*
Black Snake-root	***Sanicula marilandica***
Pod Grass	*Scheuchzeria palustris*
Water Clubrush	*Schoenoplectus subterminalis*
Peatmoss	*Sphagnum mendocinum*
Western Ladies' Tresses	*Spiranthes porrifolia*
Kruhsea	*Streptopus streptopoides*
Rush Aster	*Symphyotrichum boreale*
Fringecup	*Tellima grandiflora*
Purple Meadow-rue	*Thalictrum dasycarpum*
Short-style Tofieldia	*Triantha occidentalis ssp. brevistyla*
Northern Starflower	*Trientalis europaea* ssp. *arctica*
Western Starflower	*Trientalis latifolia*
Lichen	*Tuckermannopsis sepincola*
Large-spored Ulota	*Ulota megalospora*
Bog Cranberry	*Vaccinium oxycoccos*
Highbush Cranberry	*Viburnum opulus var. americanum*
Lichen	*Xylographa trunciseda*



Rare plant locations and distribution maps for McArthur Lake WMA. Size of point locations reflect the accuracy level of the location data.



Rare plant locations and distribution maps for the landscape area around McArthur Lake WMA. Size of point locations reflect the accuracy level of the location data.

VI. WILDLIFE AND FISH SPECIES LIST

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

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Birds		***Birds (cont.)***	
Sharp-shinned hawk	*Accipiter striatus*	Brown creeper	*Certhia americana*
Spotted sandpiper	*Actitis macularia*	Killdeer	*Charadrius vociferus*
Western grebe	*Aechmophorus occidentalis*	Northern harrier	*Circus cyaneus*
Red-winged blackbird	*Agelaius phoeniceus*	Northern flicker	*Colaptes auratus*
Wood duck	*Aix sponsa*	Western wood-pewee	*Contopus sordidulus*
Northern pintail	*Anas acuta*	Common raven	*Corvus corax*
American widgeon	*Anas americana*	Pileated woodpecker	*Dryocopus pileatus*
Green-winged teal	*Anas carolinensis*	Gray catbird	*Dumetella carolinensis*
Northern shoveler	*Anas clypeata*	Willow flycatcher	*Empidonax traillii*
Cinnamon teal	*Anas cyanoptera*	Kestrel	*Falco sparverius*
Blue-winged teal	*Anas discors*	American coot	*Fulica americana*
Mallard	*Anas platyrhynchos*	Common snipe	*Gallinago gallinago*
Gadwall	*Anas strepera*	Common yellowthroat	*Geothlypis trichas*
Redhead	*Aythya americana*	Northern pygmy-owl	*Glaucidium gnoma*
Ring-necked duck	*Aythya collaris*	Bald eagle	*Haliaeetus leucocephalus*
Canvasback	*Aythya valisineria*	Barn swallow	*Hirundo rustica*
Cedar waxwing	*Bombycilla cedrorum*	Bullock's oriole	*Icterus bullockii*
Bohemian waxwing	*Bombycilla garrulous*	Varied thrush	*Ixoreus naevius*
Ruffed grouse	*Bonasa umbellus*	Dark-eyed junco	*Junco hyemalis*
Canada goose	*Branta canadensis*	Hooded merganser	*Lophodytes cucullatus*
Great-horned owl	*Bubo virginianus*	Belted kingfisher	*Megaceryle alcyon*
Bufflehead	*Bucephala albeola*	Turkey	*Meleagris gallopavo*
Common goldeneye	*Bucephala clangula*	Song sparrow	*Melospiza melodia*
Barrow's goldeneye	*Bucephala islandica*	Common merganser	*Mergus merganser*
Red-tailed hawk	*Buteo jamaicensis*	Ruddy duck	*Oxyura jamaicensis*

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Birds (cont.)		***Mammals***	
Osprey	*Pandion haliaetus*	Moose	*Alces alces*
American white pelican	*Pelecanus erythrorhynchos*	Coyote	*Canis latrans*
Black-headed grosbeak	*Pheucticus melanocephalus*	North American beaver	Castor canadensis
Black-billed magpie	*Pica hudsonia*	Elk	*Cervus canadensis*
Downy woodpecker	*Picoides pubescens*	Red-backed vole	*Clethrionomys gapperi*
Hairy woodpecker	*Picoides villosus*	Big brown bat	*Eptesicus fuscus*
Spotted towhee	*Pipilo maculatus*	Northern flying squirrel	*Glaucomys sabrinus*
Western tanager	*Piranga ludoviciana*	Snowshoe hare	*Lepus americanus*
Red-necked grebe	*Podiceps grisegena*	River otter	*Lontra canadensis*
Pied-billed grebe	*Podilymbus podiceps*	Bobcat	*Lynx rufus*
Black-capped chickadee	*Poecile atricapillus*	Striped skunk	*Mephitis mephitis*
Sora	*Porzana carolina*	Meadow vole	*Microtus pennsylvanicus*
Virginia rail	*Rallus limicola*	Ermine	*Mustela erminea*
Ruby-crowned kinglet	*Regulus calendula*	Long-tailed weasel	*Mustela frenata*
Golden-crowned kinglet	*Regulus satrapa*	Mink	*Mustela vison*
Yellow-rumped warbler	*Setophaga coronata*	Bushy-tailed woodrat	*Neotoma cinerea*
Yellow warbler	*Setophaga petechia*	White-tailed deer	*Odocoileus virginianus*
American redstart	*Setophaga ruticilla*	Muskrat	*Ondatra zibethicus*
Red-breasted nuthatch	*Sitta canadensis*	Deer mouse	*Peromyscus maniculatus*
White-breasted nuthatch	*Sitta carolinensis*	Raccoon	*Procyon lotor*
Pine siskin	*Spinus pinus*	Masked shrew	*Sorex cinereus*
American goldfinch	*Spinus tristis*	Red squirrel	*Tamiasciurus hudsonicus*
Chipping sparrow	*Spizella passerina*	Black bear	*Ursus americanus*
Tree swallow	*Tachycineta bicolor*	***Fish***	
Violet-green swallow	*Tachycineta thalassina*	Brown bullhead	*Ameiurus nebulosus*
House wren	*Troglodytes aedon*	Pumpkinseed	*Lepomis gibbosus*
American robin	*Turdus migratorius*	Bluegill	*Lepomis macrochirus*
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	Largemouth bass	*Micropterus salmoides*
Mourning dove	*Zenaida macroura*	Rainbow trout	*Oncorhynchus mykiss*

Common Name	Scientific Name	Common Name	Scientific Name
Fish (cont.)		***Amphibians and Reptiles***	
Yellow perch	*Perca flavescens*	Western toad	*Anaxyrus boreas*
Black crappie	*Pomoxis nigromaculatus*	Painted turtle	*Chrysemys picta*
Brook trout	*Salvelinus fontinalis*	Western skink	*Eumeces skiltonianus*
Tench	*Tinca tinca*	Pacific tree frog	*Pseudacris regilla*
		Columbia spotted frog	*Rana luteiventris*
		Common garter snake	*Thamnophis sirtalis*

VII. LAND ACQUISITIONS AND AGREEMENTS

Land Acquisitions			
Year	**Funds Used**	**Acres**	**Acquired From**
Boundary County			
1942	Pitman-Robertson	769.41	Seattle First National Bank
1964	Department	12.12	Pat H. McCurdy
1964	Department	58.34	Jim D. White
1964	Exchange	21.00	Joslyn Mfg. and Supply Company
1968	Pitman-Robertson	9.20	Doyle W. Duston
1971	Department	9.40	Frank Kerns, Jr.
Bonner County			
1964	Pitman-Robertson	197.43	Roberts J. Minnich
1974	Department	130.00	Brooks G. Tessier

Flowage Easements			
Year	**Funds Used**	**Acres**	**Acquired From**
Boundary County			
1969	Department	5.37	Forrest M. Keister
1971	Department	1.60	Frank Kerns, Jr.
1972	Pitman-Robertson	7.00	Retained from Duston
Bonner County			
1964	None	23.13	Robert J. Minnich

Road Easements			
Year	**Funds Used**	**Acres**	**Acquired From**
Boundary County			
1996	Exchange	unknown	David Mendendall

Water Rights			
Water Right No.	**Priority Date**	**Amount**	**Purpose**
98-2140	11/3/45	10.0 cfs	Propagation of migratory waterfowl and fish.
98-2141	12/7/65	10.0 cfs	Storage, maintenance and replenishment of reservoir for fish and wildlife propagation and recreation.
98-2142	11/3/45	720 ac-ft.	Propagation of migratory waterfowl and fish.
98-2143	12/7/65	5,200 ac-ft.	Storage for propagation of fish and wildlife and recreation.

VIII. INFRASTRUCTURE

Building/structures
Residence House
4 Storage Sheds
Gas storage shed
CXT style Toilet
Boat ramp and dock
Fishing dock
6 Gates

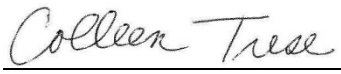
Earth structures
Dam, dike, and fish ladder
4 Parking Areas

MCARTHUR LAKE

WILDLIFE MANAGEMENT AREA PLAN

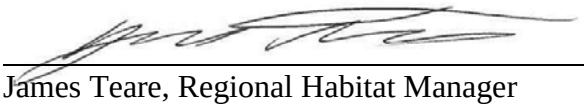
Approval

Submitted by:



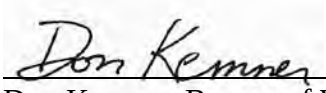
Colleen Trese, Habitat Biologist

Reviewed by:

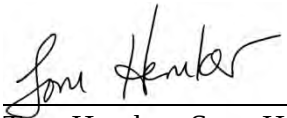


James Teare, Regional Habitat Manager

Chip Corsi, Regional Supervisor

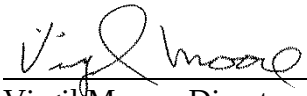


Don Kemner, Bureau of Wildlife



Tom Hemker, State Habitat Manager

Approved by:



Virgil Moore, Director