

## **Executive Summary**

The Malheur National Wildlife Refuge (Refuge) is located in southeastern Oregon's high desert, at the northern end of the Great Basin. It is adjacent to the Steens Mountain, from which the Wild and Scenic Donner and Blitzen River flows into the Refuge's southern boundary. The Refuge is famous for its spectacular concentrations of wildlife which are attracted to the Refuge's habitats and abundant water resources in an otherwise arid landscape. With more than 320 bird species, and 58 mammal species, Malheur is a mecca for birdwatchers and wildlife enthusiasts.

The Refuge was established in 1908 to protect migratory waterfowl, with an emphasis on colonial nesting species. We, the U.S. Fish and Wildlife Service (Service), manage the Refuge as part of the National Wildlife Refuge System (Refuge System). We are required by the National Wildlife Refuge System Administration Act of 1966 as amended, to manage each unit of the Refuge System in accordance with a comprehensive conservation plan that is developed in a public process with public input considered at key points in the process. This is a summary of the Malheur National Wildlife Refuge Final Comprehensive Conservation Plan (CCP); more background information is provided in Chapter 1.

We evaluated and compared three alternatives for conserving the Refuge's fish, wildlife, and plant resources through population monitoring, habitat management and restoration, and invasive species control, in Chapter 2 of the Final CCP/EIS. Providing the Refuge System's priority public uses—wildlife observation and photography, hunting, fishing, environmental education, and interpretation, in a manner that is compatible with the Refuge's conservation purpose, were also evaluated. The alternatives were the result of a collaborative public planning process initiated in 2008. Hundreds of individuals, nonprofit organizations, State and local agencies, and tribal governments shared ideas, concerns, and information during our process. Alternative 1, the no action alternative, described our current Refuge management activities. In Alternatives 2 and 3 we described management actions that would further improve Refuge conditions. We identified Alternative 2 as our management direction.

The Refuge's physical, biological, and human environments are described in detail in Chapters 3, 4, and 5. A collection of maps follows Chapter 5, and a number of appendices follow the maps, including appropriateness findings and compatibility determinations for public uses in Appendices A and B.

After the Final CCP/EIS was available to the public for 30 days, a Record of Decision was signed by the Service's Regional Director in Portland, Oregon, selecting a management direction for implementation on the Refuge. The CCP will guide management of Malheur Refuge for 15 years.

### **Refuge Information and Background**

In the late 1880s, plume hunters were decimating North American bird populations in pursuit of breeding bird feathers highly valued by the hat industry. Hunters targeted colonial nesting birds and shorebirds, killing birds indiscriminately and orphaning chicks. When plume hunters discovered the large flocks of colonial nesting birds on Malheur Lake in 1898, the area's white heron (egret) population was nearly wiped out. Ten years later, wildlife photographers William L. Finley and Herman T. Bohlman toured Malheur Lake and determined that nearly all of the egrets had been killed and the egret population had not recovered.

With backing from the Oregon Audubon Society, Finley and Bohlman proposed establishment of a bird reservation to protect birds using Malheur, Mud, and Harney lakes. Government lands identified as the Lake Malheur Reservation were set aside on August 18, 1908, by President Theodore Roosevelt, through Executive Order No. 929 “*as a preserve and breeding ground for native birds.*” A letter from the Secretary of the Interior dated August 12, 1908, to the President stated that the purpose and intent was “to preserve the habitat values of the three lakes (Malheur, Mud and Harney Lakes) for migratory waterfowl, and especially, the colonial nesting species.”

The Refuge now encompasses 187,757 acres that are a small part of the northern Great Basin. The Refuge is disproportionately important as a stop along the Pacific Flyway, and as a resting, breeding and nesting area for hundreds of thousands of migratory birds and other wildlife. Many of the species migrating through or breeding here are highlighted as priority species in national bird conservation plans. Historical bird counts show that Malheur Refuge and the adjoining Silvies River floodplain to the north may support between 50 percent and 66 percent of the Pacific Flyway’s migrating bird populations for various priority waterfowl.

The Refuge’s breeding habitat is also significant for waterbirds; it currently supports more than 20 percent of Oregon’s population of breeding greater sandhill cranes. Most colonial waterbird numbers have easily exceeded 10 percent of the regional population at its peak, and numbers for certain species have reached up to 77 percent of the populations located within the Great Basin. Numbers of migrating shorebirds have been documented at levels high enough to qualify the Refuge as a Regional Western Hemispheric Shorebird Reserve. The Refuge also supports high densities of certain nesting riparian passerines and the largest local population of bobolinks in the western U.S.

The Refuge is well-loved by its visitors, many return year after year, compelled by the excellent birding, opportunities for solitude, intriguing historic remnants and geologic sites, and its proximity to Steens Mountain, an Oregon landmark. The Refuge has strong historic ties to local residents as an important contributor to local economies. Far-flung birding communities also feel a strong connection to the Refuge and the Audubon Society’s role in its initial establishment. Both local and distant communities will continue to play a large role in the Refuge’s future.

### **Refuge Purposes, Vision, and Management Goals**

The primary purposes for Malheur Refuge follow.

- “a refuge and breeding ground for migratory birds and other wild life...” Executive Order 7106, dated July 19, 1935, as modified by Public Land Order 1511, dated Sept. 24, 1957
- “for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. § 715d (Migratory Bird Conservation Act)
- “for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. § 742f(a)(4)
- “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude...” 16 U.S.C. § 742f(b)(1) (Fish and Wildlife Act of 1956)
- “conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans...” 16 U.S.C. § 668dd(a)(2) (National Wildlife Refuge System Administration Act)

The Service's vision for Malheur Refuge is stated as follows in the CCP.

*Together with our surrounding community, partners, friends, staff, and all those who cherish this unique place where desert and water meet...*

*Malheur National Wildlife Refuge commits to care for, conserve, and enhance the health of the Malheur Lake, Blitzen Valley, and Double-O units, including the playas, dunes, marshes, rivers, meadows, and ponds that are all part of this landscape.*

*We will observe nature and manage in harmony with ecological forces, while recognizing and maintaining the Refuge as a key anchor for migratory and breeding waterfowl, waterbirds, shorebirds, songbirds, and raptors.*

*We will work diligently to improve the health of the land and water, reducing the destructive impact of carp and other invasive species, addressing imbalances in floodplain function, and restoring the original abundance of fish and wildlife for which Malheur is famous.*

*We will celebrate and welcome our visitors, noting and protecting the features that draw people again and again—the expansive landscape, the plenitude and diversity of wildlife, and the signs of a timeless history.*

*We will allow and enhance opportunities to experience abundance, solitude, and renewal, for people birding, fishing, hunting, and learning on the Refuge. In respect to our ancestors and their fortitude, we will carefully preserve the legacies they left behind on this land.*

*Collaboration with our neighbors, partners, and friends will be a critical cornerstone in our day to day work; we recognize that nature crosses our boundaries and we can be successful only in partnership. We recognize that our activities are inextricably linked to the health of the local economy. We commit to environmental stewardship and sustainable management. We commit to learn from our efforts, successes, and failures; to be humble about what we know; and to continuously strive for greater understanding in our stewardship of this remarkable place*

The vision for the Refuge would be achieved by managing the Refuge to accomplish the following goals, as stated in the CCP.

Goal 1. Enhance aquatic health and habitat conditions essential to the conservation of the flora and fauna that depend on Malheur Lake and associated water bodies.

Goal 2. Protect, maintain, and rehabilitate riverine and riparian habitats to conditions essential for the conservation of native fish and wildlife species.

Goal 3. Protect, maintain, and rehabilitate riparian habitats to conditions essential for the conservation of wildlife species.

Goal 4. Enhance, protect, and/or maintain primary habitats essential to the conservation of a diversity of aquatic and terrestrial wildlife species.

Goal 5. Enhance and maintain rare and unique habitats.

Goal 6. Visitors will be welcomed and can safely experience the Refuge's outstanding features – diversity of wildlife, signs of earlier inhabitants, scenic landscapes, and solitude. As a result, visitors will leave the Refuge with a memorable experience that fosters a connection between themselves and nature, and an appreciation of Malheur's unique resources.

Goal 7. Connect the hearts and minds of visitors with places and resources the Refuge protects, and enlighten visitors' experiences with an understanding, appreciation, and knowledge about the historic and natural resources, and the importance of conservation and stewardship.

Goal 8. Provide reasonable challenges and opportunities, and provide uncrowded conditions for the hunting and fishing public.

Goal 9. Initiate and nurture relationships to build support of the Refuge, and fortify Refuge programs and activities to achieve the Refuge's purpose and goals.

Goal 10. Manage prehistoric and historic cultural resources for their educational, scientific, and cultural values for the benefit of present and future generations of Refuge users and for the communities that are connected to these resources.

Goal 11. Identify and protect prehistoric and historic resources on the Refuge that are eligible for or listed on the National Register of Historic Places.

Goal 12. Manage the Refuge's paleontological resources for their educational and scientific values for the benefit of present and future generations of Refuge users.

Goal 13. Gather scientific information (surveys, research, and assessments) to support adaptive management decisions.

Goal 14. Integrating our conservation-based mission with the best available science, the Refuge will become a leader in advancing best design and management practices for innovative, sustainable Refuge and community development opportunities.

### **Management Issues**

Through the collaborative development of the CCP we addressed several important Refuge management issues with input from State and tribal governments, other Federal agencies, and the public. The following major issues are analyzed and addressed in the CCP.

- The importance of the Refuge and Silvies River floodplain for migratory and breeding birds.
- Invasive species, including common carp and perennial pepperweed.
- Habitat and vegetation management.
- Riverine conditions: geomorphology, hydrology, fisheries, and riparian habitat.
- Water system infrastructure and water delivery.
- Preserving the legacy of human and paleontological history at Malheur.
- Visitor access, facilities, and information.
- Providing quality wildlife observation, photography, interpretation, and environmental education.
- Providing quality fishing and hunting opportunities.

- Wilderness preservation.
- Collaboration with all stakeholders.

### **Management Direction**

The management direction described in this CCP will restore the Refuge's degraded aquatic habitats that are being adversely impacted by invasive common carp and the spread of invasive nonnative weeds, and improve services, infrastructure, and access for visitors. It will best implement Service policies by removing invasive common carp from the Refuge; managing self-sustaining high-quality sport fishing opportunities; and designating roads and motorized vehicle routes for wildlife-dependent recreation that minimize adverse impacts to Refuge resources.

The Refuge is legally mandated to conserve and protect migratory birds to achieve its establishing purposes. Addressing aquatic health is key to meeting this obligation, and full attention will be given to its improvement under the management direction. The greatest obstacle to this effort is common carp, an introduced fish that negatively impacts water quality, and in turn impacts native fish, wildlife, and plants that depend on the Refuge's aquatic resources. Primary management emphasis will be placed on improving aquatic health, with staff time and budget largely directed to carp control. Partnerships and staff resources will also address visitor services and habitat management programs. We will develop a comprehensive riverine/wetland rehabilitation plan that will progress as staffing, funding, partnerships, and other resources become available.

*Lake and Wetland Habitats.* The management emphasis is to improve the aquatic health of the Refuge's lake and wetland habitats, to enhance the feeding, resting and nesting components necessary for a variety of shore/wading birds, waterfowl, and other wildlife species. This will be achieved largely through carp population control. As turbidity decreases and submergent vegetation and invertebrate species become more abundant, the productivity of Malheur Lake and other water bodies within the Refuge (e.g., Boca Lake and Warbler Pond) will improve.

Because of the sheer size and complexity of the Refuge's aquatic health problem, a variety of assessment and control tools will be implemented to effectively address it. Existing partners, such as the Aquatic Health Coalition (comprised of federal, state, NGO, and Tribal participants) will assist in identifying strategies and implementing effective methods of control, inventory, funding, and monitoring. We will customize and incorporate methods successfully implemented worldwide, to suit the Refuge.

Strategic assessments of aquatic habitats and carp population dynamics will guide control activities and provide enhanced understanding of the system's innate ability to recover from carp impacts. Control strategies will include, but not be limited to, the application of piscicide, chemo-attractants, chemo-repellants, barriers, commercial harvest, angling, and water manipulation. The need for continued amendments to and construction of additional strategically placed instream structures (i.e., traps, screens, and fish wheels) that allow native fish passage and impede/prohibit carp movement through the system, will also be considered.

*Riverine Habitat.* The Blitzen River and its tributaries provide habitat that fish and wildlife depend upon. Because a vast majority of Refuge-managed habitats are reliant on irrigation via a network of dams, canals, and ditches associated with the river, the connectivity between Malheur, Mud, and Harney Lakes, systems, and associated wetlands adds a level of complexity to carp control. Under the CCP, we will develop a comprehensive riverine/wetland rehabilitation plan to improve lake and

wetland aquatic health through carp control. We may also pursue water management efforts to reduce the river's water temperatures in the summer, by increasing the cold water barrier that keeps carp out of wetlands in the upper Blitzen Valley.

Refuge management under the CCP will emphasize carp control primarily, and strategic riverine assessment and rehabilitation. The management direction allows for flexibility in our progress, which depends on available resources, partnerships, and carp control success on the Refuge. We will gain a greater understanding of the impacts on adjacent floodplain habitats over a longer study period, which will enable us to gain site-specific knowledge of how riverine, wet meadow, and marsh communities respond to hydrologic system changes. We will also use a science-based process to determine existing biological conditions, site capability, and management decisions. We will work with the Ecology Work Group and other stakeholders to prioritize and refine objectives for creating a comprehensive riverine strategy. Our priority inventory and monitoring efforts will focus on building baseline data that could be used as part of our riverine rehabilitation activities and improve our understanding of adjacent habitats.

*Wetlands and Terrestrial Habitats.* We will continue to manage wetland and terrestrial habitats for the life history needs of focal resources (see Appendix E), with greater flexibility in identifying strategies to meet establishing objectives. Flexibility is critical for maintaining a variety of plant communities within emergent marsh, wet meadow, and dry meadow habitats, to meet foraging, breeding, brood rearing, and other life cycle needs of migratory birds and other native wildlife. For example, bobolinks and sandhill cranes both depend on wet meadows during the breeding season; however, their use of it and the conditions they require differ. To address the wide assortment of needs found within each habitat type, vegetation management tools to address litter accumulation and plant community succession will include traditional late summer haying and autumn/winter rake-bunch grazing to meet the foraging needs of early-arriving wildlife species, and highly prescriptive warm-season grazing, mowing, farming, burning, and extended dewatering, to reclaim acres lost to invasive plants such as common cattail and reed canarygrass, or to rehabilitate communities that have transitioned beyond desired conditions.

*Wildlife Viewing, Photography, and Interpretation.* The cornerstone of our public use program will be quality wildlife observation and photography opportunities. Management under the CCP will focus on expanding facilities and programs for visitors and birders. Both spur and loop trails a mile or longer will be added to allow visitors to explore and learn about the wildlife and Refuge, and several trails will be upgraded or developed to meet accessibility compliance standards. Viewing overlooks and elevated viewing platforms will be upgraded and/or developed. The historic Audubon photography blind will be restored at the Refuge Headquarters Display Pond, two permanent screened photography blinds will be built to comply with accessibility standards, and an elevated viewing platform will be developed at Malheur Lake. For advanced birders, the Refuge will maintain and replant cottonwood and other non-endemic trees and shrubs at six historic landscapes to continue to provide habitat for rare and incidental passerines.

Docent-led tours will be conducted seasonally at various Refuge locations, and will include opportunities for guided kayak and canoe tours on Malheur Lake. Expanded vehicle access will be available, with year-round vehicle access to Krumbo Reservoir, access provided along the Boat Landing Road near Refuge Headquarters, and from the southern portion of the East Canal Road north to the confluence of Bridge Creek. In addition, boating that is not directly supporting the fishing program will be available at Krumbo Reservoir to enhance wildlife viewing.

Interpretive features and programs are another high priority and key interpretive themes will include the significance of the Refuge to breeding and migratory birds, pre- and post-contact historic events, wilderness, geology, aquatic health, water importance, resource challenges, and the National Wildlife Refuge System. A stronger emphasis will be placed on developing and utilizing modern media. The George Benson Memorial Museum at Refuge Headquarters will be enhanced with interpretive panels, to connect visitors with the places and resources that the Refuge protects. Additional outdoor interpretive panels will be placed at key field sites and will focus on improving aquatic health and associated management activities, and the connection between historic events and the ecology of the Refuge. Special events and public presentations by Refuge staff and volunteers will be expanded and promoted to enlighten visitors' experiences.

*Welcome and Orientation.* Welcome and orientation features will improve under the management direction, with an emphasis on the use of modern and traditional media to reach and orient visitors. Up to eight outdoor panels will be located near Refuge entrances, and at other congregation areas to direct and guide visitors during their visit. To welcome visitors, developed sites with visitor amenities, such as picnic tables, shelters, and vault toilets will be upgraded, and at least five new sites will be developed. An enlarged visitor contact station and gift shop at Refuge Headquarters and a seasonal contact station at P Ranch will be built to provide visitors contact with Refuge staff and volunteers.

*Environmental Education.* We will provide environmental education (EE) using Refuge staff time and resources strategically, by coordinating efforts with other EE initiatives. Existing modules from national and regional programs, such as the Junior Duck Stamp competition and International Migratory Bird Day, will be utilized as Refuge staff and volunteers become available. We will develop an outdoor shelter and learning area at Refuge Headquarters to support EE programs.

*Hunting.* Opportunities for upland game hunting will be enhanced, by improving the Saddle Butte access on Malheur Lake's north side, and opening the program three weeks early, from the fourth Saturday of October to the end of the State's pheasant season in the Buena Vista Hunt Unit. The north part of Malheur Lake and the Boundary Hunt Unit will remain open under existing regulations.

Waterfowl hunting will be enhanced, by promoting a youth hunt and improving the Saddle Butte access. In addition, new waterfowl hunt areas will be provided, doubling the existing waterfowl hunt area by opening a portion of the south-central area of Malheur Lake, and allowing waterfowl hunting within the existing Buena Vista Hunt Unit. The season will be open from the fourth Saturday of October to the end of the State waterfowl season. One new access point with an expanded parking area and an enhanced boat launch will be provided at the airboat launch site near Refuge Headquarters, to access the new Malheur Lake hunt unit. In partnership with potential users, the Refuge will support adding barrier-free facilities for waterfowl hunters with mobility impairments in the Buena Vista Hunt Unit.

An exchange of portions of Refuge lands west of State Highway 205 and southeast of Krumbo Reservoir (the Boundary Hunt Unit) to the Bureau of Land Management (BLM) in exchange for other lands will be explored, and the hunt will likely be managed under existing regulations. The exchange will facilitate the Refuge's focus on key aquatic areas and reduce the administrative problem of managing lands with an unmarked boundary.

*Fishing.* Fishing opportunities along the upper Blitzen River, the southern portion of East Canal, and Mud and Bridge Creeks, will continue. Vehicle access will be allowed on the East Canal Road to the

confluence of Bridge Creek, which will enable access to BLM's Granddad Reservoir. In addition, a new pedestrian crossing at Bridge Creek will enhance fishing access to seven miles of Bridge Creek located between the East Canal and Blitzen River. We will open a new bank fishing season from August 1 to September 15 on the Blitzen River, with a parking area on Boat Landing Road, from Sodhouse Lane to the bridge. Orientation panels with maps, brochures, and regulations, will be added to fishing areas, to provide information to visitors about fishing opportunities.

At Krumbo Reservoir, year-round access will be provided for wildlife viewing, boating, and fishing, in coordination with State seasons, which will increase public fishing opportunities. The triploid rainbow trout stocking program will continue in coordination with the Oregon Department of Fish and Wildlife (ODFW), and a redband trout genetic introgression study will be conducted.

*Volunteer Program.* To help enhance the Refuge's volunteer, public use, and other programs, a full-time volunteer coordinator will be added to the staff to increase recruitment, retention, and the return rate of volunteers, to better utilize Refuge facilities and staff, and to assist with building partnerships and increasing public outreach.

*Cultural Resource and Paleontological Protection.* We will strengthen protection of the Refuge's cultural and paleontological resources by developing step-down management plans with partners for administrative sites where historic, prehistoric, archaeological, and paleontological resources occur. Interpretation of historic sites will be expanded through the development and implementation of site specific interpretive plans. Opportunities for Native Americans to collect plant materials for traditional uses will be expanded. Monitoring and inventory of archaeological resources will increase as part of step-down management plan implementation.

*Energy Independent.* Refuge staff will pursue energy independence and carbon negative Refuge operations, and will continue to emphasize partnerships to maximize adaptive management.

*Inventory and Monitoring.* The Refuge will develop inventory and monitoring plans to guide annual management actions. The plans will emphasize focal species and national monitoring efforts, and a geodatabase will be created to record and track the data collected under these plans.

*Adaptive Management.* The Refuge will use adaptive management (AM) to implement strategies identified in the CCP. Adaptive management is a science-based public participation process for evaluating and adjusting a conservation effort relative to goal achievement as experience and knowledge are gained through implementation, study, and discussion. The Refuge and its collaborative partners support flexible decision making as outcomes from management actions and other events become better understood. As the CCP is implemented, the Refuge will achieve diverse goals through AM while enhancing wildlife benefits, advancing scientific knowledge, and improving working relationships among stakeholders.

*Implementation Subject to Funding Availability.* Actions will be implemented over a period of 15 years as funding becomes available. Project priorities are described in Appendix E. The Refuge will continue to work with partners to implement the CCP by sharing science, providing updates on successes and challenges, initiating discussions, encouraging participation, and hosting working groups.

*Tribal Coordination.* Regular communication and coordination with the Burns Paiute Tribe will continue regarding issues of shared interest. Currently, we coordinate with the Tribe on Native American Graves Protection and Repatriation Act and National Historic Preservation Act issues.

*Harney County Court Coordination.* We will continue to maintain regular discussions with the Harney County Court as CCP actions are implemented over 15 years.

*State Coordination.* The Service will continue to maintain regular discussions with the Oregon Department of Fish and Wildlife. Key topics for discussion will include wildlife monitoring, fisheries management, including fish passage and barriers, hunting and fishing seasons and regulations, and the management of species of concern (i.e. sage grouse).

*Infrastructure Maintenance to Support Management of Wetlands and Meadows.* Efforts to enhance the water management system will be made throughout the life of the CCP, to reflect aquatic health (e.g. carp control) and other habitat management needs and constraints. Actions will be directed by existing water rights, funding opportunities, and Refuge maintenance priorities.

*Refuge Fire Management.* Fire Management Plans, and accompanying NEPA documents and Endangered Species Act consultations were finalized for the Refuge in 2010. Fire management actions will continue to be guided by the direction set forth in these plans. Prescribed fire will be used in areas where it is the most appropriate tool to achieve habitat goals (e.g. emergent wetlands). Prescribed burns will generally be conducted in late winter to meet litter management objectives, but may be done at other times depending on desired outcomes.

*Climate Change.* The Refuge staff will participate in and contribute to climate change assessment efforts, including those underway at a landscape scale, such as the Great Basin Landscape Conservation Cooperative (LCC). As needed, objectives and strategies will be adjusted to enhance Refuge resources' resiliency to climate change.

*Partnerships.* Partnerships will be maintained and/or developed, to enhance collaboration in support of fish and wildlife resources, recreational opportunities, cultural and paleontological resources, and educational programs; and to explore funding opportunities and grants for projects of mutual interest. We will also accomplish common goals through partnerships, promote eco-tourism opportunities, and encourage environmentally friendly development. Workshops and training sessions with professional colleagues and the general public will be conducted to obtain ideas, techniques, and support for Refuge management decisions.

*Volunteer Opportunities.* Volunteers are key components of the successful management of public lands, and are vital to implementation of Refuge programs, plans, and projects. Volunteer opportunities will be maintained and expanded to best utilize facilities and Refuge staff, and to assist with building partnerships and conducting public outreach. A volunteer management plan will be developed, to address volunteer/staff roles, recruitment and retention of volunteers, volunteer orientation and training, and administration of the Friends of Malheur National Wildlife Refuge.

*Transportation Coordination.* Roads, bridges and trail systems play a vital role in providing public access to compatible wildlife dependent recreation opportunities. Under the management direction, the Service will look for opportunities to partner with the Oregon Department of Transportation, BLM's Burns District, and Harney County, to maintain and improve safe and appropriate transportation access in and around the Refuge.

*Refuge Revenue Sharing Payments.* Annual payments to Harney County under the Refuge Revenue Sharing Program will continue according to the established formula and subject to payments authorized by Congress. Total payments made to the County in recent years are listed in Chapter 5.

*Sustainable Practices for Maintaining and Updating Existing Infrastructure.* Periodic maintenance and updating of Refuge buildings and facilities will be necessary. Infrastructure maintenance is necessary for safety and accessibility, and to support staff and management needs, and is incorporated in the Service Asset Maintenance Management System and Environmental Management System. The Refuge will implement green technology and sustainable practices to progress toward energy independent and carbon negative operations.

*Endangered Species Act Section 7 Consultations.* All projects will be compliant with the Endangered Species Act. Section 7 consultation was not completed programmatically on the CCP. The need for Section 7 consultations for special projects or actions not described in this plan (e.g. management actions related to aquatic health) will be conducted on a case-by-case basis.

*Section 106 Compliance.* Any new ground-disturbing projects or modifications (e.g. removal of historic water control structures or dams) will undergo a review under Section 106 of the National Historic Preservation Act.

*Integrated Pest Management (IPM).* In accordance with Department of the Interior and Service policies, an integrated pest management (IPM) approach will be implemented where practicable, to eradicate, control, or contain pests and invasive species (herein collectively referred to as pests) on Refuge lands. Pesticides may be used where physical, cultural, and biological methods or combinations thereof, are impractical or incapable of providing adequate control, eradication, or containment. We will select IPM methods based on effectiveness, cost, and minimal ecological disruption, including minimum potential effects to nontarget species and the Refuge environment. If we need to use a pesticide on the Refuge, we will identify the most specific (selective) chemical available for the target species, unless persistence or other environmental and/or biotic hazards preclude it. In accordance with 517 DM 1, pesticide use is restricted to pesticides registered with the U.S. Environmental Protection Agency (EPA), that are in full compliance with the Federal Insecticide, Fungicide, and Rodenticide Act, and regulations, orders, or permits issued by EPA.

Environmental harm by pest species is identified as a biologically substantial decrease in environmental quality, indicated by a variety of potential factors including declines in native species populations or communities, degraded habitat quality or long-term habitat loss, and/or altered ecological processes. Environmental harm may result from the direct effects of pests on native species, including preying and feeding on them, causing or vectoring diseases, preventing them from reproducing, killing their young, and out-competing them for food, nutrients, light, nest sites or other vital resources; or hybridizing with them so frequently that within a few generations few if any truly native individuals remain. Environmental harm may also result from an indirect effect of pest species. For example, decreased waterfowl use may result from invasive plant infestations that reduce the availability of native wetland plants used by waterfowl as forage during the winter.

Environmental harm may involve detrimental changes in ecological processes. For example, cheat grass infestations in shrub steppe habitat can greatly alter fire return intervals, which can displace native species and communities of bunch grasses, forbs, and shrubs. Environmental harm may also cause or be associated with economic losses and damage to human, plant, and animal health. For

example, invasions of fire-promoting grasses that alter plant and animal communities and eliminate or sharply reduce native plant and animal populations can also greatly increase fire-fighting costs.

See Appendix G for the Refuge's IPM program for managing pests. Appendix G also describes the selective use of pesticides for pest management on Refuge lands where necessary. Throughout the life of the CCP, most proposed pesticide uses on Refuge lands will be evaluated for potential effects to biological resources and environmental quality. These potential effects will be documented in Chemical Profiles. Pesticide uses with appropriate and practical best management practices (BMPs) for habitat management as well as cropland/facilities maintenance will be approved for use on Refuge lands where there will likely be only minor, temporary, and localized effects to species and environmental quality, based on non-exceedance of threshold values in Chemical Profiles. However, pesticides may be used on Refuge lands where substantial effects to species and the environment are possible (exceed threshold values) in order to protect human health and safety (e.g., mosquito-borne disease).

*Hazard Analysis and Critical Control Point Plan.* A Hazard Analysis and Critical Control Points Plan (HACCP) is a tool for natural resource managers to use when identifying critical control points in their activities to decrease the spread of invasive species. The HACCP Wizard Version 2.04 will be used to develop plans for staff, contractors, volunteers and other users of the Refuge to evaluate and conduct their activities in a manner that limits the chance of spreading invasive species.

*Water Rights.* The right to use water on the Refuge is managed through Oregon's Water Resources Department. Almost all water use on the Refuge has a State-certified water right. The exception is spring water in the Refuge's Double-O Unit which is threatened by groundwater withdrawals in the area. To protect the habitats and values associated with springs, the Service will take steps to file a groundwater right.

*Water Quality.* Water quality is addressed through the Oregon Department of Environmental Quality. Refuge-specific water quality guidelines have not yet been established through a formal Total Maximum Daily Load study conducted by the State. Although water quality impairments exist in the Blitzen River before it reaches the Refuge boundary, various studies have indicated a continued increase in temperature and turbidity and a decrease in dissolved oxygen levels within some Refuge water bodies (see Chapter 3) during specific times of the year. Refuge staff will continue to identify and implement best management practices to address water quality.

*Blitzen River Water Management.* The Refuge will continue to maintain a minimum flow of 25 cubic feet per second (cfs) in the Blitzen River as a minimum flow to benefit aquatic resources.

*Research, Monitoring, and Inventory.* Refuge staff will continue to work with others to share information and expertise on habitat management, terrestrial and aquatic health, and restoration/rehabilitation techniques. Partnerships with local universities, NGOs, Tribes, State and local agencies, and others will be expanded to conduct research that will advance sound science associated with decision-making on the Refuge.

*Malheur NWR State-and-Transition Model.* The Refuge will continue to partner with ecologists, wildlife biologists, and scientists from various State and federal agencies and nongovernment organizations to develop the Malheur NWR State-and-Transition Model (STM) to increase our understanding of the Refuge's wetlands. Through the STM we will describe various habitat types along a hydrological gradient and identify the conditions that likely cause transitions between

associated plant assemblages. The STM will serve as a roadmap for managing wetlands and uplands toward target habitat conditions and will increase our understanding of the short-term and long-term effects of management treatments on Refuge habitats.

*Nonpriority Uses.* Nonpriority wildlife-dependent recreational uses will be allowed at the Refuge if found appropriate and compatible. These uses will be allowed under the stipulations identified in Appendix B. Incidental uses such as horseback riding will be permitted only on the Center Patrol Road. Bicycling and cross country skiing will be permitted on all public roads, and pets will be permitted in designated areas.

Prohibited activities will include fires, swimming, recreational ATV use, camping, and collecting natural objects (such as plants, animals, minerals, antlers, etc.), and objects of antiquity. See Appropriate Use Determinations in Appendix A, and Compatibility Determinations in Appendix B, for more information. Such recreational activities not specifically addressed in this document may be allowed on Refuge lands, if the Refuge Manager determines that they are appropriate and compatible.

*Predator Control.* Although predator control could be justifiable, specific attainable objectives must be determined before conducting predator control. It has been noted, for example, that removing coyotes often leads to an increase in other predator populations such as foxes, raccoons, and mink, which can be even more detrimental to wildlife production. If predator control is deemed necessary during the life of the CCP, the proper public process will be followed. Productivity of select key avian species will be monitored under the guidance of the Inventory and Monitoring Plan to assess whether the Refuge is serving as a source or sink for local avian populations, and if the Refuge is not serving as a source, management options including manipulation of habitat conditions and predator control will be considered.

## **Environmental Consequences**

Implementation of the management direction presented in the CCP will be expected to cause both beneficial and adverse impacts to Refuge resources, recreation opportunities, and local communities and their economies. The CCP addresses these impacts, with the majority of discussion and detail focused on impacts that are potentially significant.

We anticipate the management direction will have long-term beneficial impacts on the Refuge's fish, wildlife, plants, habitats, recreation opportunities, and cultural resources, primarily as a result of more intensive and aggressive management actions to improve ecological integrity throughout the Refuge. We also anticipate that the same management actions will have a number of short-term, less intensive, adverse impacts. Beneficial impacts will result from:

- Improving the aquatic health of the Refuge's lakes and wetlands, primarily by control of common carp.
- Managing wet meadows and wetland habitats for specified attributes, and initiating comprehensive riverine/wetland strategic planning for watersheds within the Refuge.
- Providing a more developed and structured visitor experience, with additional birding, fishing, and hunting opportunities.
- Protecting and developing historic, cultural, and paleontological resource plans.