

Draft Comprehensive Conservation Plan and Environmental Assessment

Bowdoin National Wildlife Refuge Complex

Montana

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Contents

| | |
|---|-----------|
| <i>Summary</i> | XI |
| <i>Abbreviations</i> | XIX |
| CHAPTER 1—Introduction | 1 |
| 1.1 Purpose and Need for the Plan | 4 |
| 1.2 Early History of Conservation | 4 |
| 1.3 The U.S. Fish and Wildlife Service and the Refuge System | 5 |
| <i>U.S. Fish and Wildlife Service</i> | 5 |
| <i>Service Activities in Montana</i> | 6 |
| <i>National Wildlife Refuge System</i> | 6 |
| 1.4 National and Regional Mandates | 7 |
| 1.5 Contributions to National and Regional Plans | 8 |
| <i>Fulfilling the Promise</i> | 8 |
| <i>Partners in Flight</i> | 8 |
| <i>North American Waterbird Conservation Plan</i> | 9 |
| <i>North American Waterfowl Management Plan</i> | 9 |
| <i>Northern Plains/Prairie Potholes Regional Shorebird Conservation Plan</i> | 10 |
| <i>Montana Piping Plover Management Plan</i> | 10 |
| <i>Management Plan and Conservation Strategies for Sage Grouse in Montana</i> | 10 |
| <i>State Comprehensive Fish and Wildlife Conservation Strategy</i> | 11 |
| 1.6 Strategic Habitat Conservation | 12 |
| <i>Climate Change</i> | 12 |
| 1.7 Planning Process | 14 |
| <i>Coordination with the Public</i> | 17 |
| <i>State Coordination</i> | 17 |
| <i>Tribal Coordination</i> | 17 |
| <i>Results of Scoping</i> | 18 |
| <i>Selecting an Alternative</i> | 18 |
| CHAPTER 2—The Refuge Complex | 19 |
| 2.1 Establishment, Acquisition, and Management History | 19 |
| <i>Bowdoin National Wildlife Refuge</i> | 20 |
| <i>Black Coulee National Wildlife Refuge</i> | 22 |
| <i>Creedman Coulee National Wildlife Refuge</i> | 26 |
| <i>Hewitt Lake National Wildlife Refuge</i> | 26 |
| <i>Lake Thibadeau National Wildlife Refuge</i> | 33 |
| <i>Bowdoin Wetland Management District</i> | 33 |
| <i>Summary of Land Acquisition History</i> | 39 |
| 2.2 Purposes | 41 |
| <i>Bowdoin National Wildlife Refuge</i> | 41 |
| <i>Black Coulee National Wildlife Refuge</i> | 42 |
| <i>Creedman Coulee National Wildlife Refuge</i> | 42 |
| <i>Hewitt Lake National Wildlife Refuge</i> | 42 |
| <i>Lake Thibadeau National Wildlife Refuge</i> | 42 |
| <i>Bowdoin Wetland Management District</i> | 42 |

| | |
|---|----|
| 2.3 Vision | 43 |
| 2.4 Goals | 43 |
| <i>Goal for Upland Habitat and Associated Wildlife</i> | 43 |
| <i>Goal for Wetland Habitat and Associated Wildlife</i> | 43 |
| <i>Goal for Visitor Services</i> | 43 |
| <i>Goal for Partnerships</i> | 43 |
| <i>Goal for Operations</i> | 43 |
| 2.5 Special Values | 44 |
| <i>Part of a National System</i> | 44 |
| <i>Migratory Birds</i> | 44 |
| <i>Prairie Pothole Region</i> | 44 |
| <i>Special Designations</i> | 45 |
| <i>Native Prairie</i> | 45 |
| <i>Conservation Easements</i> | 46 |
| <i>Cultural History</i> | 46 |
| <i>Public Use</i> | 46 |
| 2.6 Planning Issues | 46 |
| <i>Upland Habitat and Associated Wildlife</i> | 46 |
| <i>Loss of Sharp-tailed Grouse Leks</i> | 47 |
| <i>Wetland Management at Bowdoin National Wildlife Refuge</i> | 47 |
| <i>Lake Bowdoin Salinity Concentrations</i> | 48 |
| <i>Water Resources within Bowdoin Wetland Management District</i> | 48 |
| <i>Riparian Habitat and Associated Wildlife</i> | 49 |
| <i>Wildlife Disease</i> | 49 |
| <i>Piping Plover</i> | 49 |
| <i>Invasive Plants, Nonnative Plants, and Noxious Weeds</i> | 51 |
| <i>Habitat Protection and Acquisition</i> | 52 |
| <i>Visitor Services</i> | 52 |
| <i>Partnerships</i> | 53 |
| <i>Operations</i> | 53 |
| <i>Natural Gas Development</i> | 54 |
| <i>Prioritization of Refuge Complex Lands</i> | 54 |
| <i>Research, Inventory, and Monitoring</i> | 54 |
| <i>Lake Thibadeau National Wildlife Refuge</i> | 57 |
| CHAPTER 3—Alternatives | 59 |
| 3.1 Divestiture of Lake Thibadeau National Wildlife Refuge | 59 |
| <i>Lake Thibadeau Refuge Alternative 1 (Current Management—No Action)</i> | 59 |
| <i>Lake Thibadeau Refuge Alternative 2 (Divestiture—Proposed Action)</i> | 60 |
| <i>Summary</i> | 60 |
| 3.2 Development of Alternatives for the Refuge Complex | 63 |
| <i>Alternatives Considered but Eliminated</i> | 63 |
| 3.3 Description of Alternatives for the Refuge Complex | 63 |
| <i>Elements Common to All Alternatives</i> | 64 |
| <i>Alternative A (Current Management—No Action)</i> | 64 |
| <i>Alternative B (Proposed Action)</i> | 68 |
| <i>Alternative C</i> | 73 |
| 3.4 Summary of Alternatives and Consequences | 74 |
| CHAPTER 4—Affected Environment | 95 |
| 4.1 Physical Environment | 95 |
| <i>Climate</i> | 95 |
| <i>Climate Change</i> | 98 |
| <i>Physiography and Geology</i> | 99 |

| | |
|---|------------|
| Soils | 99 |
| Water Resources | 99 |
| Air Quality | 109 |
| 4.2 Biological Resources | 109 |
| Uplands | 110 |
| Wetlands | 117 |
| Riparian Areas | 127 |
| 4.3 Federally and State-listed Species | 128 |
| Piping Plover | 129 |
| Plant Species | 129 |
| Animal Species of Concern | 129 |
| 4.4 Cultural Resources | 130 |
| Prehistoric Occupation | 130 |
| Protohistoric and Historic Native Americans | 130 |
| Historic Euro-Americans | 130 |
| History of Bowdoin Refuge Complex | 131 |
| 4.5 Special Management Areas | 133 |
| Wilderness Review | 133 |
| Important Bird Area | 133 |
| Western Hemisphere Shorebird Reserve Network | 134 |
| 4.6 Visitor Services | 134 |
| Hunting | 134 |
| Fishing | 137 |
| Wildlife Observation and Photography | 137 |
| Environmental Education | 137 |
| Interpretation | 138 |
| 4.7 Management Uses | 138 |
| Cooperative Farming | 138 |
| Prescribed Burning , Haying, and Grazing | 139 |
| 4.8 Socioeconomic Environment | 141 |
| Population and Employment | 141 |
| Public Use of the Refuge Complex | 141 |
| Baseline Economic Activity | 142 |
| 4.9 Partnerships | 142 |
| 4.10 Operations | 142 |
| Staff | 143 |
| Facilities | 143 |
| CHAPTER 5—Environmental Consequences | 145 |
| 5.1 Analysis Methods | 145 |
| 5.2 Effects Common to All Alternatives | 146 |
| Regulatory Effects | 146 |
| Environmental Justice | 146 |
| Cultural Resources | 146 |
| Climate Change | 146 |
| Geology and Soils | 147 |
| 5.3 Description of Consequences | 147 |
| Upland Habitat and Associated Wildlife | 147 |
| Wetland Habitat and Associated Wildlife | 150 |
| Visitor Services | 153 |
| Partnerships | 155 |
| Operations | 156 |

| | |
|---|-----|
| <i>Socioeconomics</i> | 157 |
| 5.4 Cumulative Impacts | 158 |
| CHAPTER 6—Analysis of Salinity | 159 |
| 6.1 Salinity Issues | 160 |
| <i>Salinity for Lake Bowdoin</i> | 160 |
| <i>Water Quantity, Delivery, and Cost</i> | 160 |
| 6.2 Background | 160 |
| <i>Salt Basics</i> | 160 |
| <i>Principal Salts at Bowdoin Refuge</i> | 163 |
| <i>Presettlement Salt Balance</i> | 164 |
| <i>Postsettlement Salt Balance</i> | 164 |
| <i>Current Salt Balance</i> | 173 |
| <i>Water Supply</i> | 176 |
| 6.3 Salt and Water Management | 181 |
| <i>Salt Management</i> | 181 |
| <i>Water Management</i> | 181 |
| <i>Salt and Water Objectives</i> | 185 |
| 6.4 Planning Process | 185 |
| <i>Development of Alternatives</i> | 185 |
| <i>Public Involvement</i> | 186 |
| <i>Plan Completion</i> | 186 |
| 6.5 Salinity Alternatives Analysis | 187 |
| <i>Elements Common to All Alternatives</i> | 187 |
| <i>Salinity Alternative 1—Current Management (No Action)</i> | 188 |
| <i>Salinity Alternative 2—Evaporation Ponds and Removal of Saline Residue</i> | 191 |
| <i>Salinity Alternative 3—Flushing by Beaver Creek</i> | 194 |
| <i>Salinity Alternative 4—Underground Injection Well and Flushing by Beaver Creek (Proposed Action)</i> | 197 |
| <i>Salinity Alternative 5—Pumping to Milk River</i> | 200 |
| <i>Summary of Alternatives Actions and Consequences</i> | 202 |
| 6.6 Implementation of the Proposed Action (Salinity Alternative 4) | 207 |
| <i>Salinity Alternative 4—Underground Injection Well and Flushing by Beaver Creek</i> | 207 |
| <i>Goal and Objectives for Salinity and Blowing Salts</i> | 208 |
| CHAPTER 7—Implementation of the Proposed Action, the Draft CCP | 215 |
| 7.1 Divestiture of Lake Thibadeau National Wildlife Refuge | 215 |
| 7.2 Salinity and Blowing Salts | 216 |
| 7.3 Summary of the Draft CCP | 217 |
| 7.4 Goal for Upland Habitat and Associated Wildlife | 217 |
| <i>Native Grassland</i> | 217 |
| <i>Disturbed Grassland</i> | 221 |
| 7.5 Goal for Wetland Habitat and Associated Wildlife | 223 |
| <i>Managed Wetlands</i> | 224 |
| <i>Target Waterbird Species</i> | 224 |
| <i>Wetland Habitat Objectives</i> | 225 |
| <i>Avian Disease</i> | 231 |
| <i>Piping Plover</i> | 232 |
| 7.6 Objectives that Support the Goals for Upland and Wetland Habitats | 234 |
| <i>Invasive and Nonnative Species</i> | 234 |
| <i>Wildfire Management</i> | 240 |
| <i>Habitat Protection and Acquisition</i> | 241 |

| | |
|--|-----|
| 7.7 Goal for Visitor Services and Cultural Resources | 248 |
| <i>Visitor Services</i> | 248 |
| <i>Cultural Resources</i> | 253 |
| 7.8 Goal for Partnerships | 254 |
| <i>Public, Government, and Industry Partners</i> | 254 |
| 7.9 Goal for Operations | 256 |
| <i>Staff</i> | 256 |
| <i>Facilities and Equipment</i> | 258 |
| 7.10 Stepdown Management Plans | 259 |
| 7.11 Research, Monitoring, and Evaluation | 260 |
| 7.12 Plan Amendment and Revision | 260 |
| Glossary | 261 |
| Appendixes | |
| Appendix A—Key Legislation and Policy | 269 |
| Appendix B—List of Preparers, Consultation, and Coordination | 275 |
| Appendix C—Public Involvement | 279 |
| Appendix D—Draft Compatibility Determinations | 283 |
| Appendix E—Divestiture Model Results for Lake Thibadeau National Wildlife Refuge | 297 |
| Appendix F—Species Lists | 303 |
| Appendix G—Fire Management Program | 319 |
| Bibliography | 323 |

FIGURES

| | |
|--|----|
| 1 Map of refuges in the Bowdoin National Wildlife Refuge Complex within the Prairie Pothole Region of North America | 2 |
| 2 Vicinity map of the five refuges and one wetland management district in the Bowdoin National Wildlife Refuge Complex, Montana | 3 |
| 3 Map of the five refuges and one wetland management district in the Bowdoin National Wildlife Complex within Geographic Area 13—Plains and Prairie Potholes | 13 |
| 4 Process steps for comprehensive conservation planning and associated environmental analysis | 14 |
| 5 Base map of Bowdoin National Wildlife Refuge, Montana | 21 |
| 6 Map of habitat types at Bowdoin National Wildlife Refuge, Montana | 23 |
| 7 Base map of Black Coulee National Wildlife Refuge, Montana | 25 |
| 8 Map of habitat types at Black Coulee National Wildlife Refuge, Montana | 27 |
| 9 Base map of Creedman Coulee National Wildlife Refuge, Montana | 28 |
| 10 Map of habitat types at Creedman Coulee National Wildlife Refuge, Montana | 29 |
| 11 Base map of Hewitt Lake National Wildlife Refuge, Montana | 31 |
| 12 Map of habitat types at Hewitt Lake National Wildlife Refuge, Montana | 32 |
| 13 Base map of Lake Thibadeau National Wildlife Refuge, Montana | 34 |
| 14 Map of habitat types at Lake Thibadeau National Wildlife Refuge, Montana | 35 |
| 15 Map of conservation easements and waterfowl production areas in Bowdoin Wetland Management District, Montana | 37 |
| 16 Map of waterfowl flyways in the United States | 45 |
| 17 Map of critical habitat for piping plover at Bowdoin National Wildlife Refuge Complex, Montana | 50 |
| 18 Map of oil and gas activities in and around Bowdoin National Wildlife Refuge Complex, Montana | 55 |
| 19 Graph of total annual precipitation at Bowdoin National Wildlife Refuge, Montana (1905–2008) | 96 |
| 20 Graph of total February precipitation at Bowdoin National Wildlife Refuge, Montana (1905–2008) | 96 |

FIGURES (continued)

| | | |
|----|---|-----|
| 21 | Graph of total June precipitation at Bowdoin National Wildlife Refuge, Montana (1905–2008) | 96 |
| 22 | Graph of average maximum daily temperature for February at Bowdoin National Wildlife Refuge, Montana (1969–2008). | 97 |
| 23 | Graph of average minimum daily temperature for February at Bowdoin National Wildlife Refuge, Montana (1969–2008). | 97 |
| 24 | Graph of average maximum daily temperature for June at Bowdoin National Wildlife Refuge, Montana (1969–2008). | 97 |
| 25 | Graph of average minimum daily temperature for June at Bowdoin National Wildlife Refuge, Montana (1969–2008). | 98 |
| 26 | Map of Bowdoin National Wildlife Refuge Complex within the Milk River watershed | 100 |
| 27 | Map of Bowdoin National Wildlife Refuge Complex located between the Milk River and Beaver Creek watersheds | 101 |
| 28 | Map of current and proposed public use sites and activities at Bowdoin National Wildlife Refuge, Montana | 136 |
| 29 | Map of wetlands, water management infrastructure, and monitoring sites on Bowdoin National Wildlife Refuge, Montana. | 165 |
| 30 | Map of a historical survey showing the location of Bowdoin Refuge on the topographic features of the landscape | 167 |
| 31 | Map of the Milk River Project, Montana | 171 |
| 32 | Chart of sources of salts into Bowdoin National Wildlife Refuge, Montana | 173 |
| 33 | Graph of tons of salt in the lakes and wetlands at Bowdoin National Wildlife Refuge, Montana (1990–2007). | 174 |
| 34 | Chart of sources of water into Bowdoin National Wildlife Refuge, Montana | 175 |
| 35 | Map of water levels and salinity for Lake Bowdoin, Montana (1975–2007) | 177 |
| 36 | Graph of water deliveries to Bowdoin National Wildlife Refuge, Montana (1938–2008) | 179 |
| 37 | Map of the extent of Lake Bowdoin at various water elevations | 183 |
| 38 | Graph of tons of salt in Lake Bowdoin with salinity alternative 1, no action | 188 |
| 39 | Graphs of the relationship of pH and salinity to avian botulism outbreaks. | 191 |
| 40 | Graph of tons of salt in Lake Bowdoin with salinity alternative 2. | 192 |
| 41 | Graph of tons of salt in Lake Bowdoin with salinity alternative 3. | 198 |
| 42 | Graph of water depth and substrate preferences of shorebird foraging guilds | 227 |
| 43 | Map of Russian olive tree infestations in and around Bowdoin National Wildlife Refuge, Montana | 237 |
| 44 | Map of Russian olive evaluation areas (Big Island) for grassland restoration at Bowdoin National Wildlife Refuge, Montana | 238 |
| 45 | Map of wetland density per square mile in Bowdoin National Wildlife Refuge Complex, Montana. | 245 |
| 46 | Map of grassland density in Bowdoin National Wildlife Refuge Complex, Montana | 246 |
| 47 | Map of areas with high densities of wetlands and grasslands for use as a decision matrix to determine protection priorities in Bowdoin National Wildlife Refuge Complex, Montana. | 247 |
| 48 | Adaptive management process | 260 |
| 49 | Map of wetlands within 10 miles of Lake Thibadeau National Wildlife Refuge, Montana | 299 |

TABLES

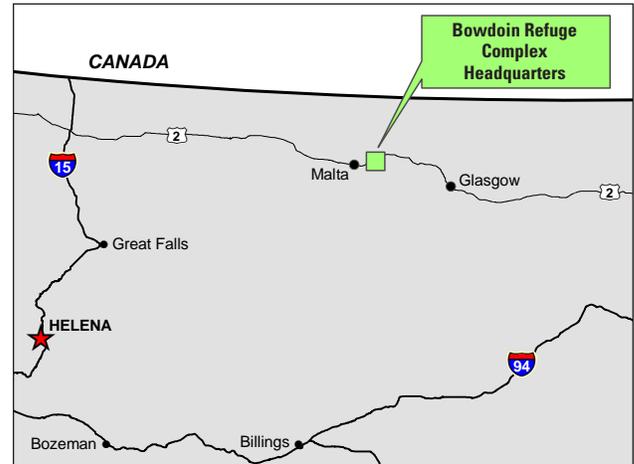
| | | |
|----|---|-----|
| 1 | Summary of the CCP planning process for Bowdoin National Wildlife Refuge Complex, Montana | 15 |
| 2 | Land acquisition history for refuges in Bowdoin National Wildlife Refuge Complex, Montana (1937–1989). | 40 |
| 3 | Land acquisition history for Bowdoin Wetland Management District, Montana (1977–2008) | 41 |
| 4 | Comparison of alternatives and environmental consequences for keeping or divesting Lake Thibadeau National Wildlife Refuge, Montana. | 61 |
| 5 | Summary of CCP alternatives for Bowdoin National Wildlife Refuge Complex, Montana. | 75 |
| 6 | Water rights for Bowdoin National Wildlife Refuge, Phillips County, Montana. | 105 |
| 7 | Water rights for the waterfowl production areas and satellite refuges of Bowdoin National Wildlife Refuge Complex, Montana | 106 |
| 8 | Base staff funded in fiscal year 2011 at Bowdoin National Wildlife Refuge Complex, Montana | 143 |
| 9 | Salinity categories and the corresponding ranges of specific conductance values | 163 |
| 10 | Pipeline size and cost estimates for western and eastern pipeline options for pumping to the Milk River. | 201 |
| 11 | Summary of alternatives and consequences considered to address the elevated salinity and blowing salts issue at Lake Bowdoin, Montana | 202 |
| 12 | Partner agencies and expertise for the injection well project at Lake Bowdoin, Montana | 209 |
| 13 | Conservation status of target species of upland birds at Bowdoin National Wildlife Refuge Complex, Montana | 218 |
| 14 | Nesting habitat requirements for target species of upland birds at Bowdoin National Wildlife Refuge Complex, Montana | 219 |
| 15 | Conservation status of target species of waterbirds at Bowdoin National Wildlife Refuge, Montana. | 225 |
| 16 | Life history needs of target species of waterbirds at Bowdoin National Wildlife Refuge Complex, Montana | 226 |
| 17 | Nest site and habitat characteristics of target, interior-nesting shorebirds at Bowdoin National Wildlife Refuge Complex, Montana | 226 |
| 18 | Current and proposed staff for Bowdoin National Wildlife Refuge Complex, Montana. | 257 |
| 19 | Stepdown management plans for Bowdoin National Wildlife Refuge Complex, Montana | 259 |

Summary

The U.S. Fish and Wildlife Service manages the Bowdoin National Wildlife Refuge Complex, which covers 84,724 acres in north-central Montana. The refuge complex is spread across Blaine, Hill, Phillips, and Valley Counties. With its headquarters near the town of Malta, the refuge complex comprises the following units:

- Bowdoin National Wildlife Refuge
- Black Coulee, Creedman Coulee, Hewitt Lake, and Lake Thibadeau National Wildlife Refuges (unstaffed satellite refuges)
- Bowdoin Wetland Management District—nine waterfowl production areas, refuge and flowage easements, wetland conservation easements, and grassland conservation easements

This is a summary of the draft comprehensive conservation plan and environmental assessment that the Service has prepared for the Bowdoin National Wildlife Refuge Complex. The full document contains background information and the Service's analyses of alternatives for managing the refuge complex.



The Refuge Complex

The Bowdoin National Wildlife Refuge Complex is located within the Prairie Pothole Region of the Great Plains. While the five national wildlife refuges and the wetland management district were established under different authorities, they all have the overriding purpose of providing migration, nesting, resting, and feeding habitat for migratory birds.



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Chokecherry is a native shrub in the Bowdoin National Wildlife Refuge Complex.

The refuge complex provides opportunities for the public to enjoy compatible wildlife-dependent public use activities including hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

The Planning Process

The National Wildlife Refuge System Improvement Act of 1997 requires the U.S. Fish and Wildlife Service to develop a comprehensive conservation plan by 2012 for each national wildlife refuge. The final plan for the Bowdoin Refuge Complex is scheduled for completion in 2011 and will guide the management of the refuge complex for the next 15 years.

The planning process for a comprehensive conservation plan is a series of steps including environmental analysis. The Service encourages and values the involvement of the public and partners throughout the process. The Service's planning team compiled a list of issues to consider and analyzed management alternatives for the comprehensive conservation plan that would not only address these issues but also meet the purposes, vision, and goals of the refuge complex.

There are three separate alternatives' analyses within the draft comprehensive conservation plan and environmental assessment for the refuge complex that are summarized under the "Alternatives" section of this summary:

- Divestiture (the selling or release of Service interests) of Lake Thibadeau National Wildlife Refuge
- Salinity and blowing salts at Lake Bowdoin
- Management of the remaining programs throughout the Bowdoin National Wildlife Refuge Complex

Chapter 7 contains the draft plan for the refuge complex. After the public reviews and provides comments on the draft plan and environmental assessment, the Regional Director will consider the environmental effects of each alternative including information gathered during public review. The Service's Regional Director of the Mountain-Prairie Region will select a preferred alternative for each of the three analyses.

After the planning team prepares the final CCP for publication, a notice of availability will be published in the Federal Register, and copies of the final CCP or accompanying summary will be sent to individuals on the mailing list. Subsequently, the Ser-

vice will implement the CCP with help from partner agencies, organizations, and the public.

Issues

Substantive issues were identified following an internal review of refuge information and through public scoping, which was begun in 2007. The following are summaries of the issues detailed in chapter 2.

Lake Bowdoin Salinity Levels

The principle sources of water for the Bowdoin National Wildlife Refuge are precipitation, floodwater from Beaver Creek, ground water seepage, water deliveries from the Milk River Project, and irrigation return flows. The last three sources of water add dissolved solids (salinity) to the refuge. In addition, the refuge and adjoining lands are underlain by glacial till and shale containing high concentrations of soluble salts. The Milk River Project water supply on Bowdoin Refuge is limited and insufficient to improve wetland water quality. As water evaporates from Lake Bowdoin's closed system, salts have become concentrated and water salinity has increased. Historically, two methods have been used to improve Lake Bowdoin's water quality and reduce salinity levels: (1) discharges of saline water into Beaver Creek; and (2) managing Dry Lake as an evaporation basin for Lake Bowdoin's water. Neither of these methods is an environmentally feasible option for removing salts. If no action is taken to improve water quality on the refuge, the progressively increasing salinity levels in Lake Bowdoin and the blowing salts out of Dry Lake will continue to threaten migratory birds, other wildlife, wetland habitats, and, potentially, neighboring landowners and downstream irrigators.

Water Quantity, Delivery, and Cost for Bowdoin National Wildlife Refuge

The current water delivery of 3,500 acre-feet and natural sources of water have been insufficient to supply the necessary water for wildlife habitat management and for improving water quality. If the refuge is to survive as a viable migratory bird refuge, it will require additional supplies of water and the means to reduce and dispose of saline water, primarily from Lake Bowdoin.

Water Resources within Bowdoin Wetland Management District

In the wetland management district, the Korsbeck and Holm WPAs and the satellite refuges have

reservoirs that rely on the runoff from precipitation events to fill them. Since the satellite refuges were established, there has been extensive water development in the watersheds, in particular, Lake Thibadeau. Runoff is being captured or diverted upstream of these wetlands. This has decreased waterbird habitat on some of these refuges, changing some from semipermanent to seasonal wetland habitat.

Upland Habitat and Associated Wildlife

Historically, the northern Great Plains was a grassland-dominated system where fire, relatively low precipitation, and native grazers restricted natural tree growth to riparian floodplains, wooded draws, islands within lakes, and small patches downwind of wetland edges (Higgins 1986). These large expanses of treeless prairies have been fragmented by cropland, shelterbelts, and human settlement, as well as from the uncontrolled spread of nonnative Russian olive trees.



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Marbled godwit and long-billed curlew are shorebirds that nest in native prairie at the refuge complex.

Grassland bird populations are declining faster and more consistently than any other group of North American birds (Samson and Knopf 1994) due to habitat fragmentation and loss of native grasslands.

Piping Plover

Approximately 3,325 acres of Bowdoin National Wildlife Refuge has been designated as critical habitat for the threatened Great Plains population of piping plover. However, there have been no known piping plover nests on the refuge since 1999, primarily due to insufficient water supplies necessary to create attractive nesting habitat.

Invasive Plants, Nonnative Plants, and Noxious Weeds

The refuge complex is constantly challenged to maintain its native grassland habitat—critical to

migratory birds—unfragmented by nonnative trees and shrubs. One of the most damaging nonnative plant species throughout the refuge complex is Russian olive. Although this tree is not designated as an invasive species in Montana, its ability to outcompete native species and fragment habitat is well documented. Russian olive trees can take over native vegetation, interfere with natural plant succession and nutrient cycling, damage water management facilities and fences, and tax water reserves. The largest infestations are on the Bowdoin Refuge and the Pearce WPA.

Crested wheatgrass is the primary invasive grass species and leafy spurge, perennial pepperweed, and Canada thistle are the primary invasive forb species. Left unmanaged these invasive plant species can have a detrimental effect on the diversity of native plants, wildlife species, and habitat quality.

Habitat Protection and Acquisition

Native prairie areas and wetlands are the most productive habitat types in Montana, particularly in the Prairie Pothole Region. Although there are laws that protect these areas, particularly wetlands, these vital habitats continue to be lost. Most of these habitat types occur on private lands. The Service has committed to work with willing landowners in Montana to compensate them for protecting these habitats, primarily through perpetual wetland or grassland conservation easements. Habitat protection needs to be evaluated through a priority system so that critical areas are identified and the most effective means of protection, through either fee title or easement, can be determined.

Visitor Services

An estimated 25,000 visitors come to explore the refuge complex annually. The refuge complex is located in north-central Montana, an area with one of the smallest population densities in the State. A major attraction for wildlife observers and hunters, the refuge complex is also popular with local school groups. For self-guided visitors, the Bowdoin National Wildlife Refuge's auto tour route offers the excellent opportunities for viewing and photographing wildlife.

There are few programs and no staff assigned to work with these visitors and students, many of whom do not know they are on a national wildlife refuge. This often results in a general lack of understanding about the mission and purposes the National Wildlife Refuge System and the refuge complex.

Operations

The Bowdoin National Wildlife Refuge Complex manages or protects 84,724 acres within a four-county area. Due to the large size of the management area, limited staff and funding, and long travel times, some lands can only be inspected once a year for maintenance and management needs. In addition, the lack of a full maintenance and biological staff limits opportunities to develop an effective habitat management program that could address some of the more challenging management issues including native grassland restoration.

Oil and Gas Development

Extraction of oil and natural gas within the Bowdoin Wetland Management District has occurred since the 1940s. When the Service acquired most refuge complex lands, the mineral rights were reserved or excepted by the landowner or the Bureau of Land Management. Hewitt Lake's establishing purposes permit oil and gas extraction.

There are currently 104 natural gas wells in production status on Service-interest lands. Annual activities on these lands include mineral exploration, well drilling and maintenance, pipeline construction

and maintenance, road building, and hauling off-site of produced water. Many of these activities can fragment habitats and disturb wildlife. Production companies operating within the Bowdoin natural gas dome estimate that drilling is expected to last about 10–15 years, with a project life of 30–50 years.

Research, Inventory, and Monitoring

Research throughout the Bowdoin National Wildlife Refuge Complex has been minimal and sporadic, and some past projects have not adequately addressed management issues. As a result, some current management actions are based on outside research, not necessarily designed to address critical refuge issues, and may not follow an established management plan.

Lake Thibadeau National Wildlife Refuge

Lake Thibadeau National Wildlife Refuge was established in 1937 as what the Service now calls a limited-interest refuge. Except for the 19.4 acres reserved from public domain, the remaining refuge is private lands that are encumbered by refuge and flowage easements. These easements give the Service the right to control hunting and trapping and



USFWS

Spring water conditions in the glaciated pothole region of Phillips County, Montana (1986).

the uses of the main bodies of water including the impoundment, lakes, and streams. The Service did not buy the right to control uses of the upland areas including farming, grazing, and development.

Habitat loss has been significant over the decades. The refuge currently offers little value to wildlife, and the purposes for which this area was first established are no longer attainable. Native prairie areas that once existed are now farmed intensively. Due to upstream development, Lake Thibadeau, Grassy Lake, and Mud Lake are often dry and farmed in most years, offering no value for migratory birds.

The Future of the Refuge Complex

The vision for Bowdoin National Wildlife Refuge Complex is based on the establishing purposes of the refuge complex, resource conditions and potential, and the issues identified during the planning process. The goals were developed to meet the vision for the refuge complex.

Vision for the Refuge Complex

Under seemingly limitless skies, Bowdoin National Wildlife Refuge Complex provides vast expanses of gently rolling native mixed-grass prairie, dotted with an array of diverse wetlands.

Recognized as one of the most important migratory bird refuges in the State of Montana, these habitats are managed to ensure that grassland- and wetland-dependent waterfowl, shorebirds, songbirds, and native wildlife species thrive.

Visitors recognize these unique and wondrous qualities and experience a sense of solitude and a connection to the land that fosters a desire to conserve this and other remnants of the northern Great Plains.

Goal for Upland Habitat and Associated Wildlife

Protect, enhance, and restore grassland habitat for breeding and migratory birds and other wildlife while maintaining the biological diversity and integrity of native prairie grasslands.

Goal for Wetland Habitat and Associated Wildlife

Provide, protect, and manage wetland habitat for breeding and migratory birds and other wildlife that maintains the biological diversity and integrity of prairie pothole wetlands.

Goal for Visitor Services

Provide visitors of all abilities with wildlife-dependent recreation, interpretation, and environmental education opportunities that foster an appreciation and understanding of the unique wildlife, plant communities, and cultural resources of the Montana Prairie Pothole Region.

Goal for Partnerships

Maintain and expand partnerships that preserve, restore, and enhance healthy and productive prairie-wetland complexes on Bowdoin National Wildlife Refuge and within Bowdoin Wetland Management District.

Goal for Operations

Prioritize for wildlife first and emphasize the protection of trust resources in the use of staff, funding, partnerships, and volunteer programs.

Alternatives

This section summarizes the three analyses within the draft comprehensive conservation plan and environmental assessment.



Mike Artmann / USFWS

Salt residue covers the shoreline on the southeastern edge of Lake Bowdoin in late summer.

Salinity and Blowing Salts at Lake Bowdoin

The following goal is what the Service hopes to achieve by addressing the salinity and blowing salts issue, so it can manage the refuge to meet its establishment purposes and the overall vision for the Bowdoin National Wildlife Refuge Complex.

Goal: *Develop a water management system on Bowdoin National Wildlife Refuge that would protect the environment and mitigate current and future salt-dust-blowing concerns for neighboring properties while providing quality water and wildlife habitat for migratory birds.*

A major aspect of achieving this goal would be to meet the Service's salinity objective of sustaining a brackish water quality level of approximately 7,000 mg/L of total dissolved solids (salts) in Lake Bowdoin.

The Service developed and analyzed five alternatives to address the salinity and blowing salts issue for Lake Bowdoin in the Bowdoin National Wildlife Refuge:

- Salinity alternative 1—current management (no action)
- Salinity alternative 2—evaporation ponds and removal of salt residue
- Salinity alternative 3—flushing by Beaver Creek

- Salinity alternative 4—underground injection and flushing by Beaver Creek (proposed action)
- Salinity alternative 5—pumping to Milk River

The Service is proposing alternative 4 as the best option for meeting the salinity objective for Lake Bowdoin and for achieving the salinity goal for the Bowdoin Refuge. The Service expects this proposed treatment would be highly effective in meeting the salinity goal, which would result in beneficial environmental and social consequences at a reasonable cost for addressing this persistent problem.

Lake Thibadeau National Wildlife Refuge

The Service completed an environmental analysis of two alternatives to address the situation at the Lake Thibadeau Refuge (section 3.1 in chapter 3):

- Lake Thibadeau Refuge alternative 1—current management (no action)
- Lake Thibadeau Refuge alternative 2—divestiture (proposed action)

Using the divestiture model for the Mountain–Prairie Region, the Service evaluated the habitat quality and ability of Lake Thibadeau National Wildlife Refuge to meet its purposes and support the goals of the National Wildlife Refuge System. The Service owns less than 1 percent of the lands within the 3,868-acre approved acquisition boundary; the remaining area

is private land encumbered by refuge and flowage easements.

The easements give the Service the right to manage the impoundments and the uses that occur on that water and to control hunting and trapping, but these easements do not prohibit development, grazing, or agricultural uses. Due to upstream development in the watershed, the impoundments do not receive adequate water supplies and are often dry enough to be farmed. The surrounding uplands are also farmed or heavily grazed. This loss or lack of habitat is the basis for the Service's proposed action to divest this refuge.

Alternatives for the Remaining Refuge Complex Programs

The Service developed and analyzed three alternatives as options for managing habitats and public use at Bowdoin National Wildlife Refuge Complex (chapters 3 and 5):

- Alternative A—current management (no action)
- Alternative B (proposed action)
- Alternative C

Alternative B would likely have the most effective management for providing wetland and upland habitat for migratory birds. While meeting this overriding purpose of the refuge complex by mimicking natural conditions, there would be benefits to many other wildlife species. In addition, there would be increased opportunities for visitors to learn about the migratory shorebirds and waterfowl, along with other wildlife species, that rely on so many aspects of the native prairie.

Alternative A—Current Management (No Action)

The current staff of five Service employees would continue to manage Bowdoin National Wildlife Refuge Complex primarily for migratory birds. The Service would continue to manipulate native grasslands using various management techniques including prescribed fire and grazing. Approximately 10 percent of the uplands would be grazed annually, and there would be minimal monitoring of response. As resources become available, cropland on waterfowl production areas would be restored to native grasses and forbs; however, dense nesting cover would continue to be seeded

on highly erodible lands in the wetland management district. The Service would continue to use mechanical and chemical methods to control existing and new infestations of Russian olive. Larger infestations of invasive species such as crested wheatgrass would continue to be given little to no attention due to the extent of infestation and the lack of resources and staff.

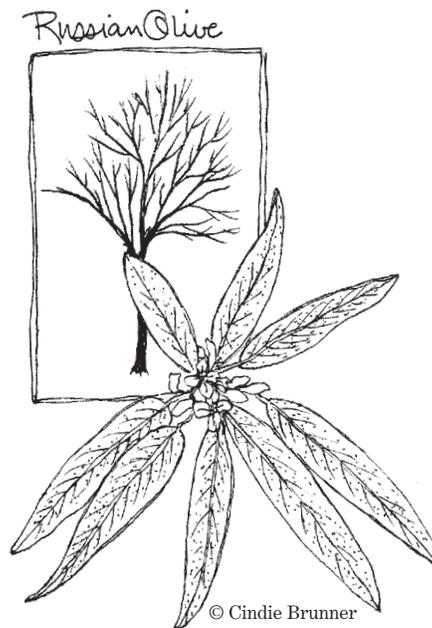
The Service would continue to attempt to mimic natural conditions on managed wetlands to meet the needs of migratory water birds. The 19 ground water wells on and around Bowdoin Refuge would be monitored to collect water quality data for the refuge and the Beaver Creek Waterfowl Production Area. Lake Bowdoin and Dry Lake would continue to be managed as closed basins.

Visitor services programs including hunting, fishing, wildlife observation, photography, environmental education, and interpretation would remain at current levels.

Alternative B (Proposed Action)

The Service would conserve natural resources by restoring, protecting, and enhancing native mixed-grass prairie and maintaining quality wetland habitat for target migratory and resident birds within the Bowdoin National Wildlife Refuge Complex. Invasive and nonnative plants that are causing habitat losses and fragmentation would be controlled or eradicated. Research would be conducted to control crested wheatgrass and restore treated areas. Enhanced wetlands would be managed to mimic natural conditions for wetland-dependent migratory birds during spring and fall migrations and during the breeding and nesting season.

Visitor services programs would be enhanced, providing additional opportunities for staff- and volunteer-led programs to provide a greater understanding of the purposes of the refuge complex, importance of conserving migratory birds and the unique mixed-grass prairie and wetlands, and an awareness of the mission of the U.S. Fish and Wildlife Service and the National Wildlife Refuge System. A sanctuary area would be created for waterfowl on the east half of the Bowdoin National Wildlife Refuge during the hunting season,



closing this to all foot traffic. A new wildlife observation site would be added on the auto tour route. The Service would work with the State to investigate the potential for offering a safe, compatible, and quality big-game hunt at Bowdoin Refuge.

The success of these additional efforts and programs would depend on added staff, research, and monitoring programs, including additional operations funding, infrastructure, and new and expanded partnerships.

Alternative C

This alternative includes most of the elements in alternative B. In addition, the Service would improve

the water management infrastructure (for example, water delivery systems, dikes, and levees to manipulate individual wetland) to create a more diverse and productive wetland complex. Biological staff would monitor the level of sedimentation occurring in natural wetlands and plan for its removal to restore the biological integrity of these wetlands.

Through partnerships, the Service would increase the acres of invasive species treated annually with an emphasis on preventing further encroachment of crested wheatgrass and Russian olive trees into native grassland. The refuge complex would serve as a conservation-learning center for the area. Public access would be improved to Creedman Coulee Refuge.

Abbreviations

| | |
|---------------------------|---|
| ac | Acre |
| A.D. | Anno Domini or “in the year of the Lord” |
| BAER | Burned Area Emergency Response |
| BAR | Burned Area Rehabilitation |
| CCP | Comprehensive conservation plan |
| CFR | Code of Federal Regulations |
| cfs | Cubic feet per second |
| cm | Centimeter |
| CO₂ | Carbon dioxide |
| Compact | Montana House Bill Number 717–Bill to Ratify Water Rights Compact |
| Compact Commission | Montana Reserved Water Rights Compact Commission |
| district | Wetland management district |
| DEQ | Montana Department of Environmental Quality |
| DNC | Dense nesting cover |
| DNRC | Montana Department of Natural Resources and Conservation |
| EA | Environmental assessment |
| EC | Electrical conductivity |
| EPA | U.S. Environmental Protection Agency |
| °F | Degrees Fahrenheit |
| FmHA | Farmers Home Administration |
| ft | Feet, foot |
| FWS | U.S. Fish and Wildlife Service |
| GIS | Geographic Information System |
| GLO | General Land Office |
| gpm | Gallons per minute |
| GPS | Global Positioning System |
| GS | General Schedule (pay) |
| HAPET | Habitat Assessment and Population Evaluation Team |
| Improvement Act | National Wildlife Refuge System Improvement Act of 1997 |
| MBOGC | Montana Board of Oil and Gas Conservation |
| mg/L | Milligrams per liter |
| mmhos/cm | Millimhos per centimeter |
| MOA | Memorandum of agreement |
| MOU | Memorandum of understanding |
| mS | MilliSiemens |
| MSGWG | Montana Sage Grouse Working Group |
| NEPA | National Environmental Policy Act |
| NWR | National wildlife refuge |
| ppt | Parts per thousand |
| Reclamation | Bureau of Reclamation |
| refuge | Refuge within the Bowdoin National Wildlife Refuge Complex |

| | |
|-----------------------|--|
| refuge complex | Bowdoin National Wildlife Refuge Complex |
| Refuge System | National Wildlife Refuge System |
| RLGIS | Refuge Lands Geographic Information System |
| Service | U.S. Fish and Wildlife Service |
| TDS | Total dissolved solids |
| µmhos/cm | Micromhos per centimeter |
| µS/cm | MicroSiemens per centimeter |
| U.S. | United States |
| U.S.C. | United States Code |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| USRS | U.S. Reclamation Service |
| WG | Wage Grade (pay schedule) |
| WPA | Waterfowl production area |

Definitions of these and other terms are in the glossary, located after chapter 7.

