

U.S. Fish & Wildlife Service
Division of Planning
P.O. Box 1306
Albuquerque, New Mexico 87103
505/248-6404
505/248-6874 Fax

<http://www.fws.gov/southwest/refuges>

Maxwell National Wildlife Refuge
P.O. Box 276
Maxwell, NM 87728
505/375-2331
505/375-2332 Fax

Cover photograph FWS

April 2006



Maxwell National Wildlife Refuges — Comprehensive Conservation Plan

Maxwell National Wildlife Refuge

*Comprehensive
Conservation Plan*

April 2006

Maxwell National Wildlife Refuge

Comprehensive Conservation Plan

April 2006

Prepared by
U.S. Fish and Wildlife Service
Region 2, Division of Planning
P.O. Box 1306
Albuquerque, New Mexico 87103

Comprehensive Conservation Plans provide long-term guidance for management decisions; set forth goals, objectives, and strategies needed to accomplish refuge purposes; and identify the Fish and Wildlife Service's best estimate of future needs. These plans detail planning program levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

COMPREHENSIVE CONSERVATION PLAN APPROVAL

for
Maxwell National Wildlife Refuge, Maxwell, New Mexico
U.S. Fish and Wildlife Service, Region 2
April 2006

The attached Comprehensive Conservation Plan for the Maxwell National Wildlife Refuge has been prepared by Regional Office and Refuge Staff. The contents and format are found to be in compliance with Service Policy on the preparation of Comprehensive Plans, and is hereby submitted for approval.

Submitted by:

Carol A. Innes
Biologist/Natural Resource Planner

4-7-06
Date

Approved by:

Patricia Hoban
Refuge Manager

4-7-06
Date

Concurrence by:

Jeannie Wagner-Dreven
Refuge Supervisor, AZ/NM (Acting)

6-15-06
Date

Gary P. Montoya
Regional Chief, NWR System, R2 Acting

6/15/06
Date

Larry Bell
Regional Director, Region 2
US. Fish and Wildlife Service acting

6/22/06
Date

TABLE OF CONTENTS

VISION	1
CHAPTER 1 INTRODUCTION AND BACKGROUND	3
Purpose of and Need for Action	3
Legal, Policy and Administrative Guidelines	4
U.S. Fish and Wildlife Service Mission and Goals	4
The National Wildlife Refuge System Mission and Goals	5
Refuge Purpose Statement	6
Refuge Overview: History of Refuge Establishment, Acquisition and Management ..	7
CHAPTER 2 PLANNING PERSPECTIVES, CONSIDERATIONS, AND ISSUES	13
Planning Process and Public Involvement	13
The Ecosystem Approach to Management	14
The Arkansas/Red Rivers Plateau Ecosystem	15
Relationship to Migratory Bird Conservation Initiatives	18
Planning Perspectives	22
Issues and Challenges	22
Expected Planning Outcomes	26
CHAPTER 3 REFUGE AND RESOURCE DESCRIPTIONS	29
Geographic/Ecosystem Setting	29
Physical Environment	30
Climate	30
Physiography and Geology	30
Soils	31
Biological Environment	31
Vegetation	31
<i>Grasslands</i>	32
<i>Woodlands</i>	34
<i>Wetlands</i>	34
<i>Croplands</i>	35
<i>Invasive Plant Species</i>	36
Fish and Wildlife	39
<i>Birds</i>	39
<i>Mammals</i>	48
<i>Reptiles and Amphibians</i>	49
<i>Fish</i>	49
<i>Invertebrates</i>	49
Species of Special Interest	50
<i>Federally Endangered, Threatened, and Proposed Species</i>	50
<i>Other Species of Concern</i>	51
Socioeconomic Environment	56
Archeological, Cultural, and Historical Resources	56
Land Use	59
<i>Water Management</i>	60
<i>Water Quality</i>	62
<i>Farming</i>	64
<i>Grassland Management</i>	67
<i>Invasive Species Management</i>	72
<i>Wilderness Review</i>	74
<i>Research</i>	76
<i>Research Natural Areas</i>	77

Public Use and Wildlife-Dependent Recreational Activities	78
<i>Hunting</i>	79
<i>Fishing</i>	81
<i>Wildlife Observation and Photography</i>	82
<i>Environmental Education and Interpretation</i>	82
Other Socioeconomic Features	83
<i>Population</i>	84
<i>Regional Economic Profile (Growth)</i>	84
CHAPTER 4 REFUGE ADMINISTRATION	87
Refuge Staffing and Facilities	87
<i>Volunteer Program</i>	88
<i>Cooperative Programs</i>	88
Memorandums of Understanding (MOU) and Other Agreements	89
<i>Current Agreements</i>	89
<i>Future Agreements</i>	90
Other Land Management	90
<i>Contaminants</i>	90
Other Administrative Considerations/Approaches	90
CHAPTER 5 MAXWELL NWR MANAGEMENT DIRECTION/PROGRAMS: GOALS, OBJECTIVES, AND STRATEGIES	93
Natural Diversity and Ecosystem Management	93
Public Use, Education, and Outreach	102
Interagency Coordination and Relationships	108
Improvement of Staff, Funding, and Facilities	110
CHAPTER 6 PLAN IMPLEMENTATION	113
Resource Projects	113
Current and Proposed Funding and Personnel	114
Partnership Opportunities	115
Step-Down Management Planning	116
<i>Completed Plans</i>	116
<i>Plans to be Completed in the Future</i>	117
Compatibility Determinations and NEPA Compliance	118
Monitoring and Evaluation of the CCP	119
Plan Amendment and Revision	119
LIST OF PREPARERS	120
REFERENCES	121
GLOSSARY	127
ABBREVIATIONS AND ACRONYMS	132
APPENDICES:	
A. Maxwell National Wildlife Refuge Species Lists	133
B. Threatened and Endangered Species List	143
C. Section 7 Consultation	145
D. Refuge Operating Needs System (RONS)	151
E. Compatibility Determinations	155

F. Key Legislation and Service Policies	175
G. Vegetation Map Accuracy Assessment	179
H. Lake Lease Status	185
I. Public Involvement and Comments	197
J. Distribution / Mailing List	207

FIGURES:

Figure 1 - Central Flyway	7
Figure 2 - Arkansas/Red Rivers Ecosystem	15
Figure 3 - New Mexico Refuges	29
Figure 4 - Vermejo Project Area	61

GRAPHS:

Annual Precipitation	30
Raptor Species Diversity	41
Peak Eagle Numbers	42
Peak Sandhill Crane Numbers	43
Peak Goose Numbers	44
Peak Duck Numbers	45
Number of Visitors	79
Revenue Sharing Act Payments	84

TABLES:

Priority Species	48
------------------------	----

MAPS:

Map 1 - Maxwell NWR Tract Map	9
Map 2 - Bird Conservation Areas	21
Map 3 - Vicinity Map	27
Map 4 - Maxwell Vegetation Map (EDAC 1999)	33
Map 5 - Invasive Species	38
Map 6 - Prairie Dog Towns	53
Map 7 - Canal/lakes/wetlands - Vermejo Ownership	63
Map 8 - Croplands	66
Map 9 - Grassland Management Units	69
Map 10 - Fire History on the Refuge	71
Map 11 - Public Use Map	80

ENVIRONMENTAL ACTION STATEMENT	209
---	------------

FONSI	211
--------------------	------------

VISION

Maxwell National Wildlife Refuge will continue to restore and enhance habitats for migrating waterfowl and other wildlife to the greatest extent possible for people of the area and the United States. Native shortgrass prairie was the predominant plant community in northeastern New Mexico before the turn of the twentieth century. Today, the refuge consists of only remnants of this plant community within an area dominated by ranching and farming. The rolling landscape is now characterized by fragmented and disturbed habitats. Future efforts will focus on implementing effective management techniques in a long-term effort to restore and protect shortgrass prairie habitat for grassland-dependent birds and other resident wildlife. The refuge will also continue to provide an environment where a diversity of fish and wildlife species and their habitats can be observed and explored, while maintaining the importance of the refuge to waterfowl. The purpose of habitat management on the refuge will be to provide healthy plant communities that best support migratory birds and other resident wildlife.

The refuge is committed to accomplishing refuge goals and significantly contributing to the mission of the national wildlife refuge system. Through partnerships with other agencies, interest groups, landowners, and local communities, the refuge will establish a range of environmental education programs, promote high quality wildlife-dependent recreational opportunities, attract new visitors, build a strong refuge support base, and enhance the local community. Local residents and visitors will view the refuge with a sense of pride and value their relationships and accomplishments with the U.S. Fish and Wildlife Service.



(photo by P. Hoban)

CHAPTER 1: INTRODUCTION AND BACKGROUND

This Comprehensive Conservation Plan (CCP) has been prepared for the Maxwell National Wildlife Refuge (Refuge). The goals, objectives, and strategies contained in this document reflect a ‘wildlife first’ management theme and focus on issues pertaining to the refuge. The refuge will manage for ecological integrity with emphasis on protection and enhancement of habitat for waterfowl and other wildlife. The refuge will also work to maintain and/or establish partnerships with stakeholders and provide opportunities for the public to learn about and enjoy the refuge.

Purpose and Need for Action

The purpose of comprehensive conservation planning is to “provide long-range guidance for the management of national wildlife refuges.” As such, all lands of the Refuge System are to be managed in accordance with an approved CCP that will guide management decisions and set forth strategies for achieving refuge purposes. The National Wildlife Refuge System Improvement Act of 1997 requires all refuges to have a CCP and provides the following legislative mandates to guide refuge management and planning:

- Wildlife has first priority in the management of refuges.
- Wildlife-dependent recreation involving compatible hunting, fishing, wildlife observation and photography, environmental education and interpretation are the priority public uses of the Refuge System.
- Other uses have lower priority in the Refuge System and are only allowed if they are compatible with the mission of the Refuge System and the purpose of the individual refuge.

This CCP provides management direction to present and future Refuge Managers for the next 15 years. It describes all management activities that occur on the refuge and provides management goals, measurable objectives, and management actions or strategies designed to enhance, protect, and restore habitats for the benefit of wildlife.

The Service’s goals for the Comprehensive Conservation Planning Process are to:

- provide a clear statement of desired future conditions (vision) for each refuge or planning unit;
- provide a forum for the public to comment on the type, extent, and compatibility of uses on refuges – provide refuge neighbors and visitors with a clear understanding of the reasons for management actions on and around the refuge;
- ensure that the refuge is managed to fulfill the mission of the System as well as the specific purposes for which it was established;
- ensure public involvement in refuge management decisions by providing a process for effective coordination, interaction, and cooperation with affected parties, including Federal agencies, State conservation organizations, adjacent landowners, and interested members of the public;
- encourage refuge planning that considers an ecosystem approach;
- demonstrate support for management decisions and their rationale by sound professional judgement, biological initiatives, and public involvement;
- provide long-term continuity in refuge management; and
- provide a uniform basis for budget requests for operational, maintenance, and capital improvement programs.

Legal, Policy, and Administrative Guidance

Administration of national wildlife refuges is governed by the designated purpose of the refuge unit as described in establishing legislation or executive orders, Service laws and policies, and international treaties. A list of most of the pertinent statutes establishing legal parameters and policy direction for the National Wildlife Refuge System is included in Appendix F, along with a summary of those laws that provide special guidance for the Service and national wildlife refuges. Many of the summaries have been taken from *The Evolution of National Wildlife Law* by Michael J. Bean. For the bulk of applicable laws and other mandates, legal summaries are available upon request.

Key concepts and guidance of the System are covered in the National Wildlife Refuge System Administration Act of 1966, the Refuge Recreation Act of 1962, Title 50 of the Codes of Federal Regulations, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System, the Fish and Wildlife Service Manual, and most recently, through the National Wildlife Refuge System Improvement Act of 1997.

The National Wildlife Refuge System Improvement Act of 1997 amends the Refuge System Administration Act of 1966 by including a unifying mission for the Refuge System, a new process for determining compatible uses on refuges, and a requirement that each refuge will be managed under a CCP. The Refuge System Improvement Act states that wildlife conservation is the priority of System lands and that the Secretary of the Interior shall ensure that the biological integrity, diversity, and environmental health of refuge lands are maintained. Each refuge must be managed to fulfill the Refuge System mission and the specific purposes for which it was established. The Act requires the Service to monitor the status and trends of fish, wildlife, and plants on each refuge. Additionally, the Act identifies and establishes the legitimacy and appropriateness of six wildlife-dependent recreational uses. These uses are hunting, fishing, wildlife observation and photography, environmental education and interpretation. As priority public uses of the Refuge System, these uses will receive enhanced consideration over other uses in planning and management. Furthermore, this Act requires that a CCP be in place for each refuge by the year 2012 and that the public have an opportunity for active involvement in plan development and revision. It is Service policy that CCPs are developed in an open public process and that the agency is committed to securing public input throughout the process. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Lands within the National Wildlife Refuge System are different from other multiple-use public lands in that they are closed to all public uses unless specifically and legally opened. No refuge use may be allowed unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgement of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. Sound professional judgement is further defined as a decision that is consistent with the principles of fish and wildlife management and administration, available science and resources, and adherence with law. Priority public uses, and other uses, can be allowed on refuges if they are compatible with the purpose of the refuge and funding is available to support them. Uses may be allowed through a special regulation process, individual special use permits, and sometimes through State fishing and hunting regulations.

U.S. Fish and Wildlife Service Mission and Goals

Since the early 1900s, the Service mission and purpose has evolved, while holding on to a fundamental national commitment to threatened wildlife ranging from the endangered bison to migratory birds of all types. The earliest national wildlife refuges and preserves are examples of this. Pelican Island, the first refuge, was established in 1903 for the protection of colonial nesting birds such as herons and egrets, which were then under threat of extinction due to the demands for their plumes for the millinery trade. The National Bison Range was instituted for the endangered bison in 1906. Malheur National Wildlife Refuge was established in Oregon in 1908 to benefit all migratory birds with emphasis on colonial nesting species on Malheur Lake. Thus began the commitment of public lands for the preservation of

migratory birds and other wildlife. The Service's responsibility broadened during the 1930s. As a result of drought, drainage of wetlands for agriculture, and unregulated hunting, waterfowl populations nationwide became severely depleted. Passage of the Migratory Bird Hunting and Conservation Stamp Act in 1934 made funds available to purchase acreage for waterfowl habitat. During the next several decades, the special emphasis of the Service (then called the Bureau of Sport Fisheries and Wildlife) was restoration of critically depleted migratory waterfowl populations.

The passage of the Endangered Species Act of 1973 refocused the activities of the Service as well as other governmental agencies. This Act mandated the conservation of threatened and endangered species of fish, wildlife, and plants both through federal action and by encouraging the establishment of state programs. In 1974, the Bureau of Sport Fisheries and Wildlife was renamed the U.S. Fish and Wildlife Service to broaden its scope of wildlife conservation responsibilities to include endangered species, as well as game and nongame species. Lands continued to be added to the Refuge System for various wildlife protection purposes including endangered species conservation. Several additional environmental laws and conservation-related laws were passed throughout the 1970s. The Fish and Wildlife Conservation Act of 1980 emphasized the conservation of nongame species and broadened management responsibilities for non-game migratory birds on national wildlife refuges.

The Service has no "organic" act to focus upon for the purposes of generating an agency mission. The agency mission has always been derived in consideration of the various laws and treaties that collectively outlined public policy concerning wildlife conservation.

The Mission of the Service is:

"working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

The goals of the Service, which are aimed at fulfilling this mission, are: 1) sustaining fish and wildlife populations including migratory birds, endangered species, anadromous fish, and marine mammals; 2) conserving a network of lands and waters including the National Wildlife Refuge System; 3) providing Americans opportunities to understand and participate in the conservation and use of fish and wildlife resources.

By law and treaty, the Service has national and international management and law enforcement responsibilities for migratory birds, threatened and endangered species, fisheries and many marine mammals. The Service assists state and tribal governments and other Federal agencies in helping to protect America's fish and wildlife resources, and the National Wildlife Refuge System plays an important role in fulfilling many of these responsibilities.

National Wildlife Refuge System Mission and Goals

The National Wildlife Refuge System (System) is the world's largest collection of lands and waters set aside specifically for the conservation of wildlife and ecosystem protection. The Mission of the National Wildlife Refuge System is:

"...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57).

Goals of the System are to 1) preserve, restore, and enhance threatened and endangered species in their natural ecosystems; 2) perpetuate the migratory bird resource; 3) preserve a natural diversity and abundance of refuge flora and fauna; provide the public an understanding and appreciation of fish and wildlife ecology; 5) provide visitors with wildlife-dependent recreation.

Over 530 National Wildlife Refuges and 38 wetland management districts covering over 92 million acres are part of the national network today. With over 77 million acres in Alaska and the remaining 15 million acres spread across the other 49 states and several island territories, over 34 million visitors annually hunt, fish, observe and photograph wildlife, or participate in environmental education and interpretative activities on refuges.

Individual national wildlife refuges are acquired under a variety of legislative acts and administrative orders and authorities. These orders and authorities usually have one or more purposes for which land can be transferred or acquired. These System units provide important habitat for many native mammals, birds, reptiles, amphibians, fish, invertebrates, and plants. Most national wildlife refuges are strategically located along major bird migration corridors ensuring that waterfowl and other migratory birds have rest stops on their annual migrations.

Individual refuges provide specific requirements for the preservation of trust resources such as migratory birds. For example, waterfowl breeding refuges in South and North Dakota provide important wetland and grassland habitat to support breeding populations of waterfowl as required by the Migratory Bird Treaty Act and North American Waterfowl Management Plan. Other refuges such as Maxwell NWR provide migration and wintering habitat for these populations. The network of lands is critical to these birds' survival. A deficiency in one location can affect the species and the entire network's ability to maintain adequate populations.

Other refuges may provide habitat for threatened and endangered plants or animals. Refuges in these situations ensure that populations are protected and habitat is suitable for their use. Refuges, by providing a broad network of lands throughout the United States, help prevent species from being listed as threatened or endangered by providing secure habitat for their use and providing recovery habitats in portions or all of a species range.

Resource management programs on refuges include water, grassland, forest, natural area, and cropland management; historical/archaeological resource management; wilderness management; and wildlife law enforcement activities. National wildlife refuges are extensively used for biological research to benefit wildlife and to improve our understanding of the environment. Scientific programs of wildlife management, wetlands management, forestry, agriculture, and soil conservation are combined for the enhancement and management of wildlife populations. In addition to protecting the Nation's natural resources, national wildlife refuges offer the public a wide variety of recreational and educational opportunities through fishing, hunting, wildlife trails, wildlife observation, nature photography, visitor centers, and environmental education programs, all of which attract millions of visitors each year.

Fulfilling the Promise

This 1999 report resulted from the first System Conference held in Keystone, Colorado in October 1998. In attendance were refuge managers from every refuge in the country, other Service employees, and leading conservation organizations. The report contained 42 recommendations packaged with three vision statements dealing with *Wildlife and Habitat, People, and Leadership*. The recommendations in the *Fulfilling the Promises* report have been incorporated into the development of goals and objectives in this draft plan, to the fullest extent possible.

Refuge Purpose Statement

Formal establishment of a unit of the National Wildlife Refuge System is usually based upon a specific statute or executive order specifically enumerating the purpose of the particular unit. Refuges can also be established by the Service under the authorization offered in such laws as the Fish and Wildlife Act of 1956 or the Endangered Species Act of 1973. In these cases, lands are identified that can provide important fish and wildlife habitat and/or contribute to the recovery of a listed species. Often, the Service works in cooperation with private nonprofit organizations in efforts to acquire suitable lands. Each refuge in the System is managed to fulfill the mission of the Refuge System as well as the specific purposes for which the refuge was established. Purpose statements are used as the basis for

determining primary management activities, and for determining allowable uses of refuges through a formal “compatibility” process.

Maxwell NWR was established on August 24, 1965 by the authority of the Migratory Bird Conservation Act (16 U.S.C. 712d) “...for use as an inviolate sanctuary, or for any other management purposes, for migratory birds.”

Refuge Overview: History of Establishment, Acquisition, and Management

Northeastern New Mexico has historically been an important section of the Central Flyway. Where irrigation water was available, lands were cultivated and the comparatively widespread production of grain coupled with scattered playa lakes provided attractive habitat for waterfowl. Old time residents of the area told of large concentrations of waterfowl, particularly geese, using the limited water areas throughout the fall and winter. In the 1920s, the New Mexico Department of Game and Fish (NMDGF) managed two lakes in the area (Lake 2, now known as Laguna Madre which was 300 acres and Lake 20 which was 67 acres) as waterfowl resting areas (NMDGF 1927). The drought and depression days of the 1930s through the 1950s gradually caused an alteration in the use of the land. The extended drought limited cultivation of these lands, with the exception of some irrigated farming. A shortage of irrigation

water made the growing of cereal grains difficult, and the switch to forage crops (alfalfa) began. As a result, waterfowl use steadily declined and was confined to irrigated lands and a few areas managed by the NMDGF. Periods of water shortage and changes in market conditions contributed to the demise of the small farmer and the growth of the cattle industry. The small farmer producing a variety of crops gradually gave way to the cattle industry, with irrigated fields producing alfalfa and grass. Drainage for agriculture purposes, increased demands for water, and water storage projects all combined to reduce the once valuable waterfowl migration and wintering areas. A variety of factors contributed to the decline of waterfowl utilization of this portion of the flyway. Overall population declines were a factor; changes in land and water uses reduced the available waterfowl food supply; and heavy hunting pressures coupled with the lack of available resting areas rendered this area unattractive to the large flocks of waterfowl that were once found here, thereby, resulting in a change in migration patterns (USFWS 1962, Mobley 1990).

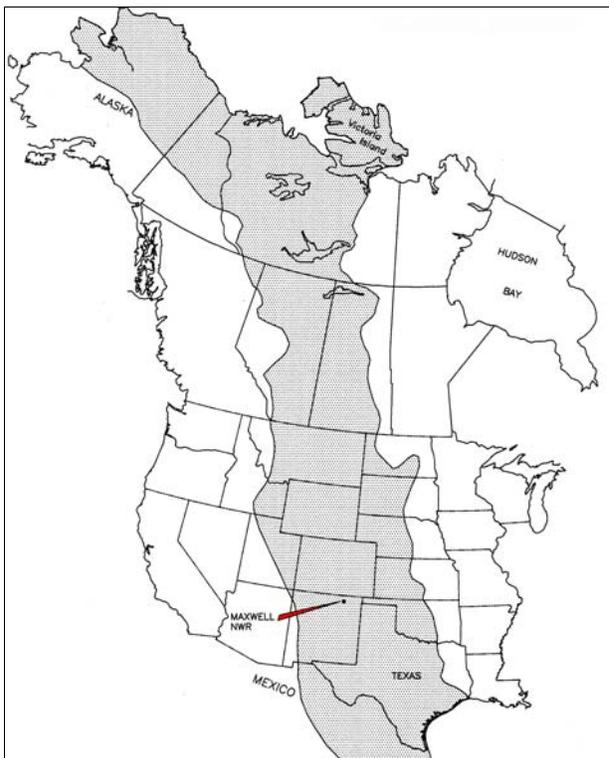


Figure 1. Central Flyway boundary.

A study made by the Branch of River Basins in 1947 shows that approximately 250,000 waterfowl migrated annually to and from their wintering grounds along the Pecos River in New Mexico. An estimated three-fourths of this flight passed through the Maxwell-Springer area on the plains south of Raton. Figures compiled by the New Mexico Department of Game and Fish for 1962 indicated populations in northeast New Mexico were considerably smaller: 42,977 ducks and 5,529 geese (USFWS 1962).

The Service began evaluating possible refuge sites in northeastern New Mexico as early as 1930. When the Central Waterfowl Flyway Council developed a Flyway Management Plan in the mid-1950s, a proposed waterfowl area for northeastern New Mexico was included. The exact location was not

delineated at the time. In 1962, preliminary investigations of establishing a waterfowl refuge in northeastern New Mexico were conducted. Several potential refuge areas were being studied for establishment as wintering areas for migrating waterfowl. Two geographic areas with the highest potential were identified for further study.

These geographic areas, totaling approximately 8,850 acres, were termed the Las Vegas-Maxwell Proposal. The proposal was comprised of two units. The proposed Las Vegas Unit consisted of approximately 5,500 acres and was located near the town of Las Vegas. The Maxwell Unit consisted of approximately 3,350 acres and was located 2-miles northwest of the small town of Maxwell in Colfax County (USFWS 1962). Later detailed studies determined that two separate refuges should be recommended for acquisition. The units were approximately 80 miles apart, had different biological objectives, and were to be managed with different wildlife management techniques. In the end, the two areas were submitted for approval as one refuge divided into two units, rather than two refuges administered as a single unit.

The primary purposes of establishing Maxwell NWR were to provide a protected feeding and resting area for Central Flyway flocks and to reduce crop depredation problems that existed in the area. The Service (then called the Bureau of Sport Fisheries and Wildlife) estimated that, under intensive refuge management, duck and goose populations approaching those of the past could be accommodated on the new refuge. During the early development phase of the refuge, plans called for providing a feeding and resting area for migrating waterfowl. The available irrigated farmlands were to be used to produce green browse and other foods for waterfowl. The existing lakes would be managed for ducks and geese (USFWS 1962).

On August 24, 1965, Secretary of the Interior Stewart L. Udall, Chairman of the Migratory Bird Conservation Commission, approved the purchase of 12,710 acres for the establishment of the Las Vegas-Maxwell NWR. The Las Vegas Unit consisted of 9446 acres and the Maxwell Unit consisted of 3264 acres. On April 26, 1966, the first tract of land was purchased for the Maxwell Unit of the Las Vegas-Maxwell NWR. In July of the same year, F.G. Spoden, Chief, Division of Realty, requested that for planning and budgeting purposes, the Las Vegas-Maxwell NWR should be considered as two separate refuges. Each unit would be designated as a separate refuge, although both refuges would continue to be under the administration of a single refuge manager. On July 27, 1966, Director John S. Gottschalk approved the separation of the Las Vegas-Maxwell NWR into two separate refuges. Although it was designated a separate refuge, Maxwell NWR was administered by Las Vegas NWR until August 1977.

The Maxwell NWR encompasses a total of 3,699 acres, which consists of 2,792 acres of acquired (purchased) land, 468 acres of land leased from the Vermejo Conservancy District, and 439 acres of land under cooperative agreement with the U.S. Bureau of Reclamation (USBR), which was later transferred to the Vermejo Conservancy District. A total of 23 tracts of land (from 19 landowners) were acquired for the refuge under the Migratory Bird Conservation Act (see Map 1). Refuge boundaries have remained the same since it was established. Most of the land acquisition was completed in 1966 and 1967, but the last three tracts were not acquired until 1976 and 1977. Each tract was managed differently over the years; therefore, overgrazing, erosion, and soil condition varied greatly at the time of acquisition.



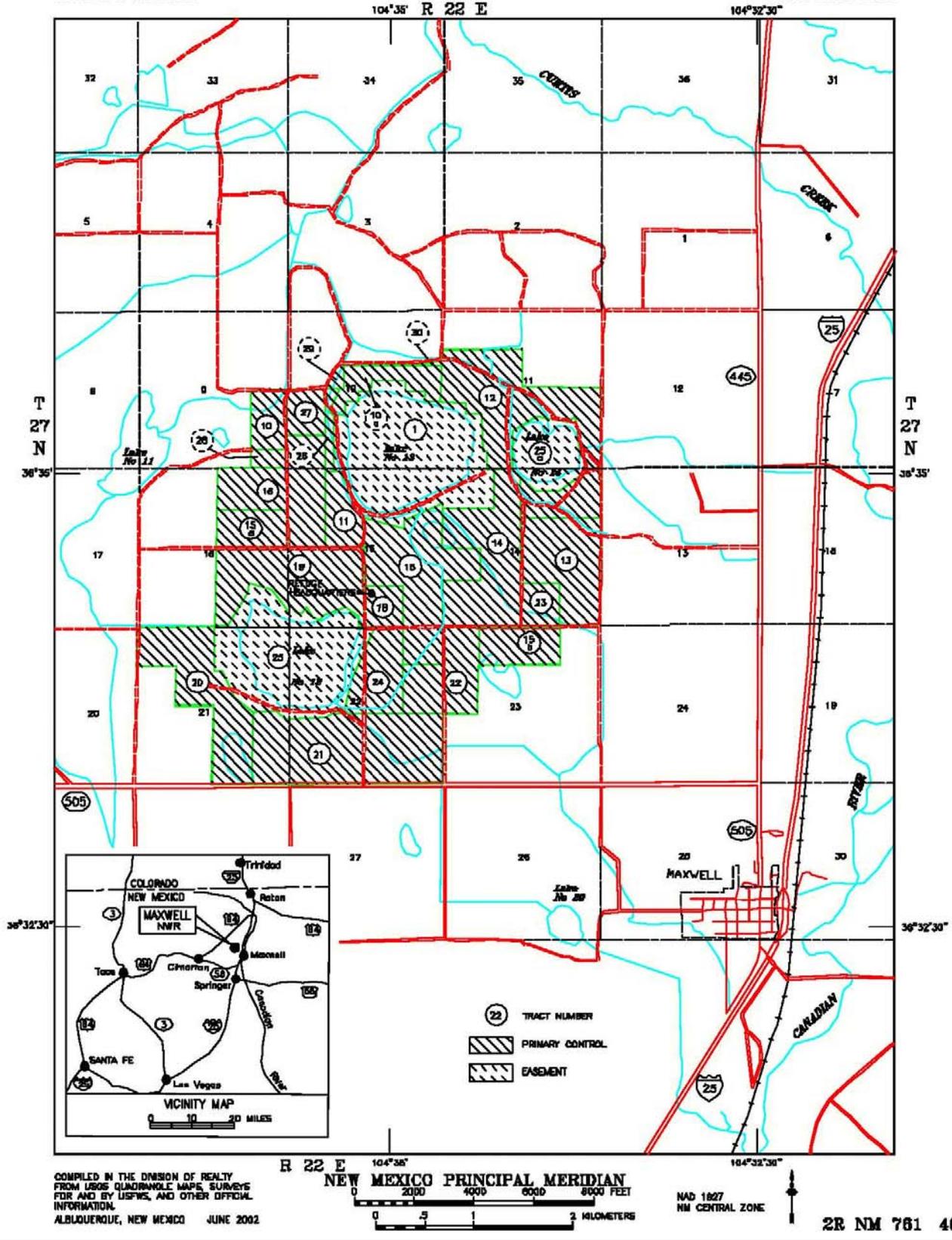
Typical homestead site (USFWS photo).

The lands within the refuge that are leased and/or under cooperative agreement consist of three irrigation reservoirs (refuge lakes 12, 13 & 14), which belong to the Vermejo Conservancy District and the USBR. These reservoirs account for the majority of water/wetlands on the refuge. All three lakes are used primarily for irrigation purposes. Irrigation

**MAXWELL NATIONAL WILDLIFE REFUGE
COLFAX COUNTY, NEW MEXICO**

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE



Map 1. Maxwell NWR Tract Map

water is supplied to the refuge by the Vermejo Conservancy District. The conservancy district is also responsible for the maintenance and repair of the irrigation water deliver system. A number of easements and rights-of-way exist within the refuge for that purpose.

There were two major land uses on the refuge prior to its acquisition. Irrigated farming was practiced on approximately 1,200 acres. Alfalfa was the major crop, which accounted for approximately 60 percent of the farming activity. Other crops included wheat, barley, oats, and corn. Approximately 1,400 acres were utilized as dryland pasture for both cattle and sheep. At the time of acquisition, all grasslands were extremely overgrazed, particularly by sheep (USFWS 1962). On some tracts overgrazing was so severe that wind erosion had removed several inches of topsoil. With no vegetation to hold runoff from thunderstorms, water erosion was becoming a problem.



Deteriorated habitat conditions at time of refuge establishment (USFWS photo).

Grazing was curtailed whenever extended use permits to former landowners expired. Contour chiseling and reseeded was started in badly eroded areas. All grasses reseeded on the eroded grasslands were species native to the area (blue grama, western wheatgrass, buffalo grass). Because of erratic rainfall patterns, success was limited. Several areas had to be reseeded three or four times before they were adequately established and over time, rangeland conditions gradually improved (Mobley 1990).

Early plans proposed management of approximately 1,000 acres of irrigated cropland within the refuge for production of waterfowl foods to assist in alleviating crop depredation problems that existed in this section of the flyway (USFWS 1962). Management during the early years was oriented toward providing feed and sanctuary. A cooperative farming program was initiated in 1967, utilizing the services of three neighbors.

The program was successful to the extent that goose and duck use of the refuge progressively increased until 1975, when dry conditions and scarcity of irrigation water caused a decline in food production. This decline continued through 1977 when the drought broke and the lakes filled again. During the dry years the cooperators lost interest in the refuge farming program. Due to the scarcity of available farmers, the refuge began force account farming in 1977. Farming practices on the refuge have always been oriented toward the production of grain and browse crops for migratory birds (Mobley 1990).

When the refuge was established, the State-managed fishing program at Lakes 13 and 14 accounted for most of the public use. The Service inherited the program when the refuge was acquired. An agreement between the Bureau of Reclamation and the NMDGF was in effect and had been since the completion of rehabilitation of project facilities by USBR. It was thought that USBR, who owned lake 13 and adjacent buffer lands, would eventually transfer them to the Service. Instead, this land was transferred to Vermejo Conservancy District in 1992.

During the early years, disturbance to wildlife was a problem because the public was allowed access to the entire shoreline of the lake. Gradually the shallow ends of Lakes 13 and 14 were closed to the public, creating a sanctuary and nesting area for waterfowl and shorebirds. An agreement was reached in 1971 between the Service and the State to close the lakes to winter fishing and prohibit water skiing.

The land comprising the refuge was purchased primarily to provide feeding and resting areas for waterfowl migrating through the Central Flyway. The refuge has focused on the production of forage crops and other habitats to sustain healthy populations of migrating birds while preventing depredation on private lands. In doing so, the refuge provides habitats for many other species of wildlife and plants. The value of this area to waterfowl and other wildlife species and their habitat has increased since the refuge's acquisition and development.

The refuge has made great strides in restoring and conserving grasslands and wetlands to fulfill its larger purpose of managing lands "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." The refuge's management activities are designed and implemented to provide habitats for a wide variety of migratory and resident species including over 221 species of birds,

41 species of mammals, 21 species of reptiles and amphibians, and 10 species of fish. This also includes federally-listed threatened and endangered species, and several other species of concern.

The Service has long recognized the importance of maintaining and restoring biodiversity on refuges. According to the Service Manual, biological diversity can be defined as the variety of life and its processes including the variety of living organisms and the genetic differences between them and the communities and the ecosystems in which they occur. The refuge recognizes it does not exist in isolation of its surroundings. Habitat on the refuge can be threatened by external factors such as contaminated air and water or altered or depleted surface and subsurface water supply. Nearly 70 percent of all fish and wildlife habitat U.S. is in private ownership. The refuge will continue to maintain a close partnership with private land owners and will work to improve the conditions for all natural resources. As a unit of the National Wildlife Refuge System, the refuge is a key component in the Service's national responsibility to maintain and restore native ecosystems and to provide for wildlife-oriented recreation and educational opportunities to the public.

CHAPTER 2: PLANNING PERSPECTIVES, CONSIDERATIONS, AND ISSUES

The refuge represents one segment of a multifaceted system of lands dedicated to the conservation and management of wildlife resources. The development of this CCP has incorporated the directives, policies, and regulations of the Service, the Refuge System, and the purpose for which the refuge was established to assist in providing guidance to the refuge for long-range management decisions.

Planning Process and Public Involvement

This CCP establishes the goals, objectives, and management strategies for Maxwell NWR. It is guided by the established purpose of the refuge, the goals of the System, Service compatibility standards, and other Service policies, legal mandates, and laws directly related to refuge management. The plan is in compliance with the requirements of the National Environmental Policy Act (NEPA). It addresses several bird conservation initiatives (such as the North American Waterfowl Management Plan and Partners in Flight), private land initiatives, and the Service's ecosystem management plans (as discussed below).

The plan is developed with specific activities to be implemented during a short time-frame. Activities proposed for implementation over the longer term, 10 to 15 years, are sometimes stated broadly with the intent that detailed step-down plans will be developed. Step-down plans for particular management programs such as grazing, public use, and prescribed fire will include implementation, monitoring and evaluation criteria. This CCP will direct the preparation or revision of step-down plans and justify budget approval for specific programs over the next 15 years.

To ensure that future management of the refuge is reflective of the issues, concerns and opportunities expressed by all interested parties, a variety of public involvement techniques were used. To begin the CCP process, a comment period notification was published in the Federal Register in June, 1998. The Service and its contract representative, Research Management Consultants, Inc. (RMCI), prepared and distributed a fact sheet which included the history of the refuge, goals and objectives and long range plans. These fact sheets were distributed at the refuge headquarters and to interested parties in March 1999. The planning process was not completed at that time due to staff changes and shifting work priorities. In April 2003, an updated scoping notice was sent to interested individuals, agencies, organizations, and other stakeholders. This notice updated the status of the project and requested comments on potential issues, concerns and opportunities, and participation in the CCP process. The fact sheets, drafts, and other relevant information have been available for public review at the refuge headquarters. In April 2004, an early draft of the CCP was provided to individuals from the New Mexico Department of Game and Fish (NMDGF) and other agencies that were invited to participate in the refuge's Wildlife and Habitat Management Review. Issues identified during the planning process are outlined in the Issues and Challenges section on page 21.

The *Draft Comprehensive Conservation Plan and Environmental Assessment* (Draft CCP/EA) was released in December 2005. The Service published a formal notice in the Federal Register requesting comments and advice from the public. The Draft CCP/EA was sent to more than 70 individuals, landowners, businesses, non-governmental organizations, city and county officials, State and Federal officials and agencies, public libraries, and media outlets (See Appendix J). A 60-day public review period was provided, with an open house held at the refuge headquarters on January 25, 2006. Comments received during the public review period were considered, and to the extent possible, incorporated into the final document (see Appendix I).

The CCP must be formally revised within fifteen years (or earlier, if it is determined that conditions affecting the refuge have changed significantly). Implementation of the Plan will be monitored to ensure that the strategies and decisions noted within are accomplished. Data collected in association with

routine inspections or programmatic evaluations will be used to continually update and adjust management activities.

Adaptive Management

The Service acknowledges that much remains to be learned about species, habitats, and physical processes that occur on the refuge, and about the ecological interactions between species. When faced with uncertainty resulting from complex ecological interactions or gaps in available data, the most effective approach to resource management over the long term is an adaptive one. *Adaptive management* refers to a management style in which the effectiveness of management actions is monitored and evaluated, and future management is modified as needed, based on the results of this evaluation or other relevant information that becomes available. The Service has been practicing adaptive management on the refuges since their establishment and plans to continue this practice. Accordingly, the management scenario proposed in this CCP provides for ongoing adaptive management of the refuge and is described more fully in Chapter 6, *Plan Implementation*.

NEPA and This Document

As the basic national charter for the protection of the environment, NEPA requires Federal agencies to consider the environmental effects of all actions they undertake. Under NEPA and implementing regulations, *action* refers to a policy, plan, program, or project that is implemented, funded, permitted, or controlled by a Federal agency or agencies. Agencies must also consider the environmental effects of all reasonable and feasible alternatives to a proposed action and possible alternatives. If adverse environmental effects cannot be entirely avoided, NEPA requires an agency to show evidence of its efforts to reduce these adverse effects and to restore and enhance environmental quality as much as possible. The EA that addresses the environmental effects of implementing this CCP is attached.

The Ecosystem Approach to Management

In 1994, the Service adopted an ecosystem approach to more effectively achieve its mission of fish and wildlife conservation for future generations. The ecosystem approach is defined as “protecting or restoring the natural function, structure, and species composition of an ecosystem while recognizing that all components are interrelated”.

Ecosystem management includes preservation of the natural ecological integrity, ecosystem health, and sustainable levels of economic and recreational activity. This approach emphasizes the identification of goals that represent resource priorities on which all parts of the Service will collectively focus their efforts. These cross program partnerships within the Service and partnerships with outside entities assist in the identification of common resource goals and contribute to the accomplishment of those goals in an effective and timely manner.

The Service has defined 53 ecosystems within the United States and US Caribbean Islands, based on US Geological Survey watershed boundaries. All of the Service’s field units (National Wildlife Refuges, National Fish Hatcheries, Law Enforcement, Ecological Services Offices, Fishery Resources Offices) within an Ecosystem Unit are involved in preparing a resource management plan for the Unit. The Ecosystem Approach also mandates cooperation between the Service and the various entities that control land or make decisions about land management within the Ecosystem Unit, including other federal agencies, state agencies, municipalities, private interests, organizations and individual landowners. In order to implement the ecosystem approach, the Service has established ecosystem teams consisting of members representing the various field stations and programs within the Service in any given area. These teams are helping the Service present a more unified approach and will work closely with traditional partners, as well as expanding partnerships with others. The refuge plays an integral role in the coordination of, and is an active participant in, projects identified by the ecosystem team as priority projects in order to accomplish the overall goals of the team. Management decisions incorporate pertinent biological and socioeconomic parameters within the ecosystem. Each team developed an ecosystem plan with input from its partners. This plan is used to implement collaborative

projects across Service programs and with partners. The ecosystem that the refuge falls within is known as the Arkansas/Red Rivers Ecosystem (Ecosystem) (Figure 2).

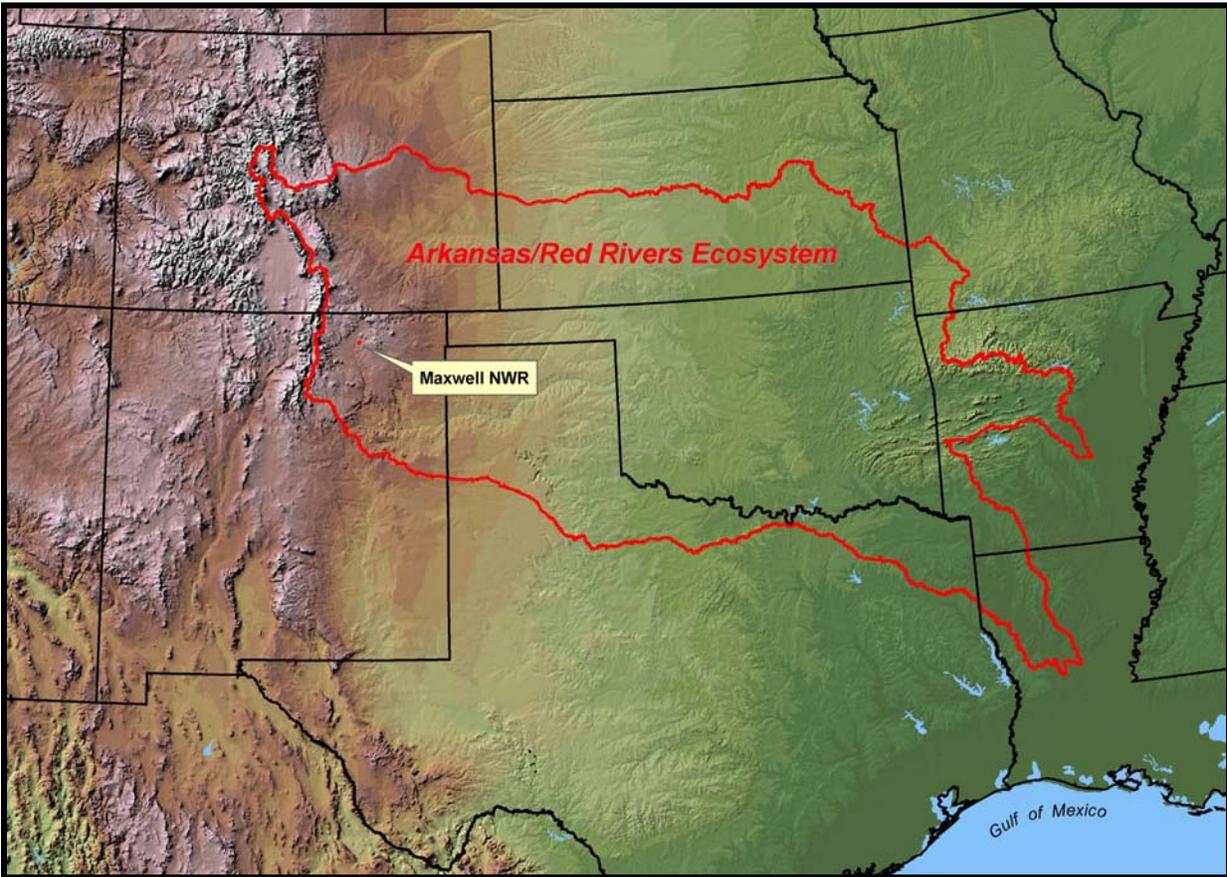


Figure 2. Arkansas / Red Rivers Ecosystem boundary

The Arkansas/Red Rivers Ecosystem

The Canadian River is a tributary to the larger Arkansas River. The location of the Maxwell NWR within the Canadian River watershed places this refuge in the Arkansas/Red Rivers Ecosystem. This ecosystem contains approximately 245,000 square miles and extends from the Rocky Mountains to the bayous of Louisiana, and contains all of Oklahoma and parts of seven other states. Because of the diversity in land forms, soils, average annual precipitation, and other factors, the Arkansas/Red Rivers Ecosystem supports the greatest diversity of fish and wildlife resources of any Service ecosystem nationwide (USFWS 2000).

Portions of four Service Regions (Regions 2, 3, 4, and 6) occur within the Arkansas/Red Rivers Ecosystem. Twenty-four Service field stations are located here, including 16 National Wildlife Refuges, four National Fish Hatcheries, three Law Enforcement Offices, and one Ecological Service Field Office. The Ecosystem Plan identifies 15 ecoregions, as defined in Omerick (1987), that occur within the Arkansas/Red Rivers Ecosystem. Each of these is discussed briefly in the Ecosystem Plan (USFWS 2000), as a background to the management objectives and strategies identified in the plan.

The Maxwell NWR is within the Southwestern Tablelands ecoregion, which extends throughout much of eastern Colorado, northeastern New Mexico, and portions of northwestern Oklahoma and Texas. The natural communities of this ecoregion are dominated by shortgrass prairies and shinnery oak scrub.

Resource threats in this ecoregion center on conversion of native grasslands and scrublands to agricultural production, and overgrazing by domestic livestock. Opportunities exist to improve grazing regimes, restore native grasslands, and work with federal, state, and local agencies as well as private organizations to gain information and to better manage the declining resources in the refuge eco-region (USFWS 2000).

There are complex resource management issues associated with this ecosystem. A diversity of human cultures competing for limited access to water rights and growing resource demands have depleted, and at times, contaminated ground and surface water. Impacts from previous water and land management practices for agricultural needs have seriously altered the Ecosystem by reducing native habitats and species diversity. Impacts from oil and gas development, mining, and urbanization further increased the need for more responsible utilization of land and water resources that support the remaining native communities. The proposed management priorities for the Arkansas/Red Rivers Ecosystem focus on managing Federal trust fish and wildlife resources, including traditional recreational opportunities and more recent directions involving ecological integrity, water conservation issues, and private lands initiatives.

Based on the broad issues identified throughout the entire Ecosystem, the Service has developed the following objectives, as described in the Arkansas/Red River Ecosystem Plan (USFWS, 2000):

Water Conservation

Objective 1: Water quantity maintenance and improvement

With partners, and under the constraints of State primacy in matters concerning water allocation, the Service will seek methods to facilitate the conservation of water resources for the management of important fish and wildlife species and habitats, with emphasis on areas downstream of Federal water management facilities. Efforts will concentrate on the maintenance of instream flows and groundwater resources to support native flora and fauna. Maintenance and development of an adequate water supply for wetlands management on existing Service lands and partner's projects also will be emphasized.

Objective 2: Water quality maintenance and improvement

With partners and stakeholders, assure that Federal and State water quality standards are established and applied in a manner that protects and enhances all aquatic resources.

Species and Habitats

Objective 1: Focus species conservation and restoration

As a result of the large area contained within the ecosystem, an enormous number of species occupy its diverse habitats. Identified focus species groups include migratory birds, federally-listed, proposed, candidate, and rare species, as well as inter-jurisdictional fisheries, and non-indigenous species. Even though this objective treats the needs of individual or groups of species, the majority of action items identified seek to conserve, restore or enhance the habitats upon which these species depend.

Objective 2: Conserve and restore focus habitats

A variety of important habitats are under threat due to human alterations and developments. Habitats of significant importance that are under threat throughout the Arkansas/Red Rivers Ecosystem include wetlands, streams and floodplain forests, native grasslands, upland forests and cave systems.

Quality of Human Life

Objective 1: Increase public outreach efforts relative to Service programs

Conservation of our wildlife heritage can only be accomplished by increasing public knowledge of the related problems and opportunities through environmental education, exhibits, pamphlets and other means.

Objective 2: Improve outdoor recreational opportunities

There is an increased demand for outdoor recreational activities with the expanding human population in the Arkansas/Red Rivers Ecosystem. Popular activities include bird watching, fishing, hiking and hunting among others.

In developing goals and objectives for this CCP, each of the above listed ecosystem objectives were considered and addressed to the greatest extent possible considering the purpose of the refuge. The Ecosystem Plan does not specifically mention Maxwell NWR activities or programs; however, the refuge can potentially play an important role in achieving most of the ecosystem objectives. The objectives, strategies and action items identified in the Ecosystem Plan for Water Conservation emphasize other parts of the ecosystem and are not applicable to refuge. The CCP contributes to the following Ecosystem Objectives:

Ecosystem Objective #1 under Species and Habitats.

Strategy 1: Conserve and restore migratory birds *Action:* improve important habitats on NWRs for migratory birds. *Action:* conduct and facilitate investigations to identify neo-tropical bird species use of Ark/Red refuges.

Strategy 3: Conserve and recover listed, proposed, candidate, and rare species. *Action:* protect and restore the diversity and integrity of important habitats within the Ark/Red for listed, proposed, candidate, and rare species.

Strategy 4: Management of non-indigenous species (invasive species control).

These are addressed in strategies described under CCP Goal 1, Objectives 2, 3, 4, 5, 6, 7, and 8.

Ecosystem Objective #2 under Species and Habitats:

Strategy 5: Conserve and restore native grassland habitat. *Action:* conduct and facilitate inventories, studies, and assessments on prairie species. *Action:* conserve and restore native grasslands on NWRs. *Action:* conduct needed research activities on NWRs relative to management of native grassland species and systems. *Action:* develop management plans to protect shortgrass prairie. Strategies described under CCP Goal , Objectives 1, 2, and 7 work toward meeting this ecosystem objective.

Ecosystem Objective #1 for Quality of Human Life:

Strategy 1: Increase public awareness of relationships between fish and wildlife conservation and quality of human life. Several actions listed in the Ecosystem Plan apply. Strategies identified under CCP Goal 2, Objectives 1 and 2 address this need.

Ecosystem Objective 2 under Quality of Life:

Strategy 1 - Provide recreational opportunities to increase public enjoyment and awareness of fish and wildlife resource conservation and quality of life. *Action:* develop recreation plans for NWRs. This is addressed in the CCP Goal 2, Objective 3.

Relationship to Migratory Bird Conservation Initiatives

There are several ongoing migratory bird conservation initiatives that all refuges should participate in to the extent applicable and practical. The following documents influence the future management of Maxwell NWR. The goals and objectives identified in this document for the refuge contribute to the implementation of following initiatives (see strategies under CCP Goal 1, Objectives 2, 4, 5, and 7; Goal 3, Objective 1; and Goal 4, Objective 1). Maxwell NWR is located in the Central Flyway, a route traveled annually by numerous species of waterfowl and other migratory birds. Two hundred and twenty-one bird species have been documented on the refuge (see Appendix A for a complete list). Twenty-seven species are waterfowl.

North American Waterfowl Management Plan

Waterfowl populations in North America had plummeted to record lows by 1985. Recognizing the importance of waterfowl and wetlands to North Americans and the need for international cooperation to help in the recovery of shared resources, the Canadian and United States governments developed a strategy to restore waterfowl populations to levels seen in the 1970s through habitat protection, restoration, and enhancement. The strategy was documented in the *North American Waterfowl Management Plan* (NAWMP or Plan) and was signed in 1986.

The plan was originally signed by the United States Secretary of the Interior and the Canadian Minister of the Environment with an initial goal of restoring waterfowl population numbers to levels observed in the 1970s. The North American Waterfowl Management Plan Committee realized that to make the plan effective it would have to be updated regularly to consider changes in the environment, society, and political policy. In 1994, the NAWMP was updated and became truly continental in scope when the Secretario de Desarrollo Social Mexico joined the United States Secretary of the Interior and the Canadian Minister of the Environment as a signatory of the plan.

The most recent update of the plan was in 1998. The updated goals seek the protection of 12.2 million acres of wetland ecosystem habitat and the restoration and enhancement of 15.2 million acres of wetland habitat. Waterfowl population goals continue to be the restoration of population numbers as seen in the 1970s. The plan's success depends upon partnerships involving Federal, State, provincial, and local governments, businesses, conservation organizations, and individual citizens. These partnerships are called joint ventures. Through these joint ventures, NAWMP is able to achieve its objectives with the assistance of its partners to collectively accomplish what is often difficult or impossible to do individually.

Implementation of the plan is at the regional level, through 12 regional habitat "Joint Ventures" in the United States. The Maxwell NWR is within the Playa Lake Joint Venture area (see Map 2). The playa lakes on the refuge provide vital habitat for migratory birds and resident wildlife. They are important for resting, breeding, nesting and/or winter residency for many species. Additional information on NAWMP and joint ventures can be found at <http://northamerican.fws.gov/NAWMP/jv.htm>.

Partners in Flight

Partners in Flight (PIF)/*Compañeros en Vuelo/Partenaires d'Envol* was launched in 1990 in response to the growing concerns about declines in the populations of numerous neotropical migrant landbird species, and to emphasize the conservation of birds not covered by existing conservation initiatives. The initial focus was on species that breed in the Nearctic (North America) and winter in the Neotropics (Central and South America), but the focus has since expanded to include all land birds of the continental United States.

PIF is a cooperative effort involving partnerships among Federal, State, and local government agencies, philanthropic organizations, professional organizations, conservation groups, industry, the academic community, and private individuals. The goal of PIF is to focus the combined resources of agencies,

academia, and private organizations on the improvement of monitoring and inventory, research, management, and education programs relating to landbirds and their habitats. Implicit in the plan is the need to identify, protect, manage and restore essential habitat for declining species.

Maxwell NWR is within Bird Conservation Region (BCR) #18, the Shortgrass Prairie, which covers the grasslands east of the Rocky Mountain chain from Wyoming south to include the eastern third of New Mexico. The refuge is near the boundary of BCR 16, the Southern Rocky Mountains/Colorado Plateau, and the birdlife of Maxwell NWR is influenced accordingly. Major landforms in and around Maxwell NWR include valleys, lowlands, outwash plains, and alluvial fans and terraces. Grama and galleta grasses and four-wing saltbush occur along with sand sage at lower elevations, pinyon-juniper at higher elevations, and conifers are in the scattered mountain ranges.

Riparian strips along water courses have cottonwood-willow and non-native salt cedar. The high dry plains that surround Maxwell are covered with a shortgrass prairie dominated by grama and buffalo grasses with scattered woodlots that consist largely of Siberian elms. Priority habitat and associated birds in this BCR include: *Grasslands* - Swainson's hawk, mountain plover, long-billed curlew, Sprague's pipit, and Chestnut-collared longspur; *Riparian* - Lewis's woodpecker; *Desert Scrublands* - scaled quail, Cassin's sparrow, and lark bunting; *Pinyon-juniper* - Ferruginous hawk, gray flycatcher, Cassin's kingbird, gray vireo, and juniper titmouse; *Wetlands* - Wilson's phalarope.



Cassin's kingbird (photo by P. Hoban).

Many of these species occur or have potential habitat on Maxwell NWR and are further discussed in the Fish and Wildlife section of this document. Additional information on PIF and species priorities for the area can also be found at <http://www.partnersinflight.org>, <http://www.rmbo.org/pif/index.html>, and <http://migratorybirds.fws.gov/reports/bcc2002.pdf>.

U. S. Shorebird Conservation Plan

The U.S. Shorebird Conservation Plan is a partnership involving organizations throughout the United States committed to the conservation of shorebirds. The organizations and individuals working on the Plan have developed conservation goals for each region of the country, identified critical habitat conservation needs and key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face. The Plan has three major goals at different scales. At a regional scale, the goal of the Plan is to ensure that adequate quantity and quality of habitat is identified and maintained to support the different shorebirds that breed in, winter in, and migrate through each region. At a national scale, the goal is to stabilize populations of all shorebird species known or suspected of being in decline due to limiting factors occurring within the U.S., while ensuring that common species are also protected from future threats. At a hemispheric scale, the goal is to restore and maintain the populations of all shorebird species in the Western Hemisphere through cooperative international efforts.

The Plan is designed to complement the existing landscape-scale conservation efforts of the North American Waterfowl Management Plan, PIF, and the North American Waterbird Conservation Plan. Each of these initiatives addresses different groups of birds, but all share many common conservation challenges. One major task is to integrate these efforts to ensure coordinated delivery of bird

conservation on the ground in the form of specific habitat management, restoration, and protection programs. Additional information on this plan can be found at <http://shorebirdplan.fws.gov>.

North American Waterbird Conservation Plan

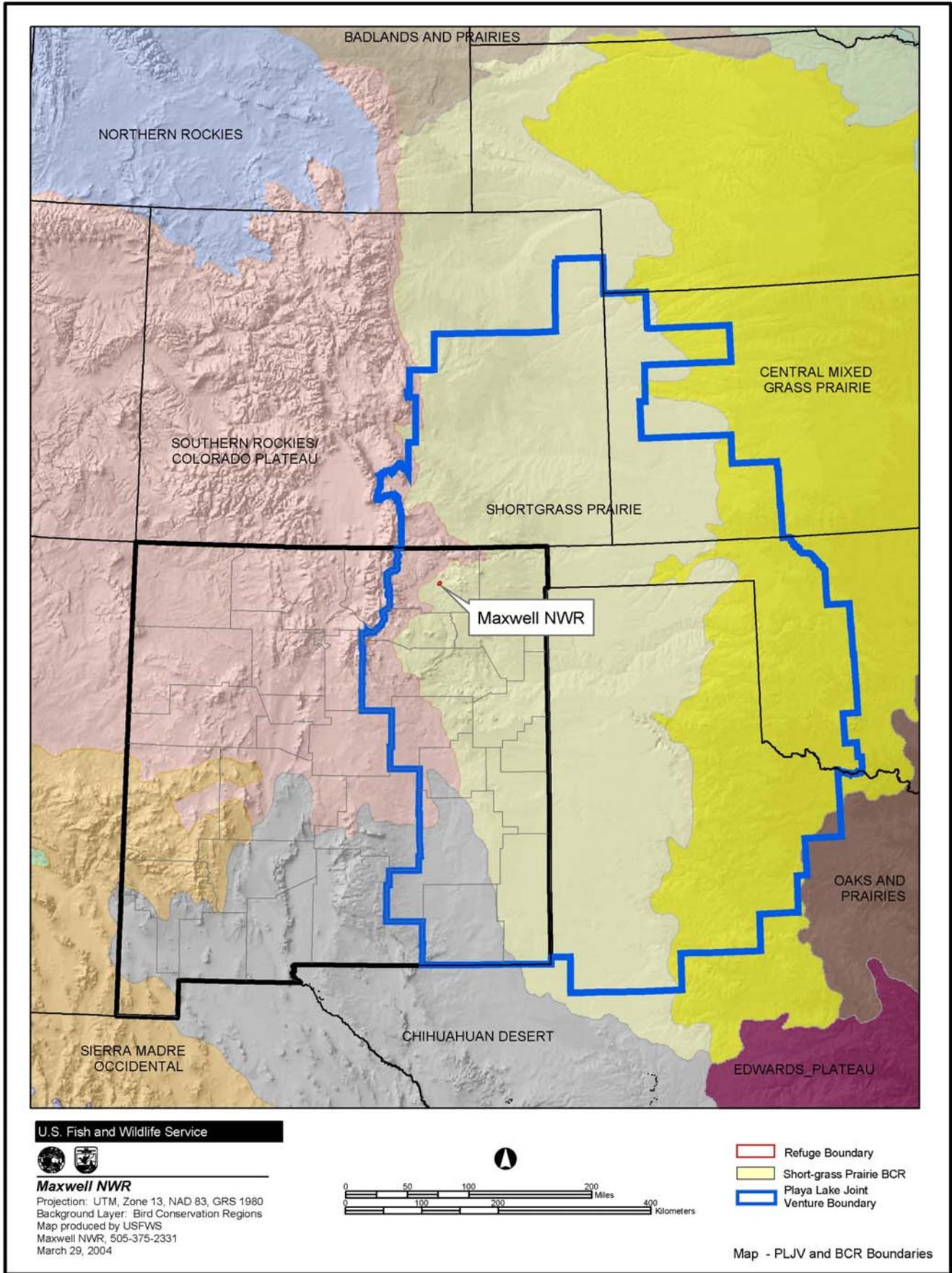
The North American Colonial Waterbird Conservation Plan was initiated in July of 1998 to advance the conservation of colonial-nesting waterbirds and their habitats in North America. A partnership of non-governmental agencies, researchers, private individuals, academics, and federal and state government agencies will be gathering information and developing the plan. The mission is to create a cohesive multinational partnership for conserving and managing colonial nesting waterbirds (seabirds, wading birds, terns, and gulls) and their habitats throughout North America. The goal is to produce a plan whose implementation results in maintaining healthy populations, distributions, and habitats of colonial nesting waterbirds in North America throughout their breeding, migratory, and wintering ranges. In 2000, the focus of this conservation planning effort expanded beyond colonial waterbirds to include non-colonial waterbirds and secretive marshbirds not covered by other conservation plans, such as rails, bitterns, grebes, etc. The name of the plan changed accordingly to the North American Waterbird Conservation Plan. The plan is still under development, but when completed the plan may have impacts on future refuge planning.

North American Bird Conservation Initiative

The primary role of the North American Bird Conservation Initiative (NABCI) is to coordinate, not duplicate, the efforts of the four major land bird plans: North American Waterfowl Management Plan, Partners In Flight, U.S. Shorebird Conservation Plan, and North America Waterbird Conservation Plan. Many of the birds targeted by these plans share the same habitats. By leveraging the plans limited resources, both human and financial, we will improve the outlook for bird conservation across all of North America. The NABCI, a coalition of U.S., Canadian, and Mexican governmental agencies and private organizations, is the most inclusive framework for bird conservation ever assembled on this or any other continent. The purpose of the NABCI is to ensure the long-term health of North America's native bird populations by increasing the effectiveness of existing and new bird conservation initiatives, enhancing coordination among the initiatives, and fostering greater cooperation among the continent's three national governments and their people. All of this will be done with appreciation of the cultural and biological differences that make each country unique.

This conservation approach is expressed through NABCI's goal of delivering the full spectrum of bird conservation through regionally based, biologically driven, landscape-oriented partnerships. "Regionally based" partnerships involve all stakeholders across ecoregions and are the proven means of effectively delivering bird conservation. "Biologically driven" means that there must be explicit linkages among population objectives, habitat goals, and conservation actions. It also means that evaluation and adaptability are critical components of successful conservation efforts. "Landscape-oriented" recognizes the response of bird populations to habitat conditions across broad ecoregions and the need for conservation to operate at multiple geographic scales.

The refuge is within the Shortgrass Prairie Bird Conservation Region (BCR) (shown in Map 2). The Shortgrass Prairie lies in the rainshadow of the Rocky Mountains, where arid conditions greatly limit the stature and diversity of vegetation. Some of the continent's highest priority birds breed in this area, including the mountain plover, McCown's longspur, long-billed curlew, ferruginous hawk, burrowing owl, and lesser prairie-chicken. Reasons for the precarious status of these birds are poorly understood but could involve a reduction in the diversity of grazing pressure as bison and prairie dogs have largely been replaced by cattle. For migrants, it is possible that the conditions of wintering grounds could also be having a negative impact. The Playa Lakes area in the southern portion of this region consists of numerous shallow wetlands that support many wintering ducks, migrant shorebirds, and some important breeding species, such as the snowy plover. Additional information on the BCRs can be found at <http://www.nabci-us.org/>.



Map 2. Bird Conservation Areas

Planning Perspectives

This CCP identifies goals and objectives for the management of the refuge and strategies to achieve those goals and objectives. The CCP establishes a practical foundation for preparing realistic and justifiable budgetary requests. Its implementation will ensure consistency of management over time while providing the flexibility needed to address particular issues as they arise.

This comprehensive planning effort will integrate the following perspectives so that management direction over the next 15 years will produce holistic management approaches for Maxwell NWR:

1. A broad perspective for overall environmental issues including endangered species, biological diversity, water issues, interjurisdictional cooperation, and socioeconomic considerations.
2. A focused perspective for the System related to policy issues that affect the refuge programs (compatibility, endangered species management, etc.).
3. A local perspective for refuge-related activities and programs affecting land and species management (habitat management, land protection, endangered species management, research, contaminants, recreational use, etc.).

An understanding of these perspectives and the relationship between them lead to the formulation of an integral set of refuge goals, objectives, and management actions for the next 15 years.

Issues and Challenges

The following is a list of issues and challenges that were identified by the public and Service staff as the most significant concerns related to the management of the refuge over the next 15 years. The questions under the issues that follow were derived from ongoing management concerns since the refuge's establishment and are addressed in the text of the CCP and/or within the goals and objectives section.

Issue 1. Biological Information

The refuge lacks good biological baseline information. Acquiring baseline information on Refuge biological communities will enable the staff to make better management decisions affecting the refuge's resources. Due to the constraints of staffing and funding, much of this information is not yet available. There is a need to inventory the refuge habitats and identify areas where the natural biological communities can be restored. A thorough database of biological information would enhance resource decision making. This information would be integral for the implementation of planned management programs that protect, maintain, and restore native habitats within the refuge.

- What strategies should be adopted by the refuge that would benefit a variety of species?
- What baseline surveys are necessary to inventory existing biological resources?
- What additional inventory, analysis and monitoring is necessary to adequately understand what is occurring on the refuge?
- What strategies should be adopted to improve the monitoring and evaluation of plant and wildlife resources on the refuge?
- What will be the appropriate and minimum tools used to better inventory, monitor and evaluate resources?
- What role will research play in the refuge's future?
- To what degree should research directly contribute to the refuge's purposes and goals?
- Should the refuge establish long-term monitoring programs to better understand present and future status of species of concern?
- Should the refuge emphasize the management of native grasses through native seed planting and the control of invasive species through fire, herbicides and mechanical control, or grazing?

- Should the refuge be set up to serve as a demonstration model for local ranchers as well as for researchers and scientists?
- Should the refuge set up permanent transect lines to monitor long-term changes in vegetative structures and wildlife populations?
- How much emphasis should be placed on controlling invasive species?
- What are the most effective means of controlling invasive species?

Issue 2. Grassland Management/Grazing

Historically, habitat on the refuge was short-grass prairie, but conversion of native prairie for farming and ranching created changes to the landscape that are still evident. When the refuge was acquired, the grasslands were severely over-grazed. Grazing was stopped when extended use permits to former landowners expired. No grazing has occurred on the refuge since 1972.

After over 30 years with no disturbance, refuge grasslands are in a deteriorated state and it is believed that overrest is the primary reason for the grassland's poor health. Overrest occurs when disturbance is absent for such a long time that the accumulated growth of past years prevents the plants from cycling enough energy to remain vital (Sayre 2001). The plants become more susceptible to or weakened by drought, fire, and competition from invasive plant species. This type of management (or lack of management) can in the long run have the same impact as overgrazing.

Several invasive species are common on the refuge and are reducing the quality and potential of the native grassland. It is recognized that invasive plant species pose a threat to the native grass and riparian communities by out-competing native plant species and forming monocultures.

The refuge has reached the time when a change in management of some of the grasslands is necessary. Ground cover in some areas has become too dense and decadent. Declines in grassland quality are a concern for native wildlife and migratory birds. Many of the most common species on the refuge are considered grassland obligate birds. The refuge provides extensive mature prairie that has developed in the absence of grazing. These areas are more suitable habitat for these species than is generally available outside the refuge.

Managed grazing and/or controlled burning would remove some of the excess vegetation, open those areas up for wildlife use, and reduce potential fire danger. Livestock grazing can be a habitat management tool used to enhance, support, and achieve established wildlife management objectives. Controlled cattle grazing can duplicate the effects of bison, elk, and pronghorn on grasslands by removing dead vegetation and providing hoof cultivation (Sayre 2001). This aerates the soils and re-seeds native plants, which prevents plant stagnation and promotes plant succession. Properly managed grazing and/or prescribed fire serve to maintain and encourage native grasses and forbs, and cycle nutrients through the ecosystem. Key issue questions include:

- C Should habitat plans be developed to address conservation needs for restoring native grassland?
- C What strategies should the refuge implement to restore, maintain, and protect grasslands to benefit native plant and animal communities?
- C Should livestock grazing be used as a management tool?
- C What are the minimum, appropriate tools necessary to better inventory, monitor and evaluate resources?
- C Should a permanent monitoring program be established to evaluate the transition from a degraded grassland habitat to a restored grassland habitat?
- C What level of disturbance (grazing and/or burning) is appropriate to maintain/improve habitat for obligate grassland birds?

Issue 3. Water Management

Water is vital to refuge operations, but the refuge has no existing water rights or any control over management of impounded water for its own uses or for secondary storage. Lakes 12, 13, and 14 (which are contained within the refuge boundary and comprise the majority of the wetlands) are owned and managed by the Vermejo Conservancy District for irrigation purposes. In place of water rights, the refuge owns 946.75 irrigation shares (for which an assessment fee is paid each year). Irrigation water is prorated biannually based on the existing volume of stored water. Under ideal conditions, one water share equals 1.5 acre feet of water or 18 inches as defined by the proration. Problems arise in dry years when shares are prorated based on depleted lake levels. During times of drought, the lakes can actually be emptied. Timing of irrigation and lake depletions can have significant impacts on feeding, nesting, and roosting of migratory waterfowl and shorebirds. Lack of irrigation water also affects the refuge's ability to grow crops for wintering migratory waterfowl.

In the past, the refuge did not participate in decisions regarding the water management on these units. Water management by the Vermejo Conservancy District generally benefits (during wet years) the refuge by providing approximately 700 acres of waterfowl roosting and feeding habitat.

- C What is the best way to coordinate water management activities with other water users?
- C What methods or procedures should be developed and implemented to monitor water quality on the refuge and address potential contaminant issues (i.e. selenium)?

Issue 4. Public Use

The National Wildlife Refuge System Improvement Act of 1997 established six priority wildlife-dependent public uses of the Refuge System. These uses are hunting, fishing, wildlife observation, photography, environmental education and interpretation. Although Congress expects managers to facilitate these priority uses, they must be compatible with the purpose for which the refuge was established and the mission of the Refuge System (see page 114 and Appendix E). The refuge currently offers opportunities for wildlife observation, photography, fishing, and limited environmental education and interpretation. Potential opportunities for hunting and increased environmental education/interpretation should be explored.

The public has expressed interest in hunting deer and waterfowl on the refuge; therefore, the potential for hunting is being assessed. National wildlife refuges are closed to all hunting unless specifically opened under federal refuge regulation to hunting of particular species. The opening of a wildlife refuge area to hunting will be dependent upon the provisions of law applicable to the area and upon a determination that the opening of the area to hunting will be compatible with the principles of sound wildlife management and will otherwise be in the public interest (50 CFR 32.1). The purpose and scope of refuge hunts should be to provide opportunities where there are none, and not duplicate but complement efforts by other agencies.

The refuge encompasses only 3, 699 acres. A total of 11 miles of refuge and county roads (public access) surround and/or bisect the refuge. Further investigation (in cooperation with NMDGF) into whether current populations could sustain hunting; whether there is legitimate public demand for this activity; and whether a hunting program could safely be implemented on the refuge is necessary before deciding the type and extent of hunting opportunities that could/should be allowed on the refuge.

- Can hunting be done safely?
- What are hunting opportunities in the surrounding area?
- Do deer populations need to be managed?
- What are current deer populations, movements, impacts to croplands on/off refuge?

The refuge has opportunities to increase community involvement and assistance in natural resource programs; enhance wildlife compatible recreation opportunities, and expand wildlife education and

community outreach. Community outreach and environmental education would be instrumental in building a supportive constituency and furthering the understanding, appreciation, and stewardship of our natural resources. Key questions include:

- What types of environmental education and interpretation programs should be implemented?
- What information should be included in brochures and other literature distributed by the refuge?
- What interpretive efforts can be implemented for the refuge?
- What educational services/experiences should the refuge offer to area schools and teachers?
- What emphasis should be given to off-site educational and informational programs?
- What accessibility arrangements are needed on the refuge?

Issue 5. Management of Research Natural Area

It has been suggested that the refuge needs to pay attention to the preservation of the RNA. In addition, it has been recommended that the refuge's 80-acre RNA (which is mostly alkali sacaton) be enlarged to include the 200+ acres of shortgrass prairie on its east side. It is important to have ungrazed prairie for comparison with grazed, and this area supports a good stand of buffalo and grama grasses. Designation as a research natural area would encourage vegetation monitoring and data analysis.

- What type of research and/or education opportunities should be developed?
- What management activities should occur in the RNA?
- Will expansion of the RNA provide greater protection to grasslands outside of the RNA?
- Has the existing RNA received any benefits that other refuge grasslands have not?

Issue 6. Interagency Coordination

Many resource agencies may be duplicating efforts when implementing programs to provide habitats that support native plant and animal communities. By working together, land management agencies and private stakeholders can integrate management strategies on a broad ecosystem-wide basis. Establishing fruitful working relationships with other agencies and jurisdictions would encourage resource sharing, produce more effective outcomes, and enhance the role of the refuge in the surrounding communities.

- How can the refuge improve communication with other agencies to coordinate and partner on projects that benefit natural resources?
- What new cooperative efforts should be investigated?
- What cooperative management tools should be put into place?
- Should the refuge enter into partnerships to increase the wildlife habitats off the refuge?
- Should the refuge enter into partnerships with other federal and state agencies to enhance wildlife management off the refuge?
- Should the refuge establish an MOU with the conservation community to conduct wildlife, recreational and environmental education programs on the refuge?

Issue 7. Funding and Staffing

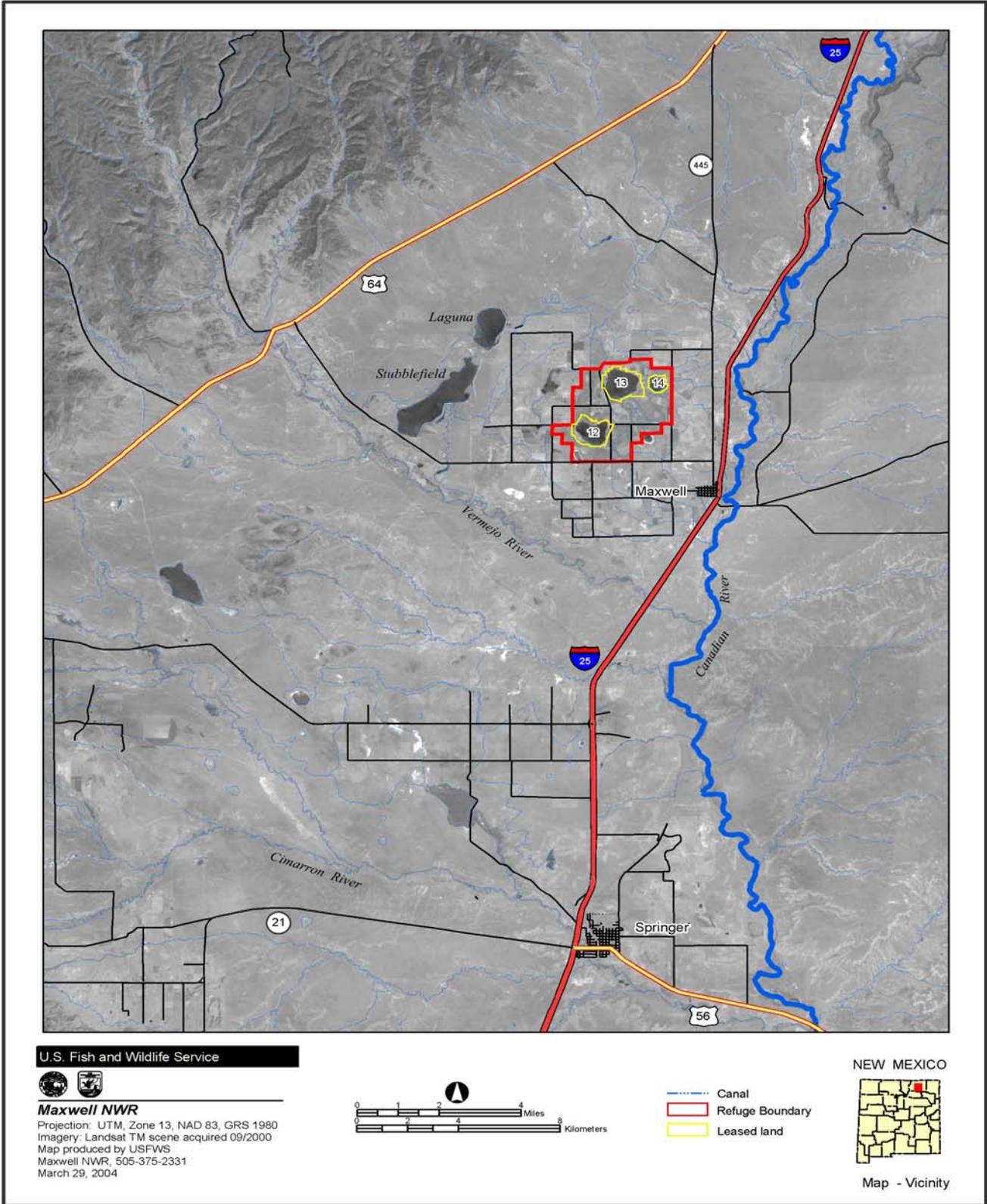
Current base funding and staffing levels only provide for refuge operations to focus on limited habitat management and maintenance projects. There are many opportunities for the refuge to expand its operations to include programs to restore native habitats, encourage visitation, and serve the community by increasing the public's awareness, understanding, and appreciation of the area's natural resources. Implementation of these opportunities may be dependent on additional funds and staff. Key issue questions include:

- What level of staffing and funding is required in order to achieve the goals and objectives of this plan?
- What specific positions should be identified for the near term that will help in plan implementation?
- To what degree is the current funding adequate to meet the long-term goals of the refuge?
- Is the current funding adequate to meet the long-term goals of the refuge?
- What could be done to improve staff accessibility to the public?
- Are current refuge facilities adequate?

Expected Planning Outcomes

The following outcomes should result from this comprehensive conservation planning effort:

1. Ensure that management of the refuge is consistent with the policies and goals of the Refuge System and the purposes for which the refuge was established, and within existing regulations;
2. Ensure that the refuge contributes to the conservation of ecological integrity and to the structure and function of the ecosystem in which they are located;
3. Provide a clear statement of desired future conditions for the refuge as a result of the successful accomplishment of the stated goals and objectives;
4. Provide a systematic process to guide decision making by identifying opportunities, issues, and concerns and identifying resource information needs in order to develop a range of management alternatives for consideration;
5. Provide a forum for determining the compatibility of uses on each refuge;
6. Ensure other Service programs, other agencies, and the public have an understanding of the Service's management actions and have opportunities to provide input in the management plan for the refuge;
7. Provide a consistent approach for budget requests for operational, maintenance, and capital development programs that accomplish the refuge and Service mission;
8. Provide a basis for monitoring progress and evaluating plan implementation on each refuge.
9. Provide long-term continuity in the management of the refuge.
10. Assure National Environmental Policy Act (NEPA) compliance on all public activities and Service management programs.



Map 3. Vicinity

CHAPTER 3: REFUGE AND RESOURCE DESCRIPTIONS

This chapter describes the refuge and the natural and cultural resources associated with it. The primary purpose of Maxwell NWR is to provide protection and habitat for migratory and resident wildlife species. Management of refuge habitats involves a variety of techniques to control and enhance habitat conditions. The primary objective of habitat management is to provide wildlife species with diverse habitats to meet a variety of requirements for resting, feeding, and nesting. Habitat is fundamental for self-sustaining populations of wildlife and plants as well as for functional ecosystems. The refuge's goal is to conserve wildlife species by protecting and restoring the habitat on which they depend.

Geographic / Ecosystem Setting

The refuge is located approximately 4 miles northwest of the small town of Maxwell, New Mexico in Colfax County. Located along the border with southeast Colorado, Colfax County is diverse in geography and industry. The town of Raton, which is the county seat, is situated in the northernmost portion of the county approximately 25 miles north of the refuge. The refuge is within five miles of Interstate 25 (I-25), the main north-south thoroughfare in New Mexico. Other refuges within New Mexico include Las

Vegas NWR, the Bosque del Apache NWR, Sevilleta NWR, San Andres NWR, and the Bitter Lake NWR, all of which are located within 350 miles south and southwest of the refuge.



Figure 3. National wildlife refuges located within the vicinity of Maxwell NWR and the state of New Mexico.

The refuge is situated in the center of the Canadian River Basin, which places it in the Arkansas/Red River Ecosystem. This open basin is created by the Sangre de Cristo Mountains to the west, the Raton Basin to the north, and a series of mesas and hills of volcanic origin to the east. The terrain within the basin is gently rolling prairie with several playa lakes, meandering rivers, and open vistas. Eastern New Mexico is the westernmost extension of the Great Plains grasslands. The refuge is located in the gently rolling high plains region characteristic of northeastern New Mexico, between the Canadian River on the east and the Vermejo River on the west. The total area of the Canadian River Basin is approximately 22,866 square miles; the headwaters beginning in northeastern New Mexico. The upper reaches of the Canadian River traverse a series of steep-sided canyons, alternating with wider meadowed

valleys, which are predominately used for cattle grazing, mining and recreation. The middle and lower reaches flow through land that is flat to hilly and almost entirely dedicated to cattle or sheep ranching. In draining the eastern slopes of the Sangre de Cristo Mountains, the Canadian River drops in elevation from 9,000 feet to 3,660 feet, while draining an area of 12,616 square miles (Red River Authority of Texas 2000). The refuge lies at an altitude of 6,050 feet.

Physical Environment

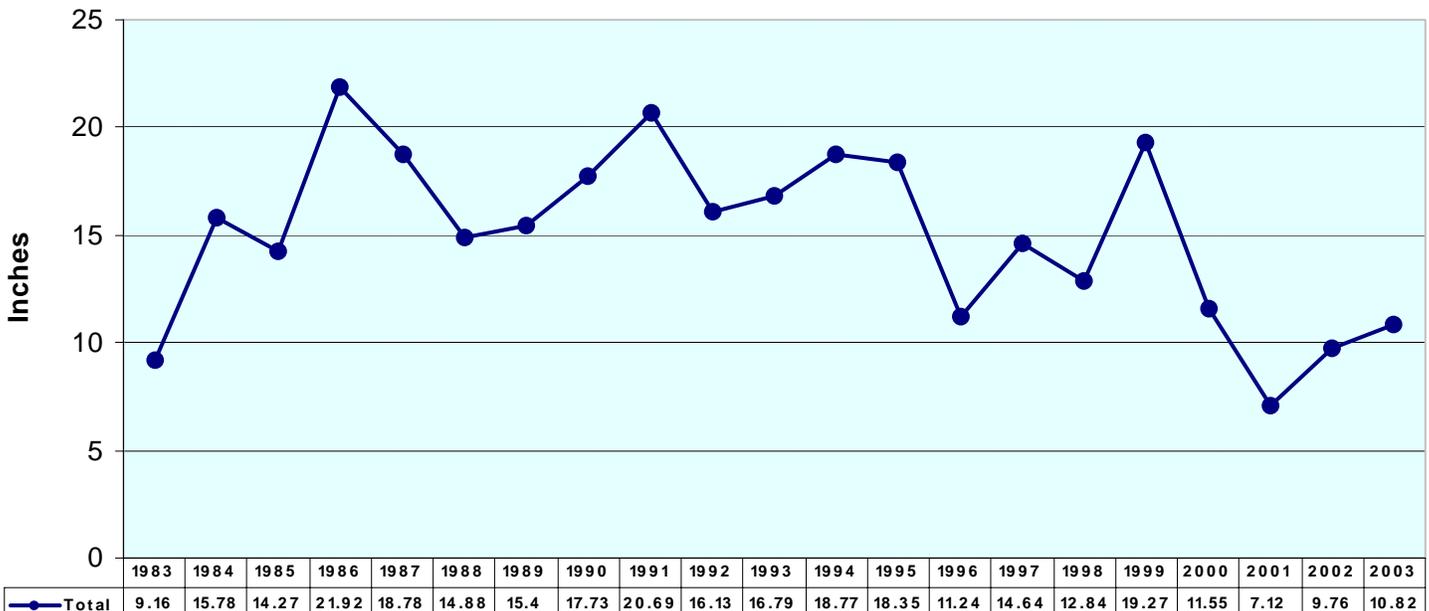
Climate

The climate of the area is semi-arid with generally moderate summer temperatures and cold winters, with a frost free period extending from May until October. The annual average precipitation over the last 20 years at the refuge is 15.34 inches. The fall and winter seasons are relatively dry with spring and late summer being the wet seasons. Although winter precipitation includes snowfall, snowpack rarely develops. Most of the precipitation occurs from May to September in the form of brief but intense thunderstorms. The refuge also suffers violent summer hail storms. Temperatures range from sub-freezing (-36 degrees Fahrenheit) in the winter to well over 90 degrees Fahrenheit in the summer. The average frost period is 148 days and extends from October to May. The relative humidity is extremely low and averages about 10 percent.



February snows provide much needed moisture (photo by P. Hoban)

Annual Precipitation for Maxwell NWR



Physiography and Geology

Geologically, the Maxwell NWR lies in the Raton Basin. Under the surface, sedimentary rock bows down between the Sangre de Cristo Mountains to the west and the broad anticline of the Sierra Grande Arch to the east. Cretaceous sedimentary rocks have been eroded off both the mountains and the arch and are still preserved in the basin. Pierre shale floors the Canadian River's valley. This layer was deposited as mud on the floor of a shallow sea, and in places contains fossils of cephalopods (shell bearing relatives of the octopus and squid), and other invertebrates, shark's teeth and skeletons of marine reptiles. The

Pierre shale and the mustard yellow soils derived from it can be seen in the banks of the Canadian River.

Beneath the Pierre shale is Dakota sandstone and another impermeable layer of shale. The Dakota sandstone is porous and serves as the aquifer east of the Rockies. The Raton Basin also exhibits remnant lava flows and volcanic intrusions of Tertiary and Quaternary age that form some of the more notable land marks such as Wagon Mound.

Soils

A variety of sedimentary shale deposits in Colfax County are representative of the Cretaceous period. Refuge soils consist of alluvial silty clay loam and clay loam overlying Pierre shale. The major soil types are Colmor-Swastika and Mion-Vermejo-Little Associations formed in alluvial-eolian deposits derived from Pierre shale. The Swastika series is characterized by deep, well-drained, level to moderately sloping, warm loamy soils on broad sloping uplands. These soils formed in fine textured residuum and alluvium derived from shale. They are slowly permeable and can become saline with an accumulation of soluble salts. The soil erosion hazard is slight to high and the hazard of soil blowing is slight to moderate. The Vermejo series is characterized by deep to very shallow, well-drained, level to hilly, silt loams and silty clay in broad drainages, swales, and on alluvial fans. These soils are formed in residuum and alluvium derived from shale. This soil is moderately to strongly alkaline throughout, and has a very slow permeability. Erosion hazard is high and the hazard of soil blowing is moderate to high.

Both soil types support buffalograss, western wheatgrass, galleta, blue grama, and fourwing saltbush on non-saline areas, and alkali sacaton and inland saltgrass in saline areas. Cultivated crops are affected by soluble salts, slow permeability, and the shallowness of soil over rock.

Biological Environment

Vegetation

The refuge lies within the Raton Section of the Great Plains Province (Hawley 1986) that is largely known for short-grass prairies and deeply dissected canyons. The terrain within the refuge is open, gently rolling plains with a mosaic of grasslands and farmlands dotted by natural and modified playas and wetlands. The average elevation of the refuge is 6,000 ft.; the high point is at an elevation of 6,070 ft.



Shortgrass prairie habitat on the refuge (photo by P. Hoban).

In 1999, a vegetative study was completed by the Earth Data Analysis Center in association with the New Mexico Natural Heritage Program (NMNHP) at the University of New Mexico. Vegetative communities were identified through ground survey data gathered in late summer and fall. These data provided the basis for the development of map units. Mapping of the study area was developed by using computer analysis of high-resolution digital ortho-photography and Landsat Thematic Mapper Satellite Imagery from September 3, 1993 (see Map 4).

Nineteen map units were defined. They include nine grasslands, two wetlands and three shrublands, all of which represent a general vegetation community type. For the the most part, these community types correspond to the NMNHP's plant community classification data base. The NMNHP classifies communities based on a combination of the dominant perennial vegetation, substrate and landscape position. There are also five miscellaneous cover classes that represent planted vegetation (Agricultural Fields and Tree Groves) or non-vegetative land cover types (Barren and Surface Water classes). An 'Herbaceous Disturbance' class was created to identify the distribution of disturbance-dependent plants such as sweet clover, sunflower, thistle, and bindweed and other weedy vegetation of interest to the refuge (EDAC)

The dominant plant communities included within the map unit are provided as well as communities that are considered *inclusions* within the mapping unit. The communities designated as *inclusions* were either too small to differentiate into separate mapping units or are considered to have enough similar elements of the dominant plant communities represented by the mapping unit (EDAC). Appendix G provides a detailed description of each map unit.

An accuracy assessment was completed in 2003 by refuge personnel. Two hundred points were distributed randomly throughout the refuge and verified with actual map results. Overall map accuracy was only 29 percent, as shown in the Vegetation Map Accuracy Assessment (see Appendix G). This is well below the FWS National Vegetation Classification Standard (NVCS) mapping guidelines, which require an accuracy of 80% when mapping to the formation level. Plans to revise and/or update the current map have been identified as a strategy under Objective 1 in Chapter 5.

General vegetation communities found on the refuge are discussed below.

Grasslands

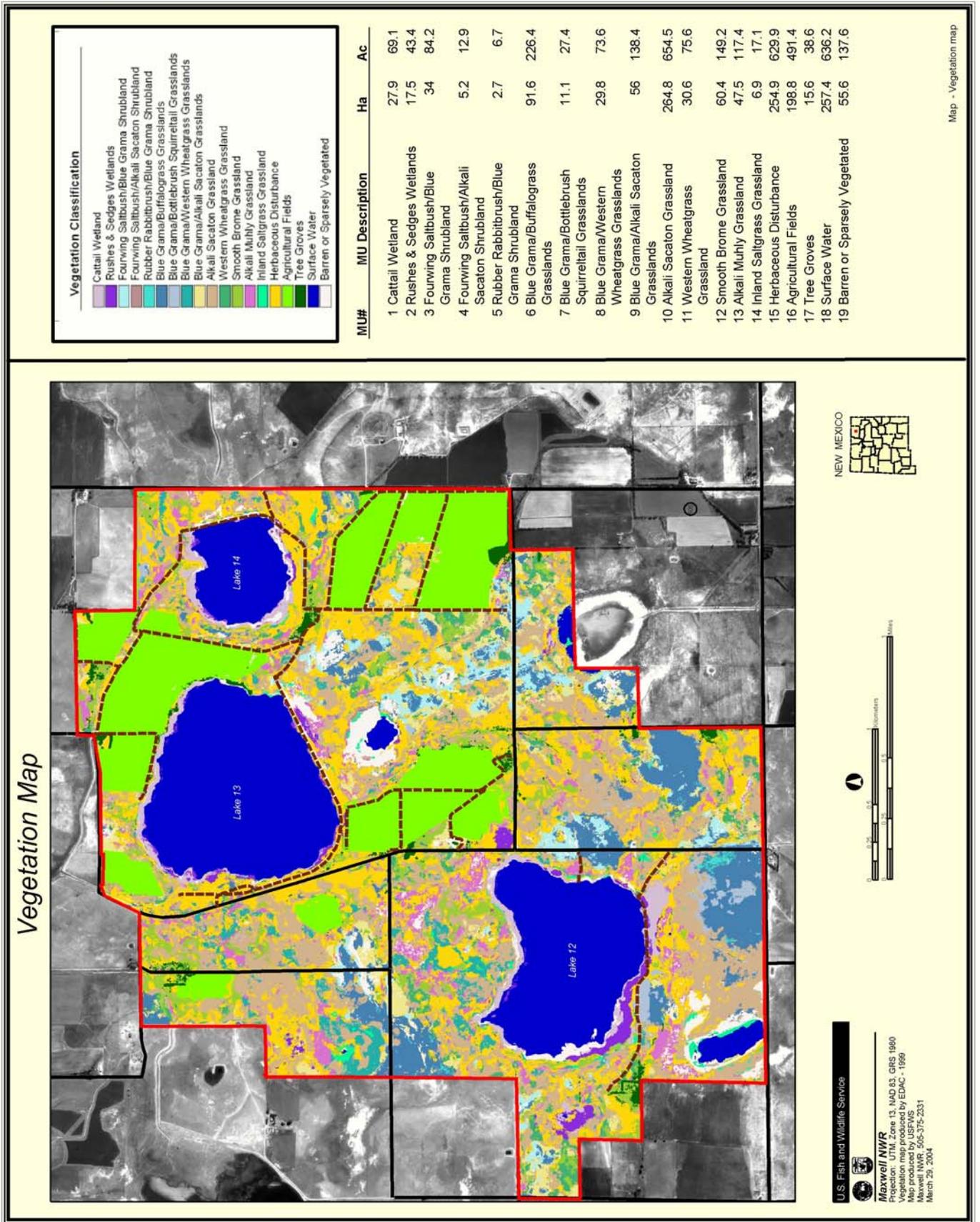
Grasslands encompass approximately 2200 acres of the refuge. The refuge is within the Plains-Mesa-Foothill Grassland complex of North America (NMNHP Community classification database, Brown & Lowe 1982, Dick-Peddie 1993) and is composed almost entirely of grasses, with shrubs and forbs comprising less than 10 percent.

The dominant native species include buffalo grass, blue grama, western wheatgrass, alkali sacaton, and galleta. Common forbs include globemallow, curly cup gumweed, and coneflower. Common shrubs found scattered throughout the plains-mesa grasslands are rubber rabbitbrush, fourwing saltbush, and soapweed yucca, which are found in the upland grasslands within the refuge. The lowland grasslands, dominated by alkali sacaton, are often associated with fourwing saltbush. In disturbed areas, the species are primarily non-native foxtail barley, field bindweed, snakeweed and kochia.

These grasslands are used in the spring and fall by migrating grassland bird species. The chief management concern related to grasslands is the invasion of shrubs, trees, and noxious weeds into the grasslands.



Grasshopper Sparrow (photo by P. Hoban).



Map 4. Vegetation Classification (EDAC 1999)

Woodlands

Refuge woodlands comprise less than 2 percent (39 acres) of the total land area and consist primarily of Siberian elm, Plains cottonwood, white poplar, and New Mexico locust. Historically, these trees were planted along roadsides and old homesteads.

These woodlots are a unique refuge habitat that while fairly limited, is very important to many species of interest, including the yellow-billed cuckoo, eastern kingbird, migrant songbirds, and many raptors. These species are essentially obligate users of woodlots for foraging and/or nesting (Mehlman 1995). They are also important loafing areas for resident mule deer and white-tailed deer, as well as cover for mountain lion and black bear, which are occasional visitors to the refuge.



Northern Flicker (photo by P. Hoban)



Woodlots provide cover for resident mule deer (photo by P. Hoban).

Dominant native shrubs include rubber rabbitbrush and fourwing saltbush. Other species include prickly pear cactus, pincushion cactus, soapweed yucca, and winterfat. Locoweed (*Astragalus sp.*) is also fairly common and is thought to be an indicator of selenium soils.

Wetlands

Lakes 12, 13, and 14 comprise the majority of the wetlands on the refuge. They provide approximately 700 acres of roosting and feeding habitat for waterfowl and shorebirds. Open water areas serve as loafing areas for waterfowl, year round habitat for marsh birds, and seasonal habitat for shorebirds. During wet years when drawdowns are minimal, the shoreline vegetation is dense enough to encourage waterfowl nesting. During dry years the constantly changing shoreline is beneficial to shorebirds. Shorelines around Lakes 13 and 14 are composed of smartweed, scattered stands of bulrush, cattails and other aquatic species. A limited amount of coyote willow and seedling cottonwoods also grow near the shallow areas. During times of drought there are also periodic infestations of salt cedar. Wetland vegetation provides ideal nesting cover for waterbirds and substrates for invertebrates, which waterfowl and shorebirds feed on.



Intermittently flooded wetland (photo by P. Hoban)



One of two natural playas on the refuge (photo by P. Hoban).



Low lake levels during drought years (photo by P. Hoban).

Croplands

The refuge maintains up to 440 acres of cropland. The primary purposes of establishing the refuge were to provide a protected feeding and resting area for Central Flyway flocks and to reduce crop depredation that occurred in the area. The refuge's farming program goes hand in hand with the reason for its establishment. Refuge farming produces timely crops to feed migrating and overwintering ducks, geese and cranes. Crops include alfalfa, corn, wheat, barley, clover and oats.

Green browse and/or cereal grains (millet, barley, and wheat) are planted for and used by wintering waterfowl and cranes from October through February. Mule deer also utilize these areas for food and cover. Winter wheat provides green browse for geese. Corn is a "hot" food for waterfowl during the coldest time of year and also benefits sandhill cranes and deer. Sandhill cranes and deer also benefit from the corn. Oats are used as a cover crop to prevent/reduce soil erosion, and to provide a waterfowl food crop. Alfalfa (the co-op farmers cash crop) is used for food and cover by deer and turkey. A variety of other species also benefit (indirectly) from crops grown on the refuge, such as the bald eagle and other predators. See page 62 for more details on the refuge's farming program.



Spring winter wheat (photo by P. Hoban).



Barley (photo by P. Hoban)

Invasive Plant Species

Several invasive plant species are well established in the area. Historically, frequent fires helped maintain the natural function and structure of grasslands by limiting the presence of woody and fire intolerant species. Farming and ranching land-use changes resulted in fire suppression and altered the landscape, vegetation, and soils; thereby making it easier for invasive species to become established. In the past, exotic seeds traveled across the continent as freight in covered wagons. Some were planted as ornamentals by settlers; some were introduced as cost-efficient forage for livestock; others arrived as “hitchhikers” along with food crop seed supplies. Settlement, which increased dramatically in the West in the late 1800s, altered both the landscape and the ecosystem. Through the years, non-native plants such as Russian thistle and musk thistle have gained a foothold and invaded the range. The altered, disturbed and fragmented landscape of the refuge has provided an ideal situation for the introduction, establishment and proliferation of invasive plant species. Maxwell NWR is on the “leading edge” of movement of invasive species into New Mexico from the north. Species such as hoary cress and Canada thistle have moved in from the north and it is important to keep track of what is spreading in southern Colorado as they could move onto the refuge. Management action is necessary to restore and maintain habitat useful to migratory birds, other species and general ecosystem health.



Canada thistle spreading (vegetatively) along ditch banks (photo by P. Hoban)

Invasive plant species pose a biological threat to the refuge because they can displace native plant and wildlife species, degrade wetlands and other natural communities, and reduce natural diversity and wildlife habitat values. They have the potential to outcompete native species by dominating light, water, and nutrient resources. Once established, getting rid of invasive plants is expensive and labor-intensive. Unfortunately, their ability to establish easily, reproduce prolifically, and disperse readily, make eradication difficult. Many of these plants can cause measurable economic impacts, particularly in agricultural fields. Preventing new invasions is extremely important for maintaining biodiversity and native plant populations. The control of existing, affected areas will require extensive partnerships with adjacent landowners, state, and local governments.



Musk thistle is a biennial capable of producing hundreds of seeds (photo by P. Hoban).

In developing a state program for addressing the invasive weed situation, species have been assigned to classes A, B, or C. Class A weeds are species that are not native to an ecosystem and have a limited distribution within the state. Prevention of new infestations and elimination are the highest priority. Class B weeds are species not native to the ecosystem and are presently limited to a particular area of the state. Priority is to contain them within their current areas. Class C weeds are species not native to the ecosystem yet they are widespread throughout the state (Lee 1999). Representatives from all three classes exist on Maxwell NWR:



Hoary cress is a common invasive species seen in the spring (photo by P. Hoban).

- Class A: Hoary Cress, Canada thistle
- Class B: Bull thistle, musk thistle, Russian knapweed
- Class C: Field bindweed, saltcedar, siberian elm

The species of greatest concern on the refuge are thistles (musk, bull and Canada), salt cedar, hoary cress, and Russian knapweed. Additionally, several other invasive plant species are common on the refuge. These include common ragweed, locoweed, gumweed, Russian thistle, cocklebur, field bindweed, kochia, common mullein, chicory and Siberian elm. Other invasive species such as downy brome and white and yellow sweet clover also occur on the refuge but are not of particular concern at this time. Map 5 shows areas of greatest concentrations of invasive species on the refuge.



Bull thistle (photo by P. Hoban)

Field bindweed has been a problem on the refuge for years. It forms a carpet on cultivated fields, prairie dog towns, and other disturbed areas throughout the refuge. It has been kept under control primarily by tilling and cultivation, and does not seem to have spread over the past 10 years. This is probably the most resilient weed in the area since it is a deep rooted perennial.

The refuge has a very small quantity of Russian thistle. Two other invasive thistles also occur on Maxwell NWR - musk thistle and Canada thistle. Musk thistle is a biennial and much easier to control than Canada thistle. Canada thistle is the most widespread, occurring in a number of locations on the refuge. Most infestations are along or near refuge and county roads, although several larger patches have spread considerably away from the roads.



Siberian Elms (photo by P. Hoban)

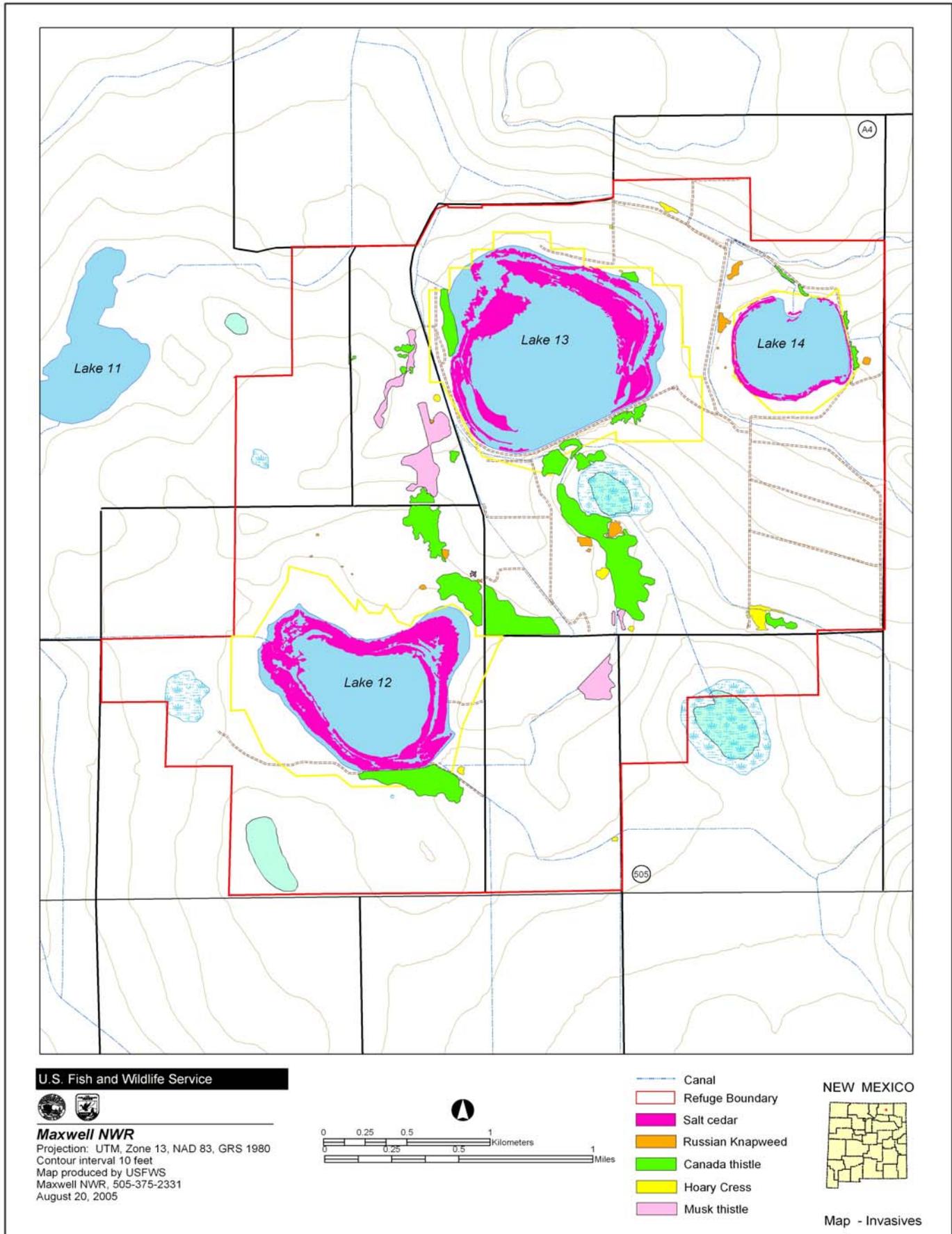
Siberian elm is a serious invasive tree in riparian areas in some parts of New Mexico. On Maxwell NWR, Siberian elm were originally introduced at old homestead sites (in the early 1900s) where they have since multiplied to dense, but limited, woodlots, and from which they have slowly spread irregularly along irrigation canals. Small doghair stands and isolated single trees are also found along roadsides and across the refuge. Elm woodlots account for less than 2 percent of the total refuge acreage. These areas are utilized by a variety of migratory birds; as loafing areas for the resident mule deer and white-tailed deer, and as cover for rare visitors such as mountain lion and black bear.

Salt cedar has become established along the perimeters of Lakes 12, 13, and 14. These populations have been mapped. The worst infestation is at Lake 12, which has been dry for almost 3 years. The population has expanded during drought years and will again be flooded when the lakes reach maximum elevation.

Chicory has moved in along the main irrigation canal ditch banks, probably from nearby private lands. Kochia is widespread in the barren areas adjacent to the lake. Kochia is not a very aggressive invasive, preferring disturbed sites and rarely moving out into well established plant communities. Hoary cress was discovered on the refuge in 1998, but misidentified until 2000. It was treated in 2000 and 2001. Although apparently a problem in past years, it has not recently been detected. Russian knapweed currently infests a 7-acre field (G-field) that the refuge is planning to restore to native grass. It was discovered for the first time on the refuge in 2000.



Salt cedar establishing along Lake 13 (photo by P. Hoban).



Map 5. Areas of greatest concentrations of invasive species

See Invasive Species Management section (page 70) and Goal 1, Objective 8 (page 95) for more details on management (past, present, and proposed) of invasive plant species on the refuge.

Fish and Wildlife

Conservation of migratory birds is often considered the central connecting theme of the refuge system. Approximately 50 species of waterfowl and other migratory game birds have been Service priorities since the 1930s. Although the refuge was established to provide habitat for migratory birds, its habitats support a wide variety of wildlife common to northeastern New Mexico. These species, including game and non-game vertebrates, and invertebrates, are important contributors to the overall biodiversity on the refuge. Management of many of these species remains a collaborative effort with the New Mexico Department of Game and Fish (NMDGF) who has primary responsibility for these species off refuge lands. Approximately 221 species of birds, 41 species of mammals, 21 species of reptiles and amphibians, and 10 species of fish occur on the refuge. In general, a thorough documentation of the population status or even presence of most species of wildlife on the refuge has not been conducted. The status or presence of most species has been extracted from various reports, studies, field guides, and biological inventories. Species lists for birds and fish are compiled from biological inventories. Most accounts of mammals, reptiles and amphibians are from range descriptions or sightings. See Appendix A for a complete list of species (including scientific names) that are known to occur on the refuge.

Birds

Protection and conservation of birds a primary purpose of the refuge. Maxwell NWR is located in the Central Flyway, a route traveled annually by numerous species of waterfowl and other migratory birds. Birds constitute the largest group of vertebrate species occurring on the refuge and populations vary according to seasonal migrations. Recent bird surveys have indicated that 221 different bird species occur on the refuge, of which 64 species are known to nest.



Say's phoebe nest on the refuge (photo by P. Hoban).

Neotropical migrant songbirds are those species that nest in the U.S. or Canada and spend the winter primarily south of our border in Mexico, Central or South American or in the Caribbean. Many of them are experiencing population declines due to the widespread loss of habitats important for their survival. Preservation of many different habitats for nesting, wintering, and migratory stopover sites is becoming vital for the survival of many of these birds.

The refuge enjoys the reputation of a place where many non-game bird species considered unusual in New Mexico can regularly be found (Mehlman 1995). The most common breeding species found on the refuge are: Western meadowlark, red-winged blackbird, grasshopper sparrow, vesper sparrow, savannah sparrow, and cliff swallow (Mehlman 1995). Many of the most common species on the refuge are considered grassland obligate birds. The refuge supports the highest known density of grasshopper sparrows in the state. Dickcissels and Cassin's sparrows are also commonly observed. Other woodland, shrubland, and grassland species that use the refuge include yellow-billed cuckoo, Hammond's flycatcher, willow flycatcher, American tree sparrow, hermit's thrush, warbling vireo, indigo bunting, and lark bunting.



Western Meadowlark (photo by P. Hoban).



Pelicans can be seen during the spring, summer, and fall (photo by P. Hoban).

Marsh birds, shorebirds, and other waterbird species that may be seen on the refuge include the five species of grebes (pied-billed, horned, eared, western, and Clark's), double-crested cormorant, American white pelican, American coot, white-faced ibis, great blue heron, snowy egret, American coot, sandhill crane, Wilson's phalarope, American avocet, lesser yellowlegs, and ring-billed gull. As is typical of isolated wetlands in an otherwise arid countryside, other species of waterbirds and shorebirds normally rare in New Mexico are attracted to Maxwell NWR on occasion, including such rarities as pacific loon, white-winged scoter, American golden-plover, and Sabine's gull.

A variety of raptors migrate through or winter on the refuge including the bald eagle, golden eagle, rough-legged hawk, ferruginous hawk, Cooper's hawk, American kestrel, peregrine falcon, prairie falcon, and osprey. Several raptor species also nest in the area, including: Swainson's hawk, red-tailed hawk, northern harrier, great-horned owl, burrowing owl, and barn owls.

Other bird species observed on the refuge including the western burrowing owl, red-headed woodpecker and eastern kingbird are generally rare, local or not commonly found in New Mexico outside of the refuge area and many of these species are experiencing population declines throughout most of their geographic regions (Mehlman 1995). The refuge provides extensive shortgrass prairie grasslands that have developed on retired agricultural areas in the absence of grazing. These grasslands provide more suitable habitat for these species than is generally available outside the refuge.



Redtail hawk (photo by P. Hoban).

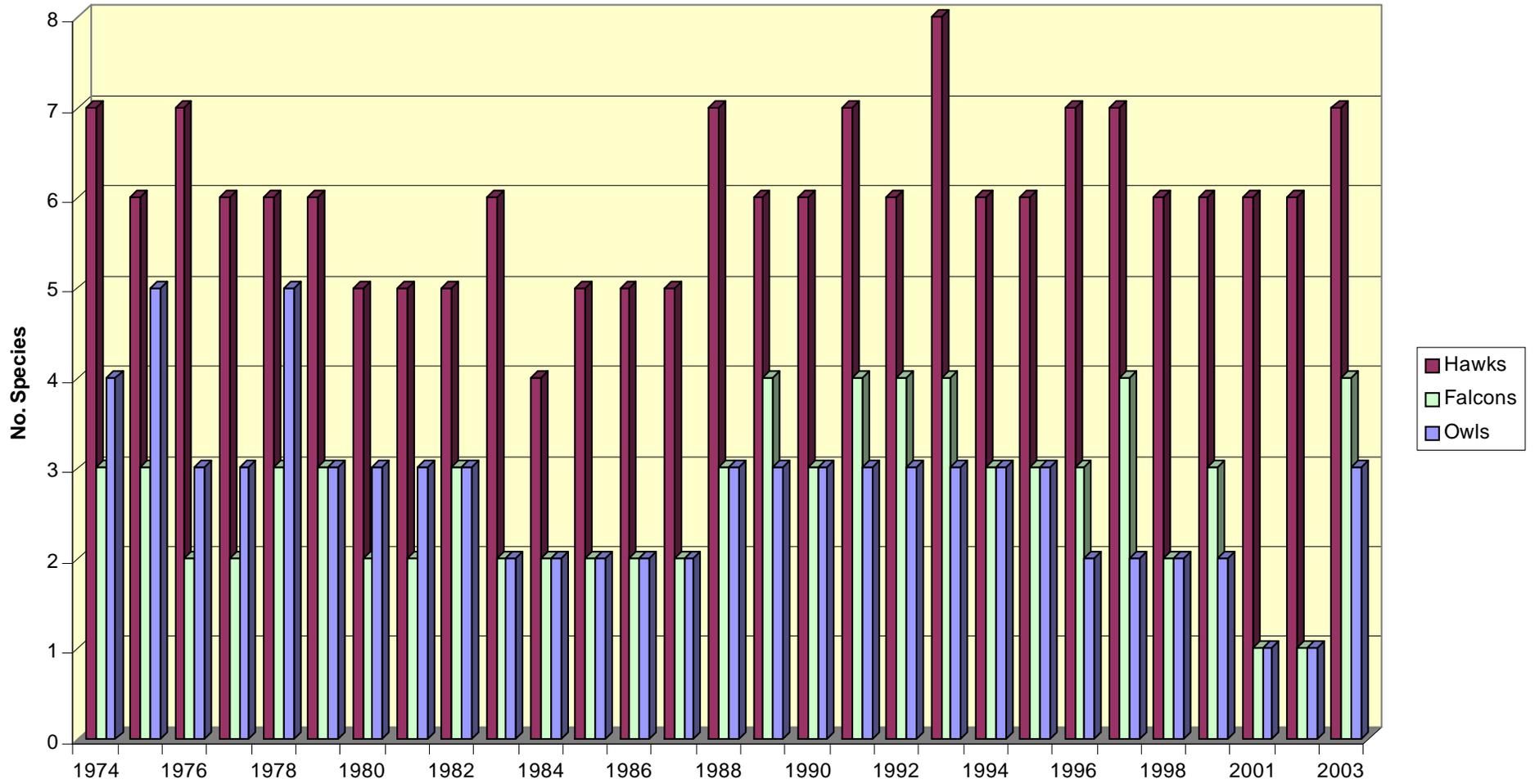
The woodlots are also important for many bird species. They provide vertical habitat as well as low, dense thickets maximizing the avian species diversity on the refuge. The woodlots, which have developed in areas that were old homestead sites, are a unique refuge habitat of fairly limited extent that is very important to many species of interest, including the willow flycatcher, yellow-billed cuckoo, eastern kingbird, other migrant songbirds, and many raptors. All of these species are essentially obligate users of woodlots for foraging and/or nesting. Most of the habitats on the refuge, including the woodlots, grasslands, and ponds, are human-influenced habitats that support a wide diversity of grassland and non-grassland bird species. Continued maintenance of these habitats is compatible with the refuge's current goals of providing habitat for migrating and wintering waterfowl and providing opportunities for human recreational activities (Mehlman 1995).



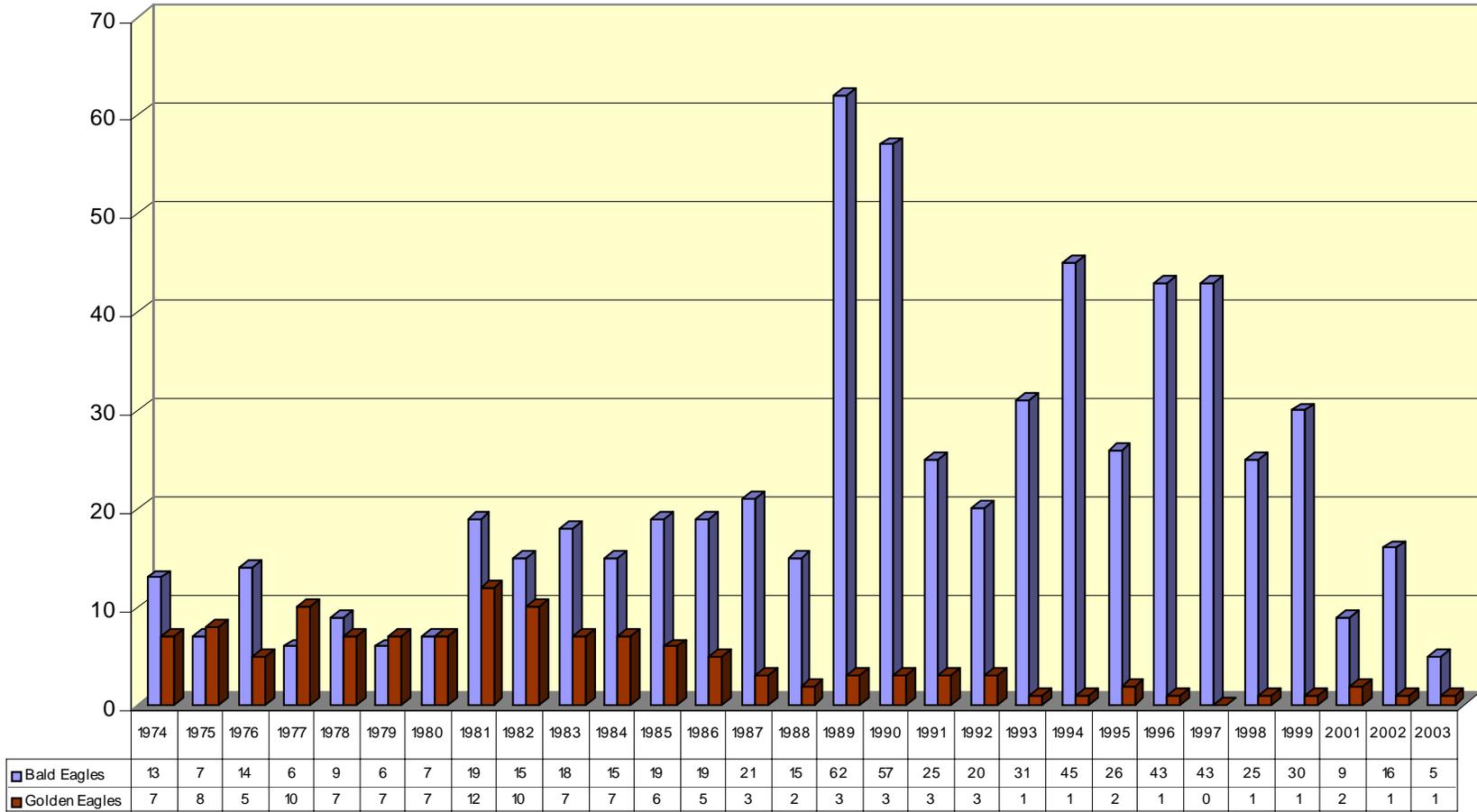
Tundra swans are a rare fall/winter visitor (photo by P. Hoban)

The refuge provides a winter haven for migrating waterfowl, including common merganser, hooded merganser, mallard, gadwall, northern pintail, canvasback, redhead, shoveler, American wigeon, blue-winged teal, green-winged teal, ring-necked duck, scaup, goldeneye, bufflehead, ruddy duck, Canada geese, snow geese, and tundra swans. Twenty-seven species of waterfowl have been recorded on the refuge. Numbers of waterfowl can peak at over 90,000 birds during the fall.

Raptor Species Diversity

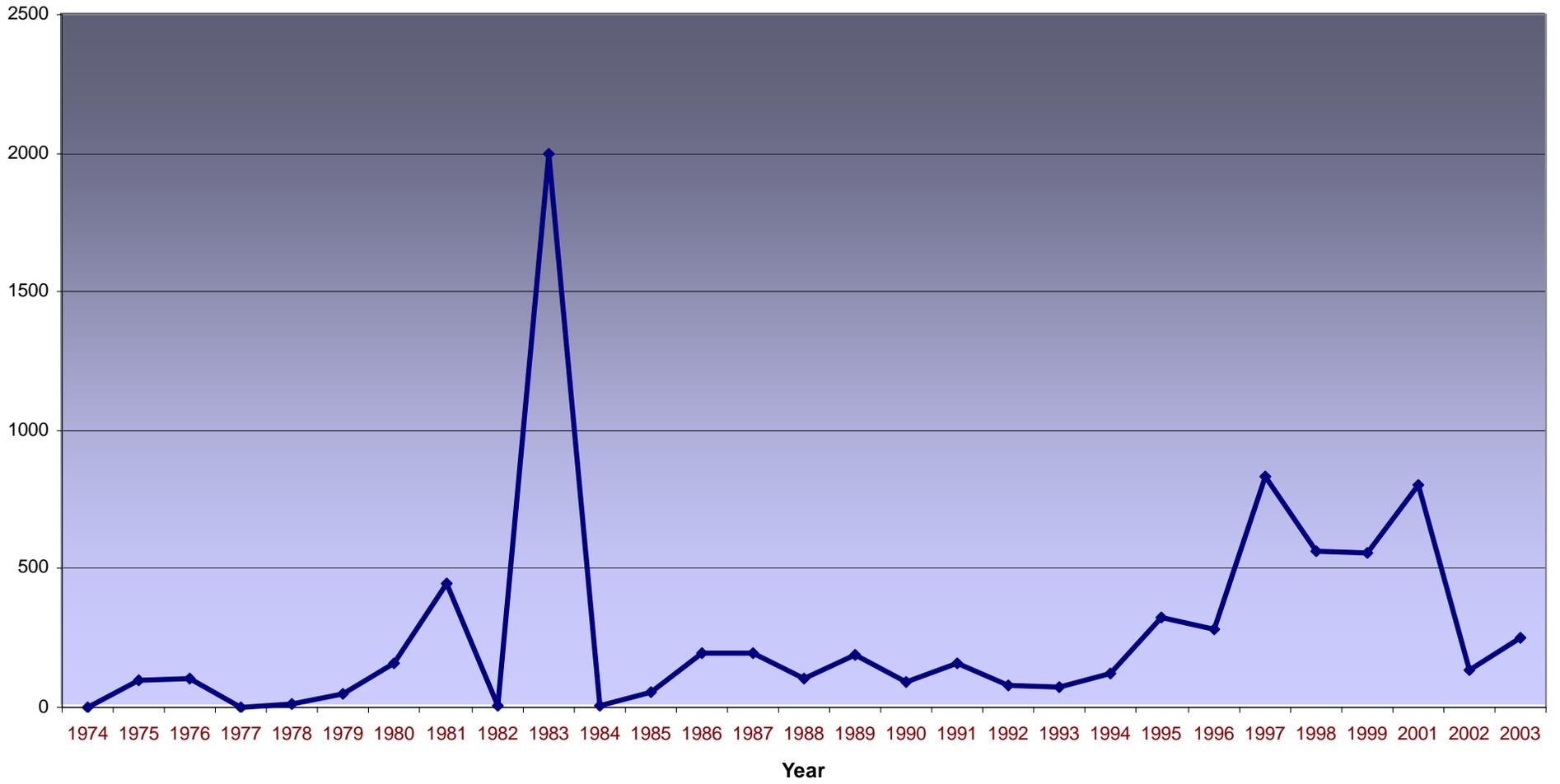


Peak Number of Bald and Golden Eagles

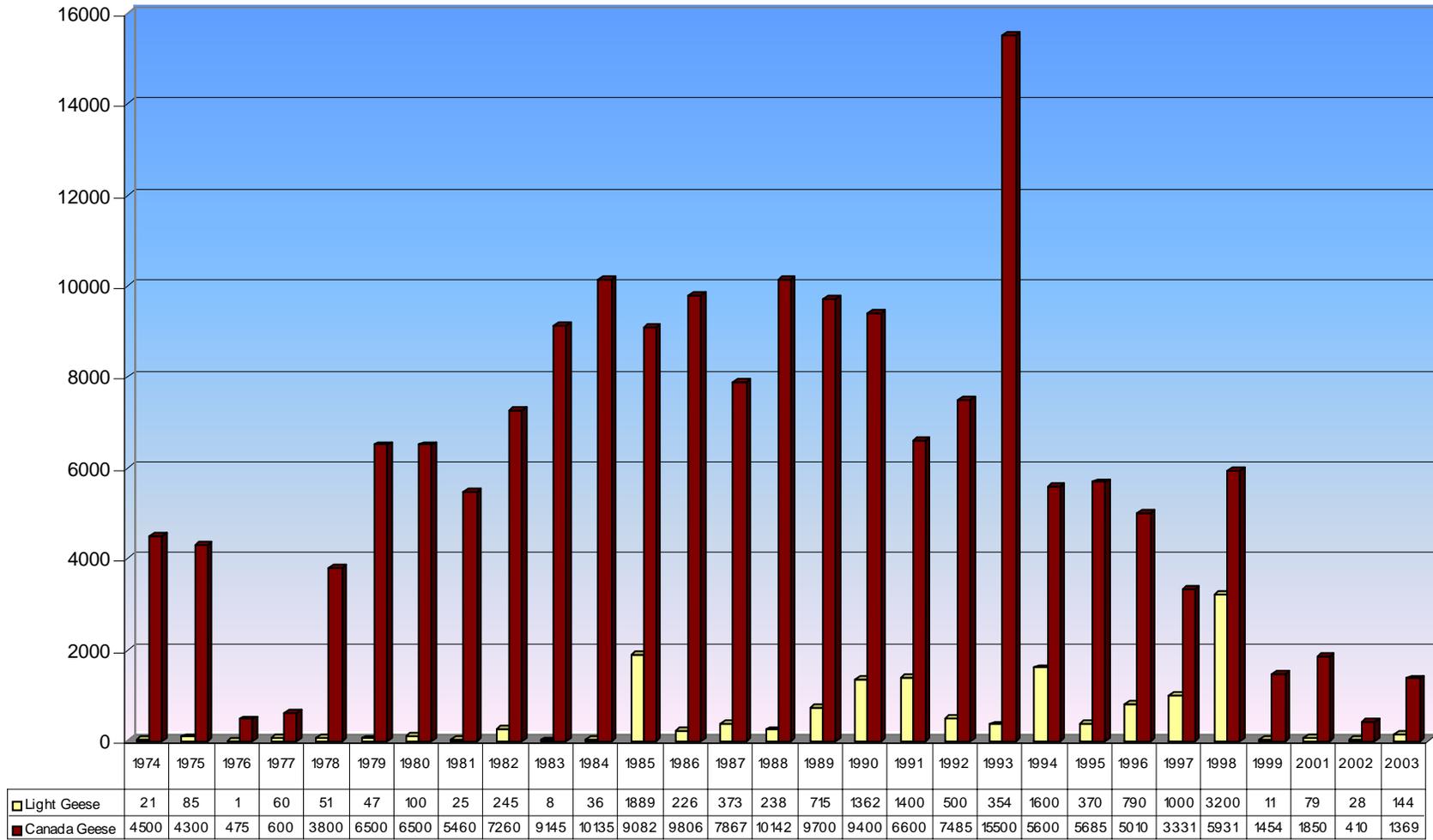


Year

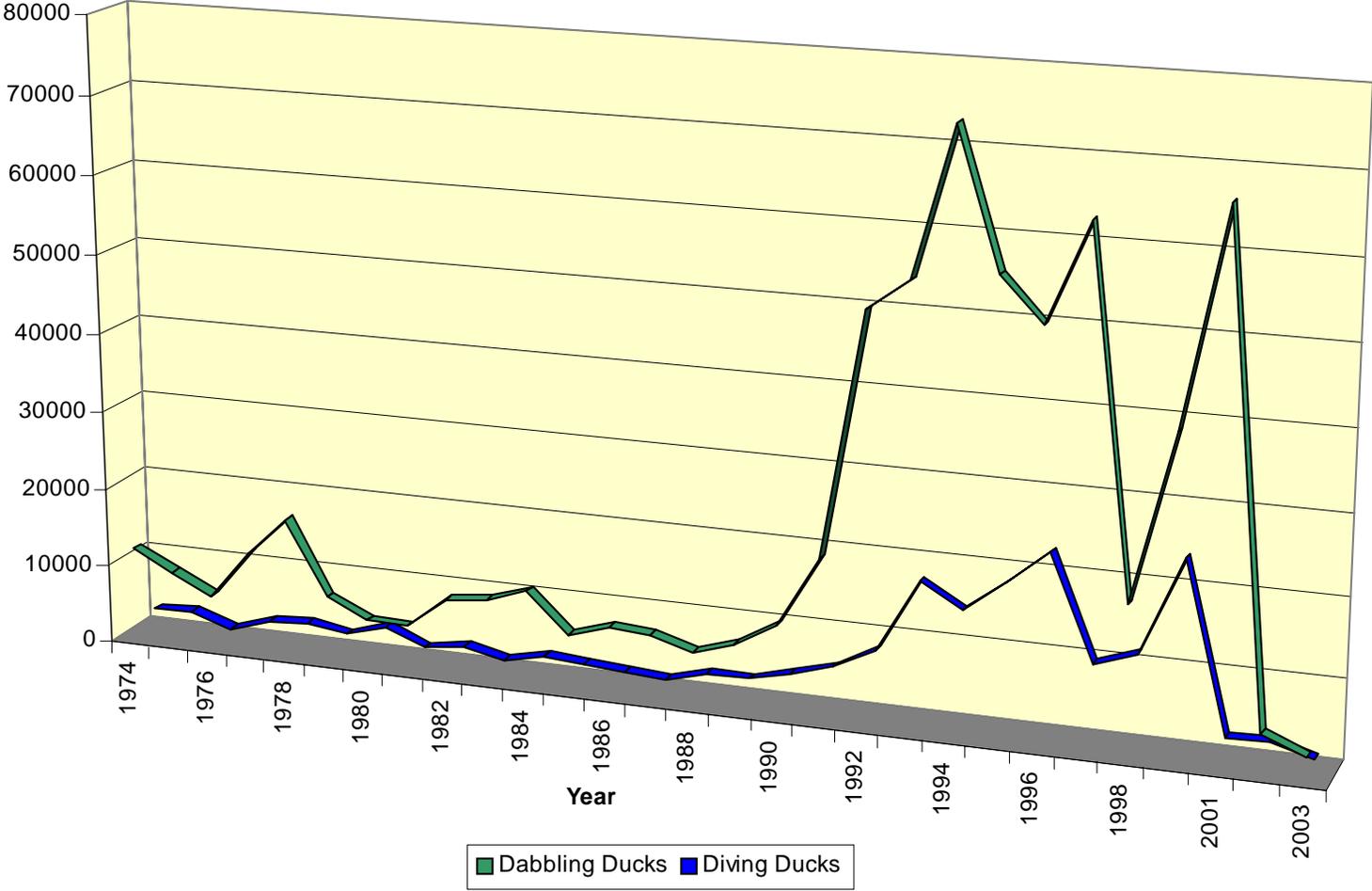
Peak Number of Sandhill Cranes



Peak Goose Numbers



Peak Duck Numbers



Migrating and Wintering Waterfowl and Cranes

The Flyway System was initiated in 1948 to allow for differing regulations relating to individual waterfowl populations migrating through each “flyway”. The term “flyway” has long been used to designate the migration routes of birds. For management purposes, four waterfowl flyways - Pacific, Central, Mississippi, and Atlantic, were established in the United States. This was the beginning of large-scale species management. Further efforts toward species management came into effect when bag limits were reduced or seasons were closed on specific species that were in danger of being over hunted. Flock management within flyways was put into effect to allow more refinement in regulations for specific groups of birds (USGS 2000). The waterfowl populations using each of these flyways differ in abundance, species composition, migration pathways, and breeding ground origin. There are differences also in levels of shooting pressure and harvest. The refuge is located within the Central Flyway. The portion of this flyway within the United States is comprised of Kansas, Nebraska, North Dakota, South Dakota, Oklahoma, Texas, and portions of Colorado, Montana, New Mexico, and Wyoming.

The Maxwell Lakes area has had a history of heavy migration and wintering use by both ducks and geese. In 1947, a waterfowl use study made by the Branch of River Basin Studies indicated that approximately 250,000 waterfowl migrated annually to and from their wintering grounds along the Pecos River. An estimated three-fourths of this flight passed through the Maxwell-Springer area on the plains south of Raton. Annual winter waterfowl census reports indicated that between 15,000 and 25,000 waterfowl wintered within a 75-mile radius of the Maxwell lakes area, of which 6,000 are Canada geese (USFWS 1962).



Mallards (photo by P. Hoban).

Of the ducks wintering in the eastern half of New Mexico, mallards, pintails, and American wigeons accounted for 94-percent of the total. Other species included teal, gadwall, canvasback, redhead, shoveler, bufflehead, ruddy, scaup and goldeneye. Approximately 7,000 coots also wintered in this region. The changes in land and water use reduced these large buildups and created a change in the migration pattern in the area. In 1962, populations were considerably smaller but use by wintering ducks and geese was still significant as shown in figures compiled by the NMDGF. Peak waterfowl populations for northeast New Mexico included 42,977 ducks and 4,529 geese (USFWS 1962).



Canada geese on Lake 13 (photo by P. Hoban).

A variety of factors contributed to the decline of waterfowl utilization in this portion of the Flyway. Overall, population declines were a definite factor. The changes in land use, such as the retiring of cultivated grain crops in connection with the soil bank programs, reduced the available food supply. Advances in harvest methods that provided more complete harvest with little grain loss also contributed to the lack of available food. Heavy hunting pressures and the absence of protected resting areas also changed migration patterns and rendered this valuable waterfowl area unattractive to the large flocks that were once found here (USFWS 1962).

Since land acquisition for the refuge began in 1966, management efforts have focused on the restoration of habitat to provide a feeding and resting area for migratory waterfowl. Prior to establishment of the refuge, local grain farmers had suffered increasing damage from waterfowl depredations. This problem was decreased with the establishment of a refuge farm operation and almost eliminated when the farmers changed their programs to a predominantly alfalfa based production. The refuge has successfully restored and enhanced habitat in northeastern New Mexico for wildlife use. Secondary

management objectives are to provide habitat for other migratory birds and non-migratory wildlife and allow for wildlife-oriented recreation.

As a feeding and resting area for waterfowl, the refuge's presence is essential, especially where natural or man-made forces have seriously reduced the quality and quantity of good waterfowl wetlands and feeding areas. In conjunction with the Vermejo Conservancy District, the refuge provides a sanctuary for migratory waterfowl. Three major impoundments provide deepwater lakes with aquatic plants and invertebrates for forage.



Canada geese (photo by P. Hoban).

The refuge continues to provide attractive waterfowl habitat and adequate food supplies that help to distribute the birds and prevent crop depredations on adjacent lands. During the winter months (December, January, and February) the refuge mows the standing crops to



Sandhill cranes use barley field on the refuge (photo by P. Hoban).

encourage and control the use of the grains by wintering waterfowl. Approximately 10 acres are mowed each week. The mowing allows the refuge to provide a variety of grains, and control feeding patterns. During severe weather, waterfowl are encouraged to use more protected areas. Boundary hunting from adjacent lands is discouraged by saving boundary crops until after the close of the hunting season. While the refuge is one of several hundred major national wildlife refuges that manage primarily for waterfowl, the successful maintenance of waterfowl populations can only be assured with the continued cooperation and assistance from local, state, and private entities.

Other Species of Special Management Concern

Several grassland bird species have been identified as Priority Bird Populations and Habitats by the PIF program for the Shortgrass Prairie BCR. These species are indicators of the condition of the grassland and wetland systems within this region (USGS, 2000). Their populations have been emphasized as a priority for monitoring. These include the Swainson's hawk, mountain plover, ferruginous hawk, long-billed curlew, scaled quail, Wilson's phalarope, black-chinned hummingbird, Lucy's warbler, and Cassin's sparrow.



Swainson's hawk (photo by P. Hoban).



Wilson's phalarope (photo by P. Hoban).

In addition to those species identified specifically for the Mesa and Plains physiographic region, there are several nongame landbird species that have been prioritized for the larger central shortgrass prairie region. Through the PIF prioritization process, scores were determined for relative abundance, breeding and nonbreeding distribution, threats to breeding and nonbreeding areas, population trends, and area importance using various criteria established for these categories. Depending on the scores, each species was ranked and placed in tier groups from Tier I having the highest priority for the region, and Tier II being the next group for prioritization. Species in subsequent tiers have already been protected as Species of Conservation Concern listed birds, (Tier III), and those species protected as federally-listed threatened and endangered species

(Tier IV) (Carter *et al.*, 2000). The bird species identified for the central shortgrass prairie region that are known to occur on Maxwell NWR are listed in Table 1.

Table 1- Priority species known to occur or those that could occur in the Maxwell NWR include the following: (Species highlighted in bold are further discussed as species of concern starting on page 50)

Tier I - High Priority	Tier II - Moderate Priority
Swainson's hawk*	northern harrier*
ferruginous hawk	common nighthawk*
snowy plover	grasshopper sparrow
mountain plover	burrowing owl*
long-billed curlew*	prairie falcon
Cassin's sparrow*	American avocet*
black-chinned hummingbird	Wilson's phalarope*
lark sparrow*	chestnut-collared longspur
Lewis' woodpecker	yellow-headed blackbird*

* known to nest locally

Mammals

The refuge provides habitat for at least 41 species of mammals. Resident mammals include mule deer, white-tailed deer, beaver, muskrat, badger, bobcat, coyote, striped skunk, raccoon, porcupine, long-tailed weasel, black-tailed prairie dog, black-tailed jackrabbit, desert cottontail, at least six species of bats, and a wide variety of rodents that are typical of the area grasslands. Mexican free-tail and little brown bats are the most common mammals encountered during the summer. Other mammals that have been documented on the refuge include elk, mountain lion and black bear. Pronghorn are found in the vicinity but are seldom encountered on the refuge.



Big Brown Bat (photo by P. Hoban).

Mule and white-tailed deer are regularly observed on the refuge year-round. During the spring and summer months, does and their fawns take advantage of cover and seclusion provided by the crop fields. Deer numbers fluctuate since they move on and off the refuge. Little is known about their status and population trends. Information on home range will be collected by monitoring the home range of two radio-collared does.



Collared mule deer fawn (photo by P. Hoban).



White-tail doe and fawn (photo by P. Hoban).

Reptiles and Amphibians

The refuge provides habitat for 13 species of reptiles and 8 species of amphibians. Surveys on the refuge indicate the presence of tiger salamander, bullfrog, northern leopard frog, Great Plains toad, red-spotted toad, Woodhouse's toad, western spadefoot toad, and the plains spadefoot toad. Several species of reptiles occur on the refuge. They include the lesser earless lizard, fence lizard, short-horned lizard, Great Plains skink, corn snake, western hognose snake, coachwhip, bullsnake, and the prairie rattlesnake.



Woodhouse's toad (photo by P. Hoban)



Prairie rattlesnake (USFWS photo)



Short-horned lizard (photo by P. Hoban).

***Fi
sh***

The NMDGF maintains a “put and take” fishery program in refuge impoundments (Lake 13), stocking rainbow trout, bluegill and channel catfish. A list of fish documented in refuge impoundments is provided in Appendix A. There has been no effort to conduct a total fishery inventory on the refuge. Because the refuge is not located on any natural water course, it is doubtful if any fish existed in the playas prior to the completion of the irrigation canals in the early 1900s.

Invertebrates

Common aquatic invertebrates on the refuge include damselflies and dragonflies (Order *Odonata*), mosquitos and midges (Order *Diptera*), diving beetles (Order *Coleoptera*), water fleas (Order *Cladocera*), crayfish (Order *Decapoda*), snails (Order *Gastropodia*), and backswimmers (Order *Hemiptera*). Terrestrial invertebrates known to occur on the refuge include beetles (Order *Coleoptera*), wasps and bees (Order *Hymenoptera*), grasshoppers (Order *Orthoptera*), moths and butterflies (Order *Lepidoptera*), and spiders (Order *Arachnida*).



Wolf spider (photo by P. Hoban).

Species of Special Interest

The refuge provides potential habitat for a variety of species of special interest, including several federally proposed, listed (threatened or endangered) and candidate species and other species of concern. Declines may be related to loss and fragmentation of suitable habitat, increasingly large areas being cultivated for crops, drought, loss of playa lakes, lack of natural fire regime, and the replacement of native grasses with exotic grasses. Some species inhabit the refuge on a regular or seasonal basis while others are migrants or accidental visitors that are infrequently sighted on the refuge, as described below. There are no known state, federally-listed or sensitive plants on the refuge.

Management actions taken on the refuge will adhere to compatibility standards, National Environmental Policy Act (NEPA), Endangered Species Act (ESA) compliance and Service regulations to ensure that endangered species are not adversely impacted. The refuge will provide technical assistance on endangered species management to neighbors and individuals from the private sector whenever it is requested. A list of threatened and endangered species that may occur in Colfax County, New Mexico can be found in Appendix B.

Federally Endangered, Threatened, and Proposed Species

The purpose of the Endangered Species Act is to conserve “the ecosystems upon which endangered and threatened species depend” and to conserve and recover listed species. Under the law, species may be listed as either “endangered” or “threatened”. Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened means a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. Proposed species means any species of fish, wildlife, or plant that is proposed in the *Federal Register* to be listed under section 4 of the ESA.

Bald Eagle (*Haliaeetus leucocephalus*) - The bald eagle was listed as endangered on March 11, 1967. Bald eagle numbers declined due to pesticide-induced reproductive failure, loss of riparian habitat, and human disturbances, such as shooting, poisoning, and trapping. On August 11, 1995, the bald eagle was down-listed from endangered to threatened status in the majority of the contiguous U.S., including New Mexico, due to nationwide recovery efforts (Fed. Register 1995). In 1999, the bald eagle was proposed for delisting (USFWS 1999). The main population of bald eagles inhabiting the desert Southwest consists of wintering bald eagles that nest in northern localities and a few nesting pairs. Most wintering and nesting bald eagles in New Mexico are associated with major rivers, lakes, or reservoirs. Winter and migrant populations seem to have increased in New Mexico (NMDGF 1988). Mid-winter surveys conducted annually by the NMDGF showed that the number of bald eagles wintering in New Mexico had steadily increased during the preceding decade, averaging about 430 birds per year during the period 1990 to 1994 (NMDGF 1994). Only a few bald eagle nests are known to exist in New Mexico (in Colfax and Sierra Counties). Nesting attempts occurred on the refuge during the early and mid-1980s. No nesting attempts have been recorded since that time; however, there are a few known nests in Colfax County. Eagles, therefore, reside in the area year-round. During the fall and winter, bald eagles are common visitors. As many as 60 bald eagles have wintered on the refuge arriving between October and November. Eagles alternately feed/rest at Stubblefield Lake and the refuge. Roost sites, open water, abundant waterfowl and fish on or near the refuge make it an attractive haven for wintering bald eagles. Historically, the population peaks in January. Bald eagles are opportunistic and will forage on fish, prairie dogs, sick or dead waterfowl, cranes, and carrion.



Bald Eagle (photo by P. Hoban).

Southwestern willow flycatcher (*Empidonax traillii extimus*) - The willow flycatcher (*Empidonax traillii*) is a small neotropical songbird that uses willow-cottonwood and other riparian habitats. The species has four or five recognized subspecies, including the southwestern willow flycatcher (*E. t. extimus*), which was listed as endangered on February 27, 1995 (USFWS 1995). This subspecies occurs in southwestern North America, and winters in southern Mexico, Central America, and northern South America. Its breeding range in the United States includes far western Texas, New Mexico, Arizona, southern California, southern portions of Nevada and Utah, and southwestern Colorado. They nest in dense riparian vegetation approximately 13 to 23 feet high, often with a high percentage of canopy cover. In New Mexico, nesting habitat generally consists of dense coyote willow patches with sparse overstory of cottonwood. However, willow flycatchers are known to nest in habitat which is also a mix of native riparian species including tree willow, saltcedar, Russian olive, box elder, and various other species. Threats to the southwestern willow flycatcher include habitat loss due to water diversion and floodplain

channelization for agricultural and urban use and flood control, replacement of native riparian vegetation by exotics, and livestock grazing. Individual populations are threatened by small size, nest parasitism by brown-headed cowbirds and nest predation.



Southwestern Willow Flycatcher (photo by Suzanne Langridge, USGS).

Willow flycatchers have been observed and/or heard in the refuge woodlots, but they are most likely a different subspecies such as *E. t. adastus* that breeds to the north of New Mexico (Mehlman 1995). The limits of the breeding range of *E. t. extimus* in northern New Mexico and southern Colorado are not precisely known.

Determining the boundaries of *extimus*' range has been difficult due to many factors including the limited number of museum specimens from some regions, the difficulty in separating breeders from migrants in many areas, and the lack of data on willow flycatchers in some areas. The Maxwell NWR has a few stands of dense willow (such as at the inflow to lake 14) that may be potential flycatcher habitat; however, the refuge is located outside the far eastern edge of the southwestern willow flycatcher's range,

as described in the Final Recovery Plan (USFWS 2002). In any case, the migrant flycatcher observations confirm the value of the upland habitat of the refuge, and the woodlots in particular, to migrating individuals of many species.

Candidate Species

Candidate species are those species for which the Service has enough information to warrant proposing them for listing as threatened or endangered, but these species have not yet been proposed for listing due to other higher priority listing activities. The Service works with state and private partners to carry out conservation actions for candidate species to prevent their further decline and possibly eliminate the need to list them as endangered or threatened. The black-tailed prairie dog has recently been removed from the candidate species list and is further discussed below. No other candidate species are known to occur on the refuge.

Other Species of Concern

Species of concern are species for which further biological research and field study are needed to resolve their conservation status or are considered sensitive, rare, or declining on lists maintained by Natural Heritage Programs, State wildlife agencies, other Federal agencies, or professional scientific societies. The following species of concern are known to occur or have potential habitat on the refuge:

Black-tailed Prairie Dog (*Cynomys ludovicianus*) - Prairie dogs live in shortgrass and mid-grass prairies and grass-shrub habitats (Finch, 1992). The historic range of black-tailed prairie dogs covered approximately 100 million acres and extended over 12 states, throughout the Great Plains from southern Canada through most of the western United States to New Mexico. Prairie dogs have been reduced to less than one percent of their original range due to poisoning by private landowners, plague, shooting, agriculture, and development. What remains is fragmented into remnants of various sizes. This species is considered a critical link or keystone species, one that significantly influences the distribution, abundance, and/ or diversity of other species (Kotliar *et al.*, 1999; Finch, 1992). It is also considered an ecosystem regulator as their natural behavior patterns lead to manipulation of soils as well as increases in plant and animal densities. Prairie dogs are helpful to other species that benefit from holes, unvegetated areas, short vegetation, as well as to prairie dog predators (Clark *et al.*, 1982). There are two separate prairie dog towns, encompassing approximately 150 acres, on the refuge (see Map 6). The smaller town, which is southwest of Lake 14, is totally within the refuge boundary. The larger town is along the SE refuge boundary, and extends onto private land. Prairie dog control occurred on the refuge in the mid-1980s; however, the population has never been monitored.



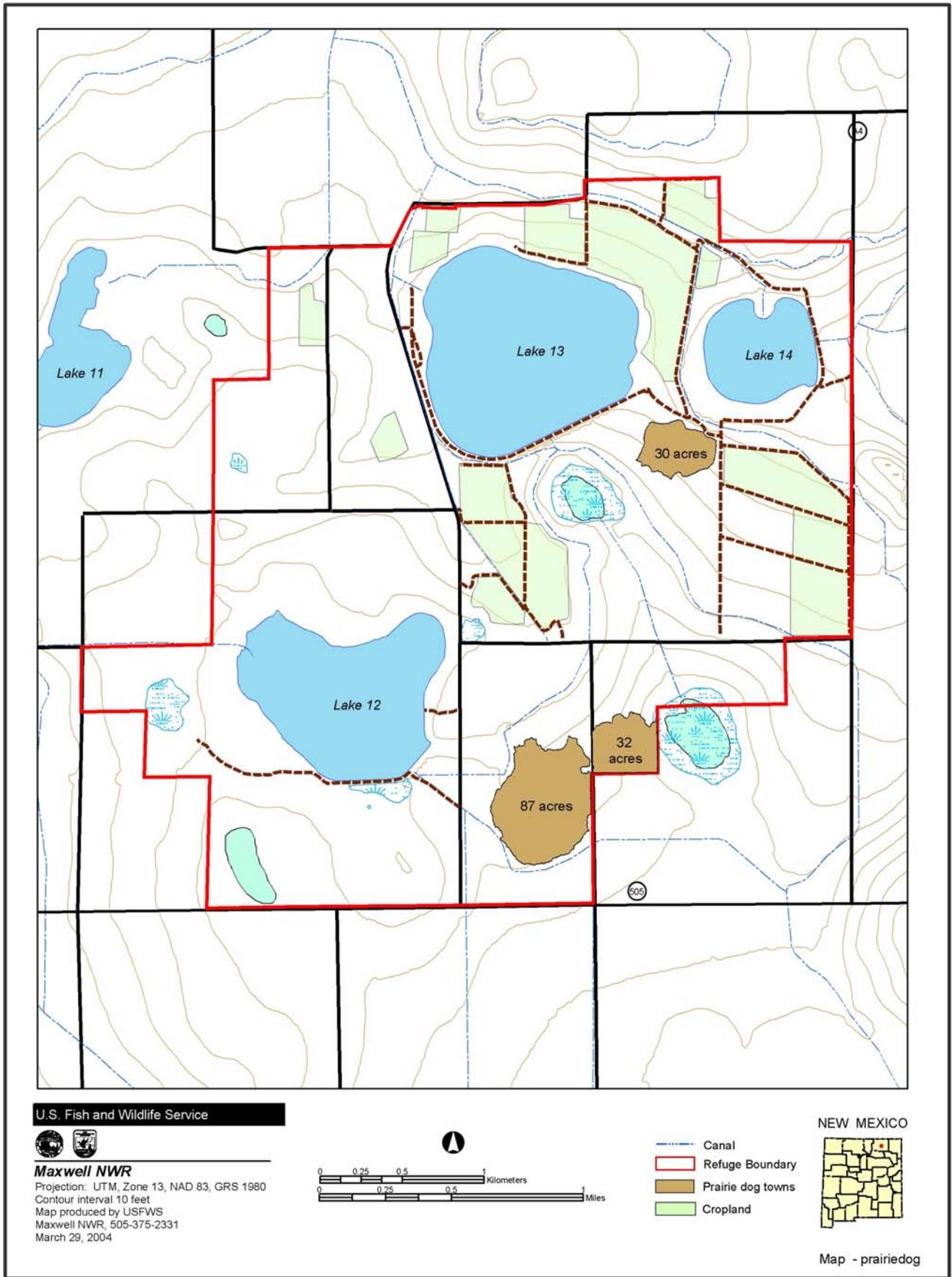
Prairie dog towns total 150 acres on the refuge (photo by P. Hoban).

Mountain plover (*Charadrius montanus*) - The mountain plover was proposed for listing as threatened under the Endangered Species Act on February 16, 1999 (USFWS 1999). This proposal was later withdrawn when the Service determined that threats to the species, as identified in the proposed rule, are not as significant as earlier believed (USFWS 2003). This species' decline is due to the agricultural and urban conversion of its habitat and pesticide use. Mountain plovers are a disturbance-evolved species that breeds in the Plains and gathers in flocks to migrate to their fall wintering grounds. It is a breeding bird of the shortgrass prairie of western North America, occupying a range extending from Montana to New Mexico and Texas (Graul and Webster, 1976). It has fairly specific habitat requirements, preferring level areas with very short grass and scattered cacti (Graul, 1975). Historically, these plovers were commonly associated with bison and prairie dog towns. The mountain plover requires expansive dry short-grass prairie such as high plains and semidesert mesas having a high proportion of bare ground (>30 percent) for nesting. Typical associated plants include blue grama, buffalo grass, and scattered cacti or forbs. They feed primarily on insects (ants, beetles, grasshoppers, crickets, etc.) and spiders. In New Mexico, the species nests from April through July and may be found nesting in open plains, mesas, or dry playas (lake bed flats). They commonly nest in or near prairie dog towns. Other sites that attract plovers for nesting, but may be in harms way, include farm fields, highway/powerline rights-of-way, and stock tanks.



Mountain plover (photo by Fritz Knopf)

The mountain plover is listed as an accidental visitor to the refuge. The refuge is within this species range and there is potential nesting habitat on the refuge, particularly around the prairie dog town, but nesting has not been documented in the area. It undoubtedly uses the refuge during migration.



Map 6. Prairie dog towns.

Baird's sparrow (*Ammodramus bairdii*) - The Baird's sparrow winters primarily in northern Mexico, although some may be found in southern Texas, New Mexico and Arizona. Baird's sparrow is a summer endemic species to the prairie where pairs select tall or mixed grasses, wet meadows, and occasionally fallow, stubble, or hay fields for nest placement. Nests are on the ground on ungrazed or lightly grazed sites. As with many endemic prairie species, reasons for the decline of breeding populations are probably related to the effects of drought, agriculture, and overgrazing on the shrubby shortgrass habitats favored by the species (Lane 1968). Similar impacts on migrational and winter habitat areas have no doubt also occurred, with the loss of cover and seed crops likely the most deleterious of the effects (NMDGF 1988). The species was formerly relatively numerous and widespread in New Mexico (Hubbard 1978), but in recent years has been rarely reported. The refuge is within the range of this species and may provide suitable habitat, but no Baird's sparrows have been recorded on the refuge.



Baird's Sparrow (USFWS photo)

***Ferruginous hawk** (*Buteo regalis*) - The ferruginous hawk is primarily found on grassy prairies, dry mesas, irrigated agricultural lands, and other habitats that support many rodents and rabbits. Ferruginous hawks range over much of the western half of the United States. They prefer forest edge or mature, isolated, flat-topped junipers, with thick support branches for nesting and are highly sensitive to human disturbance. The ferruginous hawk preys mainly on small to medium-sized mammals (Stravers and Garber 1998). Historically, ferruginous hawks experienced declines in the southwestern states, although recent trends are uncertain (Hall *et al.* 1988). Habitat destruction, reduced prey availability, and persecution have been implicated in the decline of the species (Harlow and Bloom 1989). It is common to see the ferruginous hawk on the refuge. They are regular winter/spring residents of the area.

Conversion of grassland to intensive cultivation has reduced the amount of preferred habitat that is available to the ferruginous hawk and has been implicated in the population decline of the species in some areas (Schmutz, 1984; Olendorff, 1993). Agricultural development has restricted the species to areas of greater topographic relief or other areas unsuitable for agriculture (Stewart, 1975). Nest disturbance, shooting while perched along roadsides, and widespread control of prairie dogs, a vital source of food, are other factors that may have led to the current decline of this species.

These hawks migrate and winter statewide in New Mexico and are considered a regular summer resident in the eastern plains of New Mexico (Hubbard, 1978). Positive correlations occur between the location of ferruginous hawk nests and large prairie dog towns in some grassland areas of central and west central New Mexico, indicating a reliance of some breeding pairs on the availability of prairie dogs as a primary prey item (Hawks Aloft, Inc., 2000). The fall migration of ferruginous hawks is also tied to prairie dog colony locations, as the hawks eat young dogs as well as other rodents associated with the towns (Dechant *et al.*, 1999).

Peregrine falcon (*Falco peregrinus*) - The peregrine falcon was originally listed as endangered on June 2, 1970. Their shrinking numbers were the result of decreased nesting success attributed to accumulation of chlorinated pesticides such as DDT and its metabolite DDE. After banning DDT in the United States in 1972, the population has shown a tremendous comeback from the bird's most critical low level of 30 pairs in the mid 1960's. Through captive breeding and release programs, the population of these birds has rebounded remarkably and has exceeded the recovery goals for this species. Recovery efforts resulted in delisting of the peregrine falcon on August 25, 1999 (64 Federal Register 46543); however, this species is still listed as State threatened in New Mexico.



Peregrine Falcon (USFWS photo)

Peregrines take virtually all of their prey on the wing, typically after a stoop or dive from above. Prey consists almost entirely of other birds, such as shorebirds, waterfowl, pigeons, doves, robins, flickers, jays, swifts, swallows, and other passerine birds that opportunity presents (Craig 1986). During the breeding season, a hunting range of 10 miles may be considered typical (Craig 1986); however, they may forage as far as 17 miles from the nest site (Porter and White 1973). Peregrines use a wide variety of habitats for foraging, including riparian woodlands, coniferous and deciduous forests, shrublands and prairies (Finch 1992).

Regionally, peregrines breed in Colorado, New Mexico, far western Texas, and in the mountains of northern Mexico. Nests are primarily on high, vertical cliffs. In New Mexico, peregrine falcon breeding territories center on cliffs in wooded/forested habitats, with large "gulfs" of air nearby in which they can forage (Hubbard 1985). There is no known nesting habitat on or near the refuge; however, there is

migration habitat, particularly in autumn. Single birds are usually encountered near playas where waterfowl and/or shorebirds are concentrated. Peregrines are seen infrequently, but consistently throughout the year on the refuge.

***Cassin's Sparrow** (*Aimophila cassinii*) - During the breeding season, Cassin's sparrows inhabit shortgrass prairies mixed with scattered shrubs. Their populations are known to experience considerable annual fluctuations in abundance, primarily in response to changes in precipitation levels. In the southwestern deserts, they are generally most numerous during wetter years, but become scarce during droughts. As a result of considerable annual fluctuations in abundance, the historic changes in Cassin's sparrow populations are poorly understood in most of their range. The Cassin's sparrow is commonly observed on the refuge. It is of interest on Maxwell NWR, since this area represents the western limit of its normal breeding distribution on the eastern plains (Hubbard 1978).

Black tern (*Chlidonias niger*) - In New Mexico, black terns are found near water at lower (2800 - 5500 feet) and middle (5000 - 7500 feet) elevations (Hubbard 1978). This species breeds and feeds in vegetated marshes with some open water. In 1992, Breeding Bird Surveys denoted significant declines for the species. The black tern was listed by the Office of Migratory Bird Management in 1982 and 1987 as a species of management concern because of indisputable confirmation of widespread declines, fragmented distribution, and dependence on limited wetland habitats (Finch 1992). The black tern is commonly seen in small numbers on the refuge during migration.

Yellow-billed cuckoo (*Coccyzus americanus*) - This species breeds in North America and winters primarily south of the U.S. - Mexico border (Williams 1993). The species is associated with lowland deciduous woodlands, willow and alder thickets, second-growth woods, farmland, and orchards. Caterpillars form the main component of the diet, with cicadas, grasshoppers, beetles, bugs, ants, wasps, frogs, lizards, and small fruit being consumed in smaller amounts (Howe 1986). It nests in localized riparian valleys statewide. It occurs at elevations where stream conditions provide sufficient permanent moisture for emergent plants or for a narrow band of deciduous trees and shrubs; at low elevation characterized by cottonwood and sycamore, at mid-elevation by white alder (*Alnus rhombifolia*), and bigleaf maple (*Acer macrophyllum*), and at high elevations by willows. The greatest factors adversely affecting the yellow-billed cuckoo have been the invasion of exotic woody plants into Southwest riparian systems, and clearing of riparian woodlands for agriculture, fuel development, and attempts at water conservation (Howe 1986). Yellow-billed cuckoos are seen and/or heard in most of the woodlots on the refuge, but no definitive evidence of breeding has been observed (Mehlman 1995).

Western burrowing owl (*Athene cunicularia*) - Burrowing owls are found throughout grassland and deserts in western portions of North America and in drier regions of central and South America. Burrowing owls prefer open area within deserts, grasslands, and shrub-steppe. They use well drained, level to gently sloping areas characterized by sparse vegetation and bare ground such as moderately or heavily grazed pastures. Populations in the northern part of this range are migratory. Burrowing owls prey primarily on arthropods and small mammals and are believed to be opportunistic feeders. They do excavate their own homes; however, they prefer to take use of other burrowing animal dens. They typically nest in vacated prairie dog burrows.

Urban development, conversion of pasture to cropland, and cultivation of grasslands limit burrowing owl populations through the destruction of nesting habitat. Elimination of burrowing rodents through control programs has been identified as the primary factor in the recent and historical decline of burrowing owl populations. The campaign to eradicate prairie dogs in the west has indirectly affected many nontarget species, such as the burrowing owl. Currently, the center of abundance of burrowing owls is on the shortgrass prairie where remnant prairie dog colonies continue to persist.

Burrowing owls are common on the refuge in spring, summer, and autumn. Nesting occurs on the refuge, but populations fluctuate with the prairie dog towns. In 1992, a peak population of 34 birds was recorded on the refuge. Typically, in past years, there have been 5-6 pairs, but in recent years, there have only been two pairs nesting on the refuge.

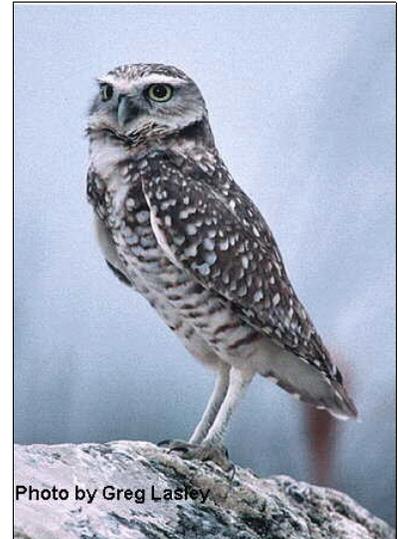


Photo by Greg Lasley

Western Burrowing Owl

Swift Fox (*Vulpes velox*) - The swift fox historically occurred throughout the Great Plain of North America, from southern Alberta/Saskatchewan Canada, and the United States from Montana to western Minnesota, south to New Mexico and the Texas Panhandle. United States populations are currently known from Montana, South Dakota, Wyoming, Colorado, Nebraska, Kansas, Oklahoma, Texas, and New Mexico. In New Mexico, the species occurs on the eastern half of the state, including San Miguel County. Populations are disjunct over its range. Prairie development and indiscriminate predator control programs are major causes for swift fox declines. Swift foxes are opportunistic predators, scavenging or feeding on small mammals, birds, reptiles, amphibians, fish, insects, grasses, and berries. Their preferred habitat is plains grasslands and deserts with loose sandy soil, but they may also frequent pastures/rangelands, farm fields, and fence rows. In New Mexico, the species is primarily found on Plains-Mesa Grassland and Desert Grassland habitat, commonly on soft soils that support large rodent populations such as kangaroo rats. The refuge is within the range of the swift fox and may provide potential habitat. There have been road kills found in the area (off the refuge).

Socioeconomic Environment

Archaeological, Cultural, and Historical Resources

Early History of the Area / The Maxwell Land Grant

The area that now comprises Colfax County was used by nomadic Indians for at least 12 thousand years before Spanish explorers entered the area. Plains Indians hunted, fished, and traded here for centuries. Apache, Navajo, and Pueblo Indians crossed the plains in search of food and trade goods, but did not create permanent settlements. The first recorded visit by a non-native was the Spaniard Don Diego de Vargas in 1696. This was shortly after the reconquest of New Mexico by Spanish forces, and de Vargas was attempting to quell an Indian riot in the area. Explorers that followed de Vargas included Juan de Ulibarri in 1706 and Antonia de Valverde in 1719. In each case the expedition was to settle hostilities between warring Indian tribes.

During the early 1800s the Spanish Government perceived that expanding U.S. interests posed a threat to their land in what is now northeastern New Mexico and southern Colorado. The land below the Arkansas River, which at that time separated Mexico from the Louisiana Purchase, was mostly unsettled and undeveloped. In order to block any unwanted intrusions, the government began to grant large blocks of land to potential developers for political favors. The government arrested and tried all invaders, such as Charles Beaubien, a Canadian by birth, who with some other traders from St. Louis were captured in New Mexico and taken to Mexico City for trial. While in Mexico City, he accepted an offer to settle in New Mexico and became a merchant in Taos. It was during this period (1821) that Mexico claimed independence from Spain. This brought to a close three centuries of Spanish rule in the North American continent, and made New Mexico a part of the Mexican Republic. The most notable change was that open trade with outsiders, especially the Americans from the emerging United States, was encouraged.

In 1821, the Santa Fe Trail opened and trade between Missouri and the new nation of Mexico began. The Santa Fe Trail blazed 909 miles from Missouri to New Mexico, ending at the state capital of Santa Fe. Huge profits from trade encouraged many businessmen to take on the challenge of developing the commercial route.

On January 8, 1841, Charles Beaubien, who was granted Mexican citizenship in 1827, and Guadalupe Miranda, Secretary of Government in Santa Fe, petitioned the Mexican government for a large grant of land along the foothills of the Sangre de Cristo Mountains neighboring the Santa Fe Trail. Within three days the petition was approved. In February 1843, Beaubien and Miranda applied for title to the grant but were met with opposition from the curate of Taos, Father Antonio Jose Martinez. Father Martinez believed that land should be given to the poor, not the rich, and argued against awarding the grant until the Treaty of Guadalupe Hidalgo was signed in 1848 and the government of the United States formally recognized all legitimate Mexican land grants. The Treaty of Guadalupe Hidalgo ended the Mexican War (1846-1848) and put New Mexico under the control of the United States. It was organized as a U.S. Territory in 1850 and became the 47th state in 1912.

Beaubien intended to pass control of the land grant to his son; however, after his son was killed during the Taos Revolt of 1847, management and eventually ownership of the land grant passed to his son-in-law, Lucien Bonaparte Maxwell. Maxwell was born in Kaskaskia, Illinois, on September 14, 1818, the son of a well-to-do merchant. After his father's death in 1834, Lucien traveled to the Rocky Mountains of Colorado and New Mexico learning the fur trade. He served as a hunter and guide on expeditions to map and explore lands west of the Mississippi River. In 1844, Maxwell returned to Taos and married Beaubien's daughter. Charles Beaubien died on February 10, 1864. Within two years of his father-in-law's death, Maxwell had managed to purchase additional deeds to parts of the Grant he had not inherited.

During the peak years of the Santa Fe Trail, northeastern New Mexico was part of the largest singly owned tract of land in the Northern Hemisphere. Maxwell encouraged many to come and be ranchers on the high plains, mountains, and canyons that covered almost two million acres. Gracious and beautiful, these large ranches greatly contributed to the history and development of the area.

Maxwell built the first settlement near Rayado where he traded with merchants on the Santa Fe Trail and contracted with the U.S. Army for stock forage and troop housing. In 1851, the Army moved their outpost to the new location at Fort Union where the two branches of the Santa Fe Trail joined. Maxwell soon abandoned his settlement at Rayado and relocated in Cimarron.

As the Plains Indians were pacified, an Indian Agency was established at Cimarron. Maxwell was well prepared to sell beef and grain to the agency. During the Civil War years, when New Mexico was mostly isolated, Maxwell was able to provide Fort Union with a substantial quantity of goods as well as supply many of the small towns in southern Colorado and northern New Mexico. Maxwell's large stone grist mill was capable of producing three hundred barrels of flour per day.

In 1867 gold was discovered in the Moreno Valley, north of the present village of Eagle Nest. Records indicate that Maxwell was aware of gold deposits on his grant but had made no effort to carry out mining activities. The rush of miners onto the grant created confusion because the land was owned by Maxwell, thus no valid mining claims could be established.

Elizabethtown, the mining camp that was located in Moreno Valley, grew so rapidly that leading citizens pressed for the creation of a new county. In January 1869, the territorial legislature approved the formation of Colfax County, named for U.S. Vice-President Schuyler Colfax. Elizabethtown was the county seat of the new county, and in 1870 became the first incorporated town in New Mexico.

Maxwell eventually formed his own mining company, but profited more by leasing out his land at a fixed rate and collecting royalties from successful miners. He also provided capital for other mining companies. Maxwell became rich by leasing land to the miners and selling them the supplies necessary for their prospecting exploits. He also became probate judge when Colfax County was established in 1869.

As word of Maxwell's success spread he was approached by outside interests who desired to purchase the entire grant. Between the years 1863 - 1880, railroads began to move into the area. In 1870, Maxwell sold the Maxwell Land Grant in Colfax County, consisting of 1,714,765 acres for \$1,350,000 to a group of English buyers. The new owners named their organization the Maxwell Land Grant and Railroad Company. Soon after buying the land, the Maxwell Land Grant and Railroad Company began to suffer financial setbacks. The mining district near Elizabethtown began to decline as prospecting returns diminished. During the financial panic of 1873, construction of the Santa Fe railroad was halted after reaching Granada, Colorado from the north. In 1876, the profitable Indian Agency was moved from Cimarron to Colorado. On July 4, 1879, the tracks of the Atchison-Topeka stretched to Las Vegas, opening a new chapter in the history of northeast New Mexico but ending the era of the Santa Fe Trail. The greatest problem centered on the large number of farmers, ranchers, and miners who questioned the validity of the land title and the right of the new "owner" to collect lease money.

After Maxwell sold the Land Grant, its ownership generated a great deal of controversy. There had been Indian claims on the land, supported by priests working within the tribes, at the time that Beaubien and Miranda first filed for the Land Grant. And, in his years of controlling the land Maxwell had not been overly precise in handling paperwork regarding titles. He was known to give land in exchange for services or to pay debts, making the deals on a hand shake rather than with written documentation.

Part of the problem centered around the fact that most Spanish land grants did not exceed 22 square leagues (approximately 42,240 acres). In 1874, the Secretary of Interior decided that this was the extent of the grant and that all other lands were public domain and subject to settlement by homesteaders. The settlement of disputes between the "grant" people and the "anti-grant" people became quite violent and resulted in many murders, lynchings, and property damage. Most of these activities centered around the town of Cimarron and were termed "The Colfax County War". The question of the legality of the land grant rose through the courts until April 16, 1891, when the Supreme Court decided that the land grant was legal. This decision also finalized the question of the land grant size. A survey prior to the court decision estimated the grant to contain 1,714,764 acres.

The legal mess resulted in court battles for the new owners of the Land Grant, but Maxwell Land Grant Company ultimately emerged with clear title, confirmed by the U.S. Supreme Court in 1887. Within 10 years after it was chartered, the Maxwell Land Grant and Railroad Company collapsed. However, the Maxwell name continued to be attached to the land through various business arrangements for more than another century. In 1880, the Maxwell Land Grant Company was organized under the laws of Holland, with its headquarters in Amsterdam and offices in New Mexico and Colorado, with involvement in mining, timber, coal, farming, irrigation projects, plaster and cement manufacturing. By 1960 the company had sold off most of its land and left New Mexico.

By the time the court decision was final the company had begun to sell off part of the land to mining companies, farmers, ranchers, and the railroad. Large deposits of coal had been discovered in the area, and efforts were begun to mine this resource. As the coal industry flourished, a number of small coal mining camps were built between Cimarron and Raton. Simultaneously several irrigation projects were underway. The first water development from the Vermejo River to provide irrigation and stock water dates from 1888. The Maxwell Land Grant Company was the first of several entities to manage a water diversion, storage and irrigation system in the area. The Maxwell Ditch Company, completed the construction of a ditch that connected the Vermejo River to “Maxwell City”. The Vermejo ditch also incorporated a series of 20 small reservoirs for water storage (Lakes 12, 13, and 14 on the refuge are part of this series). Immigrants from Scandinavia, Holland, Germany, and Russia were encouraged to farm the area. But, the irrigation system declined and the land under irrigation dwindled from over 15,000 acres to a mere 3,500 acres. In 1935, the Maxwell Ditch and Reservoir Company went bankrupt. The effort to develop the agricultural potential of the area was failing. The ditch company was later reorganized into the Vermejo Conservancy District.

After World War Two, with the irrigation capabilities of the system in deep decay, the Bureau of Reclamation (USBR) got involved in restoring the system’s infrastructure. The USBR developed the “Vermejo Project” in the 1950s, bringing irrigation water back and renewing efforts at land development. The first mention of “fish and wildlife values” for the area dates to a 1949 USBR report in preparation for the Vermejo Project. Future recognition of those fish and wildlife values led to the establishment of Maxwell NWR in 1965, in part to reduce depredation on area grain crops by hungry waterfowl.

Refuge Cultural Resources

Although the refuge lies about 2 miles east of one branch of the Santa Fe Trail and there are signs of numerous Indian campsites near the lakes, there are presently no state-listed archaeological, cultural or historical sites on the refuge or near its boundary. Should such resources be discovered, the refuge will incorporate measures to protect these areas for future study and investigative research.

Land Use

During the western migration of the mid and late 1800s, rangelands attracted settlers who wanted to build a new life of ranching, farming, business and mining. Today, people continue to move westward to take advantage of economic opportunities. Other than ranching, county-wide industries include farming, and tourism. People are also attracted by the West’s quality of life— open space, spectacular scenery, clean air and water. These virtues are often attributable to the presence of wildlife refuges. Land uses on the refuge must be in balance with wildlife needs. These lands allow visitors to see for themselves the connections between people and wildlife, habitat and land management. The refuge has successfully implemented the following land management strategies to restore and enhance habitat for wildlife. The presence of this wildlife refuge allows the public the opportunity to raise their awareness and understanding in the importance of wildlife conservation.

Water Management

The first recorded irrigation development was in 1888 with the organization of the Maxwell Land Grant Company. The Vermejo Ditch was organized in 1903 and acquired title to the water rights and developed several small reservoirs in the project area. This system was successfully owned and operated by various land development and water user companies until formation of the Vermejo Conservancy District in 1952. The Vermejo Project was authorized as a Federal reclamation project by Congress in 1950.

The Vermejo River, which originates in Colorado, is the primary source of irrigation water for the Maxwell area. This water is stored in Stubblefield and Laguna Reservoirs, as well as Lakes 11, 12, 13, and 14. These lakes regulate water diverted from the Vermejo River and from Chico Rico Creek for delivery to approximately 7,400 acres of irrigated lands in the vicinity of Maxwell (see Figure 3).

A system of canals and ditches deliver water from the watershed to the lakes and farmlands downstream. Other irrigation waters have been developed to the northeast and enter the irrigation district via the Eagle Tail Canal.



Lake 13 outlet (photo by P. Hoban).

Lakes 12, 13, and 14 are contained within the refuge boundary and comprise the majority of wetlands on the refuge. They also provide large recreational and fish and wildlife benefits at the refuge. When the lakes are full, they provide approximately 700 acres of roosting and feeding habitat for migratory waterfowl and shorebirds. During wet years when draw-downs are minimal, the emergent vegetation is dense enough to provide nesting habitat for waterfowl. During dry years the changing shoreline provides a variety of foraging areas beneficial to shorebirds.



Intake Canal at Lake 14 (photo by P. Hoban).

Although these lakes are located within the refuge boundary, they are managed by the Vermejo Conservancy District for storage of irrigation water only. The refuge has no control over this water and has no rights to retain any of it for secondary storage. The refuge also does not participate in decisions regarding the water management on these units.

The refuge does not own water rights but is provided 946.75 shares (86 percent of which come from lakes outside the refuge, such as Stubblefield) of irrigation water by the district for crop production. A water share is based upon the volume of stored irrigation water. Under ideal conditions one water share equals 1.5 acre feet of water or 18 inches as defined by the proration.

This water must be used for cropland irrigation which

precludes secondary storage for wetland development. The shares must also be used on the tract with which they were acquired. Seventy shares come from Lake 13, but they are associated with grassland tracts, and irrigation shares can only be used on cropland tracts, so these shares are never used; they stay in lake 13. To utilize those shares a fee of up to \$11,512.53 must be paid by the refuge to the Conservancy District each year, even when sufficient water is not available to meet demand. In addition, a water delivery fee of \$5 to \$15 must be paid for delivery of each acre foot.

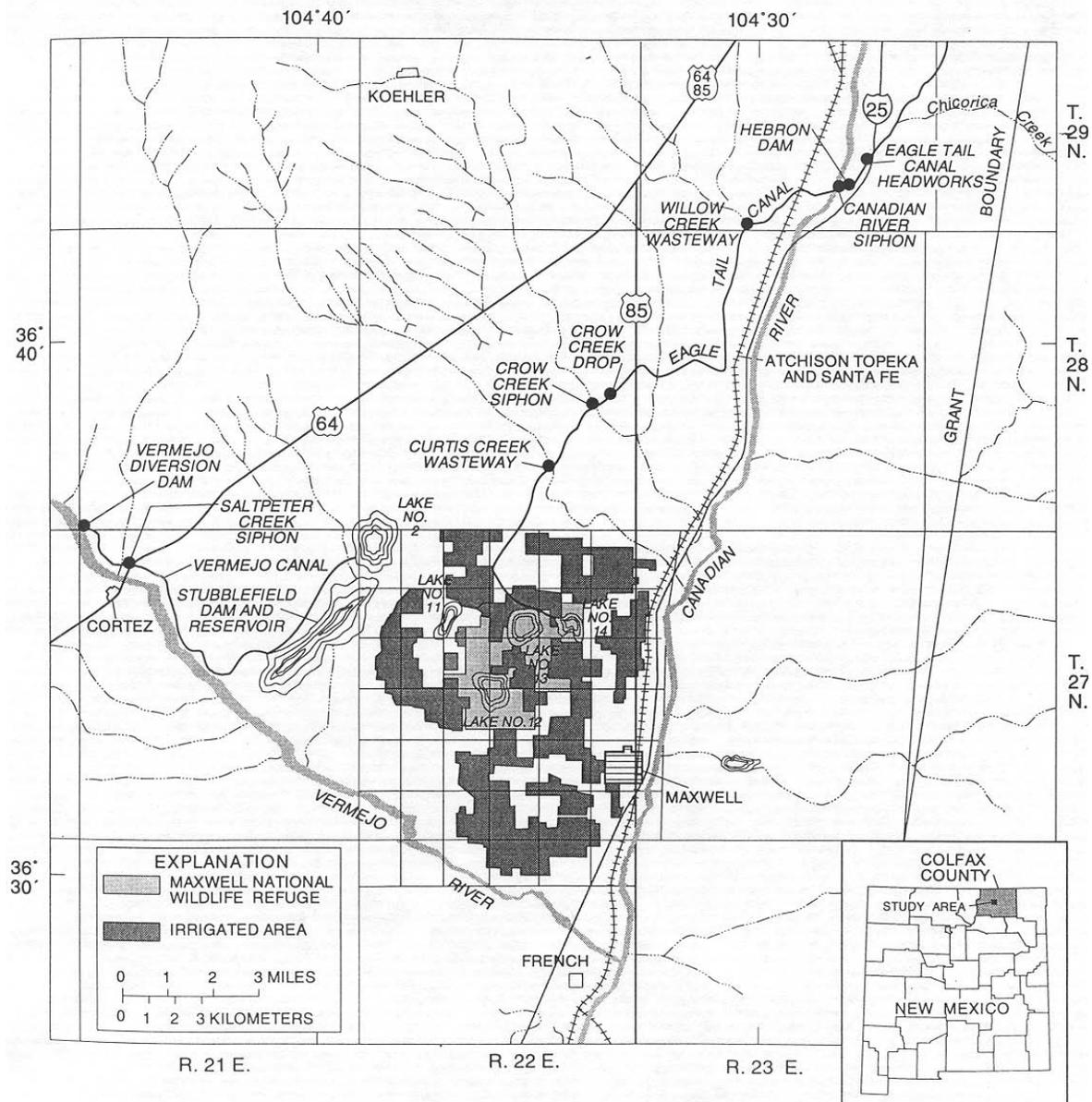


Figure 3 - Vermejo Project area

Lake 13 Agreement

Lake 13 (439 acres) is under a management agreement with Vermejo Conservancy District. Refuge management of Lake 13 is limited to the control of public use.

Lake 13 was developed by the Maxwell Ditch Company in the early part of the century to store irrigation water. The ditch company was later reorganized into the Vermejo Conservancy District. Then in 1952, the conservancy district entered into an agreement (Contract 178r-458) with the Bureau of Reclamation to have many of the district's facilities rehabilitated. In exchange for the work, the Bureau took title to the improved facilities until repayment was accomplished.

In 1961, the Bureau entered into an agreement (Contract No. 14-06-500-625) with the New Mexico State Game Commission. This granted the Game Commission "...the responsibility for the administration, development, operation, and maintenance of the game and fish and related recreational aspects of the reservoir area...".

The Service inherited the program when the refuge was acquired. Following establishment of the refuge in 1965, the agreement was amended on June 16, 1967, when the New Mexico Game Commission relinquished "...its right of use for all purposes of the project land and water areas described as Reservoir No. 13...".

On December 5, 1969, the Bureau of Reclamation entered into an agreement (Contract No. 14-06-500-1713) with the Bureau of Sport Fisheries and Wildlife (now the Fish and Wildlife Service) "...for the conservation, maintenance, and development of the area for public use..." "...the Bureau of Sport Fisheries and Wildlife shall have responsibility for regulating public use and access on the Wildlife Refuge...".

An agreement between the Bureau of Reclamation and the NMDGF was in effect and had been since the completion of rehabilitation by USBR. It was thought that USBR, who owned the lakes and adjacent buffer lands, would eventually transfer them to the Service. This never happened. Instead, this land was transferred to Vermejo Conservancy District in 1992.

On October 30, 1992, the President signed H.R. 429, the Reclamation Projects Authorization and Adjustment Act of 1991, as Public Law 102-575. One of the provisions contained therein was Title XIV - Vermejo Project. Lake 13 was transferred from USBR to the Vermejo Conservancy District. The Fish and Wildlife Service "shall retain the right to manage lake 13 for the conservation, maintenance and development of the area as a component of the Maxwell NWR in accordance with Contract 14-06-500-1713 and in a manner that does not interfere with operation of the Lake 13 dam and reservoir for the primary purposes of the Vermejo Reclamation Project." This has resulted in a perpetual right to manage public use on Lake 13.

Lake 12 & 14 Lease

The lands around Lake 12 and 14 (totaling 468 acres - see Map 7) are leased on a 5 to 10-year negotiable agreement with the Conservation District. In 1995, the refuge lease with Vermejo Conservancy District on Lakes 12 and 14 was renewed for ten years in the amount of \$21,200, ensuring the refuge use of the lands surrounding lakes until the year 2005. The current lease agreement expired in January, 2005. The refuge is currently working with the Conservancy District to renew the lease.

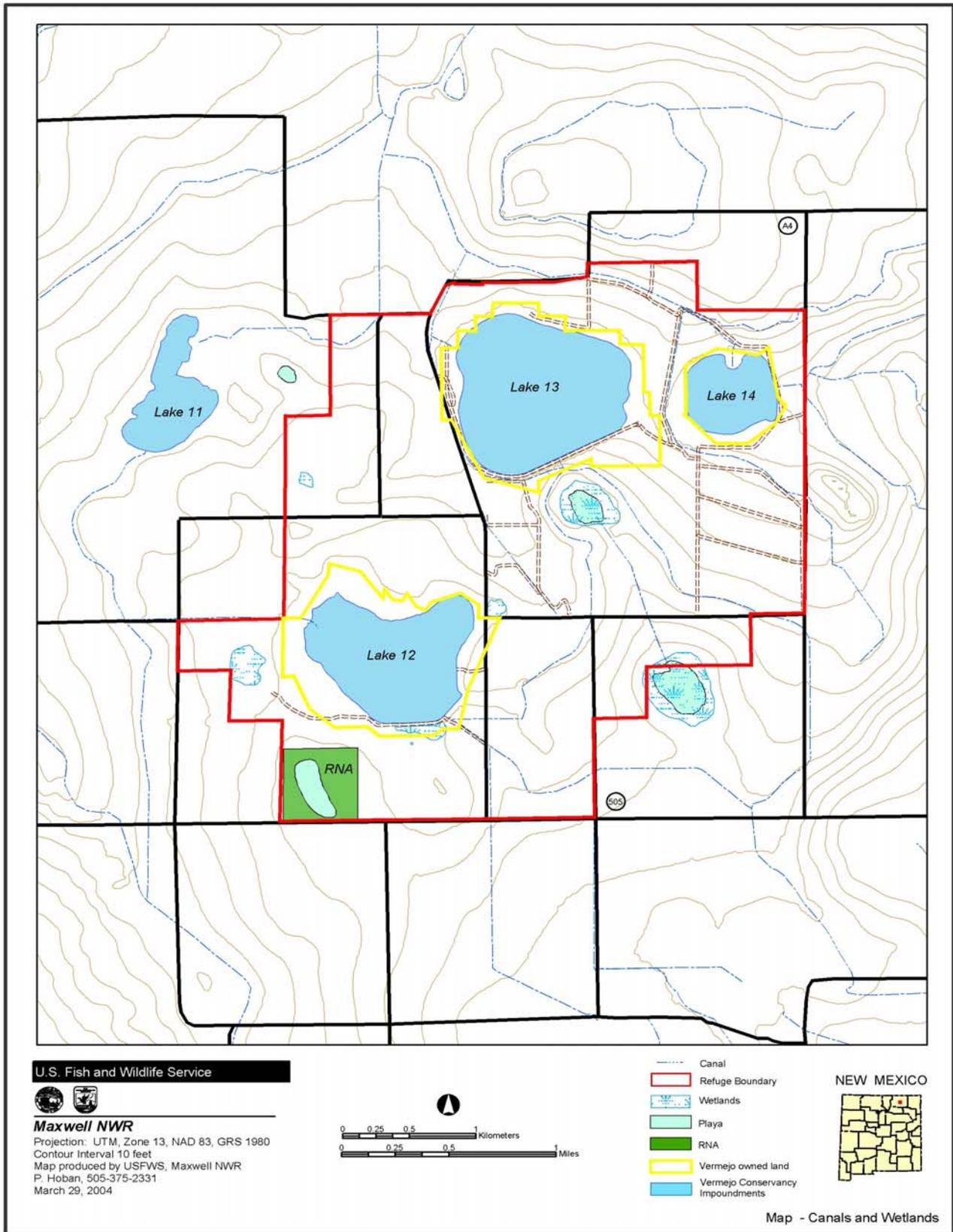
Other Refuge Wetlands

Approximately 50 acres of seasonal marsh are located on the refuge. These areas are filled by natural rainfall, irrigation water seepage or field waste water and provide habitat for nesting waterfowl and early fall migrant species. The shallow marshes usually freeze before the large waterfowl concentrations arrive. The remainder are fed from irrigation ditch seepage and rainfall. Irrigation water cannot be diverted directly to the marshes. Existing marshes are maintained from natural rainfall and run-off from farmland.

Water Quality

There are few pollution sources within a 30-mile radius that affect the refuge, except through air quality and deposition, and potential contamination by past coal mining activities in the Vermejo River watershed, which is the source of water for the lakes on the refuge. Water from the Vermejo River is commingled with other surface waters and stored in a series of lakes and reservoirs which occur on and off of the refuge, prior to delivery of this water to agricultural activities nearby. These reservoirs provide valuable habitat and food for fish and wildlife, particularly waterfowl.

The refuge has used, on a limited basis, pesticides to control invasive plant species and grasshoppers. There is little or no run-off on the refuge and spraying is not typically done next to water (unless a specific chemical is approved to be used next to the water). No known impacts to water quality are



Map 7. Refuge wetlands, lakes, and canals.

occurring now or would be expected to occur from continued efforts to control invasive plant species on the refuge.

Selenium-rich soils and parent materials have been found in the Vermejo River basin, principally in the Raton Coal Field and on the refuge. Whenever water is allowed to stand or percolate through these soils, it becomes enriched with selenium, and likely other trace elements to a limited extent. Environmental contaminant investigations have found elevated selenium levels in the aquatic biota associated with seepage wetlands and playas, but to a much lesser degree, in the irrigation storage reservoirs on the refuge. This lends credence to the hypothesis that groundwater leaching, irrigation return in the small ditches, and evaporation are exacerbating selenium contamination in playas and seepage wetlands and in the irrigation drainage ditches on the refuge, but not in reservoirs as the water moves quickly through these systems and/or is diluted by waters from other drainages (USGS 1997).

Only a few biological samples have been collected and the migratory bird tissues and eggs have selenium concentrations that are at or above the thresholds for which adverse effects from selenium might be expected; however, monitoring efforts were not sufficient to determine if there were any population-level effects. The U.S. Department of the Interior and U.S. Geological Survey modeling efforts have indicated that the potential for selenium contamination is moderate to high on the refuge and the vicinity, given the environmental setting of climate and geology. Additional studies are being developed to identify and hatchability concerns posed by selenium.

In 2004, a hydrolab was deployed in Lake 13. It will collect hourly data on pH, conductivity, temperature, and dissolved oxygen levels in an effort to gain baseline water quality data.

Farming

Beginning in 1966 as land was purchased by the Service to form the refuge, the allotted water shares were also acquired. The 2,792 fee title acres that comprise the refuge is almost exclusively made up from these small farms (23 tracts acquired from 19 owners). Most of the refuge has at one time or another been farmed or grazed. Historically, farmlands planted in grain crops provided excellent forage for waterfowl and cranes. Farming practices have changed with alfalfa and grass hay replacing grain crops.

Agricultural practices on the refuge fulfill the primary purposes for which the refuge was established, i.e., to provide feeding areas for wintering migratory waterfowl and minimize crop depredation on adjacent private lands. There are 440 acres of cropland on the refuge, 282 acres of which are farmed by refuge personnel and 158 acres of which are farmed by cooperative agreement. The number of acres farmed in any given year is dependent on water availability. In years when water is limited, the refuge may need to modify or suspend cooperative farming agreements. Crops include corn, wheat, barley, clover, oats, and alfalfa. Total production in a given year results in approximately 27 percent in barley, 36 percent in wheat, 18 percent in alfalfa, 13 percent in corn, and 6 percent in oats. Farming practices utilized on the refuge emphasize non-chemical fertilization through the use of crop rotation. Smaller farming units along with select tillage practices are utilized to minimize soil erosion.



Preparing the seedbed (photo by P. Hoban)

All irrigation water utilized by the refuge comes from 2 sources: the Vermejo River with its origin in the Sangre de Cristo Mountains and the Chicorica Creek which originate northeast of the refuge and enter the irrigation district by way of the Eagle Tail Canal. Water from the Vermejo River is diverted to all lakes in the irrigation district, but elevational differences prohibit the storage of Eagle Tail Canal

waters in the Stubblefield or Laguna Madre Reservoirs. All but 70 of the refuge's 946.75 water shares come from lakes not contained within its own boundary.

As mentioned previously, all waters are managed by the Vermejo Conservancy District and are allocated according to the irrigation shares. Each share receives a prorated amount of water in acre-inches based upon existing storage and projected runoff. The irrigation season is split into two seasons and usually runs from April through mid-October. Shares not utilized in the first half of the season can be utilized in the second half of the season. To minimize evaporative loss of irrigation water, all concrete ditches have been replaced with plastic underground pipe on refuge lands.



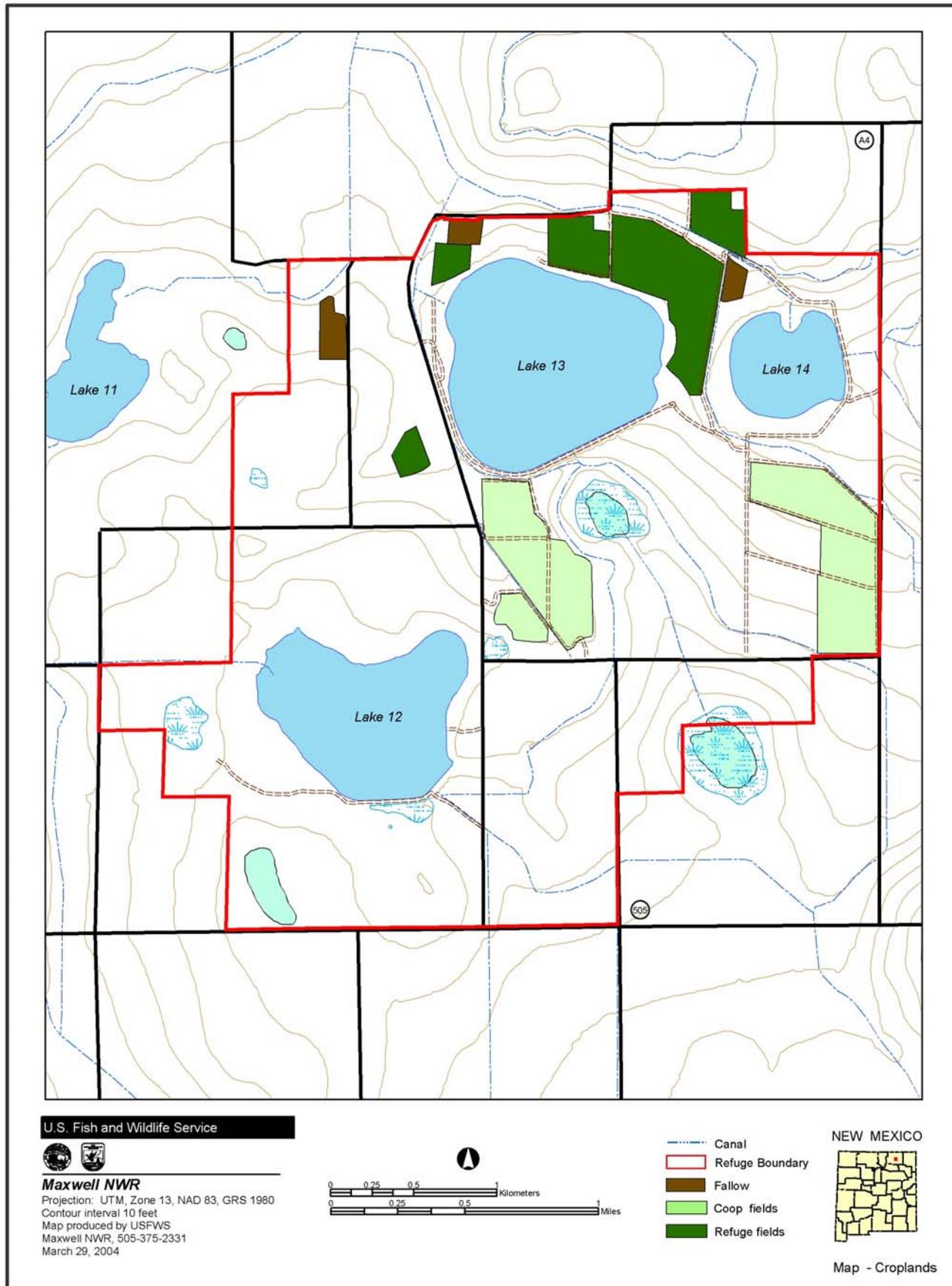
Replacement of concrete ditches with underground pipeline (photos by P. Hoban).

Crop rotation is an important component in the refuge farming program utilizing either alfalfa (cooperator fields) or yellow sweet clover (force-account fields) for nitrogen fixation. Different rotation cycles exist depending on whether or not the lands are farmed by the refuge or cooperatively. A 12-year rotation, 6 years of alfalfa followed by 6 years of small grain and browse crops, is followed by cooperators. This cycle provides sufficient nitrogen to support one year of corn, 4 years of small grain crops (wheat and barley) and a final year to reseed using a cover crop of oats or barley. Under the Cooperative farming agreement, the cooperator receives 2/3 of the share (multiple hay cuttings) in exchange for farming the remaining 1/3 of the acreage in winter wheat, barley, or corn for the refuge. In refuge farmed fields, nothing is harvested and all remaining residue is tilled under to increase organic matter in the soils. Force account fields are managed on a 3-year rotation utilizing yellow sweet clover in year one to sustain a variety of green forage, small grains, and corn.

The alfalfa grown by the refuge force account is not harvested. Approximately 14 acres of alfalfa are sown and left idle in land which has been marginal in production due to salt water incursion caused by a nearby irrigation canal. The remaining alfalfa serves as a buffer between the refuge boundary and the actively farmed fields.



Cooperative farmers harvesting their share in alfalfa (photo by P. Hoban).



Map 8. Refuge croplands

The barley/clover crop is plowed under in its second year to provide a green manure in which to plant wheat. The year following the wheat planting, half of it is plowed under and planted to corn, and the other half is allowed to mature to a grain crop. During the following year, the corn and grain land is rotated back to barley/clover. All crops are produced by irrigation because the local rainfall pattern does not provide sufficient water to sustain them. No fertilizer is used other than that provided through crop rotation. Only minimal treatments of herbicide (2,4-D) for field bindweed are used.

Several fields are excluded from the scheduled rotation cycles, based on their proximity to the refuge boundary and adjacent roads.

Pest Management

The refuge has a long history of large grasshopper outbreaks which impacts not only the natural diversity of the refuge, but agricultural activities are affected, creating an economic loss to both the farmers and the refuge. Grasshopper outbreaks occur in cycles and can be very destructive to crops. If left untreated, they can completely strip fields of newly planted crops. In 1988, transects were established when grasshopper populations exceeded 100 insects per 1.25 square yards. Because the refuge has an active cooperative farming program, a grasshopper outbreak can easily reach an economic threshold that requires treatment. Historically, the refuge has used Sevin insecticide and the biological control agent *Nosema locustae* on grasshoppers with some success (Bomar *et al.*, 1993). However, total control of grasshopper outbreaks are difficult to accomplish. Only a portion of a grasshopper population is susceptible to bait treatment because 1) some species do not eat bait; 2) some members are molting and therefore do not eat; and 3) some members do not ingest enough bait to be affected (Capinera and Sechrist 1981, Pfadt 1994). Left uncontrolled, insect pests can threaten the health of refuge habitats, other wildlife species and humans.

Grassland Management

Historically, habitat in and around the refuge was predominantly short-grass prairie. Frequent fires were an important ecological process that helped maintain the structure and function of these grasslands. Conversion of native prairie for farming and ranching resulted in fire suppression and created changes to the landscape that are still evident today. When the refuge was acquired, the grassland were severely overgrazed. In some areas, overgrazing was so severe that wind and water erosion removed several inches of topsoil. Grazing was stopped when extended use permits to former landowners expired. No livestock grazing has occurred on the refuge since 1972.

Elk, deer, and pronghorn occur in the area, but only deer regularly reside on the refuge. The numbers of these native ungulates are insufficient to have any noticeable impact on refuge grasslands. In addition, the refuge is too small to ever attract or support the numbers of these species that would be necessary to provide the type of hoof action and nutrient cycling that would revitalize refuge grasslands.



Mature alkali sacaton grassland (photo by P. Hoban).



Irrigation water is prorated in drought years (photo by P. Hoban).

After over 30 years with little or no disturbance, refuge grasslands are in a deteriorated state and it is believed that overrest is the primary reason for some of the grassland's poor health. Overrest occurs when ecological processes like grazing or fires are absent for such a long time that the accumulated growth of past years prevents the plants from cycling enough energy to remain vital. The plants become more susceptible to or weakened by drought, fire, and competition from

invasive plant species. This type of management (or lack of management) can result in long-term changes to species composition and potentially have the same impact as overgrazing.

Several invasive plant species are common on the refuge and are reducing the quality and potential of the native grassland. It is recognized that invasive plant species pose a threat to the native grassland and riparian communities by out-competing native plant species and forming monocultures.

The refuge has reached a time when a change in management of some of the grasslands is necessary. Ground cover in some areas has become too dense and decadent. Declines in grassland quality are a concern for native wildlife and migratory birds. Many of the most common species on the refuge are considered grassland obligate birds. The refuge provides extensive mature shortgrass prairie that has developed in the absence of grazing. These areas are more suitable habitat for these species than is generally available outside the refuge.

Managed grazing and/or controlled burning would remove some of the excess vegetation, open those areas up for wildlife use, and reduce potential fire danger. Livestock grazing can be a habitat management tool used to enhance, support, and achieve established wildlife management objectives. Controlled livestock grazing can be used to duplicate the effects of large herbivores like bison, elk, and pronghorn on grasslands by removing dead vegetation and providing hoof cultivation (Savory 1988). This aerates the soils and re-seeds native plants which prevents plant stagnation and promotes plant succession. Properly managed grazing can serve to maintain and encourage native grasses and forbs, and to cycle nutrients through the ecosystem. Prescribed fire can also be managed to emulate the effects of past fires to restore native grassland and prairie species, recycle soil nutrients, and control invasive and non-native species.

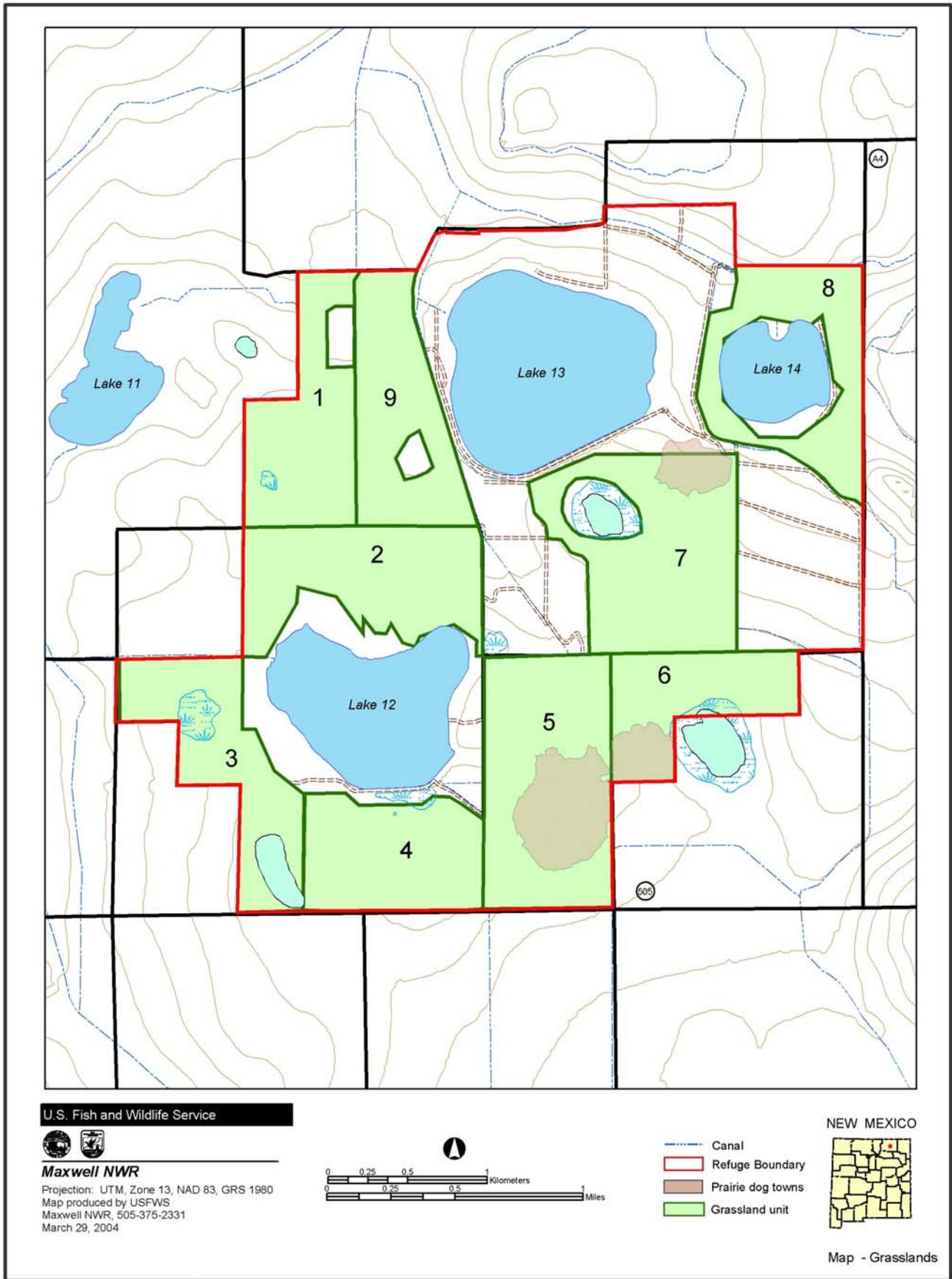
A Grassland Plan for the refuge was drafted in the mid-1980s. At that time it was determined that the refuge grasslands were in need of restoration and protection, not manipulation. But, it also recognized that treatment of native grasslands to remove excess vegetation may be needed at varying intervals, depending on climatic conditions, soil type, and topography. Some areas may never require treatment due to the soil type and the severe climatic conditions usually present.

Although the Grassland Management Plan was completed in the mid-1980s, much of the information within it is still pertinent. The basis for delineation of grassland management units is still valid and appropriate and has been adopted for this CCP (see Map 9). Information on current habitat conditions, management objectives for each unit, and potential management tools will need to be updated in the step-down plan (Habitat Management Plan) proposed in this CCP.

It is important that, whatever management tool is used, vegetative cover is established and maintained. Erosion is still apparent in several areas on the refuge as a result of past grazing practices. A history of periodic droughts and high spring winds create a fairly fragile environment. For this reason, the proposed grazing and fire management activities will only be implemented on an experimental basis.

Grazing

Livestock grazing is not currently permitted on the refuge. Grazing may be done on an experimental basis, from March through May in most units, with the exception of the RNA and the 200 acres east of the RNA (these areas will be excluded from grazing). Initially, grazing experiments will be conducted on alkali sacaton units. The type of grazing will be high intensity, short duration, managed/controlled with temporary electric fences. The primary objective is to remove decadent vegetation and aerate the soil (hoof action). The permittee will likely have to provide a protein supplement. The greatest drawback to grazing on the refuge is the lack of available water for livestock, necessitating the need to haul water. The feasibility/success of conducting this type of a program is unknown, but warrants further investigation.



Map 9. Grassland Management Units

The opportunity to graze the refuge will be determined by a bidding process. Potential bidders must agree to stipulations detailed in a special use permit. Only ranchers who currently own livestock and land within a 30-mile radius can apply. The privilege to graze the refuge will be awarded to the highest bidder. The refuge will decide how many AUMs will be allotted for the season based on the Refuge Grazing Plan and actual field condition. Permittees will have to be flexible enough to remove cattle on short notice if a problem is identified. Grazing will be used only as a land management tool and if it is determined to be incompatible with the refuge's management objectives, then it will be discontinued.

Fire Management

Historically, frequent fires played a fundamental ecological role in maintaining grassland diversity, structure and composition (Brockway *et al.* 1992; Collins and Wallace 1990; Umbanhowar 1996). In the past prairie fires burned on average approximately every 3 to 5 years, and likely at the longer end of this range in the more arid grasslands (Collins and Wallace 1990; Umbanhowar 1996). Fire frequencies in the intermediate range have been shown to enhance the greatest biological diversity in tallgrass prairies (Collins *et al.* 1995).

Very few fires have occurred on the refuge since its establishment. Past fires have been typically less than 10 acres in size and easily controlled. The greatest number occurred as the result of lightning, but the greatest damage results from fires started by people during droughts or when high winds are present. Little potential exists for wildfire during the winter from December through March due to snow cover. The highest potential for fire occurs during April through July due to increased winds and lightning activity associated with the monsoon season.

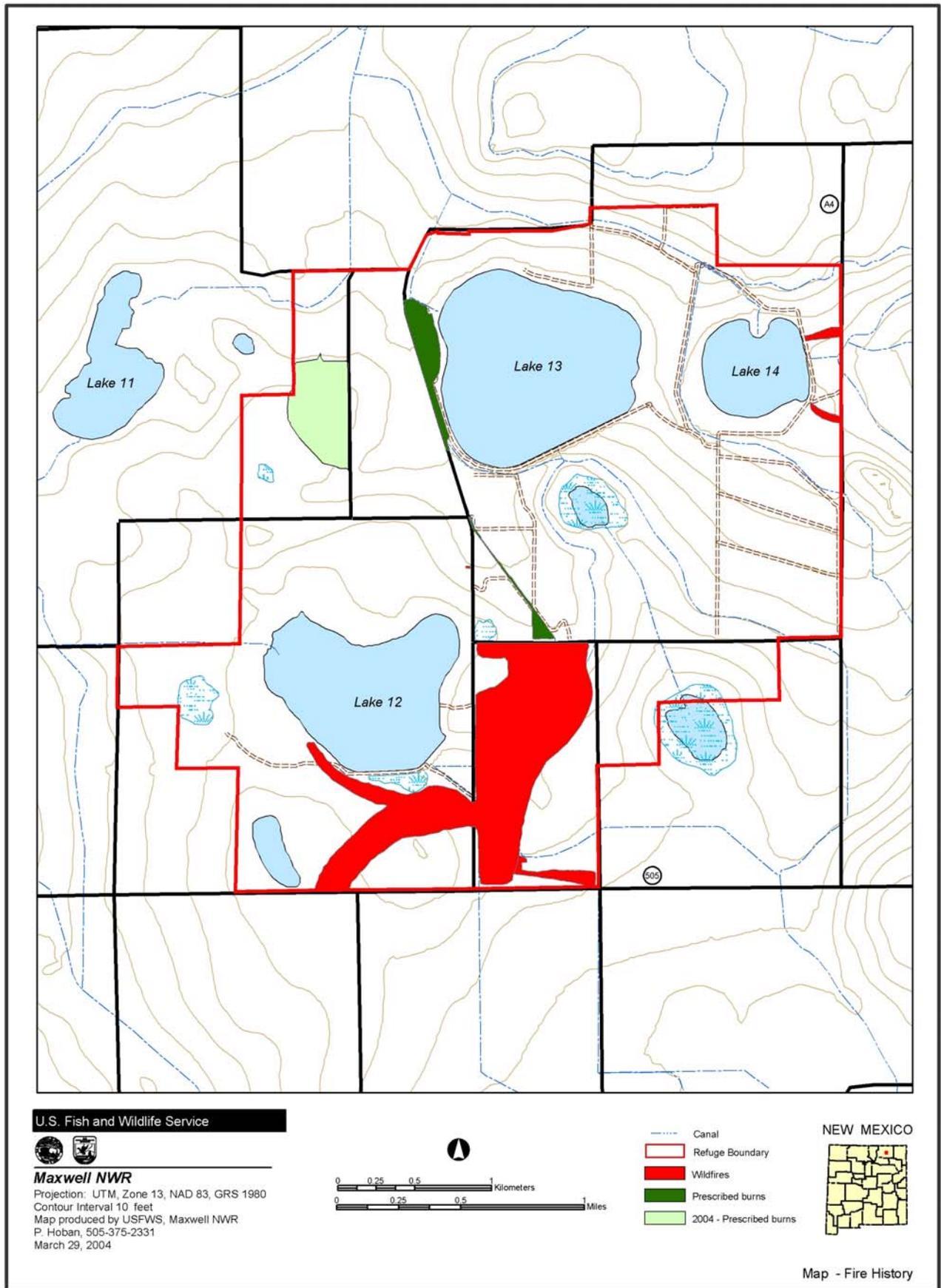
In the last 20 years, there have been at least five wildfires on the refuge that were human caused. Prescribed burns have not been regularly conducted on the refuge, however several irrigation ditches are periodically burned. This periodic burning removes the litter that restricts water flow and also removes the cover that protects burrowing mammals from predators.

Wildfires occurring on alkaline soils have resulted in setting succession back to an earlier stage with less diversity. Alkali sacaton usually becomes more predominant in these areas and has limited value for wildlife. Litter and excessive vegetation do not accumulate significantly due to the limited precipitation patterns. Regrowth after a fire can be limited due to unpredictable rainfall and stage of growth. The recovery time of alkali sacaton following fire has been reported as 2 to 4 years (Bock and Bock 1978; Wright and Bailey 1982). Fire favors blue grama, generally increasing its occurrence, production, and percent cover. Blue grama seed production may also be stimulated by fire (Weiler 1982). Galleta grass (*Pleuraphis jamesii*) is a rhizomatous perennial which resprouts following fire, achieving or exceeding preburn cover within 2 years (Goodrich 1986; Jameson 1962). Most smooth brome cultivars are rhizomatous and survive fire by resprouting (Higgins *et al.* 1989). Periodic early spring or fall fire promotes rhizomes by removing litter from sod-bound plants.



Prescribed burn completed in 2004 (photo by P. Hoban).

Prescribed fire may be used to control some invasive and non-native species however it should be used cautiously in these applications as it could enhance some unwanted fire-adapted species (Brooks and Pyke 2001). For instance, early spring (late March-April) or late-season (late summer-fall) fire can increase smooth brome productivity, especially when smooth brome has become sod-bound. Fire has been used extensively to control grassland encroachment by woody species (Wright and Bailey 1982).



Map. 10. Fire history on the refuge.

Canada thistle can be damaged or enhanced by fire. It can survive fire and sprout vegetatively from its extensive perennial root system, or colonize bare ground via seedling establishment after fire (Young 1986). Russian knapweed is probably top-killed by fire, while the roots are likely to remain unharmed. Hoary cress is likely to survive even severe fire depending on site conditions because of its extensive perennial root system with numerous underground buds and rhizomes. Bull thistle may or may not be killed by fire. Incidents of rapid colonization after fire suggest that either bull thistle



Establishing a back-burn (photo by P. Hoban).

seeds were present in the soil at the time of the fire and survived to germinate after the overstory was removed, or that bull thistle seeds were dispersed after fire from off-site seed sources (Arno 1999). However, researchers have concluded that even low-severity fire will kill bull thistle seeds (Clark and Wilson 1994). Observations in tallgrass prairie sites in South Dakota indicate that a program of prescribed burning designed to simulate the historic fire regime encouraged the growth of native plants and discouraged the growth of invasive thistles (Rice and Randall 2001).

The majority of the refuge fuels are moderate to high fuel types. The grasslands vary from continuous to sparse. The majority is shortgrass prairie with limited litter. The damage potential for grasslands will range from some resource loss to the possibility of the fire

moving off the refuge. Three residences are adjacent to refuge lands and are not separated by a road which would serve as a firebreak. The potential for fire in croplands is small due to field borders, roads and irrigation ditches. The network of roads, irrigation ditches and water areas limit the size of wildfires and permit easy access for control.

Local fire departments have assisted the refuge in suppressing wildfires. The Service is part of the State-Federal Fire Suppression Joint Powers Agreement and there is a Cooperative Mutual Aid Agreement between Maxwell Volunteer Fire Department and the Service, whose common objectives are to minimize the loss of life and property as a result of uncontrolled wildland fire.

Although burning has not been used much in the past, it has been recognized that prescribed fire could be beneficial to refuge grasslands. A Fire Management Plan was completed/approved in April 2002. An experimental prescribed burn was completed on 56 acres in March 2003. Prescribed fire should be utilized more in the future as a management tool to restore the native prairie grasslands and integrated with other activities to control non-native and invasive species.

Invasive Species Management

The refuge has used mechanical and chemical methods to control invasive plant species on farmlands and other areas. Field bindweed has been kept under control primarily by tilling and cultivation, and does not seem to have spread over the past 10 years. Only minimal treatments with herbicide have been used in the past. Infested fields will continue to be tilled and cultivated. All populations will be monitored, and additional control measures taken if they appear to be increasing and spreading.

Russian thistle usually invades bare ground and will be hand pulled whenever spotted. Musk thistle and Canada thistle are more difficult to control. Their populations on the refuge will be inventoried and mapped, and a



Mowed Canada thistle (photo by P. Hoban).



Siberian Elms (photo by P. Hoban)

developed to control the infestations. The strategy for control will address the need for continual, annual, treatment using herbicides and hand removal, and restoration of treated areas with native grasses. New and satellite populations will be eradicated, where feasible, and larger populations will be contained and reduced. There is potential for research on Canada thistle regarding the impacts of mowing, grazing, and/or fire in combination with herbicides.

Siberian elms do not appear to be an imminent threat to the integrity of the refuge because they do not currently appear to be invading healthy grasslands or spreading very fast. However, it seems likely that over time they will spread further along irrigation canals and in some moist areas, where they could be major water consumers. They also have a potential to provide a

seed source for infestation of adjacent private lands and moist fallow fields on the refuge. Consequently, all isolated Siberian elm trees found on the Refuge, and all doghair stands of elms that are not part of woodlots will be removed. In addition, elms which are growing along irrigation ditches will be removed. Dead trees will be preserved as wildlife perches. Woodlots will be managed and contained until such time as research can evaluate 1) potential negative impacts of the woodlots on grassland species, 2) utilization of the woodlots by migratory birds, and 3) the importance of the woodlots for preserving the local remnant white-tailed deer population. If research indicates that it is important to maintain woodlots for the benefit of wildlife, consideration will be given to gradually removing the existing Siberian elm woodlots and replacing them with limited stands of native cottonwood, where feasible, as an alternative to maintaining a non-native, invasive species on the refuge.

Salt cedar control efforts in 2003 consisted of spraying and mowing. Numbers are reduced when the water levels rise, drowning out new growth. The refuge will monitor and control salt cedar populations to ensure they do not spread any further. Unfortunately, no matter what the refuge does, there is an endless seed source from outside the refuge (i.e., all the drainage/irrigation canals and lake water).



Spraying salt cedar (photo by P. Hoban).

Chicory has moved in along the main delivery canal ditch banks, probably from nearby private lands. The refuge will map the infestations, monitor them, and take control actions if they appear to be spreading.

Common mullein is very difficult to get rid of due to its voluminous seed production. Control measures will consist of application of herbicides to rosettes each year, and physical removal (hand-pulling) of flowering stalks.



Russian knapweed (photo by P. Hoban)

Kochia will be mowed before it goes to seed and/or hand pulled to reduce reproduction and avoid its spread by birds to uninfested areas. Native grass seed will be sowed in the area to provide natural competition. Those actions, in combination with poor kochia seed viability, should result in natural reduction of the infestation. If the population does not reduce naturally, herbicide applications may be considered as part of an integrated control program.

Russian knapweed is difficult to control because it reproduces vegetatively and has a deep root system. The herbicide that is currently the most effective at controlling Russian knapweed is

picloram (Tordon), which can be a problem if there is shallow groundwater in the area to be treated because it may leach through the soil. In addition, Russian knapweed produces a chemical substance that acts as a germination or growth inhibitor to other plants, so it will be difficult for native plants to get reestablished. Therefore, when this site is treated, it will be necessary to plow the soils up two or three inches to overcome the resistance of the growth inhibiting chemicals before restoring native grasses.

The refuge has developed an Integrated Pest Management Plan (completed in 2001), which will be implemented to the extent possible utilizing the best management practices for each species and location. The success of control efforts depends largely on the soundness of the control strategy employed. Understanding the biology of each invading species, how it got there and how it spreads is critical to designing an effective control regime. The refuge will monitor and eradicate those species whose populations are such that eradication is a feasible goal, and will otherwise map, control and contain those which are widespread.

In addition to control and eradication of invasive species currently found, steps will be taken to prevent the inadvertent spread of those species to other parts of the refuge, and the introduction of additional species or infestations brought in from outside the refuge. Steps to be taken include the following:

- Biological and maintenance staff will be trained to identify all species on the State noxious weed list, as well as other plants that may be likely to move onto the refuge, so that control actions can be taken promptly. Hand removal of new infestations will be used where it is an effective technique for eradication.
- Vehicles used in infested areas on the refuge will be checked as needed prior to leaving to ensure they are not transporting seeds to uninfested areas.
- Vehicles or equipment borrowed from other refuges or agencies, or loaned to other refuges or agencies, will be cleaned prior to transport if they have been used in areas where invasive weeds are known to occur.
- When any ground-disturbing actions are to be taken, the site will be checked for the presence of invasive species, and actions taken to ensure activities do not spread infestations both on site and to other parts of the refuge.

Wilderness Review

The Wilderness Act of 1964 created the National Wilderness Preservation System. This system sets aside federal lands having wilderness qualities in protected status for preservation. The National Wilderness Preservation includes federal lands managed by the National Park Service, Bureau of Land Management, Forest Service, and Fish and Wildlife Service.

Areas nominated for wilderness designation must exhibit special characteristics listed in the Wilderness Act (U.S.C. 1121). Such an area:

"...(1) generally appears to have been affected primarily by the forces of nature, with the imprints of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value."

Designated wilderness areas are set aside for preservation through strict limitations on use of mechanized transportation or tools. Motorized vehicle use is generally prohibited within wilderness, as is the use of power tools. Exceptions to these restrictions are typically allowed only for emergency or other unusual conditions, on a case-by-case basis.

Per the policies of the National Wildlife Refuge System Improvement Act of 1997, all refuge CCPs must include a review of the refuge's potential suitability for wilderness designation. The Service has considered the potential for designating wilderness areas on Maxwell NWR. The refuge was evaluated for the presence of: (1) existing physical structures (roads, house building, water facilities, and other structures); (2) legal requirements/constraints (including, but not limited to endangered species, and law enforcement); (3) management priorities (including, but not limited to prescribed fires, wildlife habitat/wetland development, and public use) that would preclude such designation. The following provides information concerning the three factors above and a determination as to whether wilderness designation is appropriate based on those factors and the definition of "wilderness" as described in the Wilderness Act.

Existing Physical Structures

There are buildings on the refuge that are currently being used as offices for refuge staff and for the maintenance and storage of refuge equipment. The office headquarters is also used as a visitor contact center. Other facilities include a permanent residence, a 10 bay maintenance garage (for vehicle/equipment storage, etc.), a 30'X60' metal building, a shed for oil and pesticide storage, a boat house, and a grainery. The refuge has been noticeably affected by humans. Remnants of the Santa Fe trail can be found 2 miles west of the refuge. The refuge was acquired in 22 tracts from 19 landowners. All of these tracts were either farmed or heavily grazed. There are scattered old homesteads throughout the area.

Legal Requirements / Constraints

There are existing power line and telephone rights-of-way and roads within the refuge. A State highway and 11 miles of county roads are adjacent to or within the refuge and access along these roads must remain open. There is an additional 1.5 miles of refuge roads used to access Lake 13. Approximately 10 acres of the refuge are considered administration areas not supporting important natural resources.

Management Priorities

In 1952, the Vermejo Conservancy District was formed to provide irrigation water to area farmers. Over the years and prior to becoming a refuge, rangelands were plowed and converted to cropland. Those areas that were not farmed were grazed by sheep and cattle. The present plant community reflects changes caused by overgrazing, plowing of native rangeland, and subsequent re-seeding to monocultures of non-native grasses (brome and wheatgrass) and introduced range grasses. Grazing was curtailed when the refuge was established and there has been little management of the grassland since that time. In addition, because of the importance of providing food and habitat along the Central Flyway for migrating waterfowl and cranes, the refuge continues to administer an active farming program.

Conclusion

There is little potential for wilderness designation of lands within the refuge. The refuge encompasses only 3,699 acres, considerably less than the 5,000 acre general minimum endorsed by the Wilderness Act. The area has been noticeably affected by humans (roads, fences, farming, and other management activities). The refuge consists of 2,200 acres of grassland, 907 acres of lakes (which are leased from Vermejo Conservancy District), 50 acres of wetlands, 39 acres of woodlots, 440 acres of croplands, 20 miles of irrigation canals, and approximately 10 acres of administrative lands, including, but not limited to the following: roads, parking areas, public access, public use facilities, buildings and grounds that have limited or no vegetation. There are no extensive undisturbed areas that provide for outstanding solitude or primitive recreational opportunities. There is a network of county roads located throughout the refuge. Additionally, the management activities proposed in this CCP for the management of waterfowl species and restoration of grasslands require continued aggressive habitat management, not consistent with wilderness designation. The Service has determined that designation of wilderness areas on existing refuge lands is not appropriate at this time.

Research

This section details research that has been conducted on the refuge.

During the summer of 1989 and 1991 personnel from the Ecological Services Albuquerque Field Office conducted a contaminant investigation of the refuge. The purpose of the investigation was to develop baseline data to aid in future monitoring of the refuge. Small amounts of organic contaminants and high levels of selenium were detected. Further investigations in 1992 indicated the source of selenium to be two playas southeast of Lake 13. While the presence of selenium in these areas is cause for concern, the biological impact has yet to be determined. No detrimental effects to wildlife by the selenium have been noted. Both playas are used as nesting/roosting habitat by waterfowl and shorebirds; however, no deformed embryos have yet been noted (1991, 1992 & 1993 Annual Narratives).

Concurrent with the Ecological Service investigation is a complete water chemistry analysis of the upper Canadian River watershed by the U.S. Geological Survey. To date the USGS study has found high levels of selenium only in previously identified refuge waters.

The Reconnaissance Investigation of Water Quality, Bottom Sediment, and Biota Associated with Irrigation Drainage in the Vermejo Project Area and the Maxwell National Wildlife Refuge, Colfax County, Northeastern New Mexico 1993 was completed and published as USGS Water-Resources Investigations Report 96-4157. This report was prepared jointly by personnel from the USGS and the New Mexico Ecological Services Field Office. The report is a comprehensive study of the causes and concerns of heavy metals, organophosphates, and selenium deposits located on the refuge and throughout the Vermejo River watershed. The selenium deposits discovered during a baseline survey in 1989 have been of great concern but apparently are natural and are not creating environmental havoc.

A Survey of Grassland Bird Species of the Maxwell National Wildlife Refuge was carried out and prepared by David Mehlman, associated with Hawks Aloft, Inc., and the University of New Mexico. The study documented the variety and dispersal of grassland bird species as well as discussing the reasons for abundance or paucity of the various species (1995 narrative).

A Multiyear Evaluation of the Effects of Nosema loucstae (Microsporidia: Nosematidae) on Rangeland Grasshopper (Orthoptera: Acrididae) Population Density and Natural Biological Control was conducted on the refuge from 1988-1990. The results of this study are published in *Environmental Entomology* 22(2): 489-497 (1993). The analysis of density showed a continual decline of the grasshopper populations on the refuge. In addition, the study showed that insectivorous birds were more common in treated sites, suggesting that the birds advantageously moved into treated areas to feed on sick grasshoppers that were more easily caught.

Research Needs / Priorities

Although research in the past has been limited, there are opportunities to investigate for bird research and monitoring, habitat restoration and enhancement, invasive species control, grazing impacts, fire ecology, cultural resources and water quality. Future research may be conducted by refuge staff, academia, volunteers and other Federal and State agencies.

The research needs listed below are based on the ever-present scientific questions relating to future management of the refuge's resources. There are opportunities to investigate proposals for research or monitoring in following areas:

- bird research and monitoring
- habitat restoration and enhancement
- grazing impacts, fire ecology, or other long-term studies of ecological response to plant and animal diversity and abundance to habitat management activities
- determine appropriate grazing levels for optimum grassland management
- water quality and quantity studies

- invasive species control
- archaeological and cultural resources
- trends and study needs for mammals, reptiles, amphibians, fish and invertebrates
- deer herd management

The refuge will develop a Strategic Research Plan that will describe the research needed to support management goals and objectives.

Research Natural Areas

Research natural areas (RNAs) on national wildlife refuges are part of a national network of reserved areas under various ownerships. Federal agencies use RNAs as a land management category to designate lands permanently reserved for research and educational purposes. The intent is that natural processes will dominate in those tracts that preserve natural features. Principal goals in protecting these lands are:

- To preserve a representative array of all significant natural ecosystems as sources of baseline data against which the effects of human activities in similar environments can be measured.
- To provide sites for studies of natural processes in undisturbed ecosystems.
- To provide gene pool reserves for plant and animal species, especially rare ones.

RNAs are intended to represent the full array of North American ecosystems; biological communities, habitats, and phenomena; and geological and hydrological formation and conditions, all intended for research purposes. They are areas where natural processes are allowed to predominate without human intervention. Under certain circumstances, however, deliberate manipulation is used to maintain unique features that the RNA was established to protect. These management practices may include grazing, control of excessive animal populations, prescribed burning, and the use of chemicals for plant, insect, and disease control (Refuge Manual, 8 RM 10).

RNA's were intended originally for the Service to treat as a kind of "wilderness" concept without the strict constraints placed on designated wilderness. Each project with an RNA was intended to promote the naturalness of the area and encourage universities and other legitimate conservation groups to conduct research of these areas. RNAs across the country, however, have not been treated with the due diligence intended by the policy. As with many initiatives, as administrations have changed, so has the national level of interest in the RNA program and designations.



Research natural area on the refuge (photo by P. Hoban),

There is one RNA within the Maxwell NWR. The 80-acre (32-hectare) RNA was designated on August 17, 1973. It is located in the southwest corner of the refuge (shown on Map #7). Elevation in the RNA is from 5,995 feet (1,827 m.) to 6,012 feet (1,883 m.). Of the 80 acres, a shallow playa lake occupies up to 25 acres, varying in size seasonally and from year to year. The remainder of the area is primarily alkali sacaton. It has remained undisturbed since the refuge was established. Unfortunately, due to staffing and funding constraints no research has been conducted in the RNA.

Public Use and Wildlife-Dependent Recreational Activities

The National Wildlife Refuge System Improvement Act of 1997 recognizes six wildlife-dependent public uses (hunting, fishing, wildlife observation, photography, environmental education and interpretation) that are to be given priority on refuges when determined to be compatible. Except where otherwise mandated by law, the Service must determine whether a particular use is compatible with refuge resources before permitting it. Compatibility determinations are normally made by the refuge manager, in accordance with guidelines developed by the Service. Under these guidelines, a compatible use is defined as one that “will not materially interfere with or detract from the purposes for which the refuge was established.” Compatible uses support refuge purposes, or may have a neutral effect. In making a compatibility determination, the refuge manager must first determine if the use is compatible with refuge purposes strictly on biological grounds. After making such a determination, the refuge manager must further consider applicable laws, Service policy, and public opinion (Lee, 1986). Compatibility determinations for uses on the refuge are included in Appendix E.

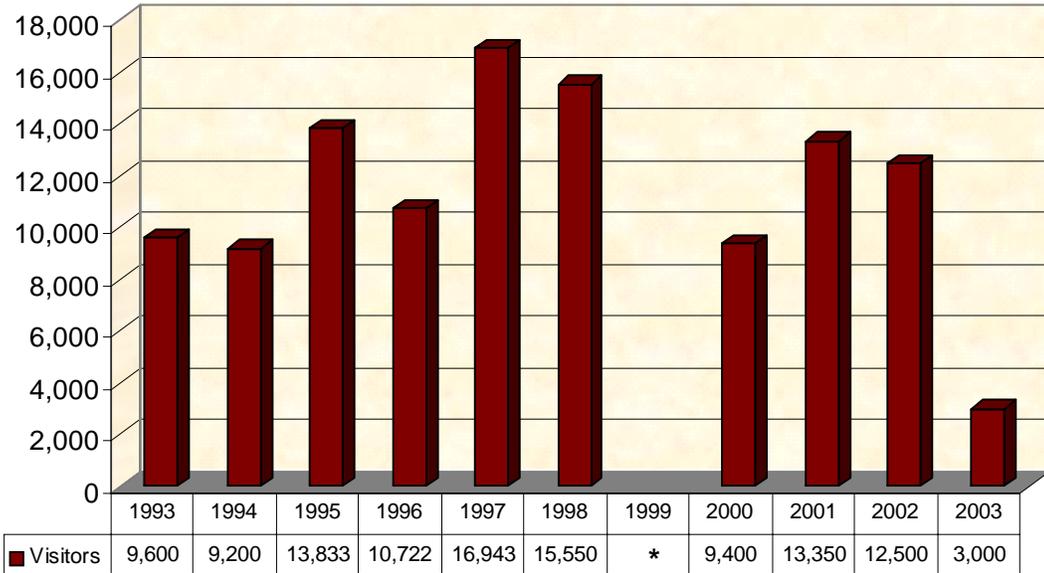
It has been determined that the following public uses are compatible with the purpose for which Maxwell NWR was established: environmental education/interpretation, wildlife observation, photography, hiking, camping, and fishing. Hunting is also being considered for the first time since the refuge was established. Before a new use is allowed on a refuge, the Service must determine that the use is compatible and not inconsistent with public safety. To determine if a new use is compatible, a refuge must estimate the time frame, location, and purpose of each use. Furthermore, the refuge staff must identify the direct and indirect impacts of each use on refuge resources and evaluate the use relative to the refuge purpose.

Managing public use on national wildlife refuges requires a careful balance of allowing wildlife-dependent recreational activities without compromising the resources the refuge is responsible for managing. Allowing the public to participate in wildlife-dependent recreational activities on the refuge can benefit the resource by providing visitors with a better understanding of wildlife and their habitats and the Service’s conservation mission.

Visitors access the refuge from I-25, a major north-south thoroughfare in New Mexico. The refuge headquarters is located approximately five miles northwest of the Maxwell exit on I-25 and is situated midway between the cities of Denver and Albuquerque. The two major types of recreational use occurring on the refuge are fishing and wildlife observation, specifically birding. Fishing is by far the most common use and is primarily enjoyed by local residents. Birding, however, attracts local residents as well as more distant travelers. The surrounding farmlands that have ponds, impoundments, and grassland habitats offer similar wildlife viewing opportunities as the refuge; however, differences in management practices off-refuge as opposed to on, create unique viewing opportunities for birders who are willing to travel long distances to see rare and unusual species. Other public use activities at the refuge include boating, photography, and hiking as described below.

From 1993-2002, the refuge received approximately 12,300 visitors per year. During this time, annual visitation was estimated from year to year; there was no effort to differentiate between actual visitors to the refuge and those people who were only using the county road for transportation to and from other destinations. In 2003, three traffic counters were installed to differentiate between the two types of vehicular traffic. As a result, there were significant differences between estimated past annual totals and the 2003 traffic counter totals. Annual visitation in 2003 was 3,000 (a 76% drop). This drop in recorded visitation could also be partially explained by the prolonged drought that the refuge has experienced since 2000 and the fact that Lake 13 had not been stocked with trout for 4 years.

Refuge Visitation for Maxwell NWR



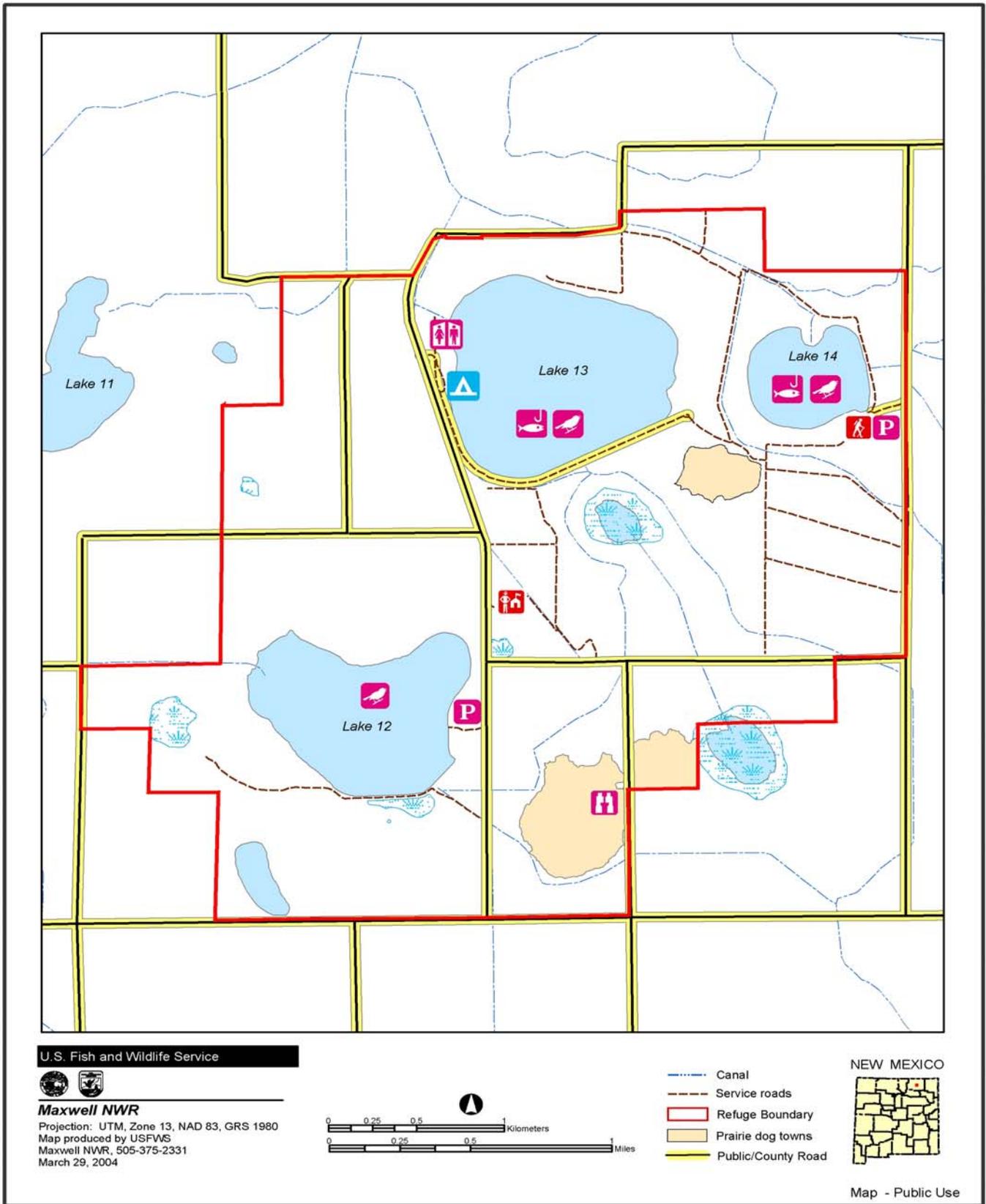
* Data not available

Hunting

The refuge has been closed to hunting since its establishment. Habitat conditions did not support game populations that would allow for a hunting program when the refuge was established. Today, habitats are healthier, but it is questionable whether hunting can be safely accommodated on the refuge. The refuge encompasses only 3, 699 acres and a total of 11 miles of state and county road surround and/or bisect the refuge.

National wildlife refuges are closed to all hunting unless specifically opened under federal refuge regulation to hunting of particular species. The opening of a wildlife refuge area to hunting will be dependent upon the provisions of law applicable to the area and upon a determination that the opening of the area to hunting will be compatible with the principles of sound wildlife management and will otherwise be in the public interest (50 CFR 32.1). The purpose and scope of refuge hunts should be to provide opportunity where there is none and not duplicate but complement efforts by other agencies.

Since hunting is one of the six priority wildlife-dependent public uses on national wildlife refuges, and the public has expressed interest in hunting deer and waterfowl on the refuge, the potential for hunting is being assessed. A compatibility determination has been completed (see Appendix E). Further investigation (in cooperation with NMDGF) into whether current populations could sustain hunting; whether there is legitimate public demand for this activity at the refuge; and whether a hunting program could safely be implemented on the refuge is necessary before deciding the type and extent of hunting opportunities that could/should be allowed on the refuge.



Map 11. Public use areas on the refuge.

Fishing

The refuge is a very popular fishing area. Record yellow perch have been caught from Lake 13 (state record for the species in late October 1995). In the past, public fishing in Lakes 13 and 14 has attracted as many as 15,900 visitors (1990 Annual Narrative). On an annual basis, it has been estimated that fishing accounts for 25 to 90 percent of all refuge visitation. Due to the increase of public participation in fishing activities during the 1990s, a parking lot was constructed near Lake 14 in 1995. Camping facilities are located adjacent to Lake 13 with as many as 135 people, primarily anglers and their families, using these facilities during the open fishing season. The few campers and picnickers the refuge attracts are almost exclusively associated with fishing.

The quality and availability of fishing opportunities on the refuge is dependent on lake levels, stocking, and weather (ice). There is periodic stocking of waters with game fish. The State (NMDGF) is responsible for stocking; the Service has no control over this activity. The recreational fishing program is permitted from March 1 through October 31 to minimize disturbances to migratory and wintering populations of waterfowl and eagles. This fishing season is established by the NMDGF. The fisheries are managed through an agreement with the NMDGF. In 1971, a Memorandum of Understanding was signed between the NMDGF and the Service concerning the maintenance of a fishing program on the refuge, and establishment of new regulations on fishing season dates and water-oriented recreational activities to more closely coincide with refuge objectives. According to this agreement, the Service is primarily responsible for the protection of the wildlife and public use on Lakes 13 and 14. The NMDGF is responsible for the fisheries program on the refuge in cooperation with the Service and is responsible for issuing regulations concerning the fisheries program. This agreement resulted in the established fishing season and boating restrictions. Powerboating is permitted only during the fishing season. Boating speeds are limited to trolling speed to minimize the disturbance of noise and wave action on breeding and nesting waterfowl.



A channel catfish caught in Lake 13 (photo by P. Hoban).



NMDGF stocking rainbow trout in Lake 13 (photo by P. Hoban).



200,000 trout were released in March 2004 (photo by P. Hoban).

The west and south shores of Lake 13 are open for public use. The east and north shores are closed to provide undisturbed roosting/feeding areas for migratory birds. Lake 14 is closed seasonally from November 1 to March 1 during peak waterfowl concentrations to provide an undisturbed area where they can feed and rest. Lake 12 is managed as a sanctuary; bird watching and wildlife viewing are the only permitted activities.

Wildlife Observation and Photography

The refuge provides limited opportunities for wildlife viewing. It is bisected or surrounded by 11 miles of refuge and county roads. There is an additional 1.5 miles of refuge roads used to access Lake 13. The west and south shores of Lake 13 are open for public use. The east and north shores are closed to provide undisturbed roosting/feeding areas for migratory birds. Lake 14 is closed seasonally from November 1 to March 1 during peak waterfowl concentrations to provide an undisturbed area where the birds can feed and rest. Remaining areas of the refuge are closed unless otherwise specified. A ½-mile hiking trail exists at the southeast corner of Lake 14. A parking/viewing area is also available at Lake 12.

It has been estimated that wildlife observation and photography accounts for approximately 25 to 50 percent of the total visitation to the refuge. It is difficult to measure visitation on the refuge due to the number of public roads which cross and surround the refuge. There are currently no viewing platforms or observation blinds in place for wildlife observation or photography. These activities are currently limited to public roads and a ½-mile walking trail. The refuge has been in need of adding interpretive staff, brochures, observation platforms, and providing interpretive trails, kiosks and photo blinds to meet the needs of the visiting public.



Local school group observing wildlife on the refuge (photo by P. Hoban).

The New Mexico Santa Fe Trail National Scenic Byway includes the Maxwell NWR on their list of assets and tourist destinations. The refuge is listed and mapped in their Corridor Management Plan as having outstanding Natural, Scenic, and Recreational intrinsic qualities. The Santa Fe Trail Byway Profile Asset Inventory encourages the traveling public to experience the natural beauty of the shortgrass prairie and playa lakes and learn of the culture and history of the area. For more information on the national Scenic Byway maps and brochures, see www.byways.org, www.SantafetrailNM.org/site42

Environmental Education and Interpretation

Because of the public's interest in fish and wildlife, the Service is responding with increased emphasis on environmental education. The Service's ability to sustain ecosystems and the natural heritage of fish and wildlife resources within them will increasingly depend on the public's active participation in the stewardship of these resources. The refuge will continue to provide environmental information so that the public understands how their well-being is linked to the well-being of wildlife, plants, and associated habitats. The refuge provides presentations to local schools and community groups, as requested. In addition, limited interpretive materials/displays are provided at the refuge headquarters.



Dissecting barn owl pellets (photo by P. Hoban).

Maxwell High School uses the refuge as an outdoor classroom and incorporates their studies with other schools doing similar work via computer networks. In the past, the refuge acquired various scientific equipment for local school groups to use while conducting environmental studies on the refuge. The refuge would like to increase these activities, but due to a lack of support staff, expansion of this program is not feasible at this time.

The refuge partnered with Audubon New Mexico (ANM), to host environmental education programs for local schools near Maxwell NWR. The programs were based on the “Birds for a Purpose” program and have been offered to low-income, under-served schools. All funding for the programs, including bus transportation to and from the refuge, was provided through ANM.

Other Socioeconomic Features

The state of New Mexico is known as the “Land of Enchantment” because of its scenic beauty and rich history. Ranking fifth in size, New Mexico is sparsely populated. Much of the state consists of mountain ranges, rugged canyons and rocky deserts.

The refuge is located in Colfax County, approximately 25 miles south of Raton (population 8,000), 2 miles northwest of the town of Maxwell (population 288) and 12 miles north of Springer (population 1300). Approximately 14,000 people live in Colfax County, which is approximately 3,765 square miles. Located along New Mexico’s border with southeast Colorado, Colfax County is diverse in geography and industry. Other than ranching, county-wide industries include farming, and tourism. Visitors flock to Colfax County to view wildlife, plains, mesas and mountains. Hunting, fishing, skiing, camping and hiking are popular activities, as are several museums that display remnants of the Santa Fe Trail and old west history.

The refuge provides economic benefits to the local economy in several ways:

- it attracts local, national and international visitors;
- it provides some local employment;
- it makes available educational opportunities for local schools and universities;
- it returns annual revenue sharing monies to Colfax County through fees collected by the National Wildlife Refuge System; and
- it spends monies from an annual operating budget in the local economy.

Approximately 84 percent of the refuge annual budget (\$170,000 to \$230,000) is spent within Colfax County. The majority of this money is recycled in the local economy through the refuge staff purchasing of equipment and supplies, and contracting local labor to accomplish refuge projects. The refuge cooperative farming program yields an annual return to the cooperative farmer.

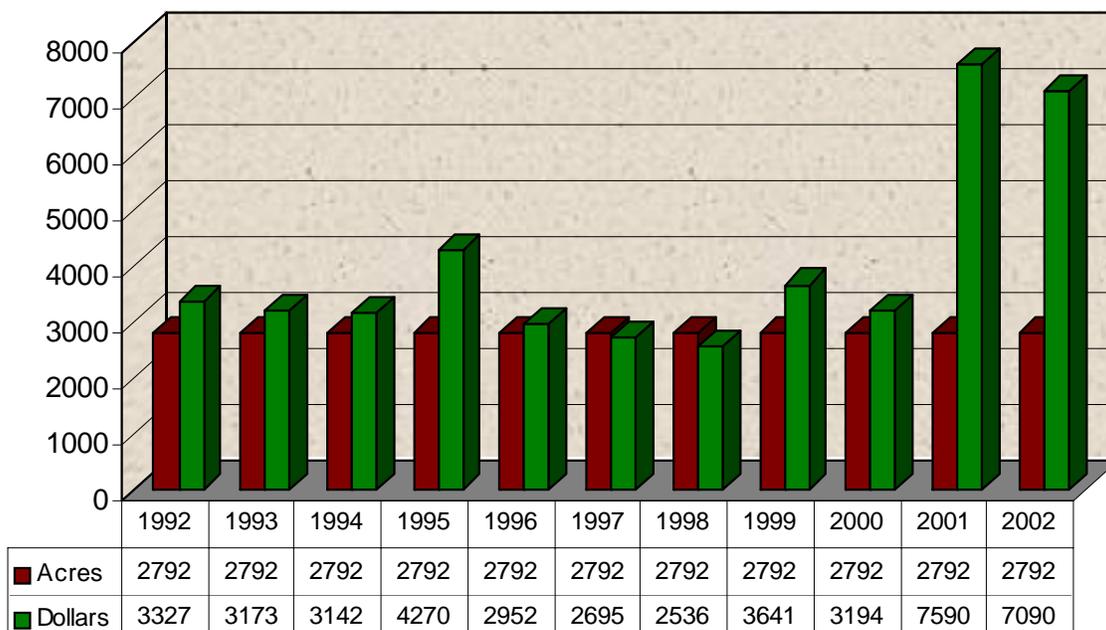
Lands acquired by the Service in fee-title are removed from the county tax roll. To help offset lost tax revenues, the county receives an annual payment in lieu of taxes, as provided by the Refuge Revenue Sharing Act of 1935 (16 U.S.C. 7145:49 Stat. 383, as amended).

Monies for these federal payments to counties come from revenues derived from the nationwide sale of refuge products and privileges. These funds are distributed based on one of the following three formulas to provide the highest return to the county:

- Seventy-five cents per acre, or
- Twenty-five percent of the net revenue received from the operation of the refuge, or
- Three-fourths of one percent of the appraised value of the property, which must be reappraised by the Service every five years (usually this formula is the one applied).

If not enough revenues are available in the fund to make full payments, the Service distributes the funds proportionately nationwide. Congress is authorized to make up the difference. Refuge revenue sharing payments exceed the property taxes paid by the previous private landowners in many cases, especially if agricultural exemptions had been claimed.

Revenue Sharing Act Payments for Maxwell NWR



Population

According to the 2000 census report, the State of New Mexico had a population estimate of 1,819,046. Among the 50 states, it ranks as the thirty-sixth most populous. By 2025, it is projected to be the thirty-fifth most populous state with 2.6 million people. Its rate of population change, at 55 percent, ranks as the second largest (Campbell 1996). Approximately 14,189 individuals resided in Colfax County in 2000. The county population has not fluctuated significantly over the last 40 years. Population totals were 13,806 in 1960, 12,170 in 1970, 13,667 in 1980, 12,925 in 1990, and 14,189 in 2000; a difference of less than 3 percent from 1960 to 2000.

The 2000 census indicated that 47.5 percent of the population is Hispanic. Non-Hispanic whites comprise 49.9 percent of the population. Native Americans, African Americans, Asians and persons reporting two or more races comprise the remainder of the county population.

Colfax County still represents the rich mixture of cultures that settled in the area in the early 1800s. Eastern Europeans, French expatriates, Spanish, Basque, and Native Americans all settled here.

Present day New Mexico, although economically and technologically advanced, still retains and nurtures the Native American and Spanish cultures. Nowhere else in the country is the presence of the Native American as strong or socially important; nowhere is the evidence of Hispanic life and custom as rich; nowhere but New Mexico do the three cultures contribute to a unique blend of traditions (State Planning Office 1976).

Regional Economic Profile (Growth)

In the late 1800s, large-scale ranching and farming began and western expansion progressed. Reliance on animal-powered transportation became less desirable. Railroads reached New Mexico as quickly as the rails could be laid. The mountains were rich in gold, silver, copper and other minerals.

The arrival of the railroad hastened large-scale development and coal soon entered the picture as fuel. The territorial period of New Mexico ended in 1912 when statehood was achieved (USFWS 1979).

At the turn of the century when local coal mines were beginning to increase production, there was a need to provide fresh inexpensive food to the coal mine camps. Area land and mining interests diverted natural stream flows and developed irrigation districts to encourage the farming of the upland areas. A market for fresh vegetables and grain crops was readily available in the coal camps. The irrigation company allotted each farm a specified amount of water shares depending upon the amount of irrigable lands, usually one share per acre. In later years, the closing of the coal camps and long periods of drought forced some farmers to leave while others tried their hand at raising sugar beets. Later the sugar beet industry also fell on hard times, and farmers that remained in the area switched to predominately alfalfa hay production. As settlement continued, competition for land and water intensified. Although the number of farms and the amount of farmland has slowly decreased since 1950, the conversion of native grasslands and wetlands to agricultural and ranching activities impacted wildlife species and their habitats.

The major industry and source of income in Colfax County is agriculture based, with cattle ranching predominating. Much of the open rangeland in the area is grazed, and growing alfalfa for hay to feed cattle and horses is an important component of the local agribusiness. Ecotourism is also an important and growing segment of the economy.

CHAPTER 4: REFUGE ADMINISTRATION

The full potential of the refuge has not been realized. Staffing is needed to conserve and enhance the quality and diversity of wildlife habitats on the refuge. Funding and staffing shortages have limited the refuge's ability to provide the best quality experiences to the public. The lack of adequate staffing has prevented some opportunities for program enhancement to be accomplished. Maintenance of existing programs and facilities has been a full-time endeavor of the existing staff. Additional staff will be necessary to allow the refuge to enhance existing programs and initiate new activities to fully address the long-term needs of the refuge.

Refuge Staffing and Facilities

Current staffing at the refuge consists of the following positions:

- Refuge Manager GS-12 PFT
- Office Assistant GS-07 PFT
- Maintenance Worker WG-08 PFT

Current staffing is adequate to perform maintenance and operations as these programs currently exist. To initiate many of the tasks proposed in this CCP, additional permanent, seasonal or part-time staff will be necessary, particularly for the increased efforts such as research and monitoring following implementation of the refuge's grassland management efforts.

The refuge's headquarters is located approximately four miles northwest of Maxwell, New Mexico. The headquarters compound consists of an office building, which is also used as a visitor contact center, a residential building, and a maintenance garage facility (for vehicle/equipment storage, etc.) that was constructed in 1981. Other facilities include a shed with separate sections for oil and pesticide storage, a boat house, a metal storage building, and a grainery. Above ground fuel storage tanks are also located in the compound. Other refuge facilities include public restrooms (pit



Aerial view of Maxwell NWR Headquarters (photo by P. Hoban)

toilets) installed in 1999 near Lake 13.



Interpretive displays at the refuge office/ visitor center (photo by P. Hoban).

Interpretive information is provided at Lake 12 and the office. Limited interpretive displays are also available at the office.

The refuge is bisected and/or surrounded by 11 miles of county roads and State highways. There is an additional 1.5 miles of refuge roads used to access Lake 13 and a parking lot at Lake 14. A parking/viewing area is also available at Lake 12.

There are existing power line and telephone rights-of-way within the refuge, as well as easements for the Vermejo Conservancy District to manage irrigation waters and maintain ditches and canals.

Volunteer Program

Currently, there is not a formal volunteer program at the refuge. Volunteers have been used to a limited extent in the past, primarily for specific biological inventory or monitoring activities. Additional volunteer help could augment the biological, habitat management, maintenance, interpretive and recreational programs. The value of a volunteer's time is difficult to measure but their assistance in helping meet the operational and maintenance needs of the refuge can be invaluable. The Service's volunteer program can also increase public understanding and appreciation of refuges and their resources through hands-on experience.



Volunteers assist with weekly bird counts and vegetation surveys (photos by P. Hoban).

Cooperative Programs

The refuge will continue to build new and nurture existing cooperative programs so that fish and wildlife management remains a useful and productive tool to affect solutions that benefit fish and wildlife resources and the habitat upon which they depend for survival. The refuge will continue to maintain or establish cooperative efforts with the following:

New Mexico Department of Game and Fish

The refuge will continue to work closely with NMDGF in conducting wildlife surveys, and will seek to establish research activities and if compatible, a hunting program on the refuge. The refuge will also cooperate in reestablishing and maintaining resident and endangered wildlife populations.

Law Enforcement Agencies (Sheriff's Dept., NM State LE, etc.)

New Mexico State Police, NMDGF Conservation Officers, and Colfax County Sheriff officers routinely patrol the public roadways crossing through the refuge.

Adjacent landowners

The refuge will continue to assist landowners by providing biological information for grasshopper control, irrigation practices, and native prairie restoration.

Audubon

The refuge will continue to partner with the Education Department at Audubon New Mexico to offer environmental education programs on the refuge. Programs are based on the "Birds for a Purpose" program and all costs are provided through Audubon.



Audubon New Mexico educators teaching "Birds for a Purpose" at the refuge (photo by P. Hoban).

Universities

The Service will continue to support studies on the refuge through cooperative agreements with colleges and universities.

Friends of the Maxwell NWR (Friends Group)

The refuge will establish a Friends Group to accomplish many management and outreach programs. The Friends Group will contribute to the refuge by gaining support from Congressional offices by keeping them informed of ongoing programs and events occurring on the refuge.

Memorandums of Understanding (MOU) and Other Agreements

The refuge recognizes the importance of establishing and maintaining Service-approved agreements with various entities to optimize the refuge's management strategies. By working with partners, the refuge is able to maximize limited resources and participate in benefits to the ecosystem as a whole.

Current Agreements

The refuge will continue to maintain the following agreements:

Vermejo Conservancy District - see pages 58 - 60.

New Mexico Department of Game and Fish: An MOU was signed in 1971 concerning the maintenance of a fisheries program on the refuge, and also the establishment of new regulations on fishing dates and water-oriented recreational activities. This included a closure of the refuge lakes to fishing and water-oriented recreational activities during the winter months, to prevent disturbance to wintering waterfowl.

Santa Fe Trail Mule Deer Adaptive Management Project (STAMP): In March 2003, an MOU was signed between the Service and several other public and private resource management agencies to identify, implement, and monitor conservation strategies, management actions, and communication programs to benefit mule deer and ecosystem health, increase appreciation of resource management partnerships, enhance multiple-use stewardship of private and public lands, and sustain wildlife related uses. The cooperators are committed to demonstrate this through community-based efforts that enhance local economic viability and impact recovery of mule deer throughout the west. The MOU defines cooperator roles in the identification of contemporary mule deer habitat use patterns and potential factors limiting Santa Fe Trail mule deer populations and the subsequent evaluation of experimental management actions on mule deer recruitment, abundance, dispersion, and rangeland habitat conditions of the area. Other cooperators in the MOU include NRA Whittington Center; Vermejo Park, LLC; CS Ranch; Philmont Ranch; Chase Ranch; TO Ranch; Express Ranch; UU Bar Ranch; Moore Ranch; Mule Deer Foundation; National Rifle Association; Rocky Mountain Elk Foundation; New Mexico Department of Game and Fish and Wildlife Research Unit; New Mexico State University; Utah State University, Jack H. Berryman Institute; Natural Resource Conservation Service, New Mexico State Forestry; and Akroyd's Aerial Survey.



Radio-collared doe on the refuge (photo by P. Hoban).

State-Federal Fire Suppression Joint Powers Agreement: This agreement is between the State of New Mexico - Energy, Minerals and Natural Resources Department Forestry Division and the U. S. Departments of Agriculture, Energy, and Interior for Interagency Fire Protection.

Cooperative Mutual Aid Agreement between the Maxwell Volunteer Fire Department and the USDI Fish and Wildlife Service: Because of the nature of refuge owned land adjoining privately owned land within the unincorporated area of Colfax County, the objectives of the two above named organizations are inseparable, i.e. to minimize the loss of life and property as a result of uncontrolled wildland fire.

The refuge also has an MOU with the Sheriff's department to use their frequencies for any law enforcement related problems.

Future Agreements

The refuge will seek to establish agreements with various agencies and interest groups working on common issues.

Other Land Management Issues

Contaminants - During the spring and summer of 1989 and 1991, personnel from the Service's New Mexico Ecological Service's Field Office (NMESFO) in Albuquerque conducted a contaminants investigation on the refuge. The objective of the study was to develop baseline data to aid in future monitoring of the refuge. In 1996, a final report from the study was prepared by personnel from the U.S. Geological Survey and the NMESFO. The report is a comprehensive study of the causes and concerns of heavy metal, organophosphate, and selenium deposits located on the refuge and throughout the Vermejo River watershed. The following elements/compounds were found during the investigation:

Organic Contaminants - Organochlorine compounds were not detected in sediment samples, though there were small levels detected in both fish and migratory bird samples. Cholinesterase inhibition, an indicator used to determine exposure to organophosphates, was present in three of the five mallard brains tested.

Inorganic Contaminants - Detectable levels of arsenic were found in invertebrate samples but could not be found in either bird or fish tissue samples. Cadmium could not be detected in sediment, plant, or fish samples but was present in aquatic invertebrates and waterfowl. Mercury was detected in samples of invertebrates, fish, birds, and in bird eggs. No mercury was found in any plant samples. Selenium was detected in some sediment samples as well as fish and bird samples. Of the fish sampled, 50 percent had detected levels of selenium concentrations. Coot and killdeer kidney and liver samples indicated concentrations of selenium as did killdeer eggs. No selenium was detected in aquatic plants. Because the refuge receives irrigation drainage, inorganic contaminants such as selenium should be monitored and actions taken, if necessary, to address any potential impacts.

Other Administrative Considerations / Approaches

Vermejo Conservancy District - The Vermejo Conservancy District owns Lakes 12, 13, and 14 within the refuge boundary. A number of easements and rights-of-way exist within the refuge for the Conservancy District to maintain and repair the irrigation water delivery system. This includes a 20-foot easement for the canal, and whatever is needed to maintain all the supply ditches, intake canals, and outlets.

Colfax County Roads - There are 40-foot easements for the 11 miles of road that bisect or surround the refuge.

Electric Cooperative - An easement for an overhead transmission line crosses the refuge from north to south, for approximately 3 miles. There is a 25KVA transformer at the headquarters, which provides power to the office, shop buildings, and the residence.

Baca Valley Telephone Company - An underground telephone line runs through the refuge along the county roads.

Research and Investigations - Natural science information is necessary for the proper management of any wildlife refuge. It is the policy of the Service and this refuge to encourage and support research and management studies in order to provide scientific data upon which decisions regarding management of the refuge can be based. The refuge will also permit the use of refuge lands for other scientific investigations when compatible with the purposes for which the refuge was established. Priority will be given to studies that contribute to the enhancement, protection, use, preservation, and management of endangered species and their habitats as well as other native wildlife and their habitats. Examples of studies completed to date are included under *Research* on page 74.

Mineral, Oil, and Gas Resources and Economic Uses - The Service does not control the subsurface mineral rights beneath the refuge. Development of mineral resources by owners or leaseholders must be allowed. If oil and gas drilling becomes profitable, normal Service regulations, policies, and guidelines for gas and oil exploration and extraction will be followed (50 CFR 29 and 31). The Service will work closely with any mineral explorers and/or developers to reduce/mitigate any potential negative impacts on refuge programs and resources from their activities.

CHAPTER 5: REFUGE MANAGEMENT DIRECTION/PROGRAMS: GOALS, OBJECTIVES, AND STRATEGIES

The following goals, objectives, and strategies are the Service's response to the issues and concerns expressed by the planning team and the public, and unless otherwise noted in the text, are expected to be implemented throughout the 15-year term of this plan. Due to the fact that the refuge CCP is a working document, modifications to the following goals, objectives, and strategies are anticipated. Ultimately, these proposed actions are designed to assist in the achievement of both the purposes of the refuge and the mission of the National Wildlife Refuge System.

NATURAL DIVERSITY AND ECOSYSTEM MANAGEMENT

GOAL 1: To restore, enhance and protect natural diversity on the refuge by implementing appropriate management programs for wildlife and habitat resources including strategies that benefit native flora and fauna, migratory birds, threatened and endangered species and other species of concern.



(photo by P. Hoban)

Rationale for Goal: Through implementation of various biological programs and wildlife management activities, provide quality habitat which can sustain natural communities and benefit native flora and fauna including migratory birds, threatened and endangered species, and other species of concern. A primary emphasis will be placed on enhancement and restoration of native shortgrass prairie to ensure that quality habitat is maintained for grassland-dependent birds and other species. Management programs will also include actions to produce habitat necessary to sustain species of special interest, migratory waterfowl, and diversity of other native fauna; protection of wetland habitats primarily for migratory birds and fishery resources; efficient water distribution to irrigate farmlands; effective removal of pest or exotic species; and restoration of native grasslands.

Objective 1: Develop a comprehensive wildlife data base for the refuge by initiating specific surveys or inventories to collect baseline data on the biological resources of the refuge, including migratory birds, mammals, reptiles, amphibians, aquatic invertebrates, and vegetation by 2008.

Rationale for Objective: Minimal data sufficient to support current waterfowl management activities has routinely been collected. However, there is a lack of data to scientifically document existing natural diversity, habitat types, habitat quality, and associated wildlife populations on the refuge. Baseline data are necessary to determine the existing biological communities and identify where native biological communities can be restored through management activities. These data will also be used to document natural fluctuations in wildlife populations as opposed to those in response to habitat manipulation. Habitat inventories and monitoring are integral components of the biological program providing valuable long-term information on dynamic habitats and animal communities. The refuge does not currently have a biologist on staff. Biological duties are accomplished by the refuge manager. Consequently, over time there has been different emphasis/priorities placed on the need for such surveys. A consistent effort needs to be focused on biological inventory and monitoring data. A systematic approach to obtaining needed resource information is paramount for making and evaluating decisions affecting the refuge's biological resource program. To be accurate and effective in guiding management decisions and activities, a comprehensive biological data base is necessary.

Strategy: Develop Inventory and Monitoring Plan (per manual direction 201FW2) by 2006. This plan will include documentation of existing flora and fauna by systematic and scientifically repeatable methodology. Development of this plan is dependent on increased staff support.

Strategy: By 2007, revise and/or update the existing vegetation baseline map (which was developed by EDAC in 1999) that delineates the distribution and acreage of native grassland, disturbed grassland, croplands, and wetland habitats. This information will be used to develop and update habitat inventory data and determine management needs. (RONS #00002)

Strategy: Monitor the status of key plant and animal species as an indicator of the quality and health of the ecosystem. (RONS #00002 and #97005).

Objective 2: Enhance the biological program by preparing a Habitat Management Plan and updating/revising the Biological Inventory Plan that will guide the management of refuge wildlife populations.

Rationale for Objective: The Habitat Management Plan and Wildlife Inventory Plan are integral components of the refuge biological program. These step-down management plans set specific population or habitat objectives and include monitoring and evaluation criteria providing long-term information on habitats and associated animal populations. This information is necessary to evaluate the effectiveness of management actions and provide a scientific basis for future changes in management. The step-down plans would incorporate baseline data collection needs and include a compilation of available data, specific objectives, monitoring for long-term information on dynamic biological communities, and criteria to evaluate management actions. These plans, as well as this CCP and the FMP, are integral components of the refuge's biological program. By identifying refuge needs through a systematic approach, these plans guide future refuge operations by providing justification for funding.

Strategy: With additional staff and/partnerships, conduct long-term monitoring of grassland bird species including species diversity, distribution, and population levels for a 10-year period beginning by the year 2006 (RONS #00001 and #00002).

Strategy: Continue to conduct special biological surveys as requested (Christmas bird counts, International migratory bird surveys, sandhill crane counts, mid-winter waterfowl counts, shorebird surveys, grassland bird surveys, and other special surveys). (RONS #00002)

Strategy: Develop and implement habitat monitoring programs in areas undergoing active management activities, document results of management actions, evaluate these in terms of habitat objectives, and amend habitat management plans when monitoring and evaluation data support adjustments by 2010.

Strategy: Monitor populations of species of management concern and determine if objectives are being met, determine population fluctuations, trends in habitat use, and response to management by 2010.

Strategy: Continue to provide food, habitat, and feeding areas for migrating waterfowl and cranes by providing approximately 300 to 400 acres of grain and green browse on refuge lands through force account or cooperative farming efforts (RONS #00003 and #00007).

Strategy: Coordinate with New Mexico Game and Fish and the New Mexico Fishery Resource Office to conduct a comprehensive inventory of fish in refuge lakes and prepare a fishery management plan by 2007.

Strategy: With the assistance of the Regional Office (RO) biological support staff, determine research and long-term monitoring needs based on biological resources and management activities. Pursue cooperative programs with other refuges, universities and NGOs to implement research projects (RONS #00001, #00002 and #97002).

Strategy: Develop and/or revise the existing Biological Inventory Plan by 2008. This will include review and compilation of species-specific literature, geographical population data, historical refuge surveys, and other appropriate information to develop population objectives and species management priorities (RONS #00002).

Strategy: By the year 2006, determine specific areas where native plant communities can be restored (RONS #97002 and #00001).

Strategy: Continue to upgrade computer data filing system with capabilities to properly store, retrieve, and archive biological data; develop data management systems to analyze data and report summaries; statistically analyze biological survey data to determine population trends once a data base is established; and periodically update or revise population objectives in wildlife inventory and habitat management plans as appropriate.

Strategy: Periodically review and incorporate as appropriate national, international, and regional plans for fish and wildlife and determine how the refuge can best contribute to the goals of these plans (Central Flyway Shorebird Plan, Colonial Waterbird Plan, North American Waterfowl Management Plan, Partners in Flight Plan, and regional and physiographic area plans) (RONS #00002).

Strategy: Establish methods to transfer biological data summaries and analysis externally through publications, symposia presentations, biological reports, annual narratives, or other forms of information transfer (RONS #00002).

Strategy: By 2010, host a habitat/biological workshop for Service personnel, other federal and state resource specialists, and private landowners on grassland management activities that have been effective in restoring the soils and native biological communities (RONS #00001, #00002, and #97002).

Objective 3: Continue to inventory and protect species of special interest (including endangered and threatened species and species of concern) and maintain or improve their habitats on refuge and adjacent lands.

Rationale for Objective: Currently no known endangered or threatened species that are present year-round on the refuge. Bald eagles have attempted to nest on the refuge in the past (mid-1980s) and there is a known nest nearby (within 15 miles). In addition, as many as 60 bald eagles winter on the refuge between October and March. These birds roost and perch on several large cottonwood trees scattered throughout the refuge and rely on waterfowl, fish, and prairie dogs as their primary food source during their stay. Black-tailed prairie dogs also occur on the refuge and adjacent lands. Other species of concern, such as the peregrine falcon, mountain plover, Cassin's sparrow, Baird's sparrow, black tern, burrowing owl, and yellow-billed cuckoo pass through the area during spring and fall migrations, relying on grassland and wetland habitats for food and cover. Future conditions may lead to other state or federally-listed species occurring within refuge boundaries.

Strategy: Monitor populations of species of special interest (endangered, threatened, candidate, state listed, etc.) to identify their presence, population level, and distribution as determined by Service policy and regional endangered species biologists (RONS #00002).

Strategy: Design and implement projects in a manner that minimizes or avoids impacts to threatened and endangered species and their habitats. Protection of threatened and

endangered species will be ensured through project design and compliance with Section 7 of the Endangered Species Act. Consultation with the Service's appropriate Ecological Services Field Office will be conducted for projects and actions that may affect threatened and endangered species.

Strategy: Protect and enhance black-tailed prairie dog colonies, and monitor existing and new colonies on refuge lands.

Objective 4: Implement waterfowl management activities to provide migrating and wintering habitat for a minimum of 500 sandhill cranes, 7,500 Canada geese, and 20,000 ducks. When possible, address and incorporate the goals of the North American Waterfowl Management Plan, Central Flyway, and regional plans focusing on species such as mallard, pintail, and gadwall.

Rationale for Objective: The refuge was established by the authority of the Migratory Bird Conservation Act to provide habitat for migratory waterfowl and aid in the restoration of this part of New Mexico as an important Canada goose, sandhill crane, and duck migration area. It is estimated that approximately 180,000 waterfowl migrated through the Maxwell-Springer area in the 1940s. In the early 1960s populations were considerably smaller, with estimates being approximately 43,000 ducks and 55,000 geese. The value of the Maxwell area to waterfowl had diminished prior to the acquisition and development of the refuge due to changes in agricultural practices in the community. Droughts in the 1930s and the drainage of natural wetlands contributed to habitat loss. Since the establishment of the refuge, waterfowl and sandhill crane numbers have fluctuated widely. Sandhill crane numbers peaked at 2,000 in 1983, but more often averaged 400 or fewer birds annually. In 1993, duck numbers peaked at 86,000. Dabbling ducks generally outnumber diving ducks by at least 3-4 times. Also in 1993, Canada goose numbers peaked at 15,500. In drought years, population numbers can decline by as much as 80 percent. Refuge croplands are planted to produce grain and browse to sustain migratory waterfowl and cranes in the area for approximately 5 months.

Strategy: Continue to incorporate data, update methodologies, and adjust population objectives for waterfowl in the Refuge Inventory and Monitoring Plan as appropriate.

Strategy: Continue to maintain breeding and brood-rearing habitats for ducks (mallard, gadwall, blue-winged/cinnamon teal, and ruddy ducks) and geese.

Strategy: Continue to provide food, habitat, and feeding areas for migrating waterfowl and cranes by providing approximately 300 to 400 acres of grain and green browse on refuge lands (RONS #00003 and #00007).

Objective 5: Determine density and population response to management for indicator species of migratory songbirds, shorebirds, raptors and other nongame birds by implementing a long-term (10 year) monitoring program. Incorporate population and habitat objectives developed for priority species in refuge wildlife and habitat management programs by 2008.

Rationale for Objective: The PIF plan for New Mexico provides an avifaunal analysis identifying priority groups of species with indicator species for management and monitoring consideration. The PIF plan will provide information for determining population objectives for priority species and specific refuge habitats. The following species have been identified by the New Mexico PIF plans as priority species or species of high responsibility and may occur as migrants or breeding birds within the habitats of Maxwell NWR: snowy plover, mountain plover, long-billed curlew, Wilson's phalarope, grasshopper sparrow, Cassin's sparrow, chestnut-collared longspur, burrowing owl, black-chinned hummingbird, Swainson's hawk, and ferruginous hawk. The PIF plan identifies the habitats of these species as a priority for active restoration and protection.

- Strategy: Hire a biologist to conduct breeding bird surveys to monitor grassland birds on the refuge. (RONS #00002)
- Strategy: Continue long-term monitoring (monthly point count and area counts) of birds and PIF priority species to document species diversity, population levels, and trends. (RONS #00002)
- Strategy: Amend population objectives for wildlife and habitat inventory plans as appropriate to incorporate new data, improved methodologies, and new approaches for monitoring and evaluation.
- Strategy: Conduct surveys documenting the occurrence of indicator species such as the grasshopper sparrow, Cassin's sparrow, and Baird's sparrow.
- Strategy: Maintain nesting and brood-rearing habitats for shorebirds on Lakes 12, 13, and 14 (assuming sufficient water exists), through control of invasive salt cedar.
- Strategy: Partner with the Audubon Society, universities, and NMDGF to conduct surveys to document occurrence of indicator species (specific PIF priority species for the area).
- Strategy: As part of the grassland management plan, target specific grassland areas to restore vegetative diversity to optimize habitats for grassland birds such as the chestnut-collared longspur. (RONS #00001, #00002, and #97002)
- Strategy: Coordinate with the RO biologists to receive information on PIF grassland species focus groups and new or recommended methods for wildlife or habitat surveys, monitoring, and evaluation; incorporate new information, and amend wildlife and habitat management plans as appropriate. (RONS #00002)
- Strategy: Analyze and evaluate fire effects on targeted species, first by research of available scientific data, then by monitoring impacts of limited prescribed burns. Adjust prescribed burning program to provide maximum benefits to targeted species.
- Strategy: Investigate and facilitate creative partnerships to encourage adjacent landowners to enhance habitats and promote conservation of sensitive species. Provide technical assistance to landowners.

Objective 6: Improve knowledge and understanding of the status of big game species (particularly mule and white-tailed deer) on the refuge, in cooperation with NMDGF, by 2008.

Rationale for Objective: Mule and white-tailed deer are regularly observed on the refuge year-round. During the spring and summer months, does and their fawns take advantage of the cover and seclusion provided by the refuge woodlots and crop fields. Deer number fluctuate since they move on and off the refuge. Little is known about their status or population trends. The refuge needs to collect inventory and baseline information. In addition, more information is needed on their impact on refuge resources (e.g. crops) and whether they are competing with migratory birds and sandhill cranes for those crops. Wildlife and habitat management activities will be implemented through the application of appropriate biological principles to maintain healthy population levels of big game species.

Information on home range will be collected by monitoring the home range of two radio-collared does.

Strategy: Continue to monitor mule deer and white-tailed deer populations on the refuge.

Strategy: Continue to provide assistance to researchers of the Santa Fe Adaptive Mule Deer Management Project (STAMP) in the form of weekly telemetry surveys, retrieval of fawn

mortalities, running vegetation transects, and collecting, keying, and photographing plants.

Objective 7: Improve habitat conditions for grassland obligate birds and other resident wildlife by maintaining, enhancing, or restoring the refuge's 2,200 acres of native shortgrass prairie through land management programs such as prescribed burning, grazing, and removal of invasive species. Implement vegetation monitoring to document changes as a result of various management activities.

Rationale for Objective: Historically, the area supported native shortgrass prairie. Over time, the area was converted for farming and ranching. Because of the small size of the farms and intense nature of the farming and grazing practices, much of the native prairie was destroyed or damaged. When the refuge was acquired, the grasslands were severely overgrazed. Grazing was stopped when extended use permits to former landowners expired. No grazing has occurred on the refuge since 1972.

After over 30 years with no disturbance, refuge grasslands are in a deteriorated state and it is believed that over-rest is the primary reason for their poor health. Overrest occurs when disturbance is absent for such a long time that the accumulated growth of past years prevents the plants from cycling enough energy to remain vital. Several invasive species are common on the refuge and are reducing the quality and potential of the native grassland. It is recognized that invasive plant species pose a threat to the native grass and riparian communities by out-competing native plant species and forming monocultures.

The refuge has reached a time when a change in management of some of the grasslands is necessary. Ground cover in some areas has become too dense and decadent. Declines in grassland quality are a concern for native wildlife and migratory birds. Many of the most common species on the refuge are considered grassland obligate birds. The refuge provides extensive mature prairie (tall grasses) that have developed in the absence of grazing. These areas are more suitable habitat for these species than is generally available outside the refuge.

The dominant native species include buffalo grass, blue grama, western wheatgrass, alkali sacaton, and red three-awn. In disturbed areas the species are primarily foxtail barley, field bindweed and kochia. The tallest native shrub on the grasslands is four-winged saltbrush.

A combination of grazing, burning, and invasive species control will be necessary to restore and/or maintain quality grassland habitat for grassland-dependent birds and other native species.

Strategy: Update existing vegetation baseline map (created in 1999) to monitor management activities including prescribed fire on refuge habitats by 2007.

Strategy: Investigate possibility/feasibility (through HMP) of implementing an experimental grazing program that would enhance refuge grasslands.

Strategy: Establish vegetation monitoring transects in grassland management units to determine plant vigor and changes in species diversity resulting from management activities.

Strategy: Investigate additional opportunities for research and monitoring to determine the methodologies that are best suited to restore and enhance shortgrass prairie habitat on the refuge.

Strategy: Revise and update the refuge's long-term Fire Management Plan by 2006 so that prescribed fire can be used as a tool to restore and enhance native grassland habitat. Hire a Fire Technician to assist with the implement of the plan (RONS #97002).

Strategy: By 2007, with increased staff support (Refuge Biologist/Maintenance Worker), initiate restoration on a minimum of 100 acres of native grasslands every 3 to 5 years in an

effort to eventually reestablish native grasses on 2200 acres of refuge (RONS #97002 and #00001).

Strategy: Continue to conduct periodic annual surveys of refuge grasslands to identify and treat areas with invasive pest plants using integrated pest management strategies (RONS #00002 and #97005).

Strategy: Experiment with various techniques to enrich the soils in areas with poor and eroded topsoils including mechanical disturbance of grasslands to break down vegetative material and increase soil permeability. Hire a Maintenance Worker to conduct restoration activities (RONS #00003).

Objective 8: Continue to control and/or eradicate existing infestations of invasive species, and prevent the introduction of new infestations through ongoing monitoring and control.

Rationale for Objective: Several invasive plant species are well established in the area. Invasive plant species pose a biological threat to the refuge because they are reducing the quality and potential of the native grassland and riparian communities. They can displace native plant and wildlife species and reduce natural diversity and wildlife habitat values. They have the potential to outcompete native species by dominating light, water, and nutrient resources. Once established, getting rid of invasive plants is expensive and labor-intensive. Unfortunately, their characteristic abilities to establish easily, reproduce prolifically, and disperse readily, make eradication difficult. Many of these plants can cause measurable economic impacts, particularly in agricultural fields. Preventing new invasions is extremely important for maintaining biodiversity and native plant populations. Management action is necessary to restore and maintain habitat useful to migratory birds, other species and general ecosystem health. The development and implementation of an integrated pest management strategy is the initial phase of the process of eradicating pest species or at least decreasing crop damage. Other strategies for reducing pest damage involve experimentation with various crop planting regimes. The control of existing, affected areas will require extensive partnerships with the adjacent landowners, state, and local governments.

The species of greatest concern on the refuge are thistles (musk, bull and Canada), salt cedar, hoary cress, and Russian knapweed. Additionally, several other invasive plant species are common on the refuge. These include common ragweed, locoweed, gumweed, Russian thistle, cocklebur, field bindweed, kochia, common mullein, chicory, smooth brome and Siberian elm.

Strategy: Continue to work with RO Invasive Species Coordinator to update and implement the Integrated Pest Management Step-down Plan.

Strategy: Expand annual surveys of refuge wetlands, ponds, croplands, irrigation canals, and riparian habitats to identify and treat areas with invasive pest plants. (RONS #97005)

Strategy: Control Siberian elms on the refuge by thinning doghair thickets and cutting all trees outside of the woodlots and along irrigation ditches. This will be done until it is determined (through research) that more extensive control is desirable and economically feasible.

Strategy: Control and/or attempt to eradicate all invasive species as described in the Invasive Species Management section (page 70 of this CCP) and the IPM plan.

Objective 9: Continue to conduct efficient agricultural operations on 300 to 400 acres of farmland. Production of grain crops for migrating waterfowl and cranes remains the primary purpose of agricultural operations.

Rationale for Objective: The refuge farming program serves the objectives for the establishment of the refuge to aid in the restoration of northeastern New Mexico as an important Canada goose, sandhill

crane, and duck wintering and migration area. The refuge agricultural practices involve soil enrichment through 3 to 6 year crop rotation practices rather than the use of fertilizers. Mechanical and chemical weed control methods are used on the refuge. Crops planted on the refuge include winter wheat, barley, corn, alfalfa, and clover. The mature grain crops and green browse are made available to wintering waterfowl and cranes by mowing. Mule deer also utilize these areas for food and cover. Crops require between 12 to 24 inches of water obtained through irrigation and precipitation. Adequate amounts of water for crop irrigation are not guaranteed. In years of normal precipitation, the refuge is allowed 946 shares of water, which is equal to 946 acre feet. In dry years the refuge may receive from zero to 50 percent.

Strategy: Continue to produce winter wheat, barley, corn, alfalfa, and green browse forage for sandhill cranes, Canada geese, ducks, and other resident wildlife, assuming normal rainfall and irrigation deliveries. (RONS #00003 and #00007).

Strategy: Maintain existing buildings for the storage of farm implements, irrigation supplies, fencing, and maintenance materials by 2006. Continue to repair and/or replace other refuge equipment storage buildings and refuge infrastructure to support farming efforts.

Strategy: Construct buildings for the storage of farm implements and irrigation supplies by 2003. Repair and/or replace other refuge storage buildings and refuge infrastructure to support farming efforts as needed.

Strategy: Continue to implement the IPM strategy for the control or removal of exotic weeds, woody plants, and insects that impact crop production, and update as necessary.

Strategy: Continue to conduct periodic annual surveys of refuge croplands to identify and treat areas with invasive species. Treat noxious weeds on approximately 20 acres/year to restore and improve farming habitat (RONS #97005).

Strategy: Continue to experiment and document strategies to minimize grasshopper and other pest species depredation on crops (RONS #97005).

Strategy: Continue to repair, maintain, and improve the current irrigation system to more efficiently deliver and distribute irrigation water.

Strategy: Replace and widen a dirt crossing/bridge over the Lake 14 intake canal on the north central portion of the refuge with a concrete structure, to provide a safe, all weather crossing.

Strategy: Identify equipment needs and secure funding to purchase or replace implements used for farming, fire, and habitat restoration (RONS #00007).

Objective 10: Protect wetland habitats that support migratory birds. Continue to work towards a better relationship with the Vermejo Conservancy District. Ideally, the refuge would participate in water management decisions that could potentially impact the wildlife values of refuge Lakes 12, 13, and 14.

Rationale for Objective: Lakes 12, 13, and 14 now comprise the majority of wetlands on the refuge. Even though these lakes are located within the refuge boundary, the lakes are managed by the Vermejo Conservancy District for storage of irrigation water only. The refuge has no control over this water and has no rights to retain any of it for secondary storage. In the past, the refuge did not participate in decisions regarding the water management on these units. Vermejo is not required to consult with anyone on its water delivery decisions; however, through improved communication the refuge would like to maximize benefits to waterfowl while at the same time meeting Vermejo's objectives. Water management by the Vermejo Conservancy District generally benefits the refuge by providing approximately 700 acres of waterfowl roosting and feeding habitat.

Strategy: If possible, establish cooperative agreements or work cooperatively with the Vermejo Conservancy District regarding their water management to maintain, and where possible, provide wetland habitat to benefit migrating, wintering or nesting waterfowl, marsh birds and shorebirds.

Strategy: Monitor and control invasive weed infestations around ditches and lake perimeters.

Objective 11: Improve understanding of the habitat conditions in the refuge's 80 acre RNA and identify potential management needs to maintain and/or improve the health of this habitat area.

Rationale for Objective: The 80-acres RNA on the refuge was established in 1973. The original documentation of the reason why this area was designated is not available in the refuge files. Habitat within the RNA includes a 25 acre playa and alkali sacaton grassland. The area has remained undisturbed since the refuge was established. Due to staffing and funding constraints, no research has been conducted in the RNA. As with other refuge grasslands, there is a lack of baseline information on the current condition and health of the grasslands within the RNA. Any future emphasis on the inventory, monitoring, or research in the RNA will be contingent on the refuge receiving additional staffing/funding.

Strategy: Work cooperatively with interested parties (i.e., Sierra Club and New Mexico Natural History Institute) to identify inventory, monitoring, and research needs in the area.

Strategy: Collect baseline vegetation data within the RNA.

Strategy: Encourage universities and other legitimate conservation groups to conduct research in the area.

Objective 12: By 2006, establish dialogue with area universities (New Mexico State University, Colorado State University, etc.), NRCS, Colfax County, and other institutions/agencies to encourage research that will improve the biological information on the refuge and contribute to habitat restoration and management activities.

Rationale for Objectives: Additional knowledge regarding refuge wildlife and habitats will contribute to better resource management decisions on refuge lands, as well as decisions affecting components of the Arkansas/Red River Ecosystem. Research priorities on major ecosystem issues center on habitat restoration, the reestablishment of native aquatic and terrestrial communities, and monitoring the wildlife and plant responses to management and restoration activities.

Strategy: Work with RO biologists to identify research needs, information gaps, and management studies that would help meet the objectives of the refuge in making better management decisions affecting the natural resources of Service lands and the public involved in recreation or educational activities.

Strategy: Develop a research strategy for invasive weed control and improved grassland health.

Strategy: Continue to fill information gaps regarding distribution and abundance of flora and fauna and seek opportunities to conduct studies that meet high priority research needs. (RONS #00002)

Strategy: Utilize U.S. Geological Service's Biological Research Division including university cooperative research units for technical assistance in designing and conducting studies.

Strategy: Set up specific research projects through the fire program to monitor and evaluate effects of wildfire and prescribed burns. Initial focus will be on impacts of various burn dates, burn frequency in a specific area, and climatic influences altering desired outcomes.

PUBLIC USE, EDUCATION, AND OUTREACH

GOAL 2: Increase public understanding and awareness of the purpose and mission of the refuge and the culture and history of the area through effective education/interpretation and continue to provide opportunities for safe, quality compatible wildlife-dependent public use and recreation.

Rationale for Goal: The long-term objectives of the refuge are to improve the quality of wildlife-compatible public uses and recreational opportunities on the refuge. Currently, the following wildlife-dependent recreational opportunities occur on the refuge: photography, wildlife observation, hiking, camping, fishing, and on-site education. Several factors constrain the expansion of current public use programs and the development of facilities.



(photo by P. Hoban)

Because of its rural location, public use is currently focused on the area within a 60 to 80 mile radius. Primary uses are by fishermen and avid birders willing to travel to see rare or unusual species. Off-refuge farmland with ponds and impoundments provide many of the same wildlife viewing opportunities as the refuge.

Increasing the public's involvement and appreciation of fish and wildlife resources can be achieved through interpretive materials, interactive environmental education, demonstrations of management practices, and quality recreational experiences. The current operation and maintenance budget does not provide adequate funding to develop additional facilities. With a staff of three, there is minimal time to develop public use or educational/outreach programs. Opportunities to improve public use, visitation, and outreach programs on refuge lands will require 1) the additional staff support of an ROS and/or Outdoor Recreational Planner (ORP); 2) coordination with jurisdictional agencies; 3) improved operational funds; 4) innovative programs to attract local communities; and (5) partnerships with other agencies or non-profit organizations to help provide these opportunities.

Objective 1: Public Use Management - By 2007, develop/improve the refuge's infrastructure and operations to provide for quality wildlife-dependent public use.

Rationale for Objective: There is a need to enhance refuge facilities and increase staff support to improve visitor use and wildlife-based recreation. Existing programs and facilities currently offer recreational opportunities for people of all abilities to enjoy. These opportunities are compatible with the primary purpose for which the refuge was established. Existing facilities can be upgraded and enhanced to further engage visitors. A Public Use Plan having short, intermediate, and long-term goals and objectives with site by site analysis is needed for enhancing public use on the refuge. The plan would highlight specific refuge needs to improve the tour route, provide directional signs, provide additional interpretive panels, and pursue partnerships with volunteers. Organized, well-managed public use would greatly enhance the quality of environmental education and natural history interpretation of the refuge.

Public use programs should also enhance and complement neighboring refuge's programs, such as those at the Las Vegas NWR.

Strategy: By 2008, with the assistance of the RO, develop a step-down management plan for public use that includes recommendations for wildlife-dependent recreation. This plan would evaluate and identify opportunities and locations to provide additional or improved recreational and interpretive opportunities on the refuge (RONS #00009).

Strategy: By 2008, hire an ROS or ORP whose primary duties would be to increase the quality and quantity of outreach programs and assist the refuge in meeting the objectives of the CCP (RONS #00009).

- Strategy: With additional staff, increase compatible forms of wildlife dependent recreational opportunities such as wildlife observation, photography, and wildlife education and interpretation on the refuge.
- Strategy: Obtain accurate visitor counts through the use of counters that differentiate between night and day use.
- Strategy: Improve quality and quantity of information about the refuge, by providing updated interpretive materials and constructing at least three visitor kiosks and interpretive panels within 5 years of the CCP being approved.
- Strategy: Continue to maintain and improve facilities for recreational public use on the refuge.
- Strategy: With the cooperation of the Vermejo Conservancy District, maintain roads used for public access to refuge recreation areas and office headquarters.
- Strategy: By 2010, pursue opportunities with Federal and State Highway Administrations to install informational kiosks about the refuge and the ecosystem at the rest areas on I-25 (Tinaja and Wagon Mound). Propose funding sources to develop these kiosks by 2006.
- Strategy: Hire a seasonal biological technician to assist with environmental education and outreach programs, wildlife surveys, and habitat projects.
- Strategy: By 2010, propose additional funding to develop interpretive programs at the refuge to enhance the quality of visitor experience.
- Strategy: Make various specific improvements to the facilities and operation of the office and vicinity over the coming five years, including: making certain there is someone to “meet/greet” visitors when the office is open (consider using volunteers to assist with this task; update the kiosk in front of the Office; and make brochures available when the office is closed.

Objective 2: Offer a quality fishing experience for anglers and review the refuge’s fishing program on an annual basis to monitor its success.

Rationale for Objective: Fishing opportunities on the refuge are limited to Lakes 13 and 14. There are limited fishing opportunities in the area, so the refuge is quite popular when the lakes have water and they have been stocked by the NMDGF. On an annual basis, it has been estimated that fishing accounts for at least 50 percent of all refuge visitation. Due to the increase of public participation in fishing activities during the 1990s, a parking lot was constructed near Lake 14 in 1995. Camping facilities are located adjacent to Lake 13 with as many as 135 people, primarily anglers and their families, using these facilities during the open fishing season. The few campers and picnickers the refuge attracts are almost exclusively associated with fishing. The recreational fishing program is permitted only seasonally (March 1 through October 31) to prevent disturbances to migratory and wintering populations of waterfowl and eagles. This fishing season is established by the NMDGF. Powerboating is permitted only during the fishing season. Boating speeds are limited to trolling speed to minimize the disturbance of noise and wave action on breeding and nesting waterfowl. The west and south shores of Lake 13 are open for public use. For safety reasons, the public is prohibited from parking on the dike on either side of the water control structure. The east and north shores are closed to provide undisturbed roosting/feeding areas for migratory birds. Lake 14 is closed seasonally from November 1 to March 1 during peak waterfowl concentrations to provide an undisturbed area where they can feed and rest. The quality and availability of fishing opportunities on the refuge is dependent on lake levels, stocking, and weather (ice). There is periodic stocking of waters with game fish. The State (NMDGF) is responsible for stocking; the Service has no control over this activity.

- Strategy: Construct an accessible fishing platform at Lake 13.

Strategy: Special event fishing days will be proposed and managed in partnership with the NMDGF.

Strategy: Within two years of the completion and approval of the CCP, a Refuge Fishing Plan will be completed to offer specific guidance on how the refuge can offer quality fishing experiences for certain types of fisheries and anglers.

Objective 3: Enhance opportunities for wildlife observation and wildlife photography by making the public aware of existing opportunities and adding certain facilities over the coming decade.

Rationale for Objective: Wildlife observation and photography are appropriate wildlife-dependent recreational uses of Refuge System lands, when compatible. However, the refuge's public use programs must ensure adequate sanctuary to allow sufficient waterfowl and other migratory bird utilization of the refuge's foraging, roosting, and nesting habitats. In order for waterfowl to meet life history needs while migrating or overwintering on the refuge, disturbance needs to be low for this "small" 3,700 acre refuge.

The refuge provides ample opportunities for wildlife viewing. It is bisected and/or surrounded by 11 miles of refuge and county roads. There is an additional 1.5 miles of refuge roads used to access Lake 13. The west and south shores of Lake 13 are open for public use. The east and north shores are closed to provide undisturbed roosting/feeding areas for migratory birds. Lake 14 is closed seasonally from November 1 to March 1 during peak waterfowl concentrations to provide an undisturbed area where the birds can feed and rest. Remaining areas of the refuge are closed unless otherwise specified. A ½-mile hiking trail exists at the southeast corner of Lake 14. A parking/viewing area is also available at Lake 12. It has been estimated that wildlife observation and photography accounts for approximately 25 to 50 percent of the total visitation to the refuge. There are currently no viewing platforms or observation blinds in place for wildlife observation or photography. Current management of these activities is limited to public roads and the ½-mile hiking trail. The refuge is in need of adding interpretive staff (at least one person), brochures, observation platforms, and providing interpretive trails, kiosks and photo blinds to meet the needs of the visiting public.

Strategy: Provide additional opportunities for wildlife observation and photography by developing nature trails (totaling approximately 2 miles) in the grassland habitat north of Lake 12 and/or the woodlot off of County Road A-5.

Strategy: Develop a photo blind at Lake 12.

Strategy: Potentially develop an observation tower on the northwest shore of Lake 13, with the cooperative and approval of Vermejo Conservancy District.

Strategy: Provide media interviews, news releases, and other articles that feature refuge issues/opportunities during peak wildlife observation periods for the local media in Raton, Springer, Cimarron, and Las Vegas.

Strategy: Advertise and provide special guided tours during peak wildlife observation periods such as a Watchable Wildlife Weekend or weekend nature walks (e.g. develop a Maxwell Meadowlark Festival). Coordinate with Audubon and other agencies.

Strategy: Pursue better cooperation with organizations and other community civic groups such as the local Chamber of Commerce, Audubon groups, New Mexico Wildlife Society, etc., to improve the awareness and appreciation of the area's natural resources.

Objective 4: By 2007, begin to develop and implement a quality environmental education and interpretation program at Maxwell NWR.

Rationale for Objective: Staff is planning to enhance and expand the environmental education program but limited funding and lack of staff impose special problems. A minimum of one additional staff member is needed to ensure a quality environmental education and interpretation program in the future. Potential themes for interpretation on the refuge could include ecology of the area, the native flora and fauna, and Service-wide mission and why we manage for fish, wildlife, plants, and their habitats. Most interpretation takes place within the refuge office. A small contact station is available at the refuge office, which is wheelchair accessible. To interest and educate the visiting public, the refuge headquarters must have quality interpretive displays and equipment. Refuge roads, tour routes and viewing areas must be improved with interpretive information to educate and generate interest and support in refuge programs.

Outreach programs are instrumental in developing and expanding public interest in the Refuge System. With funding and partnerships, the refuge has the potential to increase outreach opportunities. Interpretive displays, presentations, and interactive education activities will have the greatest opportunity to provide the public with information about fish and wildlife resources, and the value of national wildlife refuges. Because of the small staff and limited budget, outreach efforts have been limited. Regional efforts have been focused primarily on private partnerships and have not included the refuge. The outreach and education activities are conducted by the refuge manager when time permits. The refuge would benefit from contact with the general public through exhibits at special events and high visibility areas within the communities and through presentations for school groups and other audiences. More education and outreach efforts could be conducted for the local public and directed into neighboring communities. With increased staff, more effort could be directed toward the long-term objectives for improving public outreach, wildlife interpretation, and environmental education. Providing quality educational opportunities and consistent outreach efforts over the next 15 years would increase public awareness and understanding of the natural resources of the refuge as well as increase public support of management programs. By providing the public with resource information, many individuals may become aware of resource issues and be more willing to support existing and future conservation activities.

Strategy: Interpretation at the refuge will include Service, Refuge System, and refuge-specific messages such as the value of playas, prairie decline and restoration, importance of the refuge for migratory birds, and the Service's trust responsibilities. Additional themes to consider: neotropical migrants, habitat restoration and creation, and cultural themes, such as the significance of the Santa Fe trail and other local history.

Strategy: Develop a video for the visitor center using footage that is specific to Maxwell NWR and have the video available for visitors to watch on a regular basis.

Strategy: Revamp exterior kiosks with current information and install a panel explaining what priority public uses are permitted on refuges.

Strategy: Develop seasonal interpretative programming (based on staff availability) such as a bald eagle talk, shorebird talk, grassland bird talk, waterfowl talk, etc.

Strategy: Develop an outreach program that interprets the resources of the area and generates interest in the refuge. Provide five community outreach programs annually by 2010 in the towns of Maxwell, Springer, and Raton. These products/activities may include community presentations, community-involved habitat restoration projects, and/or refuge staff representation at public events that will foster the public's appreciation and understanding of fish and wildlife resources and the mission of the Refuge System.

Strategy: Use the district fire management staff to enhance outreach related to wildfire and fire effects.

- Strategy: The refuge staff will assist RO specialists in developing and designing outreach materials such as brochures, posters, pamphlets, etc., that identify the unique and significant natural resources of the Ecosystem.
- Strategy: The refuge staff will promote resource education in the community by identifying new audiences and providing programs specific to their needs. Develop new partnerships with local education institutions, youth groups, and civic groups for opportunities to provide presentations, refuge tours, instructor led outdoor classrooms, and hands-on wildlife habitat related projects.
- Strategy: By 2010, work with the RO to obtain funding to develop a teacher led outdoor classroom curriculum package including activities, investigations, and equipment; recruit local teachers and environmental education facilitators to assist with the development of the refuge specific curriculum; and provide workshops demonstrating the use of the curriculum for teachers or informal educators interested in using the refuge as an outdoor classroom.
- Strategy: The refuge will continue to provide programs that focus on the following issues: endangered species conservation, ecological integrity, habitat management, wetland values, and natural resource recreation.
- Strategy: Develop a program that can be presented coincidentally with planned burns, with focus on the historical presence of fire and short and long-term fire effects.
- Strategy: Assist with the preparation and distribution of factual briefing materials on the Vermejo Water Conservancy District's management actions and their importance to the refuge.
- Strategy: By 2008, secure funding to purchase a portable display panel. Work with RO public use staff to develop one to two themes for the display panels that would provide information on refuge resources, such as the value of the refuge habitats to wildlife, or archaeology/history of the area. These panels could be displayed at high profile areas in the local communities (schools, fairs, or other special events) in an effort to increase the public's awareness and support refuge operations and programs (RONS #00009).
- Strategy: Within two years of the addition of an ORP on staff, develop a curriculum packet with classroom, research, and field activities for elementary, middle, and high school students. This packet would relate the biological resource and management activities of the refuge to a broad ecosystem perspective. The packet would also relate local ranching and agricultural activities to the refuge with ecosystem and national migratory bird objectives (RONS #00009).
- Strategy: Work with design specialists to develop one or two interactive, "hands-on" activities for adults and children focused on key conservation concepts reflected through refuge operations. Secure funding to implement these at refuge headquarters by 2010 (RONS #00009).
- Strategy: Provide technical and logistical support to facilitators of national environmental programs in New Mexico such as Project Wild, Project Wet, Aquatic Wild, and School Yard Habitat Programs. Host one teacher training workshop using the established curriculum from these national programs every two years (RONS #00009).
- Objective 5:** Develop/enhance a volunteer program that will guide the refuge in attracting dedicated volunteers to assist staff with tasks that are amenable to non-employees or non-specialists.

Rational for Objective: There is no formal volunteer program on the refuge, but volunteers have been used in the past (4 volunteers in 2004) primarily for specific biological and maintenance activities. In addition to augmenting the biological, habitat management, and maintenance programs, volunteers could be invaluable in the interpretive and recreational program. Since staff and funding are limited on the refuge, volunteers could be instrumental in developing an informed constituency willing to support the refuge. Volunteers could assist in all refuge activities and collaborate to provide an array of environmental programs, activity packets, and related outreach projects.

Strategy: Develop volunteer job descriptions, and train all staff members on managing and supervising volunteers.

Strategy: Expand the refuge volunteer program to recruit volunteers to help with environmental education, interpretive programs, special refuge events and opportunities aimed at fostering wildlife observation on the refuge, wildlife surveys, and habitat restoration projects.

Strategy: Build volunteer facilities with full hook-up to attract more potential volunteers. (Add timeframe)

Strategy: By 2007, investigate the establishment of a “Friends Group” that would support the refuge with volunteers and get community members involved and supportive of the various programs of the refuge (RONS #00009).

Strategy: Through the “Friends Group”, seek funding sources to develop a poster and/or brochure focused on the plants and animals specific to the overlapping biomes of the area.

Strategy: The refuge will continue to participate in National Public Lands Day in September of each year.

Objective 6: Develop and implement a program that will provide an understanding and appreciation of the refuge’s prehistoric and historic cultural resources and protect these resources for the benefit of present and future generations.

Rationale of Objective: There are presently no significant cultural and historic resources known at the refuge. A comprehensive archaeological survey of the area is needed to document new and existing sites. Should such resources be discovered, the refuge will incorporate measures to ensure that such resources are protected from degradation and for future study and investigative research. The refuge is near the old Santa Fe trail and is part of what used to be the Maxwell Land Grant, which has a significant historical impact on the area. The refuge could provide visitors with specific information regarding the historical land use and area resources that could supplement other historical information provided by the Cimarron and Raton Museums. Interpretation of the history and prehistory of the area and cultural resources oriented activities, consistent with the natural resources and wildlife objectives of the area, would serve to increase the public’s awareness and conservation of the cultural resources of the area.

Strategy: Conduct a comprehensive cultural resource survey of the refuge, including GPS mapping of archaeological and historic sites by the year 2008

Strategy: Work with RO archaeologist to develop a contract with universities to do surveys, research, and obtain information that would meet the needs of the refuge in making better management decisions affecting the archaeological resources on Service lands.

Strategy: Prepare a cultural resources overview and assessment of the refuge (in cooperation with the RO archeologist) that includes a synthesis of the existing archaeological, ethnohistoric, and historic information presented within the regional context of the prehistory and history of the area by 2010.

- Strategy: Protect all cultural resources on refuge lands as mandated under the Archaeological Resources Protection Act (ARPA), including appropriate law enforcement measures. Ensure all refuge management activities are in compliance with ARPA.
- Strategy: Avoid damage and deterioration to cultural resources that would result from erosion, abandonment, or neglect.
- Strategy: Provide opportunities for the visiting public to learn about the history and pre-history of the area by 2010.

INTERAGENCY COORDINATION AND PARTNERSHIPS

GOAL 3: Maintain or strengthen existing interagency and jurisdictional relationships. Establish new partnerships within the community to cooperate on mutually beneficial programs for improving wildlife and habitat resources on the refuge and the Arkansas/Red Rivers Ecosystem.

Rationale for Goal: The implementation of ecosystem management is the first step toward achieving more cooperative agreements and working relationships. Fish and wildlife resources, public use, and educational opportunities can all be fostered and enhanced with this management approach which focuses on coordination with state, federal, and private organizations.

Objective 1: Enhance existing relationships and seek partnerships with local agencies, organizations, and landowners to benefit fish and wildlife resources on the refuge and surrounding lands.

Rationale for Objective: The refuge has a lease on approximately 907 acres of Vermejo Conservancy District property which include the three major impoundments on the refuge; Lakes 12, 13 and 14. The NMDGF manages the fishery resources on Lake 13, which is open to public fishing. Coordination and combined efforts with both the State and the Vermejo Conservancy District would benefit public use programs as well as aquatic and wetland habitat management. These partnerships require time to develop and coordinate and must be accounted for in the development of annual work plans.



(photo by P. Hoban)

- Strategy: Continue to work cooperatively with the Vermejo Conservancy District in regard to water delivery and storage in Lakes 12, 13 and 14 to benefit migratory birds and fishery resources.
- Strategy: The refuge will work with the local farm association, NRCS county extension agents, and adjacent private landowners to share ideas and exchange technical advice on successful management tools including pest management strategies for grasshoppers and noxious weeds.
- Strategy: Work closely with NMDGF and the New Mexico Fishery Resource Office to enhance fishery and other natural resources and associated recreational opportunities.

Objective 2: Participate with other government agencies, NGOs, and private groups in partnerships such as PIF, Playa Lakes Joint Venture, and Integrated Pest Management that are mutually beneficial and will ultimately benefit the fish and wildlife resources of the refuge and surrounding private lands within the Plains of northeastern New Mexico and the Arkansas/Red Rivers Ecosystem.

Rationale for Objective: Fish and wildlife resources, public use, and educational opportunities can all be fostered and enhanced through coordination with state, federal, private organizations, and individual landowners. Because of the value of the refuge to migratory birds, including waterfowl and sandhill cranes in this portion of the Central Flyway, coordinating with the entities that are involved in the management of flyway populations is imperative to the purpose for which this refuge was established. Private land initiatives and partnerships are instrumental in improving habitat conditions in a large contiguous area for the benefit of wildlife, particularly sensitive species such as the mountain plover and black-tailed prairie dog.

Strategy: Coordinate with the Central Flyway Technical Committee, the Service’s Migratory Bird Management Office, NMDGF, the Migratory and Game Bird Program leader, and others to improve the management of waterfowl, sandhill cranes, and other migratory bird populations and resolve issues such as avian disease and crop depredation.



(photo by P. Hoban)

Strategy: Refuge staff will participate in and encourage private land joint ventures and partnerships involving the cooperation of private stakeholders within the community leading to resource restoration and management activities for habitat enhancement on private lands.

Strategy: Work with county, local, and state highway personnel to repair road signs in the area and seek partnerships in the Adopt-a-Highway and Leave No Trace programs.

Strategy: Participate in and/or initiate, a local Cooperative Weed Management Area to address invasive plant issues of concern to the refuge and adjacent or nearby landowners.

Strategy: Continue cooperative agreements with the local volunteer fire departments and the New Mexico State Division of Forestry. Utilize the Joint Powers Operating Plan for additional fire assets.

Strategy: Pursue cooperative agreements with New Mexico State, Colorado State, and other educational institutions to assist the refuge in obtaining biological, archaeological, or other resource information including GIS mapping and research that would best serve refuge objectives.

Strategy: Pursue opportunities with local businesses, schools, scouts, and other organizations to “adopt the refuge” for projects or special community programs such as Earth Day, Green Team, etc.

Strategy: Contact the local Audubon chapters to conduct bird surveys and assist with future planned wildlife tours.

Strategy: Pursue partnerships with organizations and other community civic groups to help foster wildlife observation at the refuge, assist with nature tours and other public use events.

Strategy: Develop a Friends Group with the local Maxwell/Springer/Raton community to foster a constituency that supports the mission and purpose of the refuge.

STAFFING, FUNDING AND FACILITIES

GOAL 4: Develop program support sufficient to provide the necessary staffing, facilities, equipment, and funding to accomplish the purpose and goals of the refuge and fulfill the mission of the Refuge System.

Rationale for Goal: The refuge has a staff of three. The current programs on the refuge fully occupy the time of the current staff as well as expenditure of current funding. Additional funding for operations and maintenance is necessary to implement the proposed actions and accomplish the goals outlined in this plan.

Objective 1: Obtain the funding and support of the RO staff specialists to accomplish the goals of this plan.

Rationale for Objective: The current staffing level is adequate to accomplish established programs and essential maintenance. Additional staff support is necessary to expand the biological, habitat management, public use, and outreach programs identified in this plan. To implement the objectives of this plan, the refuge staff will need increased support and assistance of the staff listed below to assist with the revision and/or completion of step-down management plans, development of interpretive and educational projects, and the collection of biological/resource information.

Strategy: Use internal mechanisms such as RONS to justify and acquire the additional funding and personnel to accomplish refuge goals by 2019. The full staffing level proposed to accomplish this is as follows: (*denotes new position)

Refuge Manager	GS-12/13	PFT
*Refuge Operations Specialist	GS-09/11	PFT
Administrative Assistant	GS-06/07	PFT
Maintenance Worker	WG-08	PFT
*Outdoor Recreation Planner	GS-07/09	PFT
*Wildlife Biologist (RONS #00002)	GS-07/09	PFT
*Maintenance Worker (RONS #97001, #00003)	WG-06	PFT
*Fire Technician	GS-05/07	PFT

Strategy: Work with the RO to evaluate the need and opportunities to contract with non-service personnel to conduct biological surveys needed to accomplish the refuge goals.

Strategy: Pursue agreements with other interested agencies and organizations to assist with the needed personnel (interns, volunteers, SCEP students, etc.), volunteer housing and other services, supplies, equipment, and funds to accomplish the refuge goals.

Strategy: Use cooperative agreements, the District Fire Management Staff, and Interagency Agreements to expand the refuge fire program. Refuge staff will be responsible for long-term direction of the program, some program administration, and supervisory and approval authority for all actions taken by the DFMO. As appropriate, refuge staff will obtain necessary qualifications to participate in fire activities.

Objective 2: Continue to provide a safe, efficient, and productive work environment for refuge employees and a safe infra-structure for refuge visitors.

Rationale for Objective: Current funding is adequate to maintain existing refuge operations and facilities. Improving and increasing programs outlined in this CCP will require additional operational funding and facilities maintenance. The addition of a seasonal maintenance worker to the staff would enable the refuge to meet many of the objectives identified in this plan. To efficiently perform their duties, all refuge employees need appropriate equipment including vehicles, computers, field equipment, etc. This equipment will also need to be updated periodically.

Strategy: Utilize the RONS to upgrade computers, computer programs, office equipment, field equipment, and vehicles as needed in order to provide an efficient and productive support system for refuge staff.

Strategy: Replace and widen a dirt crossing/bridge over the Lake 14 intake canal on the north central portion of the refuge with a concrete structure, to provide a safe crossing.

CHAPTER 6: PLAN IMPLEMENTATION

Refuge objectives are intended to be accomplished over the next 15 years. New management activities will be phased in over time. Implementation of these will be contingent upon results of biological inventories, monitoring and evaluation, funding, staffing, and regional and national Service directives. This section identifies resource projects, staffing, partnership opportunities, step-down management plans, and the CCP monitoring and evaluation plan.

Resource Projects

Listed below is a summary of major resource project needs addressing the goals and objectives of this plan. Project summaries include planning links within this CCP. This list only reflects the basic needs identified by the planning team based on available information and is subject to modification depending on future conditions, needs, and cost adjustments.

Project 1. Grassland Habitat Restoration

Restore and maintain native grassland habitats that support grassland dependent birds and other wildlife native to the biological communities within the upper watershed of the Canadian River and northeastern New Mexico. A combination of grazing, burning, and invasive species control will be necessary to restore and/or maintain quality grassland habitat on the refuge.

Planning Links: Goal 1, Objective 1, 2, 7 and 8

Project 2. Enhancement of the Existing Biological Program Including Wildlife and Habitat Inventories and Documentation of Responses to Adaptive Management Techniques

Develop baseline biological data, which is essential for making informed management decisions affecting refuge resources. Develop accurate vegetation maps delineating major habitat types on the refuge. Inventory plant species associated with each habitat. Implement habitat monitoring programs for key habitats and areas targeted for restoration activities. Through surveys and monitoring, determine the biological components and diversity of refuge lands with a concentrated focus on long-term monitoring of grassland bird species.

Linked to the actions of inventorying and monitoring is the process of adaptive management to assess and modify management strategies to better achieve objectives. The effectiveness of habitat management actions to meet refuge and landscape objectives can be best determined through monitoring and subsequent evaluation of results. The first priority for the biological program would be to establish sampling schemes (transects, sampling points, etc.) to evaluate and monitor plant conditions and to achieve plant community responses to management treatments. Proper computer resources should include a field computer, GIS, database, and statistical program. Habitat monitoring and evaluation should be considered a priority in helping the refuge meet its mission. Habitat sampling protocols need to be developed based on the refuge's objectives, management treatment, juxtaposition of management units, and level of sensitivity needed to detect changes.

Operational funds should be dedicated for performing basic wildlife inventorying and monitoring on the refuge. The refuge's biological program needs trained personnel to operate each of the required activities. The biological program should have a minimum of one biologist and a biological technician. Monitoring protocols and procedures should exist for all activities and be based on study designs and standard collection procedures that provide the most efficient design in context to the subject and use resources at the staff's disposal.

Planning Links: Goal 1, Objectives 1, 2, 3, 4, 5 6, 7, and 8

Project 3. Develop and Implement a Public Use Plan and Improve Visitor Services

Develop a Public Use Plan that proposes funding to complete tasks outlined in the Plan, which emphasizes visitor services at the headquarters and increased opportunities for wildlife-related recreation activities and may include the following: installing informational signs; developing visitor interpretive displays and exhibits; producing environmental education and outreach materials; installing outdoor interpretive signs at wildlife viewing areas; designing an outdoor classroom curriculum guide with field equipment; enhancing refuge nature trails, and constructing a handicapped accessible fishing platform at Lake 13.

Planning Links: Goal 2, Objective 1, 2, 3, and 4

Project 4. Invasive Species Control

Several invasive plant species pose problems at Maxwell NWR in grasslands, wetlands, woodlots, and farmland, including thistles (musk, bull and Canada), salt cedar, Russian knapweed, hoary cress, and Siberian elm. In general, invasive plants are troublesome because they displace native vegetation on which native animals are dependent. The refuge will continue to control and/or eradicate existing infestations of invasive species, and prevent the introduction of new infestations through ongoing monitoring and control. The refuge may use a combination of fire, grazing, approved chemical spraying, and mechanical treatments to control invasive species infestations. Effective control of undesirable species will contribute to the goals and objectives of the Ecosystem.

Planning Links : Goal 1, Objective 2, 7, 8, and 9

Current and Proposed Funding and Personnel

Current Staff:

The refuge has a current staff of three permanent FTEs. The current staffing level includes the following:

Refuge Manager	GS-12	PFT
Administrative Assistant	GS-07	PFT
Maintenance Worker	WG-08	PFT

Proposed Staff:

To accomplish the goals and objectives of this plan, the following increase in staff and base funding would be required:

Refuge Operations Specialist	GS-09/11	PFT
*Wildlife Biologist	GS-07/09	PFT
*Outdoor Recreation Planner	GS-07/09	PFT
*Fire Technician	GS-05/07	TFT
Maintenance Worker	WG-06	TFT

Current base funding and other funds:

Total annual budget for the refuge varies depending on the Service priorities for resource projects each year and the national and regional allocation of operations and maintenance funding as well as RONS and MMS funds. The RONS projects can be found in Appendix D.

Since 1991, the refuge operating budget has ranged from \$180,000 to \$230,000. Approximately 60 percent of the budget covers salaries, 15 percent covers irrigation costs including assessments and leases with the Vermejo Conservancy District, and the remainder covers various maintenance, operation and supply costs.

The following is a general breakdown of the annual operation budget of the refuge:

Maxwell NWR:

year	O&M 1261*	MMS 1262*	MMS - EQ	Cleanup 1261	Total
2003	272,300	35,000	0	5,000	312,300
2002	214,600	25,000	10,000	0	249,600
2001	198,037	27,000	0	0	225,037
2000	232,430	26,800	0	0	259,230
1999	196,500	10,000	0	0	206,500

*Description of funding categories:

1261 funds are used for fixed costs for salaries, supplies, etc., mandatory training/travel, operational activities, and routine maintenance.

1262 (MMS) funds are restricted to deferred maintenance/replacement of refuge facilities and infrastructure which cannot be accomplished with Operation & Maintenance (O&M) funding.

9100 funds are for fire management for prescribed fire.

A list of RONS projects can be found in Appendix D.

Partnership Opportunities

There are many opportunities to partner with county, state and federal agencies, NGOs, private landowners, and conservation groups. The primary purpose of these partnerships would be to combine efforts on resource issues or projects that would mutually benefit all with the greatest benefits to the area’s natural resources. The benefits of the following partnerships or relationships are emphasized:

Partnerships or joint efforts with NMDGF, Vermejo Conservancy District, private landowners, corporations, and county governments could result in the development of conservation easements for the restoration of wetland habitats. Sustainable and consistently available quality wetlands would provide breeding, resting, and feeding areas for waterfowl and cranes.

Establishing relationships with private landowners and conservation organizations could result in the development of conservation agreements for land protection, habitat enhancement and restoration, and opportunities for continuity of management. The Service could enter private land initiatives with permittees on state lands of the NMDGF and State Lands Office and federal lands managed by the Bureau of Land Management (BLM) and U.S. Forest Service. Refuge lands could serve as demonstration and research areas to develop techniques for habitat restoration and enhancement efforts.

Coordination with the administrators and research investigators of the University of New Mexico’s Long-Term Ecological Research and other Universities would provide the Service opportunities to obtain data to fill gaps in resource information.

Strengthened partnerships with NMDGF could lead to the following benefits:

1. Sharing volunteers and a wildlife technician to conduct activities associated with public use on refuge lands and lakes open to public recreation.
2. Enhancing biological programs and management on adjoining lands.
3. Sharing research opportunities and information that would mutually benefit management of adjoining resource areas, as well as the refuge.
4. Coordinating water management to enhance wetland habitats.
5. Improving wildlife-oriented recreation opportunities through joint efforts.
6. Coordinating efforts for more efficient law enforcement coverage.

Enhanced communication with the Vermejo Ranch and other adjacent landowners would increase their awareness of the value of managing natural resources and would encourage cooperation on water management to increase and enhance wetland habitats.

Establishing partnerships and strengthening relationships with the chamber of commerce, city officials and other groups from the cities of Maxwell and Raton would assist in the development of a refuge outreach program. A mutual program would economically benefit these communities and enhance the ability of the refuge to provide environmental education while serving as an outdoor classroom.

Maintaining and developing partnerships will enable the refuge to achieve its goals and objectives, minimize costs, share funding and bridge relationships with others. To maintain and enhance wildlife outside the refuge, the Service will focus its efforts on continuing to develop partnerships with landowners, the state resource agencies, and interested conservation and sportsmen groups. Although the Service does not have management responsibilities for those lands outside the refuge, it is important to articulate the wildlife resource needs area wide. Collaboration with colleges and universities and with conservation organizations will enable the refuge to carry out its plan for research, monitoring, and education. To create awareness and expand environmental education efforts in the community, partnerships will also be established or expanded with organizations and school systems.

Step-Down Management Planning

Management activities on biological resources cannot be effectively prioritized, implemented, or evaluated unless guidelines are prepared through program step-down plans. These plans will document management priorities such as target areas, priority species, or management activities to be initiated and implemented.

The following is a list of step-down management plans including mandatory plans, programmatic plans, and special use plans. Often these plans will require compatibility determinations, environmental assessments, or other supporting justification before they can be implemented. The preparation and execution of these plans is dependent on funding and the availability of staff or technical support.

Completed Plans and Other Documents

The following plans and documents have been completed and are subject to review and periodic updates.

Station Safety Plan - This plan describes actions and improvements necessary to make facilities and operations comply with federal occupational health and safety standards and other applicable regulations. This plan was last updated and completed in 1998 and will remain in effect until further updates are needed.

Sign Plan - This plan provides a record of all signs installed throughout the refuge and guidelines for sign replacement. The plan was completed between 1980-1984. It will be reviewed, updated, and incorporated into the Public Use Plan.

Cropland Management Plan - This plan describes specific objectives of farming practices to produce sufficient food requirements for the refuge's migratory birds. It was completed in 1990. The update of this plan will be incorporated in the HMP.

Fire Management Plan - This plan details suppression strategies and determines the best use of fire in managing/enhancing refuge habitats. Provides specific strategies, conditions, and parameters for the use of fire to accomplish habitat objectives for targeted grassland and wetland areas. The plan was completed in 2002 and supercedes any previous plans.

Wildlife Inventory Plan - This plan describes specific wildlife inventory activities and techniques to be conducted to monitor wildlife populations including specific species population objectives, census/survey methods, data analysis, and reporting requirements. It was completed in 1984. This plan will be replaced by the Refuge Inventory and Monitoring Plan.

Waterfowl Disease Contingency Plan - This plan was prepared for Maxwell NWR in 1985. It describes procedures for identifying, reporting, and taking care of problems (outbreaks of avian botulism, fowl cholera, etc.) in the area. The plan was last updated in 1997 as part of the Playa Lakes Disease Plan and remains in effect until further updates are needed.

Interpretive Plan - This plan describes actions and improvements that would provide the public with limited interpretive opportunities that are compatible with the refuge and provide them with the opportunity to learn about the wildlife and habitat resources in the area. It was completed in 1984 and will be updated in conjunction with the Public Use Plan.

Integrated Pest Management Plan (IPM) - This plan describes biological, mechanical, or chemical methods to most effectively eradicate or control exotic weed and woody vegetation and specific pests including those depredating crops without impacting the natural resources of the area. The IPM Plan was approved in 2001 and remains in effect until further updates are needed.

Plans and Documents to be Completed in the Future

The following plans and documents will be developed and subjected to review and periodic updates.

Visitor Services Plan - This plan addresses specific wildlife-related public recreation issues and needs. It identifies opportunities for visitors to enjoy and appreciate fish, wildlife, and other resources. As a result, the public will develop an understanding and appreciation for the mission of the Fish and Wildlife Service and the National Wildlife Refuge System. It will identify appropriate/quality recreational opportunities that are conducted in a safe and cost-effective manner; develop and implement a quality environmental education program; interpret key resources and issues; and build volunteer programs and partnerships with refuge support groups. This plan will incorporate updates of the old interpretive management and sign plans.

Refuge Inventory and Monitoring Plan - Although inventory and monitoring are ongoing, a current plan has not been written to describe specific wildlife inventory activities and techniques to monitor wildlife populations including specific species population objectives, census/survey methods, data analysis, and reporting requirements. This plan will be written in accordance with current guidance (701 FW2) and refuge needs.

Habitat Management Plan - This plan describes the most appropriate management strategies for habitat protection, enhancement and restoration, emphasizes specific habitats and areas for management activities, and provides monitoring methods and evaluation criteria. This plan will include the refuge's cropland and grassland management plans. If a grazing program is implemented, this plan

will state the objective of managing grasslands on Maxwell through grazing as a way to stimulate habitat diversity and provide roosting and feeding areas for sandhill cranes, raptors, and other grassland species.

Cultural Resource Management Plan - This plan identifies areas with significant sites and provides methods for the management of these resources. The CRM Plan also identifies areas with a high potential of significant resources and provides the refuge manager with information to make better decisions regarding development or management activities. A comprehensive cultural resource inventory is a prerequisite to the development of the CRM Plan; as land management or development activities including public access could impact unidentified or unevaluated resources.

Research Plan - This plan describes the research needs of the refuge to support management goals and objectives. It will describe and prioritize specific research needs, and these will be reflected in accompanying RONS projects. It will be developed utilizing input from refuge and RO staff, and from researchers knowledgeable about the species and habitats that occur on the refuge.

Priority Order for Completing Step-down Plans	Target Completion Date
Habitat Management Plan	Within 3 years of plan approval
Refuge Inventory and Monitoring Plan	Within 3 years of plan approval
Public Use Management Plan	Within 5 years of plan approval
Research Plan	Within 5 years of plan approval
Cultural Resource Management Plan	Within 10 years of plan approval
Note: Target completion dates are contingent on receiving adequate funding and staff support; priority order may change based on staffing and funding shifts.	

Compatibility Determinations and NEPA Compliance

Compatibility determinations are written to determine whether specific uses of the refuge are compatible with the purpose and objectives for which the refuge was established. The refuge manager will usually complete compatibility determinations as part of the CCP or step-down management plan process for individual uses, specific use programs, or groups of related uses described in the plan. When we add lands to the Refuge System, the refuge manager assigned management responsibility for the land to be acquired will identify (prior to acquisition) the existing wildlife-dependent recreational public uses (if any) that are compatible and will determine whether they will be permitted to continue.

Compatibility determinations in existence prior to the effective date of the compatibility policy will remain in effect until and unless modified and will be subject to periodic reevaluation. We will not initiate or permit a new use of a national wildlife refuge or expand, renew, or extend an existing use, unless we have determined that it is compatible with the purpose of the refuge and is not a public safety issue.

We do not require a compatibility determination for refuge management activities as defined by the term “refuge management activity” except for “refuge management economic activities.” Examples of refuge management activities that do not require a compatibility determination include: prescribed burning; water level management; invasive species control; routine scientific monitoring, studies, surveys, and censuses; historic preservation activities; law enforcement activities; and maintenance of existing refuge facilities, structures, and improvements.

NEPA compliance is involved with these determinations. A Recreational Act Funding Analysis was completed to determine that the refuge base funding allocated for recreational use management is adequate to administer and manage the recreational public uses and ensure compatibility.

Certain recreational activities were ongoing on the Bureau of Reclamation lands prior to management by the Service. These public recreational rights and responsibilities were accepted by the Service, and as a result, these activities (wildlife observation, photography, camping, fishing, and powerboat use) were determined to be compatible with the purposes of the refuge when the first compatibility determinations were completed in 1994. Farming was also determined to be compatible at that time.

As a part of this planning effort, the refuge has fully reviewed these determinations and finds these activities to remain compatible with the purpose for which the refuge was established. These compatibility determinations have been updated as shown in Appendix E. In addition, compatibility determinations have been completed for potential hunting, environmental education/interpretation, and proposed grazing on the refuge.

Monitoring and Evaluation of the CCP

The National Wildlife Refuge System Improvement Act requires that the Service monitor fish, wildlife, and plants on refuges in order to establish status and trends of both resident and migratory wildlife. Monitoring is an essential component of this plan, and specific strategies have been integrated into the previously described goals and objectives. All habitat management activities will be monitored to assess whether the desired effect on wildlife and habitat has been achieved. Baseline surveys will be established for species of wildlife for which existing or historical numbers are not well known.

If the plan is to be a useful measure of the achievements of refuge programs and useful to future refuge managers, documentation needs to be a priority to determine if the objectives are achieved within the time frame of this plan. The existing refuge programs, current data bases, and guidelines for monitoring and evaluation of each step-down program plan needs to be considered in the review, evaluation, and amendments of the CCP. Implementation of the CCP will require periodic review and adjustments to amend the plan so it will continue to be effective as the programs progress.

Where possible, the CCP will identify and incorporate monitoring and evaluation activities as objectives or strategies under the general goals for the refuge. Specific guidelines for monitoring and evaluation will vary by program and will need to be developed and referred to in the appropriate step-down plan.

Plan Amendment and Revision

The Maxwell National Wildlife Refuge CCP is a dynamic plan. While it will serve as a guide for overall refuge direction, it will be adjusted to consider updated information, ensuring that refuge activities best serve the established purpose and the mission of the National Wildlife Refuge System. The CCP will be reviewed every five years, and monitored continuously to ensure the developed management actions support the goals and objectives of the refuge.

This CCP will be informally reviewed by refuge staff while preparing annual work plans and updating the Refuge Information Management System (RMIS) database. It may also be reviewed during routine inspections of programmatic evaluations. Results of the reviews may indicate a need to modify the CCP. The monitoring of objectives is an integral part of the plan, and management activities may be modified if desired results are not achieved. If minor changes are required, the level of public involvement and associated NEPA documentation will be determined by the project leader. This CCP will be formally revised at least every 15 years.

LIST OF PREPARERS

Carol Torrez - Biologist/Natural Resource Planner, Division of Planning, Region 2, USFWS

Patty Hoban, Refuge Manager, Maxwell National Wildlife Refuge

Original Draft: Research Management Consultants, Inc. (RMCI):

Contributors:

Thomas P. Baca, Chief, Division of Planning, Region 2, USFWS

Yvette Truitt, Biologist/Natural Resource Planner, Division of Planning, Region 2, USFWS

Jerry French, Refuge Manager (Retired), Maxwell National Wildlife Refuge

Kay Plotner, Office Assistant, Maxwell National Wildlife Refuge

Bill Howe, Non-game Migratory Bird Coordinator, Division of Migratory Birds, Region 2, USFWS

April Fletcher, Regional Invasive Species Coordinator, Division of Resource Management, Region 2, USFWS

Kathy Granillo, Regional Refuge Biologist, Division of Resource Management, Region 2, USFWS

Art Needleman, Visual Information Specialist, Division of Visitor Services, Region 2, USFWS

Juli Niemann, Outdoor Recreation Planner, Division of Visitor Services, Region 2, USFWS

REFERENCES

- Arnberger, L.P. 1982. *Flowers of the Southwest Mountains*, Southwest Parks and Monuments Association.
- Arno, Stephen F. 1999. Undergrowth response, shelterwood cutting unit. In: Smith, Helen Y., Arno, Stephen F., eds. Eighty-eight years of change in a managed ponderosa pine forest. Gen. Tech. Rep. RMRS-GTR-23. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 36-37.
- Bock, Carl E.; Bock, Jane H. 1978. Response of birds, small mammals, and vegetation to burning sacaton grasslands in southeastern Arizona. *Journal of Range Management* 31: 296-300.
- Bomar, C.R., J.A. Lockwood, MA. Pomerinke, and J.D. French. 1993. Multiyear evaluation of the effects of *Nosema locustae* (Microsporidia: Nosematidae) on rangeland grasshopper (Orthoptera: Acrididae) population density and natural biological controls. *Environ. Entomol.* 22(2): 489-497.
- Bragg, T.B. 1995. Climate, soils and fire: The physical environmental of North American grasslands. *In* The Changing Prairie, K. Keeler and A. Joern, editors. Oxford University Press, N.Y.
- _____ and A.A. Steuter. 1996. Prairie ecology-The mixed prairie. *In* Prairie Conservation, F.B. Samson and F.L. Knopf, editors. Island Press, CA.
- Brockman, C.F. 1986. *Trees of North America*. Golden Press. New York.
- Brockway, D.G., R.G. Gatewood, R.B. Paris. 2002. Restoring fire as an ecological process in shortgrass prairie ecosystems: initial effects of prescribed burning during the dormant and growing seasons. *Journal of Environmental Management* 65: 135-152.
- Brooks, Matthew L.; Pyke, David A. 2001. Invasive plants and fire in the deserts of North America. In: Galley, Krista E. M.; Wilson, Tyrone P., eds. Proceedings of the invasive species workshop: The role of fire in the control and spread of invasive species; Fire conference 2000: the first national congress on fire ecology, prevention, and management; 2000 November 27 - December 1; San Diego, CA. Misc. Publ. No. 11. Tallahassee, FL: Tall Timbers Research Station: 1-14.
- Brown, D.E. and C.H. Lowe. 1982. Biotic communities of the southwest. Rocky Mountain Forest and Range Experiment Station, U.S. Forest Service. General Technical Report RM-79.
- Burt, W.H. and R.P. Grossenheider. 1976. *A Field Guide to the Mammals*. Houghten Mifflin Co. Boston.
- Capinera and Sechrist. 1981. *Grasshoppers of Colorado*.
- Chronic, Halka. 1987. *Roadside geology of New Mexico*. Mountain Press Publishing Company, Missoula, MT.
- Clark, Deborah L.; Wilson, Mark V. 1994. Heat-treatment effects on seed bank species of an old-growth Douglas-fir forest. *Northwest Science*. 68(1): 1-5.
- Clark, T.W., *et al.* 1982. Prairie dog colony attributes and associated vertebrate species. *Great Basin Naturalist*, Vol. 42(4) pp. 572-582.
- Collins, S.C., S.M. Glenn, and D.J. Gibson. 1995. Experimental analysis of intermediate disturbance and initial floristic composition: decoupling cause and effect. *Ecology* 76: 486-492.

- Collins, S.C. and L.L. Wallace. 1990. *Fire in the North American Prairies*. University of Oklahoma Press. 175 pp.
- Coppedge, B.R., D.M. Engle, S.D. Fuhlendorf, R.E. Masters, and M.S. Gregory. 2001. Landscape cover type and pattern dynamics in fragmented southern Great Plains grasslands, USA. *Landscape Ecology* 16: 677-690.
- Craig, G. 1986. Peregrine Falcon. *Audubon Wildlife Report 1986*.
- Dechant, J.A., M.L. Sondreal, D.H. Johnson, L.D. Igl, C.M. Goldade, P.A. Rabie, and B.R. Euliss. 1999. Effects of management practices on grassland birds: Ferruginous hawk. Northern Prairie Wildlife Research Center, Jamestown, ND. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. <http://www.npwrc.usgu.gov/resource/literatr/grasbird/ferhawk.htm> (Version 17FEB2000).
- DeGraaf, R.M. and Rappole, J.H. 1995. *Neotropical Migratory Birds, (Natural History, Distribution, and Population Change)* Comstock Publishing Associates, a Division of Cornell University Press, Ithaca and London.
- Dick-Peddie, W. A. 1993. *New Mexico Vegetation, Past, Present, and Future*, University of New Mexico Press, Albuquerque, New Mexico, p. 105.
- Ehrlich, Paul R., D.S. Dobkin and C. Wheye. 1988. *The Birder Handbook: A Field Guide to the Natural History of North American Birds*. Simon and Schuster.
- Elmore, F.H. 1976. *Shrubs and Trees of the Southwest Uplands*. Southwest Parks and Monuments Association.
- Field Guide to the Birds of North America*, National Geographic Society. 1987.
- Finch, Deborah M. 1992. Threatened, Endangered, and Vulnerable Species of Terrestrial Vertebrates in the Rocky Mountain Region. USDA Forest Service General Technical Report RM-215.
- Frey, Jennifer K. and Terry L. Yates. 1996. Mammalian Diversity in New Mexico. *New Mexico Journal of Science*. Vol. 36:4-37.
- Goodrich, Sherel. 1986. Vascular plants of the Desert Experimental Range, Millard County, Utah. Gen. Tech. Rep. INT-209. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 72 pp.
- Hall, R.S., R.L. Glinski, D.H. Ellis, J.M. Ramakka, and D.L. Base. 1988. Ferruginous Hawk. Pp. 111-118 in R.L. Glinski *et al.*, eds. Proceedings of the southwest raptor management symposium and workshop. Natl. Wildl. Fed. Scien. Tech. Ser. No. 11.
- Harlow, D.L. and P.H. Bloom. 1989. Buteos and the Golden Eagle. Pp. 102-110 in B.G. Pendleton, ed. Proceedings of the western raptor management symposium and workshop. Natl. Wildl. Fed. Scien. Tech. Ser. No. 12.
- Hawks Aloft, Inc. 2000. Nesting, productivity, and food habits of Ferruginous hawks as a function of prairie dog towns in central, western and northwestern New Mexico. Unpublished report for the Bureau of Land Management, Socorro and Farmington District Offices and New Mexico Department of Game and Fish.
- Hawley, J. W. 1986. Physiographic provinces II in *New Mexico in Maps*, ed. Jerry L. Williams, p. 26-27.

- Higgins, K.F. 1986. Interpretation and compendium of historical fire accounts in the northern Great Plains. U.S. Fish and Wildl. Serv. Resour. Publ. 161. 39 pp.
- Higgins, Kenneth F.; Kruse, Arnold D.; Piehl, James L. 1989. Prescribed burning guidelines in the Northern Great Plains. Ext. Circ. EC-760. Brookings, SD: South Dakota State University, Cooperative Extension Service, South Dakota Cooperative Fish and Wildlife Research Unit. 36 p.
- Hillman, C.N. and J.C. Sharps. 1978. Return of swift fox to Northern Great Plains. Proceedings South Dakota Academy Science, vol. 57, p. 154-162.
- Hitchcock, A.H. 1971. *Manual of Grasses of the United States*. Volume One. Dover Publications, Inc. New York.
- Howe, William H. 1986. Status of the Yellow-billed Cuckoo (*Coccyzus americanus*) in New Mexico. New Mexico Department of Game and Fish. December 22, 1986.
- Hubbard, J.P. 1978. Revised checklist of the birds of New Mexico. New Mexico Ornithological Society Publication No. 6.
- Jameson, Donald A. 1962. Effects of burning on a galleta-black grama range invaded by juniper. Ecology. 43(4): 760-763.
- Kotilar, N.B., B.W. Baker, A.D. Whicker, and G. Plumb. 1999. A critical review of assumptions about the prairie dog as a keystone species. Environmental Management.
- Lane, J. 1968. *Ammodramus bairdii* (Audubon), Baird's sparrow. U.S. Nat. Mus. Bull. 237:745-765.
- Lee, Wendy Smith. 1986. The National Wildlife Refuge System *in* Audubon Wildlife Report 1986. Pp. 424 - 425. National Audubon Society, 950 Third Avenue, New York, NY 10022.
- Mehlman, D.W. 1995. A Survey of Grassland Bird Species of the Maxwell National Wildlife Refuge. U.S. Fish and Wildlife Service Contract.
- New Mexico Department of Game and Fish. 1988. Handbook of Species Endangered In New Mexico., F-580:1-2.
- New Mexico Department of Game and Fish Endangered Species Program. 1990. Checklist of the Native Birds of New Mexico. Santa Fe, New Mexico 87503. June 30, 1990.
- New Mexico Department of Game and Fish-State Game Commission. 1994. Endangered Species of New Mexico - 1994 Biennial Review and Recommendations. Authority: New Mexico Wildlife Conservation Act (NMSA 17-2-37, 1978).
- Olendorff, R.R. 1993. Status, biology and management of ferruginous hawks: a review. Raptor Research and Technological Assistance Center Special Report. USDI, Bureau of Land Management, Boise, Idaho.
- Omerick, J.M. 1987. Ecoregions of the conterminous United States. Ann. Amer. Geogr. 77(1)118-125.
- Peterson, R.T. 1961. *A Field Guide to Western Birds*. Houghton Mifflin Co. Boston.
- Pfadt. 1994. Field Guide to Western Grasshoppers.
- Red River Authority of Texas. 2000. Webmaster@rra.dst.tx.us

- Rice, Barry Meyers; Randall, John M., compilers. 2001. Weed report: *Cirsium vulgare*--bull thistle. In: Wildland weeds management and research: 1998-99 weed survey. Davis, CA: The Nature Conservancy, Wildland Invasive Species Program. 5 p. On file with: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, Missoula, MT.
- Rickett, H.W. 1966. *Wild Flowers of the United States*. Vol. 4, Part 1. McGraw-Hill Book Co. New York.
- Schmutz, J.K. 1984. Ferruginous and Swainson's hawk abundance and distribution in relation to land use in southeastern Alberta. *Jour. Wildl. Manage.* 48:1180-1187.
- Stebbins, Robert C. 1985. *A Field Guide to Western Reptiles and Amphibians*. Houghton Mifflin Co. Boston.
- Stewart, 1955. O.C. Why were the prairies treeless? *Southwestern Lore.* 20:59-64.
- Stravers, J.A. and Garber, G.L. 1998. Nest site selection, reproductive success and territory reoccupation of ferruginous hawks in three regions in New Mexico. Unpublished report Bureau of Land Management, Socorro and Farmington Field Offices.
- Sauer, C.O. 1950. Grassland climax, fire, and man. *Journal of Range Management.* 3:16-21.
- Savory, Allen. 1988. *Holistic Resource Management*. Island Press, Washington, D.C. 558 pp.
- Sayre, N.F. 2001. *The New Ranch Handbook: A Guide to Restoring Western Rangelands*. The Quivera Coalition. 102 p.
- Umbanhowar, C. E.. 1996. Recent fire history of the northern Great Plains. *American Midland Naturalist* 135: 115-121.
- United States Census Bureau. 2000. <http://www.census.gov/cen2000.html>
- United States Census Bureau. 2000. State and County Quick Facts. <http://quickfacts.census.gov/qfd/states/35/35007.html>
- United States Department of Agriculture Soil Conservation Service and Forest Service. 1982. *Soil survey of Colfax County, New Mexico 1982*.
- United States Fish and Wildlife Service. 1962. Refuge Land Acquisition Biological Reconnaissance Report. Maxwell National Wildlife Refuge, New Mexico.
- United States Fish and Wildlife Service. 1968. Las Vegas and Maxwell National Wildlife Refuges, New Mexico. Management planning document. USFWS, Albuquerque, NM. 28 pp.
- United States Fish and Wildlife Service. 1979. Concept Plan Unique Ecosystems New Mexico. Prepared by New Mexico State University, Dept. of Biology. New Mexico Dept. of Natural Resources, Natural Heritage Program for U.S. Fish and Wildlife Service, Region 2, May 18, 1979.
- United States Fish and Wildlife Service. 1969-1998. Maxwell National Wildlife Refuge Annual Narrative Reports Calendar Years 1969-1998. Maxwell National Wildlife Refuge.
- United States Fish and Wildlife Service. 1995. Endangered and threatened species: bald eagle reclassification, final rule. *Federal Register* 50:35999-36010. July 12, 1995.

- United States Fish and Wildlife Service. 1999. Endangered and threatened wildlife and plants: proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife. Federal Register 64:36454-36464.
- United States Fish and Wildlife Service. 1999. Endangered and threatened wildlife and plants: proposed threatened status for the mountain plover. Federal Register 64:7587-7601.
- United States Fish and Wildlife Service. 2000. Arkansas/Red Rivers Ecosystem Plan, Ecosystem Team, Albuquerque, New Mexico.
- United States Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Final Recovery Plan, Albuquerque, New Mexico.
- United States Fish and Wildlife Service. 20003. Endangered and threatened wildlife and plants: withdrawal of the proposed rule to list the mountain plover as threatened. Federal Register 68:53083-53101.
- United States Geological Survey. 1997. Methods to identify areas susceptible to irrigation-induced selenium contamination in the western United States. Fact Sheet FS-038-97.
- Weiler, Gregory J. 1982. The use of saline water to establish native species on topsoiled mine spoil. In: Aldon, Earl F.; Oaks, Wendall R., eds. Reclamation of mined lands in the Southwest: a symposium; 1982 October 20-22; Albuquerque, NM. Albuquerque, NM: Soil Conservation Society of America--New Mexico Chapter: 174-177.
- Whitson, T.D., L.C. Burrill, S.A. Dewey, D. Cudney, B.E. Nelson, R.D. Lee, R. Parker. 1991. *Weeds of the West*. Western Society of Weed Science. Pioneer of Jackson Hole, Publ.
- Williams, Sartor O. III. Preliminary Listing and Status Assessment of Neotropical Migrant Birds in New Mexico. Revised 22 July 1993. New Mexico Depart. of Game and Fish, Santa Fe, NM 87504.
- Wright, Henry A.; Bailey, Arthur W. 1982. Fire ecology: United States and southern Canada. New York: John Wiley & Sons. 501 pp.
- Young, Richard P. 1986. Fire ecology and management in plant communities of Malheur National Wildlife Refuge. Portland, OR: MS Thesis, Oregon State University. 169 pp..

GLOSSARY

Adaptive Management: Refers to the process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plans. Analysis of results help managers to determine whether current management should continue as is or it should be modified to achieve desired conditions.

Alternative: 1) A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2); 2) Alternatives are different means of accomplishing refuge purposes and goals and contributing to the System mission (Draft Service Manual 602 FW 1.5).

AUM or Animal Unit Month: A measure of the quantity of livestock forage. Equivalent to the forage sufficient to sustain a 1,000 pound animal (or cow/calf pair) for 1 month during a normal season.

Biological Diversity/Biodiversity: The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

Biota: Flora and fauna of the region

Categorical Exclusion: A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).

Compatible Use: A wildlife-dependent recreational use, or any other use on a refuge that will not interfere with or detract from the fulfillment of the mission of the Service or the purpose(s) of the refuge.

Comprehensive Conservation Plan (CCP): A document that describes the desired future conditions of the refuge, and provides long-range guidance and management direction for the refuge manager to accomplish the purposes of the refuge, contribute to the mission of the National Wildlife Refuge System, and meet other relevant mandates.

Ecological Integrity: The relative intactness of biotic and abiotic components and their interrelated structure and function within a given ecosystem.

Ecosystem: A dynamic interrelated complex of plant and animal communities and their associated nonliving environment.

Ecosystem Approach: A strategy or plan to protect and restore the natural function, structure, and species composition of an ecosystem, recognizing that all components are interrelated.

Ecosystem Management: Management of an ecosystem that includes all ecological, social, and economic components which make up the whole of the system.

Endangered Species: Any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the *Federal Register*.

Environmental Assessment (EA): A systematic analysis to determine if proposed actions would result in a significant effect on the quality of the environment.

Endemic Species: Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

Exotic or Invading Species (Noxious Weeds): Plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insects or disease; or nonnative, new or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or has adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.

Fauna: All the vertebrate and invertebrate animal species of a determined area.

Federal Trust Resources: A trust is something managed by one entity for another who hold the ownership. The Service holds in trust many natural resources for the people of the United States of America as a result of Federal Acts and treaties. Examples are species listed under the Endangered Species Act, migratory birds protected by the Migratory Bird Treaty Act and other international treaties, and native plant or wildlife found on the National Wildlife Refuge System.

Federal Trust Species: All species where the Federal government has primary jurisdiction including federally endangered or threatened species, migratory birds, anadromous fish, and certain marine mammals.

Fire Regime: A description of the frequency, severity, and extent of fire that typically occurs in an area or vegetative type.

Goals: Descriptive statements of desired future conditions.

Habitat: Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.

Integrated Pest Management: Methods of managing undesirable species, such as weeds, including: education, prevention, physical or mechanical methods of control, biological control; responsible chemical use; and cultural methods.

Invader Species: Members of the native plant community that become dominant or much more common when a natural regime is disturbed (e.g., native woody species in prairie ecosystems become much more common when fire frequency is decreased by fire suppression programs).

Invasive Species: Non-native species that lack natural controls and tend to aggressively dominate the plant community, often forming extensive mono-cultures; a plant that has been introduced into an environment or environmental conditions in which it did not evolve, and thus in which it has few or no natural enemies to limit its reproduction and spread. Both invasive and invader species generally reduce diversity and health of ecosystems when they become dominant.

Issue: Any unsettled matter that requires a management decision. For example, public uses, habitat protection needs, conflicts or controversies that are the focus of the planning effort.

Keystone Species: A species, the presence or abundance of which can be used to assess the extent to which the resources of an area (i.e., habitats) are being exploited.

Loam: Soil consisting of varying proportions of clay, silt, and sand.

Migration: The seasonal movement of an individual or individuals (i.e. birds) from one area to another and back.

Mission Statement: A succinct statement of a unit's purpose and reason for being.

Monitoring: The process of collecting information to track changes of a selected parameter over time.

National Wildlife Refuge (NWR): A designated area of land or water or an interest in land or water within the Refuge System, including national wildlife refuges, wildlife management areas, waterfowl production areas, and other areas under Service jurisdiction for the protection and conservation of fish and wildlife, and plant resources. A complete listing of all units of the refuge system may be found in the current *Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service*.

National Wildlife Refuge System: All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as national wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife, and plant resources.

Native Species: Species that normally live and thrive in a particular ecosystem.

Neotropical Migratory Bird: A bird species that breeds north of the U.S. - Mexican border and winters primarily south of this border.

No Action Alternative: An alternative under which existing management would be continued.

Non-priority Public Use: Any use other than a compatible wildlife-dependent recreational use.

Objectives: Concise statements of what will be achieved, how much will be achieved, when and where it will be achieved and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies, monitoring refuge accomplishments, and evaluating the success of the strategies. Objectives should be attainable and time specific and should be stated quantitatively to the extent possible. If objectives cannot be stated quantitatively, they may be stated qualitatively.

Opportunities: Potential solutions to issues.

Preferred Alternative: This is the alternative determined (by the decision-maker) to best achieve the refuge purpose, vision, and goals; contributes to the Refuge System mission; addresses the significant issues; and is consistent with the principles of sound fish and wildlife management. This is the Service's selected alternative at the draft CCP stage.

Prescribed Fire: The skillful application of fire to natural fuels under conditions of weather, fuel moisture, soil moisture, etc., that allows confinement of the fire to a predetermined area and produces the intensity of heat and rate of spread to accomplish planned benefits to one or more objectives of habitat management, wildlife management, or hazard reduction.

Priority Public Uses: Compatible wildlife-dependent recreational uses (hunting, fishing wildlife observation and photography, environmental education and interpretation) are the priority general public uses of the system and shall receive priority consideration in refuge planning and management.

Proposed Action: The Service's proposed action for CCPs is to prepare and implement the CCP.

Public Involvement: The process by which interested and affected individuals, organizations, agencies, and governmental entities are offered an opportunity to become informed about, to express their opinions and participate in the planning and decision-making process of Service actions and policies. In this process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

Purpose of the Refuge: The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donating document, or administrative memorandum establishing, authorizing or expanding a refuge, refuge unit or refuge sub-unit.

Scoping: A process for determining the scope of issues to be addressed by a CCP and for identifying the significant issues. Involved in the process are federal, state, and local agencies, private organizations and individuals.

Special Status Species: Plants or animals that have been identified through Federal law, State law, or agency policy, as requiring special protection or monitoring. Examples include federally-listed endangered, threatened, proposed, or candidate species, state listed endangered or threatened species; U.S. Fish and Wildlife species of management concern and species identified by the Partners in Flight program as being of extreme or moderately high conservation concern.

Species: A distinctive kind of plant or animal having distinguishable characteristics and that can interbreed and produce young. A category of biological classification.

Species of Management Interest: Those plant and animal species, while not falling under the definition of special status species, that are of management interest by virtue of being Federal trust species such as migratory birds, important game species, important prey species, or significant keystone species.

Strategy: A general approach or specific action, tool, or technique or combination used to achieve refuge objectives.

Step-Down Management Plan: A plan that provides the details necessary to implement strategies identified in the CCP.

Sound Professional Judgement: A finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of the Refuge Administration Act and other appropriate laws.

Threatened Species -Those plant or animal species likely to become endangered species throughout all or a significant portion of their range within the foreseeable future. A plant or animal identified and defined in accordance with the 1973 Endangered species Act and published in the *Federal Register*.

Trophic: Hierarchical level of the food chain characterized by groups of organisms.

Trust Species: Species for which the U.S. Fish and Wildlife Service has primary responsibility, including most federally-listed threatened and endangered species, anadromous fishes (once they enter inland U.S. waterways), migratory birds, and certain marine mammals.

Vegetation: Plants in general, or the sum of total plant life in a given area.

Vegetation Type or Habitat Type: A category of land based on potential or existing dominant plant species of a particular area.

Vision Statement: A concise statement of the desired future condition of the planning unit, based primarily upon the System mission, specific refuge purposes, and other relevant mandates.

Watershed: The entire land area that collects and drains water into a stream or stream system.

Wetlands: Areas such as lakes, marshes, and streams that are inundated by surface or ground water for a long enough period of time each year to support, under natural conditions, plants and animals adapted to thrive in saturated or seasonally saturated soils.

Wilderness Area (or Designated Wilderness Area): An area designated by the U.S. Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 602 FW 1.5).

Wildfire: A free-burning fire that usually requires a suppression response; all fire other than prescribed fire that occurs on wildlands.

Wildland: Lands characterized by natural vegetation and landscapes where man-made structures and alterations are not evident.

Wildlife: Wild animals and vegetation not domesticated by people.

Wildlife-dependent Recreational Use: A use of a refuge that involves hunting, fishing, wildlife observation and photography, or environmental education and interpretation. The National Wildlife Refuge System Improvement Act of 1997 specifies that these are the six priority general public uses of the Refuge System.

Wildlife Diversity: A measure of the number of wildlife species in an area and their relative abundance.

ABBREVIATIONS AND ACRONYMS

AMR	Appropriate Management Response
ARPA	Archeological Resources Protection Act
AUM	Animal Unit Month
BBS	Breeding Bird Survey
BCR	Bird Conservation Region
BLM	Bureau of Land Management
CCP	Comprehensive Conservation Plan
CFR	Code of Federal Regulations
CRM	Cultural Resource Management
DFMO	District Fire Management Officer
EA	Environmental Assessment
EDAC	Earth Data Analysis Center
ESA	Endangered Species Act
FMO	Fire Management Officer
FMP	Fire Management Plan
GIS	Geographic Information Systems
GPS	Global Positioning System
IPM	Integrated Pest Management
MMS	Maintenance Management System
MOU	Memorandum of Understanding
NMDGF	New Mexico Department of Game and Fish
NMHU	New Mexico Highlands University
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
NWR	National Wildlife Refuge
NGO	Non-governmental Organization
NPS	National Park Service
O&M	Operation & Maintenance
ORP	Outdoor Recreation Planner
PFT	Permanent Full Time
PIF	Partners in Flight
NABCI	North American Bird Conservation Initiative
NAWMP	North American Waterfowl Management Plan
NMESFO	New Mexico Ecological Services Field Office
NMNHP	New Mexico Natural Heritage Program
NMRDAC	New Mexico Randall Davey Audubon Center
NWRS	National Wildlife Refuge System
RNA	Research Natural Area
RMCI	Research Management Consultants, Inc.
RMIS	Refuge Management Information System
RO	Regional Office
RONS	Refuge Operating Needs System
ROS	Refuge Operations Specialist
SCEP	Student Career Experience Program
STAMP	Santa Fe Trail Mule Deer Adaptive Management Project
USBR	United States Bureau of Reclamation
USDI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
YCC	Youth Conservation Corps

APPENDIX A - MAXWELL NWR SPECIES LIST

BIRDS

* Indicates nesting species

(A) Indicates accidental occurrence

(regional occurrence) indicates that the species has been observed within the area but not on the refuge

Loons

Common Loon *Gavia immer*

Grebes

Pied-billed Grebe* *Podilymbus podiceps*
Horned Grebe *Podiceps auritus*
Eared Grebe* *Podiceps nigricollis*
Western Grebe* *Aechmophorus occidentalis*
Clark's Grebe *Aechmophorus clarkii*

Pelicans

American White Pelican *Pelecanus erythrorhynchos*

Cormorants

Double-crested Cormorant *Phalacrocorax auritus*

Bitterns and Herons

American Bittern* *Botaurus lentiginosus*
Great Blue Heron *Ardea herodias*
Great Egret(A) *Ardea alba*
Snowy Egret *Egretta thula*
Little Blue Heron(A) *Egretta caerulea*
Cattle Egret *Bubulcus ibis*
Green Heron *Butorides virescens*
Black-crowned Night Heron* *Nycticorax nycticorax*

Ibises and Spoonbills

White-faced Ibis *Plegadis chihi*

New World Vultures

Turkey Vulture *Cathartes aura*

Ducks, Geese and Swans

Greater White-fronted Goose *Anser albifrons*
Snow Goose *Chen caerulescens*
Ross' Goose *Chen rossii*
Canada Goose* *Branta canadensis*
Tundra Swan *Cygnus columbianus*
Wood Duck *Aix sponsa*
Gadwall* *Anas strepera*
American Wigeon *Anas americana*
Mallard* *Anas platyrhynchos*
Blue-winged Teal* *Anas discors*
Cinnamon Teal* *Anas cyanoptera*
Northern Shoveler* *Anas clypeata*
Northern Pintail *Anas acuta*
Green-winged Teal *Anas crecca*

Canvasback
Redhead
Ring-necked Duck
Lesser Scaup
White-winged Scoter(A)
Long-tailed Duck
Bufflehead
Common Goldeneye
Barrow's Goldeneye(A)
Hooded Merganser
Common Merganser
Red-breasted Merganser
Ruddy Duck*

Aythya valisineria
Aythya americana
Aythya collaris
Aythya affinis
Melanitta fusca
Clangula hyemalis
Bucephala albeola
Bucephala clangula
Bucephala islandica
Lophodytes cucullatus
Mergus merganser
Mergus serrator
Oxyura jamaicensis

Hawks, Kites, and Eagles

Osprey
Bald Eagle
Northern Harrier*
Sharp-shinned Hawk
Cooper's Hawk
Swainson's Hawk*
Red-tailed Hawk*
Ferruginous Hawk
Rough-legged Hawk
Golden Eagle

Pandion haliaetus
Haliaeetus leucocephalus
Circus cyaneus
Accipiter striatus
Accipiter cooperii
Buteo swainsoni
Buteo jamaicensis
Buteo regalis
Buteo lagopus
Aquila chrysaetos

Falcons

American Kestrel*
Merlin
Peregrine Falcon
Prairie Falcon

Falco sparverius
Falco columbarius
Falco peregrinus
Falco mexicanus

Pheasants, Quail, and Turkey

Ring-necked Pheasant*
Wild Turkey*
Scaled Quail(A)

Phasianus colchicus
Meleagris gallopavo
Callipepla squamata

Rails, Gallinules, and Coots

Sora*
Virginia Rail*
American Coot*

Porzana carolina
Rallus limicola
Fulica americana

Cranes

Sandhill Crane

Grus canadensis

Plovers

Black-bellied Plover
American Golden Plover (A)
Snowy Plover
Semipalmated Plover
Killdeer*
Mountain Plover (A)

Pluvialis squatarola
Pluvialis dominica
Charadrius alexandrinus
Charadrius semipalmatus
Charadrius vociferus
Charadrius montanus

Stilts and Avocets

Black-necked Stilt
American Avocet*

Himantopus mexicanus
Recurvirostra americana

Sandpipers and Phalaropes

Greater Yellowlegs	<i>Tringa melanoleucus</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper*	<i>Actitis macularia</i>
Long-billed Curlew*	<i>Numenius americanus</i>
Marbled Godwit*	<i>Limosa fedoa</i>
Sanderling	<i>Calidris alba</i>
Semipalmated Sandpiper (A)	<i>Calidris pusillus</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Common Snipe*	<i>Gallinago gallinago</i>
Wilson's Phalarope*	<i>Phalaropus tricolor</i>
Red-necked Phalarope (A)	<i>Phalaropus lobatus</i>

Gulls and Terns

Franklin's Gull	<i>Larus pipixcan</i>
Bonaparte's Gull (A)	<i>Larus philadelphia</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Herring Gull	<i>Larus argentatus</i>
California Gull	<i>Larus californicus</i>
Forster's Tern	<i>Sterna forsteri</i>
Black Tern	<i>Chlidonias niger</i>

Pigeons and Doves

Band-tailed Pigeon (A)	<i>Columba fasciata</i>
Mourning Dove*	<i>Zenaida macroura</i>

Cuckoos and Roadrunners

Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Greater Roadrunner (A)	<i>Geococcyx californianus</i>

Owls

Barn Owl*	<i>Tyto alba</i>
Western Screech Owl	<i>Otus kennicottii</i>
Great Horned Owl*	<i>Bubo virginianus</i>
Burrowing Owl*	<i>Athene cunicularia</i>
Long-eared Owl	<i>Asio otus</i>
Short-eared Owl	<i>Asio flammeus</i>
Northern Saw-whet Owl (A)	<i>Aegolius acadicus</i>

Goatsuckers

Common Nighthawk*	<i>Chordeiles minor</i>
-------------------	-------------------------

Hummingbirds

Black-chinned Hummingbird	<i>Archilochus alexandri</i>
Calliope Hummingbird (A)	<i>Stellula calliope</i>
Broad-tailed Hummingbird*	<i>Selasphorus platycercus</i>
Rufous Hummingbird	<i>Selasphorus rufus</i>

Kingfishers

Belted Kingfisher

*Ceryle alcyon***Woodpeckers**

Lewis' Woodpecker

Melanerpes lewis

Red-headed Woodpecker

Melanerpes erythrocephalus

Williamson's Sapsucker (A)

Sphyrapicus thyroideus

Red-naped Sapsucker

Sphyrapicus nuchalis

Downy Woodpecker

Picoides pubescens

Hairy Woodpecker

Picoides villosus

Northern Flicker (red-shafted)

Colaptes auratus

" " (Yellow-shafted) (A)

Tyrant Flycatchers

Olive-sided Flycatcher

Contopus cooperi

Western Wood-Pewee

Contopus sordidulus

Hammond's Flycatcher (A)

Empidonax hammondi

Willow Flycatcher

Empidonax spp.

Eastern Phoebe

Sayornis phoebe

Say's Phoebe*

Sayornis saya

Ash-throated Flycatcher (A)

Myiarchus cinerascens

Great Crested Flycatcher (A)

Myiarchus crinitus

Cassin's Kingbird*

Tyrannus vociferans

Western Kingbird*

Tyrannus verticalis

Eastern Kingbird*

Tyrannus tyrannus

Scissor-tailed Flycatcher (A)

*Tyrannus forficatus***Shrikes**

Loggerhead Shrike*

*Lanius ludovicianus***Vireos**

Warbling Vireo *

*Vireo gilvus***Jays and Crows**

Blue Jay (A)

Cyanocitta cristata

Black-billed Magpie*

Pica hudsonia

American Crow

Corvus brachyrhynchos

Common Raven*

*Corvus corax***Larks**

Horned Lark*

*Eremophila alpestris***Swallows**

Tree Swallow (A)

Tachycineta bicolor

Violet-green Swallow

Tachycineta thalassina

Northern Rough-winged Swallow*

Stelgidopteryx serripennis

Bank Swallow*

Riparia riparia

Cliff Swallow

Petrochelidon pyrrhonota

Barn Swallow*

*Hirundo rustica***Titmice**

Black-capped Chickadee

Pocile atricapilla

Mountain Chickadee

*Pocile gambeli***Nuthatches**

White-breasted Nuthatch

Sitta carolinensis

Creepers

Brown Creeper

*Certhia americana***Wrens**

Rock Wren (regional surveys)

Salpinctes obsoletus

House Wren

Troglodytes aedon

Marsh Wren

Cistothorus palustris

Sedge Wren (A)

*Cistothorus platensis***Kinglets and Gnatcatchers**

Golden-crowned Kinglet

*Regulus satrapa***Thrushes**

Western Bluebird

Sialia mexicana

Mountain Bluebird*

Sialia currucoides

Swainson's Thrush (A)

Catharus ustulata

Hermit Thrush

Catharus guttata

American Robin*

*Turdus migratorius***Mockingbirds and Thrashers**

Northern Mockingbird*

Mimus polyglottos

Sage Thrasher

Oreoscoptes montanus

Brown Thrasher

*Toxostoma rufum***Starlings**

European Starling*

*Sturnus vulgaris***Pipits**

American Pipit

*Anthus rubescens***Waxwings**

Cedar Waxwing

*Bombycilla cedrorum***Wood Warblers**

Tennessee Warbler

Vermivora peregrina

Orange-crowned Warbler

Vermivora celata

Yellow Warbler*

Dendroica petechia

Yellow-rumped Warbler

Dendroica coronata

Northern Waterthrush*

Seiurus noveboracensis

MacGillivray's Warbler

Oporornis tolmiei

Common Yellowthroat*

Geothlypis trichas

Wilson's Warbler

*Wilsonia pusilla***Tanagers**

Western Tanager

*Piranga ludoviciana***Sparrows**

Green-tailed Towhee

Pipilo chlorurus

Eastern (rufous sided) Towhee

Pipilo erythrophthalmus

Canyon Towhee

Pipilo fuscus

Cassin's Sparrow*

Aimophila cassinii

American Tree Sparrow

Spizella arborea

Chipping Sparrow

Spizella passerina

Clay-colored Sparrow

Spizella pallida

Brewer's Sparrow

Spizella breweri

Field Sparrow
Vesper Sparrow
Lark Sparrow*
Black-throated sparrow (A)
Lark Bunting*
Savannah Sparrow
Baird's Sparrow
Grasshopper Sparrow
Song Sparrow
Lincoln sparrow (A)
White-throated Sparrow
White-crowned Sparrow
Dark-eyed Junco
Chestnut-collared Longspur

Spizella pusilla
Pooecetes gramineus
Chondestes grammacus
Amphispiza bilineata
Calamospiza melanocorys
Passerculus sandwichensis
Ammodramus bairdii
Ammodramus savannarum
Melospiza melodia
Melospiza lincolnii
Zonotrichia albicollis
Zonotrichia leucophrys
Junco hyemalis
Calcarius ornatus

Cardinals and Grosbeaks

Black-headed Grosbeak
Blue Grosbeak*
Lazuli Bunting*
Indigo Bunting (A)
Dickcissel

Pheucticus melanocephalus
Passerina caerulea
Passerina amoena
Passerina cyanea
Spiza americana

Blackbirds and Orioles

Red-winged Blackbird*
Eastern Meadowlark (A)
Western Meadowlark*
Yellow-headed Blackbird*
Brewer's Blackbird
Common Grackle
Brown-headed Cowbird*
Orchard Oriole (A)
Bullock's Oriole*

Agelaius phoeniceus
Sturnella magna
Sturnella neglecta
Xanthocephalus xanthocephalus
Euphagus cyanocephalus
Quiscalus quiscula
Molothrus ater
Icterus spurius
Icterus bullockii

Finches

Purple Finch (A)
House Finch*
Pine Siskin
Lesser Goldfinch*
American Goldfinch
Evening Grosbeak

Carpodacus purpureus
Carpodacus mexicanus
Carduelis pinus
Carduelis psaltria
Carduelis tristis
Coccothraustes vespertinus

Old World Sparrows

House Sparrow*

Passer domesticus

MAMMALS

Pronghorn	<i>Antilocapra americana</i>
Muskrat	<i>Ondatra zibethica</i>
Beaver	<i>Castor canadensis</i>
Black bear	<i>Ursus americanus</i>
Coyote	<i>Canis latrans microdon</i>
Swift Fox	<i>Vulpes velox</i>
Elk	<i>Cervus elaphus</i>
Mule Deer	<i>Odocoileus hemionus hemionus</i>
White-tailed Deer	<i>Odocoileus virginianus</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
White-footed Mouse	<i>Peromyscus leucopus</i>
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Plains Harvest Mouse	<i>Reithrodontomys montanus</i>
White-throated Wood Rat	<i>Neotoma albigula</i>
House Mouse	<i>Mus musculus</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
Ord's Kangaroo Rat	<i>Dipodomys ordii durranti</i>
Bushy tailed woodrat	<i>Neotoma</i>
Norway rat	<i>Rattus norvegicus</i>
Black rat	<i>Rattus rattus</i>
Porcupine	<i>Erethizon dorsatum</i>
Mountain Lion	<i>Felis concolor</i>
Bobcat	<i>Lynx rufus texensis</i>
Northern Pocket Gopher	<i>Geomys</i>
Yellow-faced Pocket Gopher	<i>Pappogeomys castanops</i>
Botta's Pocket Gopher	<i>Thomomys bottae</i>
Desert Cottontail	<i>Sylvilagus auduboni</i>
Black-tailed Jackrabbit	<i>Lepus californicus</i>
Badger	<i>Taxidea taxus berlandieri</i>
Striped Skunk	<i>Mephitis mephitis varians</i>
Long-tailed Weasel	<i>Mustela frenata frenata</i>
Raccoon	<i>Procyon lotor fuscipes</i>
Thirteen-lined Ground Squirrel	<i>Citellus tridecemlineatus</i>
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>
Eastern Mole	<i>Scalopus aquaticus</i>
Mexican Free-tailed Bat	<i>Tadarida mexicana</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Little brown bat	<i>Myotis lucifugus</i>
Cave bat	<i>Myotis velifer</i>
Western pipistrelle	<i>Pipistrellus hesperus</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>

AMPHIBIANS AND REPTILES

Salamanders

Tiger Salamander

Ambystoma tigrinum

Toads

Great Plains Toad

Bufo cognatus

Red-Spotted Toad

Bufo punctatus

Plains Spadefoot

Scaphiopus bombifrons

Western Spadefoot

Scaphiopus hammondi

Woodhouse toad

Bufo woodhousei

Frogs

Bullfrog

Rana catesbeiana

Northern Leopard Frog

Rana pipiens

Lizards

Lesser Earless Lizard

Holbrookia maculata

Fence Lizard

Scleoporus undulatus

Short-horned Lizard

Phrynosoma douglassi

Checkered whiptail lizard

Cnemidophorus grahamii

Great Plains Skink

Eumeces obsoletus

Snakes

Corn Snake

Elaphe guttata

Western Hognose Snake

Heterodon nasicus

Bullsnake

Pituophis melanoleucas

Western Coachwhip

Masticophis flagellum

Plains Garter Snake

Thamnophis radix

Western Terrestrial Garter Snake

Thamnophis elegans

Western Diamondback Rattlesnake

Crotalus atrox

Prairie Rattlesnake

Crotalus viridis

FISH

Black Bullhead

Ameiurus melas

White Sucker

Catostomus commersoni

Largemouth Bass

Micropterus salmoides

Channel Catfish

Ictalurus punctatus

Yellow Perch

Perca flavescens

Rainbow Trout

Oncorhynchus mykiss

Green Sunfish

Lepomis cyanellus

Plains Killifish

Fundulus zebrinus

Fathead Minnow

Pimephales promelae

Walleye

Stizostedion vitreum

Northern Pike

Esox lucius

No Insect List Available

PLANTS

Common Name	Family	Scientific Name
Trees		
Alligator juniper	Cupressaceae	<i>Juniperus deppeana</i>
One-seed juniper	Cupressaceae	<i>Juniperus monosperma</i>
New Mexico locust	Fabaceae	<i>Robinia neomexicana</i>
Goodding's Willow	Salicaceae	<i>Salix gooddingii</i>
Cottonwood	Salicaceae	<i>Populus deltoides</i>
Siberian elm	Ulmaceae	<i>Ulmus pumila</i>
Russian olive	Elaeagnaceae	<i>Elaeagnus angustifolia</i>
White poplar	Salicaceae	<i>Populus alba</i>
Shrubs		
Soaptree yucca	Agavaceae	<i>Yucca glauca</i>
Skunkbush sumac	Anacardiaceae	<i>Rhus trilobata</i>
Rubber rabbitbrush	Asteraceae	<i>Chrysothamnus nauseosus</i>
Snakeweed	Asteraceae	<i>Gutierrezia microcephala</i>
Prickly pear	Cactaceae	<i>Opuntia phaeacantha</i>
Fourwing saltbush	Chenopodiaceae	<i>Atriplex canescens</i>
Winterfat	Chenopodiaceae	<i>Krascheninnikovia lanata</i>
Coyote willow	Salicaceae	<i>Salix exigua</i>
Pale wolfberry	Solanaceae	<i>Lycium pallidum</i>
Saltcedar	Tamaricaceae	<i>Tamarix ramosissima</i>
Graminoids		
Three-square sedge	Cyperaceae	<i>Schoenoplectus americanus</i>
American bulrush	Cyperaceae	<i>Scirpus acutus</i>
Spike rush	Cyperaceae	<i>Eleocharis</i> spp.
Baltic rush	Juncaceae	<i>Juncus balticus</i>
Tall wheatgrass	Poaceae	<i>Agropyron elongatum</i>
Big bluestem	Poaceae	<i>Andropogon gerardii</i>
Poverty three-awn	Poaceae	<i>Aristida divaricata</i>
Blue grama	Poaceae	<i>Bouteloua gracilis</i>
Hairy grama	Poaceae	<i>Bouteloua hirsute</i>
Smooth brome	Poaceae	<i>Bromus inermis</i>
Downy brome (cheatgrass)	Poaceae	<i>Bromus tectorum</i>
Buffalograss	Poaceae	<i>Buchloe dactyloides</i>
Field sandbur	Poaceae	<i>Cenchrus pauciflorus</i>
Inland saltgrass	Poaceae	<i>Distichlis spicata</i>
Barnyard grass	Poaceae	<i>Echinochloa crus-galli</i>
Canada wild rye	Poaceae	<i>Elymus Canadensis</i>
Squirreltail	Poaceae	<i>Elymus elymoides</i>
Plains lovegrass	Poaceae	<i>Eragrostis intermedia</i>
Galleta	Poaceae	<i>Hilaria jamesii</i>
Foxtail barley	Poaceae	<i>Hordeum jubatum</i>
Wolftail	Poaceae	<i>Lycurus phleoides</i> Kunth
Alkali muhly	Poaceae	<i>Muhlenbergia asperifolia</i>
Mat muhly	Poaceae	<i>Muhlenbergia richardsonis</i>
Ring muhly	Poaceae	<i>Muhlenbergia torreyi</i>
Witchgrass	Poaceae	<i>Panicum capillare</i>
Vine mesquite	Poaceae	<i>Panicum obtusum</i>
Western wheatgrass	Poaceae	<i>Pascopyrum smithii</i>
Common reed	Poaceae	<i>Phragmites communis</i>
Little bluestem	Poaceae	<i>Schizachyrium scoparium</i>
Plains bristlegrass	Poaceae	<i>Setaria leucopila</i>
Alkali sacaton	Poaceae	<i>Sporobolus airoides</i>

Sand dropseed	Poaceae	<i>Sporobolus cryptandrus</i>
Spike dropseed	Poaceae	<i>Sporobolus contractus</i>
Sleepygrass	Poaceae	<i>Stipa robusta</i>
Forbs		
Pigweed	Amaranthaceae	<i>Amaranthus hybridus</i>
Broadleaf milkweed	Asclepiadaceae	<i>Asclepias latifolia</i>
Showy milkweed	Asclepiadaceae	<i>Asclepias speciosa</i>
Western whorled milkweed	Asclepiadaceae	<i>Asclepias subverticillata</i>
Russian knapweed	Asteraceae	<i>Acroptilon repens</i>
Common ragweed	Asteraceae	<i>Ambrosia artemisiifolia</i>
Giant ragweed	Asteraceae	<i>Ambrosia trifida</i>
Wild tarragon	Asteraceae	<i>Artemisia dracunculus</i>
Fringed sage	Asteraceae	<i>Artemisia frigida</i>
Heath aster	Asteraceae	<i>Aster falcatus</i> var. <i>commutatus</i>
Musk thistle	Asteraceae	<i>Carduus nutans</i>
Chicory	Asteraceae	<i>Cichorium intybus</i>
Canada thistle	Asteraceae	<i>Cirsium arvense</i>
Wavyleaf thistle	Asteraceae	<i>Cirsium undulatum</i>
Bull thistle	Asteraceae	<i>Cirsium vulgare</i>
Canadian horseweed	Asteraceae	<i>Conyza canadensis</i>
Fetid marigold	Asteraceae	<i>Dyssodia papposa</i>
Trailing fleabane	Asteraceae	<i>Erigeron flagellaris</i>
Blanket flower	Asteraceae	<i>Gaillardia aristata</i>
Curlycup gumweed	Asteraceae	<i>Grindelia squarrosa</i>
Common sunflower	Asteraceae	<i>Helianthus annuus</i>
Poverty sumpweed	Asteraceae	<i>Iva axillaris</i> Pursh
Prickly lettuce	Asteraceae	<i>Lactuca serriola</i>
Dotted gayfeather	Asteraceae	<i>Liatris punctata</i>
Purple aster	Asteraceae	<i>Machaeranthera canescens</i>
Plains bahia	Asteraceae	<i>Picradeniopsis oppositifolia</i>
Short ray coneflower	Asteraceae	<i>Ratibida tagetes</i>
Broom groundsel	Asteraceae	<i>Senecio multicapitatus</i>
Common cocklebur	Asteraceae	<i>Xanthium strumarium</i>
Hoary cress	Brassicaceae	<i>Cardaria draba</i>
Pitseed goosefoot	Chenopodiaceae	<i>Chenopodium berlandieri</i>
Common Kochia	Chenopodiaceae	<i>Kochia scoparia</i>
Russian thistle	Chenopodiaceae	<i>Salsola kali</i>
Field bindweed	Convolvulaceae	<i>Convolvulus arvensis</i>
Locoweed	Fabaceae	<i>Astragalus</i> spp.
Black medic	Fabaceae	<i>Medicago lupulina</i>
Alfalfa	Fabaceae	<i>Medicago sativa</i>
White sweetclover	Fabaceae	<i>Melilotus albus</i>
Yellow sweetclover	Fabaceae	<i>Melilotus officinalis</i>
Bugleweed	Lamiaceae	<i>Lycopus americanus</i>
Venice mallow	Malvaceae	<i>Hibiscus trionum</i>
Common mallow	Malvaceae	<i>Malva neglecta</i>
Globemallow	Malvaceae	<i>Sphaeralcea</i> spp.
Velvety gaura	Onagraceae	<i>Gaura parviflora</i>
Plantain	Plantaginaceae	<i>Plantago</i> spp.
Buckwheat spp.	Polygonaceae	<i>Eriogonum</i> spp.
Knotweed	Polygonaceae	<i>Polygonum</i> spp.
Mexican dock	Polygonaceae	<i>Rumex salicifolius</i> var. <i>mexicanus</i>
Common purslane	Portulacaceae	<i>Portulaca oleracea</i>
Clematis	Ranunculaceae	<i>Clematis</i> spp.
Common mullein	Scrophulariaceae	<i>Verbascum thapsus</i>
Common cattail	Typhaceae	<i>Typha latifolia</i>

APPENDIX B - THREATENED AND ENDANGERED SPECIES LIST

FEDERAL ENDANGERED, THREATENED, PROPOSED, AND CANDIDATE SPECIES AND SPECIES OF CONCERN in Colfax County (updated 10/04)

ENDANGERED

- Black-footed ferret (*Mustela nigripes*)**
- Southwestern willow flycatcher (*Empidonax traillii extimus*)

THREATENED

- Bald eagle (*Haliaeetus leucocephalus*)
- Mexican spotted owl (*Strix occidentalis lucida*)
- Piping plover (*Charadrius melodus*)
- Arkansas River shiner (*Notropis girardi*)***

SPECIES OF CONCERN

- Black-tailed prairie dog (*Cynomys ludovicianus*)
- New Mexican meadow jumping mouse (*Zapus hudsonius luteus*)
- Swift fox (*Vulpes velox*)
- American peregrine falcon (*Falco peregrinus anatum*)
- Arctic peregrine falcon (*Falco peregrinus tundrius*)
- Baird's sparrow (*Ammodramus bairdii*)
- Black tern (*Chlidonias niger*)
- Mountain plover (*Charadrius montanus*)
- Northern goshawk (*Accipiter gentilis*)
- Western burrowing owl (*Athene cunicularia hypugea*)
- Yellow-billed cuckoo (*Coccyzus americanus*)
- Rio Grande cutthroat trout (*Oncorhynchus clarki virginalis*)
- Dwarf milkweed (*Asclepias uncialis* var. *uncialis*)

** Survey should be conducted if project involves impacts to prairie dog towns or complexes of 200-acres or more for the Gunnison's prairie dog (*Cynomys gunnisoni*) and/or 80-acres or more for any subspecies of Black-tailed prairie dog (*Cynomys ludovicianus*). A complex consists of two or more neighboring prairie dog towns within 4.3 miles (7 kilometers) of each other.

*** Extirpated in this county

APPENDIX C - SECTION 7 CONSULTATION

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Carol Torrez
Telephone Number: 505-248-6821
Date: January 25, 2006

- I. **Region:** Southwest (Region 2)
- II. **Service Activity (Program):** Refuges
- III. **Pertinent Species and Habitat:**

The New Mexico Ecological Services Field Office provided a species list for Colfax County, New Mexico (shown in Appendix C of the CCP). All species on that county list were considered; those that do not occur or have potential habitat on the refuge or surrounding area are not discussed. The following species have been documented and/or have potential habitat on the refuge.

- A. Listed species and/or their critical habitat within the action area:

Bald eagle (*Haliaeetus leucocephalus*) - Threatened
Southwestern willow flycatcher (*Empidonax traillii extimus*) - Endangered

- B. Proposed species and/or proposed critical habitat within the action area: None

- C. Candidate species within the action area: None

- D. Include species/habitat occurrence on a map:

For a map of the refuge please see Map# 1 in the draft CCP.

The bald eagle is the only listed species that regularly occurs on the refuge between October and March. The southwestern willow flycatcher is a migrant or accidental visitor that could possibly use the refuge during spring and fall migration.

- IV. **Geographic area/station name and background of action:**

Station: Maxwell National Wildlife Refuge in northeastern New Mexico.

Action: Issuance and implementation of the CCP for the Maxwell NWR.

- V. **Location (attach map):** See Map 3 in CCP

- A. Ecoregion Number and Name: Region 2, Ecosystem #15, Arkansas/Red River Ecosystem

- B. County and State: Colfax County, New Mexico
- C. Section, township, and range (or latitude and longitude): Latitude 36.34
Longitude 104.35
- D. Distance (miles) and direction to nearest town: The refuge is located approximately 4 miles northwest of the town of Maxwell, 25 miles south of Raton, and 12 miles north of Springer, New Mexico.
- E. Species/habitat occurrence:

Bald Eagle - Bald eagles are common visitors during fall and winter with as many as 60 bald eagles wintering on the refuge between October through March. Typically, the population peaks in January. Bald eagles are opportunistic and will forage on fish, prairie dogs, sick or dead waterfowl, cranes, and carrion. Bald eagles alternately feed and rest at the refuge and Stubblefield Lake approximately 4 miles from the refuge. The availability of roost sites, open water, abundant waterfowl, fish, and prairie dog towns on or near the refuge make it an attractive haven for wintering bald eagles. They sometimes roost in refuge woodlots, but there are no known nest sites on the refuge. Nesting attempts occurred on the refuge during the early and mid-1980s, but no subsequent attempts have been recorded. There are, however, known nesting pairs in Colfax County, allowing for potential sightings during the summer months.

Southwestern willow flycatcher - Maxwell NWR is located just outside the eastern edge of this subspecies' range (Rio Grande Recovery Unit), as described in the August 2002 Final Recovery Plan. No flycatcher designated critical habitat is located within or near the refuge. This subspecies (*E. t. extimus*) has not been recorded on the refuge; however, refuge habitats may be important to flycatchers during migration. Other willow flycatcher subspecies (such as *E. t. adastus* that breeds to the north of New Mexico) have been observed and/or heard in the refuge woodlots (Mehlman 1995). The refuge has a few stands of dense willow (such as at the inflow to lake 14) that may be potential flycatcher habitat. This area, as well as the woodlots, provide valuable habitat for migrating individuals of many species.

VI. Description of proposed action:

The proposed action is to implement the Maxwell National Wildlife Refuge CCP over the next 15 years. The CCP formalizes management goals, long-range objectives, and strategies for achieving refuge purposes. Specific goals associated with the CCP are: 1) to restore, enhance, and protect the natural diversity on the refuge by implementing appropriate management programs for wildlife and habitat resources including strategies that benefit native flora and fauna, migratory birds, threatened and endangered species, and other species of concern; 2) to increase public understanding and awareness of the purpose and mission of the refuge and the culture and history of the area, through effective wildlife education/interpretation and continue to provide opportunities for safe, quality compatible wildlife-dependent public use and recreation; 3) to maintain or strengthen existing interagency and jurisdictional relationships and establish new partnerships within the community to cooperate on mutually beneficial programs for improving wildlife and habitat resources on the refuge and the

Arkansas/Red Rivers Ecosystem; and 4) to develop program support sufficient to provide the necessary staffing, facilities, equipment, and funding to accomplish the purpose and goals of the refuge and fulfill the mission of the Refuge System.

The overall management of the refuge will focus on restoring, maintaining and enhancing a healthy grassland ecosystem. A variety of habitat management techniques (including prescribed burning, experimental grazing, mechanical mowing, and chemical control of invasive species) may be used to encourage ecological integrity, promote native grassland restoration, and provide/enhance habitat for grassland birds and other resident wildlife. The farming program will continue as a priority, along with invasive species control. Management efforts will be directed toward waterfowl, sandhill cranes, other migratory birds, threatened and endangered species, species of concern, and resident wildlife that currently and historically occurred on the refuge.

For detailed descriptions of proposed actions (objectives and strategies), please refer to the draft CCP. As a working document, modifications to the objectives and strategies are anticipated. If modifications result in changes to the effects analysis, or include actions that are not considered in this document, the refuge will reinitiate consultation.

VII. Determination of Effects:

- A. Explanation of effects of the action on species and critical habitat in items III A, B, and C:

Bald eagle--Eagle use on the refuge is generally associated with migrating flocks of waterfowl from November through March. Most of this use is associated with Lakes 12, 13 & 14 and the prairie dog towns. Eagles use the refuge primarily for feeding, resting, and roosting.

No long-term detrimental effects to bald eagles are anticipated from preserving and enhancing the refuge's grassland habitats. The other refuge activities that could impact bald eagles include invasive species control (primarily elm control), farming, and public use. At this time, elm control will consist of removing all isolated trees and all doghair stands that are not part of larger woodlots. Dead trees will be preserved as *perches*. Elm control, may occur during the fall and winter months, but these activities will be implemented in a manner that minimizes disturbance (see measure in section B). *good* ✓ This activity will not negatively impact the availability of potential roosts or perches. No long-term detrimental effects are anticipated as a result of invasive species control activities on the refuge. Farming and construction activities described in the CCP are implemented during the summer months when bald eagles are not present. If any project is scheduled when eagles are present, the protective measures listed below (in section B) will be taken. The farming program indirectly benefits bald eagles (as well as other migratory and resident species) by increasing and concentrating the prey base (i.e. waterfowl) during migration periods. Public use along refuge trails or roads, where eagles may be observed foraging or perching is not considered significant. These activities would not adversely affect bald eagles because they are opportunistic feeders and other areas such as the lakes are better suited for feeding. Impacts as a result of disturbance are expected to be insignificant or discountable.

Southwestern willow flycatcher – This species may occur on the refuge during its

migration. According to this species' August 2002 Final Recovery Plan, migrant southwestern willow flycatchers may occur in non-riparian habitats and/or be found in riparian habitats unsuitable for breeding. Such migration stopover areas, even though not used for breeding, may be critically important resources affecting productivity and survival. Refuge management activities as proposed in the CCP are intended to improve the ecological integrity of habitats on the refuge. The refuge will continue to provide valuable habitat for many migratory bird species. Actions proposed in the CCP are not expected to directly impact flycatchers that may migrate through the refuge.

B. Explanation of actions to be implemented to reduce adverse effects:

If any project extends into the winter months, work will not begin until ½ hour after sunrise, after eagles have left their roost(s). If an eagle is sighted in the construction area before work begins, construction activities will not commence until the bird leaves of its own volition. If construction work is already in progress and an eagle enters the construction area, work may proceed.

VIII. Effect determination and response requested:

[* = optional]
[^s = beneficial effect]

A. Listed species/designated critical habitat:

<u>Determination</u>	<u>Response Requested</u>
No effect on species/critical habitat (species: <u>southwestern willow flycatcher</u>)	<u> X </u> *Concurrence
May affect, is not likely to adversely affect species /critical habitat (species: <u>bald eagle</u>)	<u> X </u> Concurrence
May affect, is likely to adversely affect species /critical habitat (species: <u>none</u>)	<u> </u> Formal Consultation

B. Proposed species/proposed critical habitat

No effect
(species: none) Concurrence

C. Candidate species

No effect
(Species: none) Concurrence

Is NOT likely to jeopardize candidate species
(Species: none) Concurrence

Prepared by: Carol A. Jurey 1-26-06
Biologist/Natural Resource Planning Date

Reviewed/Approved by: Patricia A. Hoban 1-26-06
Refuge Manager Date
Maxwell NWR

IX. Reviewing ESFO Evaluations:

- A. Concurrence: Nonconcurrence:
- B. Formal consultation required: _____
- C. Conference required _____
- D. Informal conference required _____
- E. Remarks (attach additional pages as needed):

Brian Hansen 2/16/06
Signature Date
[Title/office of reviewing official]
Acting Field Supervisor, New Mexico Ecological Services Field Office
Cons # 22420-2006 I-0042

APPENDIX D - REFUGE OPERATING NEEDS SYSTEM (RONS) PROJECTS

Refuge Operating Needs

22581 Maxwell NWR	00002	00002
<p>SR: 8 One-Time: \$65</p> <p>DR: 73 RecurBase: \$53</p> <p>RR: 17 Tot. 1st Yr: \$118</p> <p>FTEs 1.0</p> <p><input checked="" type="checkbox"/> Approved Minimum Staff <input type="checkbox"/> Approved Critical Mission <input type="checkbox"/> Approved New/Expand Station <input type="checkbox"/> Approved Facility Enhance</p> <p>22581 Maxwell NWR</p>	<p>00002 Monitor fish and wildlife populations and plant communities (Biologist)</p> <p>Provide a GS-9 Wildlife Biologist to inventory and monitor fish and wildlife populations and plant communities to improve refuge management. This individual will design, develop, and implement surveys and monitoring efforts, and enhance management capabilities by gathering science-based data to guide ecosystem management efforts.</p>	<p>00002 Monitor fish and wildlife populations and plant communities (Biologist)</p> <p>Provide a GS-9 Wildlife Biologist to inventory and monitor fish and wildlife populations and plant communities to improve refuge management. This individual will design, develop, and implement surveys and monitoring efforts, and enhance management capabilities by gathering science-based data to guide ecosystem management efforts.</p>
22581 Maxwell NWR	00007	00007
<p>SR: 2 One-Time: \$124</p> <p>DR: 27 RecurBase: \$21</p> <p>RR: 52 Tot. 1st Yr: \$145</p> <p>FTEs</p> <p><input type="checkbox"/> Approved Minimum Staff <input checked="" type="checkbox"/> Approved Critical Mission <input type="checkbox"/> Approved New/Expand Station <input type="checkbox"/> Approved Facility Enhance</p> <p>22581 Maxwell NWR</p>	<p>00007 Maximize Crop Production to Meet Objectives for Migratory Birds</p> <p>Purchase equipment, infrastructure and supplies necessary to maximize refuge crop productivity to benefit migratory birds. Necessary items include a 100 hp 4x4 tractor, an ATV with spray tank, 1/2 mile of new irrigation line, herbicide to treat exotic thistle and bindweed infestations in crop lands, and seed for crops. This project is linked to project 00003, the critical staffing need (WG-9 Equipment Operator) associated with the same habitat management goal for crop lands. Maximizing crop land production will increase forage for migrating and wintering waterfowl and cranes, increasing the health of the birds, and will further reduce the likelihood for crop depredation on neighboring private farmland.</p>	<p>00007 Maximize Crop Production to Meet Objectives for Migratory Birds</p> <p>Purchase equipment, infrastructure and supplies necessary to maximize refuge crop productivity to benefit migratory birds. Necessary items include a 100 hp 4x4 tractor, an ATV with spray tank, 1/2 mile of new irrigation line, herbicide to treat exotic thistle and bindweed infestations in crop lands, and seed for crops. This project is linked to project 00003, the critical staffing need (WG-9 Equipment Operator) associated with the same habitat management goal for crop lands. Maximizing crop land production will increase forage for migrating and wintering waterfowl and cranes, increasing the health of the birds, and will further reduce the likelihood for crop depredation on neighboring private farmland.</p>
22581 Maxwell NWR	00003	00003
<p>SR: 1 One-Time: \$65</p> <p>DR: 41 RecurBase: \$60</p> <p>RR: 105 Tot. 1st Yr: \$125</p> <p>FTEs 1.0</p> <p><input checked="" type="checkbox"/> Approved Minimum Staff <input type="checkbox"/> Approved Critical Mission <input type="checkbox"/> Approved New/Expand Station <input type="checkbox"/> Approved Facility Enhance</p> <p>22581 Maxwell NWR</p>	<p>00003 Provide Staff to Maximize Farm Productivity for Migratory Birds</p> <p>Provide a WG-9 Equipment Operator to maximize refuge crop land management capabilities and facility and infrastructure maintenance. The incumbent will provide cross-program benefits in a variety of refuge programs, including farming, rangeland enhancement and restoration efforts, invasive exotic weed control and facility and road maintenance.</p>	<p>00003 Provide Staff to Maximize Farm Productivity for Migratory Birds</p> <p>Provide a WG-9 Equipment Operator to maximize refuge crop land management capabilities and facility and infrastructure maintenance. The incumbent will provide cross-program benefits in a variety of refuge programs, including farming, rangeland enhancement and restoration efforts, invasive exotic weed control and facility and road maintenance.</p>

Refuge Operating Needs

22581 Maxwell NWR	SR: 3	One-Time: \$65	00001 Restore Short Grass Prairie
	DR: 57	RecurBase: \$16	Restore a total of 2,420 acres of short grass prairie habitat at Maxwell National Wildlife Refuge. Former grazing and cropping practices have altered and degraded refuge prairie habitat. These areas are now infested with invasive exotic Russian knapweed and Canada and musk thistle. This project will restore a functioning prairie ecosystem through the application of integrated pest management practices to control invasive plants and reseeding 160 acres per year of degraded grassland and abandoned crop lands with native prairie seed mixtures. A prescribed fire program will reintroduce fire to the ecosystem, and a limited grazing program utilizing native bison will mimic the natural effects of hoof action and grazing on the prairie.
	RR: 120	Tot. 1st Yr: \$81	
	FTEs		
	<input type="checkbox"/> Approved Minimum Staff <input checked="" type="checkbox"/> Approved Critical Mission <input type="checkbox"/> Approved New/Expand Station <input type="checkbox"/> Approved Facility Enhance		
22581 Maxwell NWR	SR: 9	One-Time: \$33	97001 Improve Farm Management for Migratory Birds
	DR: 74	RecurBase: \$29	Increase the refuge capability to effectively farm refuge crop lands with the addition of 1/2 FTE for seasonal WG-9 Equipment Operator. Incumbent would perform duties critical to the success of the refuge farming program, including tractor operation, irrigation, and control of invasive exotic weeds during the farming season from March through August.
	RR: 169	Tot. 1st Yr: \$62	
	FTEs 0.5		
	<input checked="" type="checkbox"/> Approved Minimum Staff <input type="checkbox"/> Approved Critical Mission <input type="checkbox"/> Approved New/Expand Station <input type="checkbox"/> Approved Facility Enhance		
22581 Maxwell NWR	SR: 6	One-Time: \$59	00006 Restore short grass prairie
	DR: 211	RecurBase: \$10	This project for supplies and materials is essential to implement habitat management effort to ultimately restore 2,420 acres of altered short grass prairie. Former grazing and cropping practices have altered and degraded the prairie which is now infested with exotic Russian knapweed and Canada and musk thistle which are spreading rapidly and seriously degrading native grassland habitat. This project will help restore the natural functioning prairie ecosystem through management practices to control invasive plants, reseeding (160 acres per year) with native prairie seed mixture, developing and implementing management programs to sustain the prairie ecosystem (prescribed fire program; using native ungulates (bison) to mimic the natural effects of hoof action and grazing on the prairie; and/or use of new and innovative restoration methods, etc.
	RR: 150	Tot. 1st Yr: \$69	
	FTEs		
	<input type="checkbox"/> Approved Minimum Staff <input type="checkbox"/> Approved Critical Mission <input type="checkbox"/> Approved New/Expand Station <input type="checkbox"/> Approved Facility Enhance		

APPENDIX E - COMPATIBILITY DETERMINATIONS

Compatibility Determination

Use: Environmental Education and Interpretation

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use:

Maxwell NWR provides environmental information to the public in the form of brochures, printed literature, and presentations of fish and wildlife resources to local schools and community groups upon request. In addition, refuge signs also provide visitors with educational and regulatory information regarding permitted activities on the refuge. Refuge plans include adding three kiosks with interpretive panels at the refuge headquarters, Lake 13, and Lake 14. Currently, the refuge offers a .5 mile walking trail from Lake 14. The refuge also plans to add a one mile loop trail from the visitor center to Lake 12 with an observation deck and interpretive panels.

In the past, the refuge has been used as an outdoor classroom for environmental studies by science classes at the local school. Future plans include increased involvement by area schools to assist the refuge with the collection of biological/scientific information on the refuge as well as offering a wider variety of environmental education programs to various age groups.

The refuge is currently working with the education department at Audubon New Mexico (ANM) in Santa Fe to offer environmental education programs to local schools. The program "Birds for a Purpose" focuses on refuge habitat, species of concern, and conservation issues through the teaching of bird anatomy, adaptations, behavior, and identification. The refuge's various habitats (shortgrass prairie, woodlots, farm fields, wetlands, and playa lakes) serve as the outdoor classroom. Longevity of this program is dependent on available grant funding. Future proposals include the creation of several computerized PowerPoint presentations for distribution to local teachers for education purposes.

Availability of Resources:

Funding and staff are not currently available to implement the interpretation and environmental education program as described in the CCP. To add kiosks, interpretive panels, additional trails, and an

observation deck as outlined above, additional funding and staff time in the form of an outdoor recreation planner is required. Although the refuge is partnering with Audubon New Mexico, additional funding is needed to continue environmental education programs on an annual basis. To expand these programs to additional age groups and offer a wider variety of topics, another staff position in the form of an outdoor recreational planner is required.

Anticipated Impacts of the Use

Short and long-term impacts are expected from the building of the kiosks, interpretive panels, additional trails, and an observation deck in the form of increased disturbance and trampling. Short-term impacts include noise generated from power tools and other equipment used in building the kiosks, interpretive panels, and observation deck. All work will be scheduled to minimize impacts to wildlife during the breeding season and other sensitive times. In addition to the proposed construction, increased environmental education on the refuge is expected to result in short-term minimal disturbance to wildlife, which is not expected to impact breeding, foraging, and roosting behavior of resident and migratory species.

Long-term impacts anticipated from these activities include loss of habitat and increased use by the public. This increased visitor traffic will likely occur in late spring through early fall. Public use on the refuge is limited during winter months, when large numbers of wintering migratory waterfowl utilize the refuge. The creation of additional trails, kiosks, and observation platforms will result in the permanent loss of habitat (2 acres or less). Although this may displace some wildlife, there is adequate habitat adjacent to the disturbed area to accommodate these displaced individuals. The observation deck for Lake 12 will be placed in an area to minimize disturbance to birds and other wildlife. Effective education and law enforcement programs should minimize this disturbance factor. Biological monitoring, including weekly bird counts, will document any changes in wildlife behavior in response to the proposed changes. There are no anticipated long-term impacts associated with increased environmental education programs on the refuge.

Public Review and Comment:

During the Scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below):

- Use is Not Compatible
 Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Public access to many of the key observation areas may be closed during extremely wet periods for road protection and visitor safety. Seasonal closures relative to sensitive wildlife populations may also apply. Refuge specific regulations and information will be available through visitor contacts, the visitor center, brochures and kiosks. Visitors would be restricted to their vehicles except at designated pullouts and observation areas.

Justification:

According to the National Wildlife Refuge system Improvement Act of 1997 environmental education and interpretation are high priority public use activities that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support and appreciation for national wildlife refuges. The educational possibilities provided by these opportunities would far outweigh anticipated short-term impacts associated with these uses.

Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Ray Meins, Acting 4/27/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2021

Compatibility Determination

Use: Wildlife Observation and Photography

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use: Wildlife observation activities such as bird watching, hiking, and nature photography are common public uses at the refuge. The seasonal variety of bird species, many of which are unique to shortgrass prairie, can draw several hundred visitors to the refuge each year. Public use is confined to designated areas (see Map #11 in CCP). Vehicle access is restricted to refuge and county roads. Foot traffic is confined to one walking trail, the south and west shores of Lake 13, and the east shore of Lake 14. Bicycle and horseback riding are allowed on all public roads; however, these activities have been minimal in the past. Overnight stays in support of wildlife observation/photography are permitted in a primitive campground along the west shore of Lake 13. A viewing room at the headquarters also offers excellent photo opportunities at feeding stations and Lake 12.

Availability of Resources:

There is adequate funding to ensure compatibility and to administer these uses at their current level; however, additional fiscal resources would be needed as outlined in the comprehensive conservation plan to improve access, develop wildlife access points, and provide directional/interpretive signs. Other costs associated with the implementation of the wildlife observation and photography program include equipment and fuel for maintenance of refuge roads and trails. The refuge has also submitted RONS/MMS project proposals to improve refuge roads to support all weather access.

Anticipated Impacts of the Use:

Based on current visitation levels, very little impact on wildlife, plants, and habitat from these activities is anticipated. Potential impacts from visitors engaged in wildlife observation, photography, and associated uses include: damage to vegetation, littering, increased road/trail maintenance, trespass, and disturbance to wildlife. Past impacts have been minimal because the number of visitors actually engaging in wildlife observation and photography has been fewer than 1000 individuals per year. The refuge is planning to construct an observation deck, with a photo blind, to provide visitors an

opportunity to view and photograph wildlife with minimal disturbance. It will be fenced, thus limiting observers to a designated area only. Future boardwalks, photo blinds, wildlife drives, and observation platforms will be designed and installed in a manner that will minimize wildlife disturbance. Because visitor access is controlled and numbers are limited, these activities do not create long-term impacts and do not conflict with the primary purposes of Maxwell NWR.

Public Review and Comment:

During the Scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below):

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Public access for wildlife viewing and photography will be allowed in designated areas only. An increase in public education and refuge patrols would minimize illegal or undesirable activity. Wildlife observation and photography would be monitored to document any negative impacts. Public access to many of the key observation and photography areas may be closed during extremely wet periods for road protection and visitor safety. Seasonal closures relative to sensitive wildlife populations may also apply. Refuge specific regulations and information will be available through visitor contacts, the visitor center, brochures and kiosks. Visitors are restricted to their vehicles except at designated pullouts and observation areas.

Justification:

According to the National Wildlife Refuge system Improvement Act of 1997 wildlife observation and photography are high priority public use activities that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support and appreciation for national wildlife refuges. The educational possibilities provided by these opportunities would far outweigh anticipated short-term impacts associated with these uses.

Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Roxy Melius, Acting 4/27/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2021

Compatibility Determination

Use: Sport Fishing

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use: Sport fishing (day/night) and boating (motorized and non-motorized) are permitted on the refuge (Lakes 13,14) from March 1 through October 31, concurrent with New Mexico Department of Game and Fish (NMDGF) regulations. Through a 1971 agreement with the NMDGF, the Service is responsible for the wildlife and public use activities on Lakes 13 and 14 while the NMDGF is responsible for the fisheries program, including periodic stocking of waters with game fish and issuance of regulations. Boating speeds are limited to trolling speed only. Permanent boat ramps are not practical due to constantly fluctuating water levels. The quality and availability of fishing opportunities are dependent on lake levels, ice accumulation, and stocking frequency.

Availability of Resources: Existing funding and staffing are adequate to maintain the refuge recreational fishing program. Personnel of the NMDGF provide assistance on a regular basis in routine patrol and enforcement of state regulations.

Anticipated Impacts of the Use: Short-term disturbance, both direct and indirect, of wildlife occurs as a result of fishing and boating. These activities are prohibited from November 1 through February 28 to minimize disturbance on wintering populations of waterfowl and eagles. Short-term impacts of recreational fishing on waterfowl, shorebirds, and eagles include noise, harassment, and displacement. Negative impacts of wave action on breeding and nesting birds result from boating. Disturbance of wildlife is increased in drought years when lake levels recede or dry up, forcing the birds to concentrate in smaller areas. Night fishing may disturb roosting birds as well as other resident wildlife from associated noise, litter, and illegal campfires; however, current use is minimal. Competition for prey base may impact fish-eating birds in drier years during receding lake levels and subsequent fish die off.

Public Review and Comment:

During the Scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special

mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below):

- Use is Not Compatible
- Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Fishing is permitted from March 1- October 31. The west and south shores of Lake 13 are open for fishing; the east and north shores are closed. Only the east shore along the dam is open to fishing on Lake 14. Lake 12 is closed to all fishing and is managed as a sanctuary. All fishing is done in accordance with NMDGF rules and regulations.

All boats must meet state licensing requirements and have adequate septage disposal.

Lake 14 is closed seasonally from November 1 – March 1 during peak waterfowl concentrations in order to provide an undisturbed feeding/roosting area.

Justification:

Prior to establishment of the Refuge, the NMDGF managed the fishery program at Lakes 13 and 14 based on an agreement between the Bureau of Reclamation and the State since 1952. The Service inherited the State managed fishing program when the Refuge was created. (See section 3.4.2, Water Management in the CCP). In 1971, an MOU was signed by the NMDGF and the Service regarding maintenance of the fisheries program on the Refuge and establishment of new regulations on fishing seasons dates and water oriented recreational activities. According to the agreement, the Service is primarily responsible for the protection of wildlife and public use on Lakes 13 and 14. The NMDGF is responsible for the fisheries program in cooperation with the Service and is responsible for issuing regulations concerning the fisheries program. This agreement resulted in the established fishing season and boating restrictions listed in the stipulations section above. Fishing is the primary recreational use at the refuge and accounts for over 50% of all public use on the refuge annually. According to the National Wildlife Refuge System Improvement Act of 1997, fishing is a priority public use activity that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support for national wildlife refuges.

Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Royce Wilkins, Acting 4/27/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2021

Compatibility Determination

Use: Camping

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use: Camping (car and tent) is permitted on the refuge along the west shore of Lake 13 from March 1 through October 31, concurrent with the New Mexico Department of Game and Fish (NMDGF) fishing season. Fishermen comprise 50% or more of all campers, followed by birdwatchers and wildlife photographers. June, July and August are the peak visitor use months at the refuge. Camping is primitive in nature, i.e. there are no improved facilities (established pads, electrical hookups or septic systems). The designated area is mowed and bear-proof trash receptacles are provided. Pit-toilets are available at the entrance road to Lake 13. Refuge regulations specify restrictions for open campfires, length of stay, vegetation removal, and littering.

Availability of Resources: Existing funding and staffing are adequate to maintain the refuge camping program at its current use. The main costs of camping to the refuge are maintenance activities associated with litter clean-up. Personnel of the NMDGF provide assistance on a regular basis in routine patrol and enforcement of state regulations. New Mexico State police also routinely enforce DWI violations.

Anticipated Impacts of the Use: Short-term disturbance, both direct and indirect, of wildlife occur as a result of camping and associated fishing or bird watching activities. To minimize disturbance on wintering populations of waterfowl and bald eagles, camping is prohibited from November 1 through February 28. Short-term impacts include damage to shoreline vegetation, littering, increased maintenance activities, potential conflicts with other visitors, and disturbance (noise, harassment, and temporary displacement) to wildlife. No long-term impacts to wildlife or habitats are anticipated.

Public Review and Comment:

During the Scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Camping is allowed only in designated areas. Length of stay is limited to 3 days. The manager may temporarily close or restrict use to benefit wildlife and/or habitats. Littering and strict adherence to no open campfires is strictly enforced.

Justification:

Camping is not a priority wildlife-dependent recreational use as identified in the National Wildlife Refuge System Improvement Act of 1997. It is, however, an activity in support of other priority uses (fishing, wildlife observation and photography). Camping on the refuge will have limited negative impacts on natural resources when conducted under the above stipulations. Administration of this use will require minimal administrative time, and potentially manageable amounts of time in the form of litter cleanup and public contacts. Camping, therefore, at its current use will not negatively interfere with the purpose of the Refuge or the mission of the Refuge system.

Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Royce Williams, Acting 4/27/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2016

Compatibility Determination

Use: Farming

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use:

Cooperative farming is done on approximately 158 acres of the refuge to provide forage and green browse for wintering and resident migratory birds. Cooperative farming is accomplished by private landowners in years of adequate irrigation shares. All farming is outlined under the terms and conditions of an annual Cooperative Farming Agreement, specifying crop types and amounts to be left for wildlife use. The planting, growing and harvesting season is from May 1 to mid-September.

Crops are farmed on a share basis, the cooperators receiving two thirds of the crop, while the refuge receives one-third (left in the field). A 6 year rotation cycle is followed: 6 years of alfalfa, followed by one year of corn and four years of small grain crops (barley, millet, wheat, or oats). The remaining year is used to reseed alfalfa using barley or oats as a cover crop. With adequate precipitation, the cooperative farmed fields will produce approximately 80 acres of alfalfa, 25 acres of oats, 10 acres of corn, 25 acres of barley and 18 acres of wheat.

Small grain crops may be allowed to mature into grain or plowed under as green manure. Through rotation and double cropping practices, there is no need to apply commercial fertilizers or soil amendments.

Availability of Resources:

There is adequate base funding and staff to ensure compatibility and to administer and manage the use of the cooperative farming program at its current level. Approximately 80 hours of staff time is used to administer this use. This includes meeting annually with cooperators to set up agreements, checking field progress and compliance, determining acres to farm, assisting with mowing and irrigating, and completing annual water and pesticide use reports.

Anticipated Impacts of the Use:

Cooperative farming will result in short-term disturbances and long-term benefits to both resident and migratory wildlife using the Refuge. Short-term impacts will include disturbance and displacement typical of any heavy equipment operation. Cropping activities in idle or fallow croplands will also result in short-term loss of habitat for any species using the area for nesting, feeding, or perching. Positive long-term benefits result in providing food/habitat for wintering migratory waterfowl (meeting the purposes for which Maxwell NWR was established) and minimizing crop depredation on neighboring farms. In addition, the farming program provides habitat diversity and supplemental food to a variety of other migratory birds and resident wildlife.

Public Review and Comment:

During the Scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below):

- Use is Not Compatible
- Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

All farming will be accomplished under the guidance of the Cropland Management Plan, in which biologically based crop rotations and integrated pest management practices are outlined. The terms of the Agreement shall ensure that all current Service restrictions and guidelines are followed. Only historically cropped lands will be farmed, specifically lands within the Maxwell NWR boundary located in Sections 14 and 15. Only alfalfa, winter wheat, oats, corn, barley and any other crops beneficial to native waterfowl will be planted. Water necessary to irrigate crops will be deducted from total available refuge shares, subject to change with annual precipitation. All operations are timed to avoid conflicts with migratory birds at peak concentrations or undue stress.

Justification:

Cooperative farming will provide the fastest, most cost effective way to establish crops given the current staff. Cooperative farming on the refuge is consistent with local practices and is accomplished on land suitable for such management. Refuge croplands supplement natural food sources on the Refuge and provide undisturbed areas where wintering waterfowl can forage. The refuge farming program minimizes crop depredation on area lands, thus preventing economic loss to private landowners. Mule deer and other resident wildlife indirectly benefit from refuge farming practices. Additionally, wildlife viewing opportunities are enhanced through concentrating birds.

Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Raye Willis, Acting 4/21/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2016

Compatibility Determination

Use: Grazing

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use:

Historically, habitat on the refuge was short-grass prairie, but conversion of native prairie for farming and ranching created changes in the landscape that are still evident today. At the time of acquisition, all grasslands on the refuge were moderately to severely overgrazed. In an effort to restore/rehabilitate the grasslands, grazing was discontinued in 1972, after extended use permits to former landowners expired. Continued over-rest, however, has left some grasslands in a deteriorated state, with an accumulation of dead, decadent litter that prevents the plants from cycling enough energy to remain vital.

Initially, grazing will be done on an experimental basis, during the dormant season to remove dead, decadent litter and promote increased forage production. A high intensity, short duration, rest rotation grazing system will be used to manage 2,200 acres of native short grass prairie (Alkali sacaton, Buffalo grass, blue grama, and Galleta) on the refuge. Temporary electric fences will be used to manage/control grazing impacts and water will most likely have to be hauled. No more than 30% of refuge grasslands will be grazed in any given year, allowing for sufficient vegetative cover for nesting grassland species.

The opportunity to graze the refuge will be determined by a bid process. The successful bidder must comply with stipulations specified in a special use permit. Pastures to be grazed, number of animal units, timing and season of use will be determined in accordance with refuge wildlife and habitat objectives. Responses of vegetation will be monitored and stocking rates will be evaluated annually. Current stocking rates will vary depending on seasonal conditions. Livestock will be deferred as necessary to allow for drought conditions and/or for recovery of pastures post-burn. Permittees will have to be flexible enough to remove livestock on short notice if a problem is identified.

Availability of Resources:

Currently, sufficient resources (funding and personnel) are available to implement a grazing program on the refuge. Detailed stipulations in the permit will guide the successful bidder in the type of operation required on the refuge.

Anticipated Impacts of the Use:

The effects of livestock grazing will depend on timing, intensity, and frequency. Erosion, trailing, trampling and overgrazing are potential impacts associated with grazing if not properly managed.

The proposed action, however, will minimize these potential impacts by carefully controlling the duration and intensity of grazing within each unit. The proposed grazing system (high intensity, short duration, rest rotation) will necessitate frequent boundary changes. Temporary electric fences and water sources will be used to control the movement, distribution and concentration of livestock. Proper location will result in less deterioration of forage resources near the water supply and increased utilization of forage throughout the pasture.

Grazing will result in short-term impacts to those species that prefer dense overgrown vegetation; however, these impacts are expected to be minimal since no more than 30% of refuge grasslands will be grazed in any given year. This will ensure that sufficient vegetative cover remains for nesting species.

The impacts of overgrazing and/or over-rest, on neotropical migrants and passerines in particular, have not been well studied; however, initial studies seem to indicate a need by passerines for a variety of habitats, tall residual cover for nesting, and shorter grasslands for foraging. Over-rest may cause accumulations of litter that effectively prevent recruitment of new seedlings into the community, and make foraging by passerines virtually impossible.

Properly managed grazing can help maintain and encourage native grasses and forbs, open up areas for wildlife use, and reduce potential fire danger. Associated hoof action from grazing will help aerate the soils and reseed native plants, preventing plant stagnation and promoting plant succession. Grazing, when properly managed for the habitat and soil type, can provide a variety of habitats suitable for a broad range of species. Certain species such as grasshopper sparrows depend upon grassland types/condition not available on commercially grazed lands.

Long-term impacts are expected to be positive since grazing (along with fire) will be used as tool to improve plant vigor, stimulate nutrient cycling through the ecosystem, increase water absorption and distribution, and maintain or increase species diversity. Strict stipulations and monitoring will ensure all impacts associated with grazing are beneficial for grassland health. Monitoring will also ensure that grazing is being properly and effectively utilized as a management tool.

Public Review and Comment:

During the scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below): Grazing

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Coordinate grazing guidelines with the Natural Resources Conservation Service (NRCS) to insure proper rotation and livestock intensity.
- Conduct an annual evaluation of grazing activity to monitor results.
- Designate specific areas and times where grazing is allowed, allowing for contingency plans to remove livestock in years of drought or other unforeseen emergencies.
- Exclude sensitive areas from any grazing and/or provide buffers around refuge facilities, roads, public use areas, waterfowl use areas (lakes, other wetlands, and farm fields which are used for roosting and feeding), and other sensitive areas (i.e. prairie dog habitat).
- Specify detailed stipulations in the permit to ensure consistency with current management objectives.

Justification:

Refuge grasslands have not been actively managed with fire or grazing in over 30 years and are currently in a deteriorated state due to an accumulation of dead, decadent plant material. The short grass prairie developed under a regime of grazing by large ungulates; therefore, grazing is a natural component of the ecology of this area. Grazing, along with prescribed fire and mechanical means, will be used as a tool to encourage ecological integrity, promote native prairie restoration, and provide/enhance habitat for grassland birds and other resident wildlife. The proposed use (grazing) contributes to the achievement of refuge purposes and the National Wildlife Refuge System Mission by maintaining the biological integrity of the habitat.

Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Royce Wilkins, Acting 4/27/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2016

Compatibility Determination

Use: Hunting

Refuge Name: Maxwell NWR

Establishing and Acquisition Authority(ies):

Acquired with funds under provisions of the Migratory Bird Conservation Act, August 24, 1965, (16 USC 715-715r).

Refuge Purpose(s):

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” [16 USC 715d]

“...provide habitat mainly for migrating and wintering waterfowl, plus some nesting areas for both ducks and geese”. USFWS Refuge Land Acquisition Biological Reconnaissance Report, 1962.

National Wildlife Refuge System Mission:

“The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.” (National Wildlife Refuge System Administration Act of 1966, as amended [16 USC 668dd-668ee]).

Description of Use:

Currently, there is no hunting on the refuge. Interest in hunting mule deer and waterfowl was expressed by one individual during the CCP scoping process. The purpose of this compatibility determination is to assess if potential hunting opportunities of mule deer and/or waterfowl are appropriate/compatible uses of the refuge. In completing this assessment, available habitat, current recreational uses, and associated short and long term impacts were considered.

The NMDGF allows a variety of hunting opportunities (big/small game and waterfowl hunting) on private and State lands in Colfax County. Public waterfowl hunting is available within 5 miles of the refuge at Stubblefield Reservoir (900 acres) and Laguna Madre (300 acres). The Maxwell NWR consists of 3,699 acres - 440 acres of farmland, 900 acres of leased land (lakes), and 2,200 acres of grassland. Lakes 12, 13, and 14 are owned and managed by the Vermejo Conservancy District. The Service's control of public access and recreational uses on Lakes 12 and 14 are accomplished through lease agreements with the Vermejo Conservancy District.

Twenty-five species of waterfowl regularly use the refuge. The most abundant species include Canada geese, American wigeon, gadwall, shoveler, ruddy duck, redhead, and lesser scaup. Snow geese typically number 500 or fewer annually. Waterfowl use is limited to the refuge's lakes, wetlands, and farm fields. These habitats include 628 acres of surface water, 50 acres of other wetlands, and 440 acres of farmlands (see attached map). The above listed surface water acreage presumes that the lakes are full. Lake 12 (225 acres) and Lake 14 (88 acres) periodically dry up in drought years leaving only Lake 13 (315 acres) for roosting. Lake 13 receives the majority of public use and is open year round to visitors. Fishing is allowed from March 1-October 31. Lake 14 is closed seasonally to all visitors from November 1-February 28 during peak waterfowl concentrations in order to provide an undisturbed feeding/roosting area. Lake 12 is the shallowest of all 3 reservoirs and periodically dries up in late summer; consequently, it is closed to fishing and is managed as a sanctuary.

The nearest public land available for deer hunting is national forest land approximately 35 miles west of the refuge. The refuge's mule deer herd is typically small (less than 50) and year-round use of the refuge has not been documented as it varies from year to year depending on habitat conditions and hunting pressure. On the refuge, deer occupy refuge woodlots consisting of a mixture of Siberian elm, Plains cottonwood, and white poplar. Historically these trees were planted along roadsides and old homesteads and comprise less than 2 percent of the total habitat. During hunting season deer use increases with increased hunting pressure on adjacent private lands. Use during other times of the year depends on available food and water on and off the refuge.

The proximity of the refuge to numerous public roads requires that any future hunting opportunities be managed accordingly. For example, a special hunt program designed specifically for youth or mobility impaired would be more appropriate given the circumstances. It is not safe to discharge high powered weapons (rifles, pistols, shotguns using slug ammunition) on the refuge due to the proximity of homes, the refuge headquarters, and the extensive network of public roads, which are adjacent to the wooded areas where the deer inhabit. It is unknown whether a special hunt (using compound bow or muzzle loader) could be implemented safely and within compliance with State regulations (i.e., prohibiting shooting from or in close proximity to maintained roads). At this time, the Service does not have enough information to describe a specific hunting proposal. If a proposal is prepared in the future, it would be coordinated with NMDGF.

Further investigation, in cooperation with the NMDGF, is necessary to determine if populations and habitats on the refuge could support hunting, while accomplishing the purpose of the refuge and maintaining public safety.

Availability of Resources:

Currently, sufficient resources (funding and personnel) are not available to implement a hunting program on the refuge. With additional staff and/or partnerships proposed in the CCP, a hunt program could be more effectively administered. Costs could be offset through the collection of fees. Additional law enforcement support (from internal and external cooperators) would be necessary to ensure compliance with State and Federal regulations and public safety.

Anticipated Impacts of the Use:

Potential impacts associated with hunting include direct mortality, short-term changes in game species distribution and abundance, and disturbance (to target and non-target species). Public safety is also a concern at Maxwell NWR given the small size of the refuge and extensive public road network. The refuge is either bisected or surrounded by over 11 miles of public roads.

The refuge encompasses 3,699 acres. Of this, less than 1,200 acres (which includes the refuge lakes, wetlands, and farm fields – see attached map) provide suitable waterfowl habitat. Hunting waterfowl on the refuge could potentially increase their propensity to disperse and deter these species from using limited roosting and feeding areas. Hunting (obviously dependent on intensity and duration) can influence distribution and feeding patterns of waterfowl. The potential exists for short-term to long-term displacement or complete avoidance of hunted areas if other suitable habitat is not available. Due to the small size of the refuge and the fragmented nature of suitable habitat, no other areas are available where the birds can safely disperse. All lands surrounding the refuge are in private ownership and land management practices do not provide crops necessary to sustain wintering waterfowl. Ranching is the primary management practice in the surrounding area. Given the primary purpose of the refuge is to provide food and habitat for wintering migratory waterfowl, the limited suitable habitat, and the density of roads on the refuge, we find that waterfowl hunting is currently not a compatible public use.

The potential impacts of waterfowl hunting on national wildlife refuges are commonly mitigated through the presence of alternate foraging and roosting sites (sanctuaries) within or adjacent to refuge lands. At Maxwell NWR, however, these impacts are not easily mitigated for the following reasons:

1. Lack of alternate suitable habitat on-refuge.

The refuge encompasses 3,699 acres. Of this, 1,400 acres (lakes, wetlands, and farm fields – see attached map) provide suitable waterfowl habitat. The remainder of the area consists of shortgrass prairie and woodlots. See Chapter 3 of CCP for more details on habitat types available on the refuge.

2. Lack of suitable habitat off-refuge.

Maxwell NWR is the only public land base within Colfax County that is managed specifically for waterfowl. Although, there are 3 other irrigation lakes in the area, all are open to the public for hunting and fishing. Alternate foraging sites are limited to private agricultural lands or pastures, which are not specifically managed for waterfowl and where waterfowl use often results in depredation of crops. Outside of Maxwell NWR, the nearest available sanctuary (protected habitat) is 80 miles away at the Las Vegas NWR.

The small amount of suitable habitat available for waterfowl and the fragmented nature of the existing habitat make it impractical to designate specific hunting areas. Allowing hunting on any of the refuge's wetlands would significantly reduce sanctuary habitat for waterfowl in the area. In addition, hunting on refuge farm fields would deter birds from feeding on the refuge and displace them onto adjacent private lands. This in turn could increase crop depredation, creating a problem that establishment of the refuge was intended to alleviate.

Currently there is a lack of information on deer abundance and population trends on the refuge. This information would need to be gathered before any decision regarding hunting on-refuge could be made using the principles of sound wildlife management.

If deer hunting is managed well, potential impacts on non-target species and their habitat are expected to be insignificant. Given that Maxwell NWR is a small island of habitat in a highly disturbed landscape, any activities beyond minimal hunting could have undesirable effects on non-target wildlife populations on the refuge.

The attached map shows the proximity of woodlots (deer habitat) to public roads and refuge farm fields. Woodlots comprise a small, fragmented portion of the refuge - mostly adjacent to county roads and/or farm fields. Pertinent state laws in the NMDGF hunting proclamation that would be considered prior to implementing a deer hunt at Maxwell would include:

IT IS ILLEGAL TO:

1. Shoot at, wound, take, attempt to take, or kill any protected species or artificial wildlife on, from or across any graded and maintained public road, or to shoot at game from within the fenced right-of-way of any paved road or highway or from within 40 feet of the pavement or maintained surface if no right-of-way fence exists.
2. Discharge a firearm within 150 yards of an inhabited dwelling or other building, except abandoned or vacated buildings, without permission of its owner or lessee.
3. Take or attempt to take game mammals or game birds over ground baited with any material....
(*i.e., refuge farm fields, particularly our corn fields*).

Public Review and Comment:

During the scoping phase of the preparation of the CCP, verbal and written comments were solicited from members of the general public on all aspects of current refuge management through special mailings, local newspapers and radio announcements. The Compatibility Determinations are also being made available for public review and comment through the distribution of the draft CCP and EA.

Determination (check one below): Waterfowl Hunting

Use is Not Compatible

Use is Compatible With Following Stipulations

Determination (check one below): Deer Hunting

Use is Not Compatible

Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- In cooperation with NMDGF, investigate whether the existing refuge deer population could sustain hunting. Gather the data necessary to plan, develop, and establish limited/appropriate hunting opportunities on the refuge.
- Regulate hunting with day or weekly use permits, mandatory check-in/check-out, or periodic visits by cooperating outside enforcement entities (USFWS special agents, NMDGF game wardens, county sheriff deputies, etc).
- Designate specific areas and times where hunting is allowed.
- Exclude sensitive areas from any hunting and/or provide buffers around refuge facilities, roads, public use areas, waterfowl use areas (lakes, other wetlands, and farm field which are used for roosting and feeding), and other sensitive areas (i.e. prairie dog habitat).
- Gather and review (annually) population data in coordination with the NMDGF to ensure that potential harvest from hunting would not unacceptably impact target populations.
- Any hunt program would need to be carried out in accordance with State regulations and Service policy (FWS Manual Chapter 605 FW 2, Hunting), with public safety being the primary consideration.

Justification:

Although hunting is a priority wildlife-dependent public use listed under the National Wildlife Refuge System Improvement Act as amended (1997), it was determined that waterfowl hunting would materially interfere with or detract from the purpose for which the refuge was established. The primary reasons for establishing Maxwell NWR were to provide a protected feeding and resting area for waterfowl and to reduce crop depredation problems that existed in the area (USFWS 1962). Refuge croplands supplement natural food sources on the refuge and provide undisturbed areas where wintering waterfowl can forage. Habitats (the lakes and farm fields) on the refuge are the only secure areas available for these birds to rest and feed. Given its small size, opening the refuge to hunting would potentially displace birds onto private lands and deter them from using the refuge. Crop depredation could potentially increase, causing economic loss to private landowners. For these reasons, and the biological impacts described above and in the draft CCP/EA, it is the Refuge Managers professional opinion that the disturbance from hunting that would occur to waterfowl in critical feeding and resting areas would result in interference with fulfilling the refuge's purpose.

Deer hunting would not materially interfere with the purpose of the refuge, provided the above listed stipulations can be implemented. Hunting has been identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997 when this activity is compatible with the Refuge purpose.

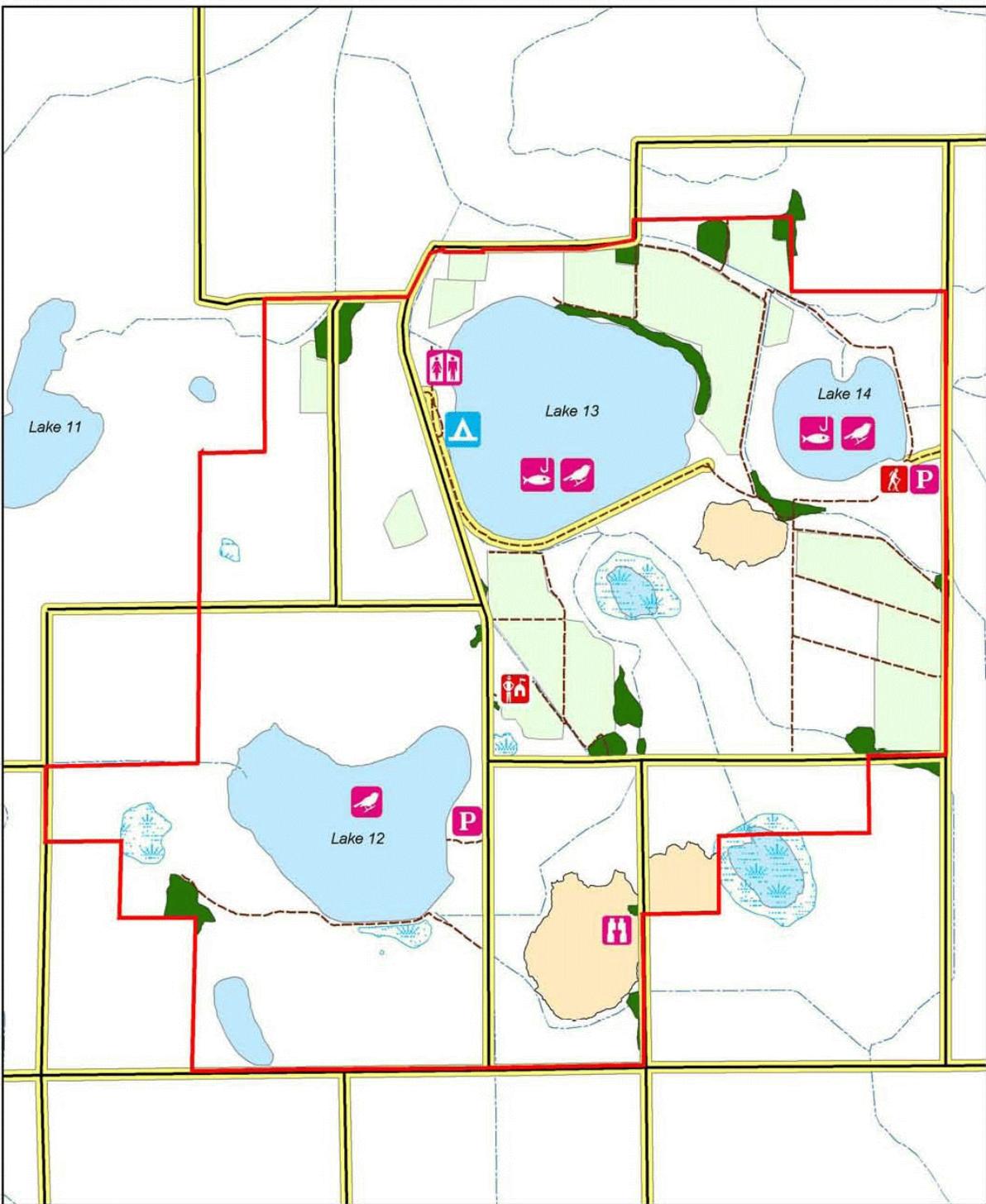
Signature: Refuge Manager Patricia Hoban 4-7-06
(Signature and Date)

Concurrence: Regional Chief Raye Nienis, Acting 4/27/06
(Signature and Date)

Mandatory 10- or 15-year Re-Evaluation Date: 2021

References Cited

United States Fish and Wildlife Service. 1962. Refuge Land Acquisition Biological Reconnaissance Report. Maxwell National Wildlife Refuge, New Mexico. 11pp

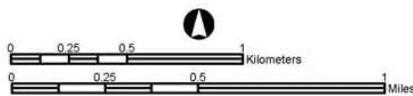


U.S. Fish and Wildlife Service



Maxwell NWR

Projection: UTM, Zone 13, NAD 83, GRS 1980
 Map produced by USFWS, P. Hoban
 Maxwell NWR, 505-375-2331
 March 7, 2005



- Cropland
- Service roads
- Refuge Boundary
- Prairie dog towns
- Public/County Road
- Woodlot

NEW MEXICO



APPENDIX F - KEY LEGISLATION AND SERVICE POLICIES

Many procedural and substantive requirements of Federal and applicable State and local laws and regulations affect refuge establishment, management, and development. This appendix identifies the key permits, approvals, and consultations needed to implement the strategies. In undertaking the proposed action, the Service would comply with the following Federal laws, Executive orders, and legislative acts.

American Indian Religious Freedom Act of 1978: Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans With Disabilities Act of 1992: Prohibits discrimination in public accommodations and services.

Antiquities Act of 1906: Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act of 1974: Directs the preservation of historic and archaeological data in Federal construction projects.

Archaeological Resources Protection Act 1979, as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Architectural Barriers Act of 1968: Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Bald and Golden Eagle Protection Act of 1940, as amended: Calls for the protection of these raptorial species on and off Federal lands.

Clean Air Act of 1977, as amended: The primary objective of this Act is to establish Federal standards for various pollutants from both stationary and mobile sources and to provide for the regulation of polluting emissions via state implementation plans. In addition, and of special interest for national wildlife refuges, some amendments are designed to prevent significant deterioration in certain areas where air quality exceeds national standards, or to provide for improved air quality in areas that do not meet Federal standards (non-attainment areas). Federal facilities are required to comply with air quality standards to the same extent as non-governmental entities (42 U.S.C. 7418). Part C of the 1997 amendments stipulates requirements to prevent significant deterioration of air quality and, in particular, to preserve air quality in national parks, national wilderness areas, national monuments, and national seashores (42 U.S.C. 7470).

Clean Water Act of 1977: Requires consultation with the U.S. Army Corps of Engineers (404 permits) for major wetland modifications.

Emergency Wetlands Resources Act of 1986: The purpose of the Act is “To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes.”

Endangered Species Act of 1973, as amended: Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species. An Intra-Service Section 7 consultation was prior to implementation of this CCP (see Appendix C). No significant impact is expected from the implementation of this CCP.

Executive Order 11593, Protection and Enhancement of Cultural Environment (1971): If the Service proposes any development activities would affect the archaeological or historical sites, the Service will consult with Federal and State Preservation Officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.

Executive Order 11988 (1977), Floodplain Management. Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains. No structures or other barriers that could either be damaged by or significantly influenced by movement of flood waters are planned for construction by the Service in the project area.

Executive Order 11990, Protection of Wetlands. The proposal will help conserve the natural and beneficial values of the wetland habitat. The Service will undertake no activity that would be detrimental to the continuance of the vital wetlands.

Executive Order 13084, Consultation and coordination with Indian Tribal Governments.

Executive Order 12372, Intergovernmental Review of Federal Programs. The State of New Mexico and counties encompassing the refuge are sent copies of the Draft Comprehensive Conservation Plan and Environmental Assessment for distribution to State and County agencies and departments. Coordination and consultation is ongoing with local and State governments, Tribes, Congressional representatives, and other Federal agencies.

Executive Order 12898, Environmental Justice in Minority Populations and Low-income Populations. This environmental justice analysis concluded that the socioeconomic, cultural, physical, and biological effects of the preferred alternative (the CCP) does not predict any outcomes that would cause disproportionately high and adverse human health impacts in an population, nor would they result in disproportionately higher or adverse impacts to low-income or minority populations, nor would they create a greater burden on low-income households.

Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System (1996). Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System. Through the development of this Comprehensive Conservation Plan, the Service has completed compatibility determinations for existing wildlife dependent recreational activities that will be allowed to continue.

Executive Order 13007, Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and maintain the confidentiality of sacred sites.

Federal Noxious Weed Act of 1990: Requires the use of integrated management systems to control or contain undesirable plant species and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Fish and Wildlife Act of 1956: Establishes a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act of 1958: Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Land and Water Conservation Fund Act of 1965: Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

Migratory Bird Conservation Act of 1929: Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act of 1934: Authorizes the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act of 1918: Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

National Environmental Policy Act of 1969: Requires all Federal agencies to examine the impacts upon the environment that their actions might have, to incorporate the best available environmental information, and the use of public participation in the planning and implementation of all actions. All Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documentation to facilitate sound environmental decision-making. NEPA requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment. The process, from its inception, to prepare this Plan has complied with all NEPA requirement.

National Historic Preservation Act of 1966, as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the Nation's prehistoric and historic resources.

National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary of the Department of the Interior to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary for managing and protecting the Refuge System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Native American Graves Protection and Repatriation Act of 1990: Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession. No known Native American cultural items are known to exist or are in possession of the refuge.

Refuge Recreation Act of 1962, as amended: Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses. This plan is in compliance with this Act.

Refuge Revenue Sharing Act of 1935, as amended (16 U.S.C. 715s): Provides for payments to counties in lieu of taxes, using revenues derived from the sale of products from refuges. Public Law 88-523 (1964) revised this Act and requires that all revenues received from refuge products, such as animals, timber and minerals, or from leases or other privileges, be deposited in a special Treasury account and net receipts distributed to counties for public schools and roads. Payments to counties were established as: 1) on acquired land, the greatest amount calculated on the basis of 75 cents per acre, three-fourths of one percent of the appraised value, or 25 percent of the net receipts produced from the land; and 2) on land withdrawn from the public domain, 24 percent of net receipts and basic payments under Public Law 94-565 (31 U.S.C. 1601-1607, 90 Stat. 2662), payment in lieu of taxes on public lands. The current and proposed management of this refuge under this Plan is in compliance with this Act.

Rehabilitation Act of 1973: Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Secretarial Order 3127 (602 DM 2), Contaminants and Hazardous Waste Determination. No contaminants or hazardous waste are known to exist on the refuge and none will be created.

Volunteer and Community Partnership Enhancement Act of 1998: The purposes of this Act are to encourage the use of volunteers to assist in the management of refuges within the Refuge System; to facilitate partnerships between the Refuge System and non-Federal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of the resources and; to encourage donations and other contributions.

Wilderness Act of 1964 (Public Law 88-577 [16 U.S.C. 1131-1136]): Defines wilderness as follows: “A Wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”

APPENDIX G - VEGETATION MAP UNIT DESCRIPTIONS AND ACCURACY ASSESSMENT

MAPPING UNIT DESCRIPTIONS (EDAC 1999)

MU#	MU DESCRIPTION	AC	HA
1	Cattail Wetland	69.1	27.9

These wetlands are dominated by stands of monotypic cattail (*Typha latifolia*). Cattail is an obligate wetland plant species that forms dense colonies in standing water along the shore margins of lakes and ponds on the refuge. It is also found on the mud banks of some canals and drainages. Rushes, sedges, and inland saltgrass (*Distichlis spicata*) are locally dominant.

MU#	MU DESCRIPTION	AC	HA
2	Rush and Sedge Wetland	43.4	17.5

Rushes and sedges are principally found at the margins of the lakes, drainages, and wet, lowland depressions where water levels are shallow or fluctuating. American bulrush (*Scirpus pungens*), three-square sedge (*Schoenoplectus americanus*), Baltic rush (*Juncus balticus*), common spikerush (*Eleocharis* spp.) and Mexican dock (*Rumex salicifolius* var. *mexicanus*) are the most common species within this map unit. Highly disturbed sites along canals may be mixed with weedy species such as broadleaf milkweed (*Asclepias latifolia*) and western whorled milkweed (*Asclepias subverticillata*).

MU#	MU DESCRIPTION	AC	HA
3	Fourwing Saltbush/Blue Grama Shrubland	84.2	34.0

This shrubland is dominated by fourwing saltbush (*Atriplex canescens*) with an understory of blue grama (*Bouteloua gracilis*). This community has a high diversity of regularly occurring forb species that include cluster aster (*Aster falcatus* var. *commutatus*), broom groundsel (*Senecio spartioides*), poverty sumpweed (*Iva axillaris*) and clover (*Melilotus alba*, *M. officinalis*). This community is found on moderate slopes with a silty clay loam substrate. Prickly pear (*Opuntia phaeacantha*) and winterfat (*Krascheninnikovia lanтана*) are also abundant. This community has a highly disturbed phase where disturbance indicators including broom snakeweed (*Gutierrezia microcephala*), black medic (*Medicago lupulina*), poverty sumpweed (*Iva axillaris*), and common sunflower (*Helianthus annuus*) are common.

MU#	MU DESCRIPTION	AC	HA
4	Fourwing Saltbush/Alkali Sacaton Shrubland	12.9	5.2

This fourwing saltbush (*Atriplex canescens*)/alkali sacaton (*Sporobolus airoides*) shrubland is found in swales and highly alkaline areas that interfinger with alkali sacaton grasslands (MU #19). Some of the weedy species, such as Canadian horseweed (*Conyza canadensis*), sunflower (*Helianthus annuus*), pitseed goosefoot (*Chenopodium berlandieri*), field bindweed (*Convolvulus arvensis*), and poverty sumpweed (*Iva axillaris*) are typically found in this community.

MU#	MU DESCRIPTION	AC	HA
5	Rubber Rabbitbrush/Blue Grama Shrubland	6.7	2.7

The rubber rabbitbrush (*Chrysothamnus nauseosus*) shrublands have grassy understories dominated by blue grama (*Bouteloua gracilis*). Buffalograss (*Buchloe dactyloides*) and ring muhly (*Muhlenbergia torreyi*) are also common. Winterfat (*Krascheninnikovia lanata*) patches are found throughout this community. This diverse community also has an assortment of forbs that include curlycup gumweed (*Grindelia squarrosa*), fetid marigold (*Dyssodia papposa*), plantain (*Plantago* spp.) and broom groundsel (*Senecio spartioides*).

MU#	MU DESCRIPTION	AC	HA
6	Blue Grama/Buffalograss Grasslands	226.4	91.6

This grassland unit, typically found on gently sloping silty loam soils, includes several community types, all of which are dominated by blue grama (*Bouteloua gracilis*). These grasslands include blue grama/galleta (*B. gracilis/Hilaria jamesii*), blue grama/winterfat (*B. gracilis/Krascheninnikovia lanata*), blue grama/buffalograss (*B. gracilis/Buchloe dactyloides*), and blue grama/sleepygrass (*B. gracilis/Stipa robusta*). The blue grama/galleta grasslands are typically in very good condition although with rubber rabbitbrush (*Chrysothamnus nauseosus*) increasing at some sites. Indicator plains mesa forbs representative of these grasslands include fetid marigold (*Dyssodia papposa*) and broom groundsel (*Senecio multicapitatus*). Weedy indicator plants in blue grama grasslands typically include prickly lettuce (*Lactuca serriola*), Canadian horseweed (*Conyza canadensis*), common kochia (*Kochia scoparia*), common sunflower (*Helianthus annuus*), wavyleaf thistle (*Cirsium undulatum*), snakeweed (*Gutierrezia microcephala*), prickly pear (*Opuntia phaeacantha*), poverty sumpweed (*Iva axillaris*), and purple aster (*Machaeranthera canescens*). Prairie dog towns occur within buffalograss dominated grasslands of the refuge. Surrounding the towns, vegetation is cropped very low, due to the activities of the prairie dogs.

Inclusions: buffalograss monotypic
blue grama/galleta
blue grama/winterfat
blue grama/sleepygrass

MU#	MU DESCRIPTION	AC	HA
7	Blue Grama/ Bottlebrush Squirreltail Grasslands	27.4	11.1

This is a grassland community dominated by blue grama (*Bouteloua gracilis*), with bottlebrush squirreltail locally co-dominant (*Elymus elymoides*). Trailing fleabane (*Erigeron flagellaris*) frequently occurs in the understory, and sweetclover (*Melilotus* spp.), black medic (*Medicago lupulina*), alfalfa (*Medicago sativa*) and snakeweed (*Gutierrezia microcephala*) are found at varying densities.

MU#	MU DESCRIPTION	AC	HA
8	Blue Grama/Western Wheatgrass Grasslands	73.6	29.8

This grassland is co-dominated by blue grama (*Bouteloua gracilis*) with western wheatgrass (*Pascopyrum smithii*). Patches of fourwing saltbush (*Atriplex canescens*) may be found at some sites. Short ray coneflower (*Ratibida tagetes*), plains bahia (*Bahia oppositifolia*), and poverty sumpweed (*Iva axillaris*) are typically found in high densities throughout this community.

MU#	MU DESCRIPTION	AC	HA
9	Blue Grama/ Alkali Sacaton Grasslands	138.4	56.0

Alkali sacaton (*Sporobolus airoides*) and blue grama (*Bouteloua gracilis*) are co-dominants in this mapping unit. This is a transitional community between the upland grasslands and more alkaline, lowland depressions. These sites have plains-mesa indicator forbs, such as fetid marigold (*Dyssodia papposa*) and shorthead coneflower (*Ratibida tagetes*), throughout. In more disturbed sites, poverty three-awn (*Aristida divaricata*) increases.

MU#	MU DESCRIPTION	AC	HA
10	Alkali Sacaton Grassland	654.5	264.8

Alkali sacaton grasslands typically occupy broad expanses on silty clay loams within playa depressions. These grasslands also occupy hummocky landscapes southeast of Lake 13. This mapping unit includes several alkali sacaton dominated communities due principally to the microtopography in these lowland swales. Fluctuating water levels in these heavy soils create a mosaic of grasses interrupted by barren or sparse areas where poverty sumpweed (*Iva axillaris*) increases. Although alkali sacaton (*Sporobolus airoides*) is dominant, sand dropseed (*Sporobolus cryptandrus*) occurs in lenses of coarser soils. Some swales are co-dominated with inland saltgrass (*Distichlis spicata*) or alkali muhly (*Muhlenbergia asperifolia*). Weedy species that increase in this community are typically netleaf lambsquarters (*Chenopodium berlandieri*), common kochia (*Kochia scoparia*), Canadian horseweed (*Conyza canadensis*) and poverty sumpweed (*Iva axillaris*).

When alkali sacaton occurs with sleepygrass (*Stipa robusta*), buffalograss (*Buchloe dactyloides*) often occurs within the understory. These sites were probably agricultural areas due to the high density of field bindweed (*Convolvulus arvensis*) and alfalfa (*Medicago sativa*) and as yet have not recovered from its past landuse. Alkali sacaton, when co-dominant with spike dropseed (*Sporobolus contractus*), covers more upland areas.

Inclusions: alkali sacaton/monotypic
alkali sacaton/inland saltgrass
alkali sacaton/spike dropseed
alkali sacaton/sleepygrass

MU#	MU DESCRIPTION	AC	HA
11	Western Wheatgrass Grassland	75.6	30.6

This is a grassland community dominated by western wheatgrass (*Pascopyrum smithii*). This mesic grassland includes areas of where wheatgrass forms a dense, monotypic cover as well as areas with a significant understory of bindweed. Other grasses are seldom found in this community; however, there may be inclusions of forbs such as sweetclover, prickly lettuce (*Lactuca serriola*), and common sunflower (*Helianthus annuus*).

MU#	MU DESCRIPTION	AC	HA
12	Smooth Brome Grassland	149.2	60.4

Smooth brome (*Bromus inermis*) typically occurs in monotypic stands or in association with blue grama. It is a non-native that was planted in the old agricultural fields and contains a significant amount of alfalfa (*Medicago sativa*). Some of the more disturbed sites have high densities of field bindweed (*Convolvulus arvensis*), poverty sumpweed (*Iva axillaris*), netleaf lambsquarters (*Chenopodium berlandieri*), and showy milkweed (*Asclepias speciosa*).

MU#	MU DESCRIPTION	AC	HA
13	Alkali Muhly Grassland	117.4	47.5

Alkali muhly dominates wet, lowland depressions throughout the refuge in nearly monotypic stands. Alkali muhly is also found along roadsides and ditches with other grasses, such as alkali sacaton (*Sporobolus airoides*), mat muhly (*Muhlenbergia richardsonii*), or western wheatgrass (*Pascopyrum smithii*) in a highly disturbed matrix that include weedy species such as western whorled milkweed (*Asclepias subverticillata*), prickly lettuce (*Lactuca serriola*), barnyard grass (*Echinochloa crus-galli*), common cocklebur (*Xanthium strumarium*) and poverty sumpweed (*Iva axillaris*).

MU#	MU DESCRIPTION	AC	HA
14	Inland Saltgrass Grassland	17.1	6.9

Inland saltgrass (*Distichlis spicata*) is a wetland community found throughout the refuge in swales, playas, ditches, and at the margins of waterbodies. This grass typically forms a thick mat interspersed with occasional forbs on saturated, usually saline soils. In some areas, western wheatgrass is found within this community. Along ditches weedy species increase and include western whorled milkweed and broadleaf milkweed.

MU#	MU DESCRIPTION	AC	HA
15	Herbaceous Disturbance	629.9	254.9

Herbaceous disturbance covers areas that are dominated by 'early colonizers' such as poverty sumpweed (*Iva axillaris*), common sunflower (*Helianthus annuus*), sweetclover (*Melilotus spp.*), thistle (*Cirsium spp.*), common kochia (*Kochia scoparia*), and prickly lettuce (*Lactuca serriola*). These plants are quick to invade areas that have been disturbed by surface blading, fire, or overgrazing. Many of these areas follow the canals and ditches. Also, some of the margins of the wetlands that extend into the plains are infested with these plants and eventually colonize adjacent grasslands. Some of this may be due to seeds being introduced into the area from the irrigation canals. Many of the playa depressions are dominated by these herbaceous disturbance plants.

MU#	MU DESCRIPTION	AC	HA
16	Agricultural Fields	491.4	198.8

This mapping unit represents fields that were in production or fallow at the time of image acquisition.

MU#	MU DESCRIPTION	AC	HA
17	Tree Groves	38.6	15.6

Usually near old homesteads or along roads are areas dominated by groves of trees that can be combinations of any of the following: Siberian elm (*Ulmus pumila*), cottonwood (*Populus deltoides*), Russian olive (*Elaeagnus angustifolia*), or juniper (*Juniperus spp.*). The understory grasses and forbs are diverse.

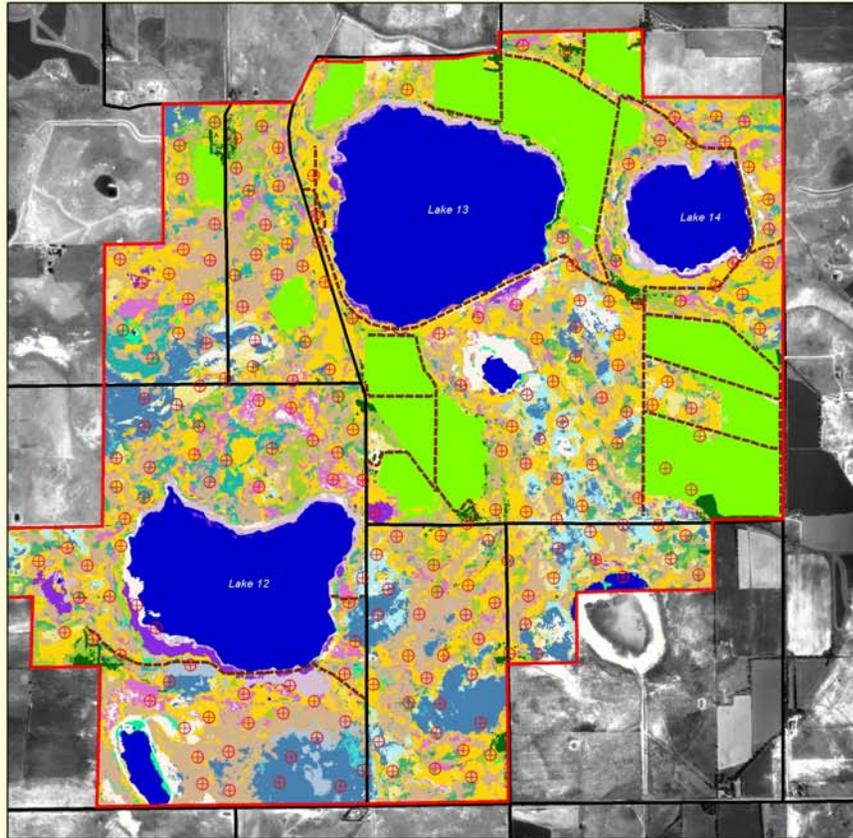
MU#	MU DESCRIPTION	AC	HA
18	Surface Water	636.2	257.4

This mapping unit represents the surface water extent as a combination of 3 September, 1993, the acquisition date of the satellite image and the aerial photography dated 29 September, 1997.

MU#	MU DESCRIPTION	AC	HA
19	Barren or Sparsely Vegetated	137.6	55.6

Barren ground, little to no cover of vegetation.

Vegetation Ground-truth Sample Points

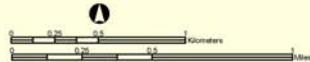


U.S. Fish and Wildlife Service

Maxwell NWR

Projection: UTM, Zone 13, NAD 83, GRS 1980
Map produced by LIS/WS
Maxwell NWR, 505-375-2331
March 29, 2004

⊕ Sample point
n=200

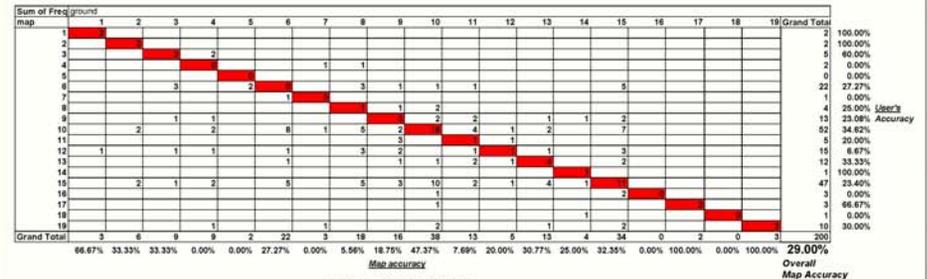


Accuracy Assessment

Earth Data Analysis Center used Landsat Thematic Mapper (TM) satellite imagery to map the natural vegetation cover at Maxwell NWR. Nineteen map units were defined including nine grasslands, two wetlands and three shrublands, all of which represent a general vegetation community type. These community types correspond to the New Mexico Natural Heritage's (NMNHP) plant community classification database. The NMNHP classifies communities based on a combination of the dominant perennial vegetation, substrate and landscape position. There are also five miscellaneous cover classes which represent planted vegetation (Agricultural Fields and Tree Groves classes) or non-vegetative land cover types (Barren and Surface Water classes). An 'Herbaceous Disturbance' class was created to identify the distribution of disturbance-dependent plants such as sweetclover, sunflower, thistle, bindweed, and other weedy vegetation of interest to the refuge.

To evaluate accuracy, 200 sample points were randomly generated using an ESRI random points extension. Areas of water or cropland were masked out prior to running the extension. The points were uploaded into a GPS unit and located in the field. Mapped vegetation was compared with actual vegetation at each site resulting in only 29% of the 200 sample points in agreement with mapped values. Map accuracies exceeding 50% included the following categories: Cattail wetland, Tree Groves and Barren or sparsely vegetated ground. Significant errors were obvious in the Blue grama grass categories (6-9) and the herbaceous disturbance category (15).

Maxwell NWR Vegetation Map Accuracy Assessment



VEGETATION CATEGORIES

- | | |
|--|---------------------------------|
| 1 Cattail Wetland | 11 Western Wheatgrass Grassland |
| 2 Rushes & Sedges Wetlands | 12 Smooth Brome Grassland |
| 3 Fourwing Saltbush/Blue Grama Shrubland | 13 Alkali Muhly Grassland |
| 4 Fourwing Saltbush/Alkali Sacaton Shrubland | 14 Inland Saltgrass Grassland |
| 5 Rubber Rabbitbrush/Blue Grama Shrubland | 15 Herbaceous Disturbance |
| 6 Blue Grama/Bufalograss Grasslands | 16 Agricultural Fields |
| 7 Blue Grama/Bottlebrush Squirreltail Grasslands | 17 Tree Groves |
| 8 Blue Grama/Western Wheatgrass Grasslands | 18 Surface Water |
| 9 Blue Grama/Alkali Sacaton Grasslands | 19 Barren or Sparsely Vegetated |
| 10 Alkali Sacaton Grassland | |

APPENDIX H - LAKE LEASE STATUS

The following contingency statement was published in the *Maxwell National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment*:

“The U.S. Fish and Wildlife Service’s ability to implement the alternatives proposed in this draft Comprehensive Conservation Plan (CCP) and Environmental Assessment (EA) for Maxwell NWR are contingent upon the renewal of a long standing lease for Lakes 12 and 14 with the Vermejo Conservancy District, the owners of interest in these properties. These areas are two of three in-holdings on the Maxwell NWR. The lease expired on January 16, 2005, following a 10 year term that the Vermejo Conservancy District chose not to renew. Between the expiration of the lease in January and the present time, the Service has submitted a renewal offer based upon a fair market value appraisal. This offer has been rejected and the District is contemplating placing the lease holdings up for bid to the public.

The Service remains hopeful that the District will renew the lease with the Service. It is in that spirit that this draft document has been constructed. Should the lease holdings move from the Service to another lessee, it is likely that the ability to achieve refuge purposes will be severely hampered. It is also likely that the Service would have to completely rethink the purpose of the refuge as well as practical management considerations for the long term.”

Correspondence concerning negotiations between the Service and Vermejo Conservancy District and the current status of the lake leases is included in this appendix.

On April 4, 2006, board members of the Vermejo Conservancy District met with the Refuge Manager and the Chief of Realty, Rick Jones, to discuss renewing the lake lease. The Service offered to pay the appraised value contingent on responsibilities that will be outline in a separate Memorandum of Understanding (MOU). The Service agreed to maintain the roads at Lake 12 and 13, assist the District with ditch maintenance (burning and spraying), and control/treat noxious weeds throughout the refuge. The terms of the lease will be for three years upon mutual agreement of both parties.

The MOU between the Service and Vermejo Conservancy District, which outlines the responsibilities of each agency, was signed on May 10, 2006. The lease agreement is in the process of being approved and signed by both parties.

Vermejo Conservancy District

P.O. Box 292, Maxwell, NM 87728

Phone: 505 375-2381 Fax: 505 375-2349 vcdmchwua@bacavalley.com

RECEIVED

JAN 30 2006

REALTY

January 26, 2006

Barbara A. Rose
Chief, Realty Management
Division of Realty

U.S. Department of the Interior
Fish and Wildlife Service
P.O. Box 1306
Albuquerque, N.M. 87103

Dear Ms. Rose,

Regrettably, much time has passed since we have last discussed the leasing of lakes 12 and 14. The Board of Directors were ready to go out to bid for the lease when some issues arose out of discussions at the meeting to finalize that action. Not wanting to over-look any aspects, and in fairness to all involved the Board and I thought it would be best to allow any concerns brought to our attention to be substantiated, however none were.

Ms. Hoban, management for the Maxwell Refuge, has attended the board meetings and argued valiantly for the lease to be renewed at the wildlife Services proposed offer. However, I believe she is fighting a battle that can't be won. The Board and I hold firm that we believe the appraisal obtained by the Service does not truly reflect the properties lease value. Initially we were informed that the Appraisal Directorate Services would have to put the appraisal out for competition and that it would be a contracted service. So I was surprised when an appraiser from the Department of Interior showed up and told me he was here performing the appraisal for lakes 12 and 14. He promptly informed me that he was only interested in what was fair to both entities and I informed him that was what I expected. Weather this was not his genuine interest or that we just do not share the same ideas of what is fair, I am not sure. I would also like to point out that the Statement of Just Compensation states " I certify that the total just compensation is not less than the approved appraisal of your property". It does not indicate that value is not more than or could well be more than the amount estimated.

It is my personal opinion; it would be mutually advantageous for our agency's to cooperate with each other regarding the lease, and also our day to day operations. Our conservancy district is of nominal size and intermingles or overlap's, depending on the point of view, the refuge witch is also nominal in size. It seems reasonable that we should work co-operatively towards our mutual benefits.

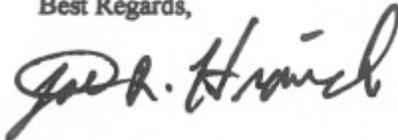
It is quite apparent that this lease is vital to the refuge here at Maxwell, please see enclosures. It is not the intention of the District to be detrimental to the Refuge, however you should be aware that our district is funded solely through revenues derived from within our district, we do not receive any federal or state funds. Our annual budget is derived from assessments for irrigation shares, a tax on non-irrigated real property within our district boundaries, a charge on water deliveries, and the leasing of property that we own. I think it is evident why the board feels like they must receive as much as the open market will bear on the leases.

It is apparent to me that the Service can not pay more than the appraised value and that the Vermejo Board of Directors will not renew the lease at the Services proposed amount The District proposed a lease amount of \$4683.80 per annum and the Service offered \$2800.00 per annum. I find it incredulous that the Service would consider compromising the Maxwell Refuge over a difference of \$1883.80 per year. I do not know what the annual budget for the Refuge is, but I would think it would be safe to assume that this difference is meager, probably less than 1%. In fact I wonder what percent the lease asking price total would be of the refuge's annual budget?

According to the Statement of Just Compensation, the appraised value approved for service expired on October 26, 2005. At my request, the Board of Directors has authorized me to make a final attempt to negotiate a lease with the Service that both parties can live with. Please inform me at your earliest convenience if the Service is interested in attempting to negotiate a new lease offer and what the process and timetable might be if they are. The Board of Directors has gave me until the next regular meeting scheduled for February 14th, 2005 to at least have a response and plan of action.

I look forward to your response and any ideas you may have that will help this situation. If a meeting of our agencies is necessary or will be helpful please let me know and we can set something up.

Best Regards,



Joe R. Hronich
General manager

Encl: copy of front page article- Raton Range, Jan. 24, 2006
copy of contingency statement- Maxwell National Wildlife Refuge draft comprehensive conservation plan and environmental assessment

CC: w/o encl. Ms. Patricia Hoban, Maxwell National Wildlife Refuge

Roston Range

Tuesday, January 24, 2006

124th Year No. 7

Refuge's future direction awaits fate of lakes

By **TODD WILDERMUTH**
Editor, *The Roston Range*

As the Maxwell National Wildlife Refuge plans for its future, a key factor will be whether or not the refuge will be able to continue leasing two of the three lakes that play an important role at the site that was set up to host migratory water fowl and other birds.

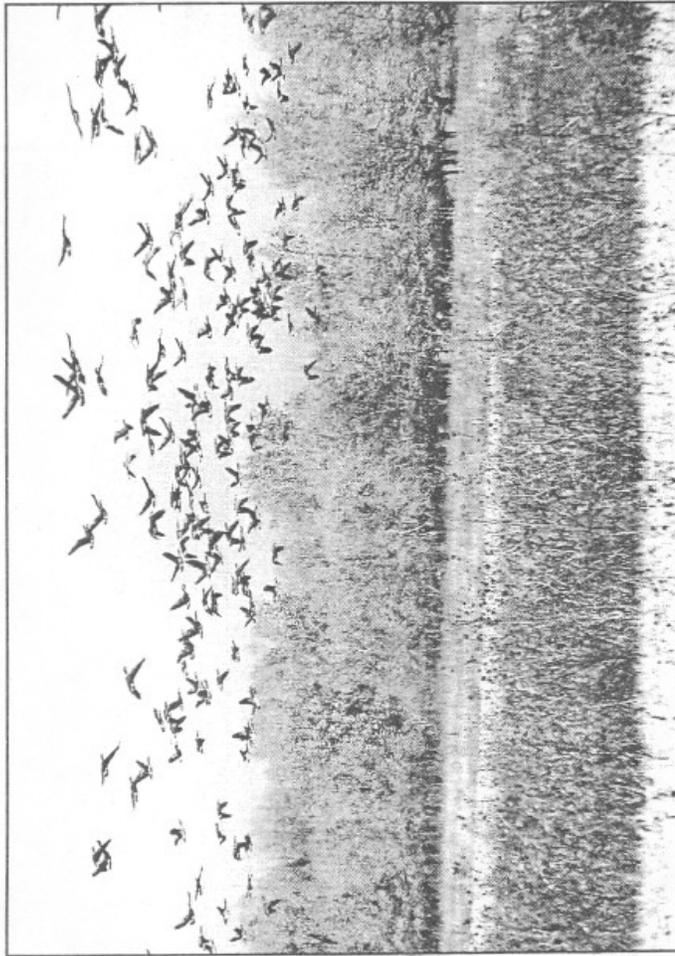
Lakes 12, 13 and 14 have been integral parts of the refuge just northwest of Maxwell. While Lake 13 remains under a perpetual use agreement signed in 1992, the other two lakes and their surrounding grasslands have been leased by the U.S. Fish and Wildlife Service, which runs the refuge, from the Vermejo Conservancy District since 1973.

The refuge covers about 3,700 acres, but only 2,800 acres are owned by the federal government. The rest is the leased areas.

The last lease for lakes 12 and 14 expired in 2005. Although negotiations have been going on for more than a year, the Fish and Wildlife Service and the conservancy district have been unable to come to an agreement on a new lease.

Refuge Manager Patty Hoban said the federal agency is not allowed to pay more for a lease than what the lease value of the land is appraised at. Vermejo Conservancy District General Manager Joe Hronich said the district would like to continue the lease with the government, but only "at a feasible rate." So far, the two sides have remained apart on a lease price.

Hronich said talks will continue and the district's board would like to at least be moving toward a deal with the refuge by the middle of next month. The possibility



► Canada geese fly over a field at the Maxwell National Wildlife Refuge. The refuge is currently developing its 15-year plan for its management and goals. Courtesy Maxwell National Wildlife Refuge

MAXWELL

remains, he said, that if no significant progress is made with the refuge, the conservancy district may seek other private bidders for the lease of the lakes.

Hoban said that could result in the lakes being leased out for water fowl hunting, a move that would change how the refuge is managed. She said such hunting would be incompatible with the refuge's mission of providing birds a place to stop during migration. One major change would be to stop farming on the refuge, something currently done to provide food for the birds

and attract them to the refuge. "I'm not going to attract water fowl here for someone's private hunting ground," Hoban said.

The final disposition of lakes 12 and 14 will likely be a factor in the final development of the refuge's new Comprehensive Conservation Plan (CCP), a document designed to guide the refuge for the next 15 years.

The Fish and Wildlife Service will hold an open house this Wednesday from 11 a.m. to 7 p.m. at the refuge office for people to meet with the agency's personnel who have drafted the plan for the refuge. The CCP formalizes management goals, long-range objectives, and strategies for achieving refuge purposes.

Continued on page 3



M., Chapter 18, will to Public Employee enter, 5:30 p.m. p.m.

E, alliance office, aw committee; 9:30 board of directors.

TIVE, New Mexico 1233 Whittier St.,

School, 2 and 7 p.m. Ave. Portion of pro- ion: 447-6064.

ire, 900, S. Sixth St., stration: 445-8071.

5 p.m., early bingo sponsored by Raton

RANCE, St. Joseph er person, includes ic School. Corsages

to Council #1332, first and third

...Refuge's future awaits lakes' fate

Continued from page 1

The refuge was established in 1966 for birds that migrate through the central part of the United States.

The CCP was prepared during the last six or seven years with the help of local, state and federal agencies, as well as private citizens. Written comments and suggestions on the draft CCP will be accepted through Feb. 24.

"The plan gives people a clear understand-

ing of the desired conditions for the refuge and how the Service will implement management strategies," said Dr. Benjamin Tuffie, acting director of the Fish and Wildlife Service's Southwest Region. "There are many elements considered in the planning process, including habitat and wildlife management, habitat protection and acquisition, public and recreational uses, and cultural resources. Public input helps us to put the proper emphasis on the elements."

Copies of the CCP will be distributed at the open house or may be obtained by contacting Carol Torrez, Biologist/Natural Resource Planner, Division of Planning, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, N.M. 87103-1306; e-mail carol_torrez@fws.gov; voice (505) 248-6821; fax (505) 248-6874. The draft plan is also on the Internet at www.fws.gov/southwest/refuges/Plan/index, click on Completed Plans and Drafts.

...Rodeo remains at site one more year

Continued from page 1

property for the rodeo as long as alcohol is eliminated, something the rodeo association does not want to consider as a permanent change.

The association is looking into two or three other properties

along York Canyon Road (N.M. 555) as possible sites for the rodeo arena and pavilion. Segotta said. The main sticking point is "just trying to come up with some money," he said.

Last October, the association was hopeful of possibly getting a state grant to assist with the pur-

chase of land and the expense of moving the arena and pavilion. However, Raton was not included in the rodeo grants recently announced by the state.

Segotta, though, said the state money may still be an option. He said the association could not come up with the

necessary "matching" funds to land a grant in the recent round of funding awards. Don Segotta, Beaver's father, is scheduled to address the Colfax County commission for a second time Tuesday about the county serving as fiscal agent for a state grant.

...Recall dismissal sought for lack of summonses

Continued from page 1

recall petition but not a formal summons.

Gonzales and Marchetti also did not receive summonses when they were served a copy of the petition the same day as

the commissioners. Pride said he asked if the sheriff's office needed anything else for service and was told nothing other than a check for payment of service was needed.

The next day, deputies picked up copies of the petition, but no summonses, and served the

would have to be at least one-third of the total number of votes cast in the last preceding general election at which each commissioner's position was voted on.

Once the signatures are collected, they must be verified by the county clerk. Once verified

In Reply Refer To:
R2/NWRS-RE

LA-New Mexico
Maxwell NWR

March 1, 2006

Mr. Joe R. Hronich
General Manager, Vermejo Conservancy District
P.O. Box 292
Maxwell, New Mexico 87728

Dear Mr. Hronich:

Thank you for your letter of January 26, 2006, and your continued willingness to consider pursuing the lease matter through the cooperation of both agencies. From a conservation standpoint, I personally wish we could reach an agreement for the lease of the Conservancy District lands to the benefit of the Maxwell National Wildlife Refuge (Refuge) and the District as well as the local community. Unfortunately, the Fish and Wildlife Service (Service) is bound by strict legal guidelines as determined by the Department of Justice and our own land acquisition policies. These are enforced for the benefit of the taxpayers, the landowner, and the Service.

You mentioned the appraisal process appeared to be confusing to you. Approximately 2 years ago, the Department of the Interior (DOI) merged the appraisers associated with each agency in the Interior Department into one office under the Secretary of the Interior. This office was named the Appraisal Services Directorate or ASD. The purpose was to assure the taxpayer and the landowners we were working with that all appraisals completed for purchasing interests in land would be done according to the same standard. Prior to the formation of the ASD, each agency controlled the appraisal process and gave the impression to some observers that there were differences in the way appraisals were completed. By having one division (directorate) this helped DOI to eliminate the perception that one agency was doing things differently from another.

The ASD is the controlling factor in the valuation process. The Service determines what tract of land it wishes to be appraised for value and contacts ASD. From that point on the Service does not see the product until the appraisal is completed and reviewed. The ASD has several methods of completing an appraisal. One, is to use staff appraisers in valuing the interest in the property to be purchased. The second is to contract the appraisal with qualified, outside, contact appraisers. The last is to work with a landowner who wishes to pay for and secure his own appraisal. In this last case, all work toward securing that appraisal must be coordinated with the ASD office prior to contracting and the ASD must also review and approve the appraisal. In our case of the Vermejo Conservancy District land, the short timeframe to secure an appraisal probably made it more advantageous, in ASD's mind, to use a staff appraiser.

Mr. Joe R. Hronich

2

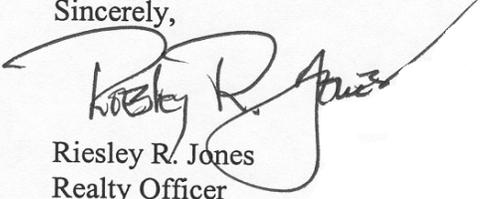
All of the appraisals completed for any Interior agency must comply with stringent appraisal guidelines. These include not only the UNIFORM APPRAISAL STANDARDS FOR FEDERAL LAND ACQUISITIONS but also UNIFORM STANDARDS OF PROFESSIONAL APPRAISAL PRACTICE. Furthermore, PL 91-646 required the Service to offer the landowner no less than the market value of the property as determined by the approved appraisal. There is no legal provision for us to exceed this value.

In the proposed transaction, the offer the Service made to the District is the limit of our authority. You mentioned that you are surprised that the Service would let the property go for such a small difference in value. Unfortunately, the \$1,883.80 per year increase over our offer that you propose amounts to a 67.28 percent difference. That to me is substantial and beyond our authority as described above.

The Refuge and the District have cooperated in the management of the lands for the benefit of the New Mexico citizens and the local community for many years. I would like to see that cooperation continued into the future, however, my hands are tied on the value at this point.

Should you wish to discuss this matter more, please contact me at the 505-248-7417. I apologize for not responding to you prior to the Board meeting, but I was out of the office about the time your letter reached my office.

Sincerely,



Riesley R. Jones
Realty Officer

cc: Ms. Patricia Hoban, Maxwell National Wildlife Refuge
Mr. Gary Montoya, Refuge Supervisor, AZ-NM

RJones:jc:vermejo.wpd

Vermejo Conservancy District

P.O. Box 292, Maxwell, NM 87728

Phone: 505 375-2381 Fax: 505 375-2349 vedmchwua@bacavalley.com

March 15, 2006

U.S. Fish and Wildlife Service
RE: R2/NWRS-RE (Lease of lakes 12 and 14)

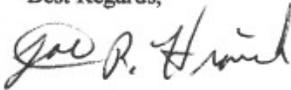
Ms. Patricia Hoban
Maxwell National Wildlife Refuge
P.O. Box 276
Maxwell, N.M. 87728

Dear Ms. Hoban,

Though we have been unable to agree on the value of the lake property leases, it seems that both entities recognize the potential benefit to our community as a whole. In light of this, the Board of Directors is inclined to executing a new lease with the Service at the proposed amount per year. However, to do so there are certain considerations we would like to have included in the lease or at least attached as a memorandum of understanding between the entities.

In the interest of productivity and time the Board of Directors would like to call a special meeting to discuss these items of consideration, rather than corresponding back and forth via letters. Please notify me as soon as possible if the Service is agreeable to such a meeting, and if so, hopefully we can set a date in the next week or two.

Best Regards,



Joe R. Hronich
General Manager

CC: Mr. Riesley R. Jones, Realty Officer, Fish and Wildlife Service ✓

RECEIVED
MAR 16 2006
REALTY

Memorandum of Understanding

Between

U.S. Fish & Wildlife Service, Region 2
Maxwell NWR
P.O. Box 276
Maxwell, NM 87728

and

Vermejo Conservancy District
P.O. Box 292
Maxwell, NM 87728

I. INTRODUCTION

This Memorandum of Understanding is between the U.S. Fish and Wildlife Service (hereinafter referred to as Service), and the Vermejo Conservancy District (hereinafter referred to as District).

II. PURPOSE

The purpose of this MOU is to establish a framework of cooperation between the District and the Service in completing work tasks on District lands/infrastructure mutually benefiting both parties and members of the general public.

III. AUTHORITY

The Service manages the Maxwell National Wildlife Refuge in Colfax county, NM in accordance with the mission of Refuge System "...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57). Maxwell NWR was established by authority of the Migratory Bird Conservation Act (16 U.S.C. 712d) "...for use as an inviolate sanctuary, or for any other management purposes, for migratory birds." The District owns, operates and maintains the Vermejo Project which serves 60 shareholders and 7,379 acres of land.

IV. STATEMENT OF MUTUAL BENEFIT

Cooperation between the Service and District will mutually benefit both parties in accomplishing several projects through shared labor and equipment to offset limited budgets and staffs. The visiting public will benefit through improved quality of habitat and ensured safe access.

V. RESPONSIBILITIES

A. The U.S. Fish and Wildlife Service:

1. Control/mow vegetation along the dams and spillways of Lakes 12, 13, and 14.
2. Blade and maintain the road surface along the Lake 13 dam, filling all potholes with gravel.
3. Shape and blade the road to Lake 12 to facilitate access and drainage. Funds permitting, the road surface will be graveled.
4. Provide assistance to the District in helping maintain irrigation ditches on the refuge through a combination of prescribed fire and herbicides.
5. Provide assistance to the District in the control of noxious weeds on lease properties in years when adequate funding exists.
6. Work with the NMDGF to design/construct a temporary boat ramp at Lake 13 to accommodate boat trailers during fluctuating lake levels.
7. Keep the District informed of any vehicle or heavy equipment sales as advertised through the GSA auction website.

B. The Vermejo Conservancy District:

1. The District will strive to work cooperatively with the Service in future lease negotiations, renewals, or extensions for Lakes 12 and 14.
2. The District will remain on designated Refuge roads and trails or existing District right-of-ways during the transport, loading, and unloading of heavy equipment used in maintaining District infrastructure.

VI. AGREEMENT TERM

This MOU will remain in force for a period of three years from the date of execution.

VII. SPECIAL PROVISIONS

- A. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties of this MOU will be handled in accordance with applicable laws, regulations, and procedures.
- B. This MOU may be modified or amended as necessary upon written consent of all parties or may be terminated by either party with a 60 day written notice to all other parties.

C. The principle contacts for this MOU are:

1. U.S. Fish and Wildlife Service
Maxwell NWR
P.O. Box 276
Maxwell, NM 87728
Phone: 505-375-2331
Fax: 505-375-2332

2. Vermejo Conservancy District
P.O. Box 292
Maxwell, NM 87728
Phone: 505-375-2381
Fax: 505-375-2349

IN WITNESS WHEREOF, the parties hereto have caused this Memorandum of Understanding to be executed as of the date of last signature below.

Patricia A. Hoban
Signature

Joe R. Hronich
Signature

PATRICIA HOBAN, REFUGEE MANAGER
Printed Name and Title

Joe R. Hronich / General Manager
Printed Name and Title

MAY 10, 2006
Date

May 10, 2006
Date

APPENDIX I - PUBLIC INVOLVEMENT AND COMMENTS

On December 23, 2006 the U.S. Fish and Wildlife Service (Service) published a notice in the Federal Register Notice announcing the availability of the Draft CCP/EA for public review. The notice provided instructions for requesting a copy of the document, in print or CD-ROM format, by telephone, letter or e-mail and announced that the Service would accept comments on the Draft CCP/EA until February 24, 2006. The Draft CCP/EA was also sent to more than 70 public citizens, landowners, businesses, non-governmental organizations, city and county officials, State and Federal agencies and officials, public libraries, and media outlets on December 23, 2006.

The Service held an Open House at the Maxwell NWR headquarters office on January 25, 2006 to present the Draft CCP/EA and receive comments on the document. Nine individuals attended. Written responses received during the 60-day public review period consisted of seven letters and two e-mail responses. Those comments, as well as comments received from individuals that attended the public meeting, are summarized below with the Service's response.

1. Interim Planner, Colfax County, in an e-mail dated February 15, 2006, made the following comments:

Comment: The plan is excellent. You cover all bases, and cover them very well.

Response: Comment acknowledged.

2. Audubon New Mexico in an e-mail dated February 24, 2006, made the following comments:

Comment: Thank you for the opportunity to comment on the Draft Comprehensive Conservation Plan and Environmental Assessment (CCP/EA) for the Maxwell National Wildlife Refuge. During the 2004-2005 school year, Audubon New Mexico had the opportunity to partner with the Maxwell National Wildlife Refuge to offer our popular "Birds for a Purpose" program to 10 classrooms from Raton, Maxwell, and Cimarron. Audubon New Mexico supports the efforts for Environmental Education and Interpretation presented in the Draft CCP. After the partnership was created between Maxwell National Wildlife Refuge and Audubon New Mexico, other refuges in New Mexico, Las Vegas and Bitter Lake National Wildlife Refuges, have requested similar programs at their sites. We are currently in the planning process for classes in the 2005-2006 school year with the Refuge.

Response: Comment acknowledged.

Comment: In terms of suggested edits to the CCP/EA, I would suggest rewording the final paragraph on page 80 under "Environmental Education and Interpretation" to read as follows: "The refuge partnered with Audubon New Mexico (ANM), to host environmental education programs for local schools near Maxwell NWR. The programs were based on the "Birds for a Purpose" program and have been offered to low-income, underserved schools. All funding for the programs, including bus transportation to and from the refuge, was provided through ANM."

Response: Suggested edits have been incorporated into the CCP on page 82.

Comment: In addition, these programs were funded through the National Fish and Wildlife Foundation and New Mexico Department of Game and Fish.

Response: Comment acknowledged.

Comment: On the final paragraph on page 85 under "Audubon", I would suggest the following rewrite: The refuge will continue to partner with the Education Department at Audubon New Mexico to offer environmental education programs on the refuge. Programs are based on the "Birds for a Purpose" program and all costs are provided through Audubon." Additionally, under the photo with

the caption “NM Randal Davey Audubon teachers their “Birds for a Purpose” program at the refuge”, please change to “Audubon NM educators teaching “Birds for a Purpose” at the refuge”.

Response: Suggested edits have been incorporated into the CCP on page 88.

Comment: On the first paragraph of page 154, please change Randall Davey Audubon Center to Audubon New Mexico. In response to the final sentence in this paragraph, I would like to emphasize that this program has been funded for two years and Las Vegas NWR and the Friends of Las Vegas NWR adopted this program after observing the program and partnership created with Maxwell NWR. We are in the discussion stages with Bitter Lake NWR of offering this program in the 2006-2007 school year.

Response: Comment acknowledged. Suggested correction made on page 151 of CCP.

Comment: Thank you once again for the opportunity to comment. We look forward to working more in the future to provide educational opportunities to schools in northeastern New Mexico in our partnership with Maxwell NWR.

Response: The Service and refuge staff appreciate Audubon New Mexico’s input and also looks forward to our continued partnership.

3. New Mexico Natural History Institute, provided the following comments in a letter dated January 13, 2006:

Comment: Thank you for the opportunity to comment on the Maxwell NWR Draft Comprehensive Conservation Plan and EA. Good documents! Sad state of the Refuge! Write grant proposals, not plans!

Response: Comment acknowledged. Regarding the plan, Comprehensive Conservation Plans are required by law (National Wildlife Refuge System Improvement Act of 1997) for all national wildlife refuges. We are continuing our negotiations with the Vermejo Conservancy District to secure the lake leases for Lake 12 and 14.

Comment: Alan Savory’s theory of “overrest” of grasses in partly right but livestock grazing is an extreme solution. The prairies were healthy for millennia with fires (including ones set by Native Americans) and unreliable visits from bison. We like burning much more than grazing for restoration of Refuge grasslands, and hope that if livestock are used, they will be used only to simulate the brief visits of bison herds.

Response: Both grazing and prescribed burning will be used as “tools” to manage grassland habitats. We acknowledge that fires were historically an important ecological process that helped maintain the structure and function of short-grass prairies; but in some years, fire may not always be the most appropriate tool to use. Goals of grazing include increased soil aeration/cultivation, nutrient cycling, plant stimulation, seed distribution, and invasive weed control. Initially, a short duration, high intensity grazing program will be implemented on an experimental basis, the results of which will be closely monitored. No more than 30% of total grassland habitats will be grazed in any given year and like prescribed fire, grazing will be done on a 4-5 year rotation depending on community type, annual rainfall, and vegetative response.

Comment: We’re concerned by the Plan’s treatment of smooth brome (*Bromus inermis*), especially on page 68 and lack of treatment on page 95. You say that alkali sacaton (*Sporobolus airoides*) has limited value for wildlife; at least it has more than non-native smooth brome, a dangerous invasive. It would not be economical to eradicate smooth brome but attention should be paid to curtailing it, including by fire and (if used) grazing.

Response: We recognize (and agree) that smooth brome is an invasive species. It is not our intent to manage for or increase smooth brome pastures on the refuge. Any confusion regarding the status of this species and our management objectives were clarified in the document. Since it would not be economic to eradicate smooth brome, our management efforts will concentrate on controlling further spread wherever possible.

Comment: Thinking of invasive plant species, we point to the discrepancy between pages 22's claim that undisturbed grassland is more susceptible than disturbed to invasion and page 123's claim of the reverse. The latter seems correct. That "overrested" plants might be so weak as to admit invaders is an interesting idea but seems unlikely, since they have tied up real estate and water and mineral and sometimes even sunshine resources in their bloated "bodies" leaving little for invaders. Only a few rhizomatous species such as leafy spurge and smooth brome can commonly invade undisturbed grassland.

Response: The key as you mentioned is in the ability of rhizomatous species or those with extensive root systems to invade vegetated sites (both disturbed and undisturbed). In the case of overrested grasslands, as is the case in mixed grasslands on the refuge, dead/decadent plants and their litter reduce the amount of light from reaching new growth. These plants are unable to successfully compete with invaders due to unhealthy, inactive root systems. Eventually plants die, creating areas of bare ground between plants. Canada thistle and Russian knapweed, both of which have extensive root systems, rapidly invade these areas and within 1-2 years can develop monotypic stands. Russian knapweed has even successfully established itself in smooth brome pastures along the west shore of Lake 14.

Comment: We appreciate your proposal (page 97) that we work with the Refuge to provide data for the Research Natural Area. We will contact the manager to offer (limited) services. We think that livestock, if admitted to the Refuge, should be kept out of the RNA and the 200+ acres east of the RNA to the Refuge road, an area proposed in 1975 as a Natural Landmark for shortgrass prairie.

Response: The RNA and the 200 acres east of the RNA will be excluded from any grazing activities. This change was incorporated into the final document on page 68.

4. Rio Grande Chapter of the Sierra Club, provided the following comments in a letter dated January 16, 2006:

Comment: The Maxwell NWR Draft Comprehensive Conservation Plan and EA seem well-thought-out and well-written. Difficulties faced by the Refuge - water management and staffing - are even greater than we knew. Obviously the Refuge's greatest need is to gain some control over water by leasing and by buying irrigation shares.

Response: Comment acknowledged. It is unfortunate that the refuge was acquired given its current restraints in having to periodically renew lease agreements for control of public access (particularly hunting and fishing) on two Vermejo Conservancy District impoundments (refuge in holdings). Discussions with the District are still ongoing to renegotiate the leases at the Service's proposed offer.

Comment: Alternatives B and C are not "alternatives" in the usual sense. "B" presents good goals and some possible ways of meeting them. We accept all of "B," so long as livestock grazing is seen as both experimental and brief, not as an every-year program. "C" provides a bureaucratic alternative for reaching the goals of "B" by using Las Vegas NWR resources. We are not persuaded by the documents rejection of "C," but we admit that this is a decision that must be made by insiders, not outsiders like ourselves.

Response: Comment acknowledged. As mentioned in the above comment, grazing will initiated on an experimental basis and managed carefully in terms of intensity, duration, and rotation cycle.

Comment: Thank you for addressing our concern about the research natural area. We still think that 200 acres should be added. As we stated in 2003, “Designation as a research natural area would encourage vegetation monitoring and record-keeping.” Protection of a shortgrass area would also delineate an area that should not be grazed but only, if needed, burned.

Response: Comment acknowledged. While there is currently no procedure for designating additional RNA acreage, the refuge is committed to protecting the 200 acre area east of the RNA; therefore this area will be treated the same as the RNA.

Comment: We close with comments not on the documents but on the Refuge’s situation. Maxwell NWR is in trouble. Politics (including money), not biology, is the key to solving its problems. The Service should be reaching out for help, not only within its hierarchy but outside - for instance to local chambers of commerce, the National Wildlife Refuge Association, and the Sierra Club. We wonder whether the County or local groups might bring pressure on Vermejo Conservancy District to protect Refuge lakes, a major regional resource.

Response: Comment acknowledged. Members of the local community and local conservation groups have been notified of the situation and have responded with letters to the District voicing their support of the refuge in terms of its benefit to the local/regional communities and national conservation efforts.

5. A local landowner and Vermejo Conservation District shareholder, provided the following comments in a letter dated January 23, 2006:

Comment: Page 11 of draft plan (also other pages in this plan) - The USFWS comes off arrogantly in its assumption that Lakes 12, 13, and 14 would be transferred to them from USBR instead of being returned along with all other property to the original owner - Vermejo Conservancy District. Standard practice has been to return property to the original owner or successor in interest.

Response: We would like to clarify that not all three lakes were involved in this transfer. USBR never owned Lakes 12 and 14. This decision only applies to Lake 13. Furthermore, arrogance was not a factor in reaching this conclusion. Throughout the history of the Refuge, transferring Lake 13 (only the lands beneath; not associated water rights and management thereof) to the Service was often considered. In the case of Federal ownership, it is common practice for Federal lands to be transferred to another Federal entity before returning it to the public sector. The intent of the Service in acquiring these lands was not to impact, acquire, or change irrigation practices within the District, rather to control public access (hunting and fishing) in an effort to minimize disturbance to migratory birds and other resident wildlife.

Comment: Page 22, Issue 2 - We are glad that someone in USFWS recognized the “overrest” of the grasslands. But someone could have decided to act 15 years ago and not set back the health of the refuge so far.

Response: At the time of acquisition, refuge grasslands were in a deteriorated state and in need of rest. Since that time, all new uses (management or recreational) on a refuge must first go through a compatibility determination, to assess whether or not the proposed use will conflict with the primary purpose for which the refuge was established. Regarding past managers, it should be recognized that they dealt with different goals/priorities and budget constraints in deciding whether or not to implement a grazing program.

Comment: Page 23, Issue 3 - Water Mngt (also refers to other references to water shares in this plan) - A water share is not “based upon the volume of stored irrigation water”....Also the statement “normally equals on acre foot per share in a wet year” is not correct. A VCD water share entitles the owner to up to 1.5 acre feet of water per share per year in a normal year.

Response: Correction noted and changes made on pages 24 and 60 of the CCP.

Comment: Page 54, Swift Fox - In 1994 we purchased property adjacent to the refuge and for several years we had swift fox living and raising young in the area. At that time, the coyote population was low. Since the coyote population has increased (we have complained of this to refuge personnel), the swift fox have left the area and have moved further out - i.e. Crow Creek - where they are controlled. I did not say eliminated but controlled. We have found coyote tracks all the way around our house this winter.

Response: The implication that the refuge is responsible for a corresponding increase in coyotes over time is not likely in that coyote management on the refuge has not changed in over 20 years. In reality, the refuge constitutes a small percentage of total State and Federal lands in Colfax County (1 percent), whereas private lands account for 88% of the total. On private lands, coyote control is the decision of each individual landowner; therefore, when you compare the number of acres of private vs. federal lands, it is apparent that the government has little or no jurisdiction regarding predator control on the vast majority of lands within Colfax County.

Comment: Pages 58, 59-63 - References to VCD certainly don't make any points with us. Your comment on not being able to use 70 shares from Lake 13 is the USFWS decision evidently made years ago. Don't make this out to be a VCD decision, these are the USBR/conservancy district requirements. So plant something on the land these shares are adjudicated to, it is still classed as Class A land. Also your figures on the cost of the water assessment are incorrect - as I calculate the assessment based on what we pay per share, your assessment is less than \$8000 per year. The delivery charge is based on total acre feet delivered per year for the whole district. It has been up to \$12.64/acre foot - last year it was around \$5.38/acre foot.

Response: Our comment about not being able to use 70 shares from Lake 13 is simply a statement of fact describing the past and present status of those shares. For now, it is our decision to leave those shares in Lake 13, particularly in drought years, for the long-term benefit of migratory waterfowl. If the need arises (based on future waterfowl numbers and adequate staffing), we will farm those 2 additional tracts. Regarding your comments on the cost of our water assessment - your calculations of what our assessment should be do not reflect what the government has paid during the past five years. Below is a listing of those costs. Our water delivery fees have ranged from \$5.38 to \$14.63.

2006	11,512.53
2005	9,107.77
2004	9,013.10
2003	9,533.81
2002	9,609.55

A correction to the range of delivery fee costs was made on page 60 of the CCP.

Comment: Page 68 - bidding on grazing - Will the bids be per AUM or a flat bid?

Response: It will likely be per AUM. All other details and stipulations will be further outlined in the permit once the program is implemented.

Comment: Page 72 - Russian knapweed alleopathic characteristic - I wonder if the shallow plowing would be necessary to break the chemical chain? I had volunteer grass growing the next season after eliminating a patch of Russian knapweed (with manure) without plowing or disturbing the ground other than hoof action.

Response: We have little experience regarding the longevity of Russian knapweeds' alleopathic effects. Subsequent monitoring of recently treated areas is ongoing. Reported alleopathic effects are based on published literature and experience from other Service weed experts. The use of Tordon also precludes planting to other crops for a minimum of one year due to the herbicides residual effects in the soil.

Comment: Page 63 - VCD adjudicated water comes only from the Vermejo River and Chico Rica Creek - not Eagle Tail Creek - don't know where you got that piece of bad info.

Response: Comment acknowledged. The correction has been made on page 64 of the CCP.

Comment: Page 73 - I grew up in Colfax County and I think it is interesting that the Santa Fe Trail moved east of the refuge - east of the refuge puts it in the Canadian River. Don't you men west of the refuge?

Response: Thank you for pointing out this typographical error. Correction has been made on page 75 of the CCP.

Comment: Page 106 - Coop Weed Mngt Area - Your map of weed infestations on the refuge sure opened my eyes. At least now with some refuge weed management I might have a fighting chance of keeping ahead of the weeds. But since the drought and the wind, I sure have a whole new batch of weeds - blown in from the refuge - on top of what was already here.

Response: Invasive weed problems are widespread throughout Colfax County and the refuge comprises only .1% of the total county land base. Weeds are spread/disseminated via many avenues, the most predominant of which includes the extensive network of irrigation canals and impoundments in this area. Current management of ditch right-of-ways encourages the spread of vegetatively reproductive weeds such as Russian knapweed and Canada thistle through dissemination root pieces/shoots. Haying practices and purchase of hay not local to the area has also contributed to the spread of noxious weeds.

Comment: Page 161 - Deer hunting - "The nearest public land for deer hunting is national forest land approximately 35 miles west of the refuge" All state school sections are open to public deer hunting in season. There is a minimum of one school section per 36 sections in New Mexico. A section is 640 acres remember. 640 acres is adequate for deer hunting on state land but heaven forbid that 3000 acres of refuge land is enough! Also NMDGF holds elk depredation hunts in the Maxwell area. Property owners with less than 300 acres have gotten permits for these hunts. Your hunting assumptions don't fly based on what is happening right next door so to speak.

Response: Land management goals and objectives of Maxwell NWR are different than those of adjacent land owners. Unlike private lands, the refuge exists for the use and enjoyment of all members of the public; therefore, multiple use and safety are primary considerations. The State also has different management objectives for their managed lands. The 640 acre blocks of state land that you refer to are probably much more remote and surrounded by private lands, which do not have the same visitor use or proximity to public roads that the refuge has. Nonetheless, the refuge will work with NMDGF to gather the necessary data to evaluate and potentially establish compatible hunting opportunities that do not conflict with visitor safety and/or negatively impact other refuge resources. If it is determined that wildlife populations on the refuge could sustain hunting, the refuge may sometime in the future develop a Hunt Plan in cooperation with NMDGF.

Comment: The past management of weeds - both noxious and otherwise - and control of predators - namely coyotes- doesn't leave a good feeling about the Refuge as a desirable neighbor. Patty Hoban has done a remarkable job on the weeds, for the short time she has been manager. The Federal Government, in whatever form, does not have any business owning and managing land if they do not have adequate budgets and common sense management to take care of the land let alone acquiring more land. When the F&WS purchased the Maxwell refuge, the community began its decline. Instead of 15 or so families earning some income from the land, we have only 3 employees and 1 coop farmer benefitting from this land.

Response: Comment noted. Declines in the Maxwell community cannot simply be attributed to the establishment of the refuge. More likely, the gradual decline is related to changes in the local economy, land management, increased costs, and the reduction of jobs in northeastern New Mexico. Colfax County benefits annually from Revenue Sharing payments made by the USFWS under the authority of the Refuge Sharing Act of 1978, Public Law 95-469. The amount of the payment is based upon a percent of the fair market value of the lands and is intended to offset property taxes

that normally would have been assessed had the lands remained in private hands. Furthermore, the refuge benefits thousands of people, migratory birds, and resident wildlife by providing quality habitat and an area where priority recreational uses such as fishing, environmental education, interpretation, bird watching, and hiking can be enjoyed by all members of the public. The Act authorizes payments to counties in which Service-owned land is located, based upon

Comment: Page 15 - reference to shinnery oak - I consulted both Trees of N.A. and Shrubs & Trees of the SW Uplands and can not find “shinnery oak”. The oak around here is *Quercus gambelli*. There may be some wavyleaf oak at lower elevations - *Q. undulata* sometimes call shin oak also *Q. grisa* - Gray oak may be shin oak but that occurs further south.

Response: We are aware of the various plant species that occur on the refuge and in the surrounding area, as detailed in Appendix A of the CCP. The reference to shinnery oak on page 15 of the draft CCP is not specific to the refuge, rather it is describing one of 2 dominant vegetation types which delineate an ecoregion extending throughout much of eastern Colorado, northeastern New Mexico, and portions of northwestern Oklahoma and Texas. Shinnery oak is the common name for sand shinnery oak (*Quercus havardii* Rydb.). Additional information on this species can be found at: http://www.fs.fed.us/database/feis/plants/shrub/quehav/botanical_and_ecological_characteristics.html

6. A representative with the Santa Fe Trail National Scenic Byway attended the open house after reading an article in the published in the Raton Range on January 24 regarding the refuge and the lake lease renewals with the Vermejo Conservancy District. The following comments were received later in a letter dated February 4, 2006.

Comment: The New Mexico Santa Fe Trail National Scenic Byway is pleased to include the Maxwell Refuge on our list of assets and tourist destinations. We are delighted with you *Draft Comprehensive Plan and Environmental Assessment*. Your EA3.2 Alternative B, with emphasis on Goal 2, Public Use, Education, and Outreach, is consistent with our goals on the Byway. Our Vision Statement from our Corridor Management Plan of 1997 states:

“The Santa Fe Trail Scenic Byway initiative will help preserve, promote, and build appreciation of the Santa Fe Trail. The Trail corridor embodies the rich cultural heritage of northern New Mexico including prehistoric to present-day peoples, the interplay of diverse cultures, unmatched natural environments, and varied human expectations.”

Response: The Service and refuge staff appreciate the strong show of support for its preferred alternative.

Comment: The Maxwell National Wildlife Refuge is both listed and mapped in our Corridor Management Plan as having outstanding Natural, Scenic, and Recreational intrinsic qualities. Our Santa Fe Trail Byway Profile Asset Inventory encourages the traveling public to experience the natural beauty of the shortgrass prairie and playa lakes and learn of the culture and history of the area. We publicize our assets through national Scenic Byway maps and brochures, www.byways.org, www.SantafetrailNM.org/site42, and www.NEnewmexico web sites, and Northeast New Mexico Tourism brochures. We work with the National Park Division of Long Distance Trails, the Federal Highway Administration, and the New Mexico Departments of Tourism and Transportation.

Response: Thank you for providing this information. The web sites you provided have been incorporated into the document on page 82 of the CCP.

Comment: Sharing common goals for interpretation, we are pleased with you plans and offer our best wishes for continued success.

Response: Comment acknowledged and appreciated.

Comment: I would like to make several minor suggestions for pages 56-57 (Draft CCP):

During the financial panic of 1873, the Santa Fe stopped construction of the Railroad at Granada, Colorado. The resultant Granada-Fort Union Military Freight Road thru Toll-Gate Canyon and Capulin was the major route of the Santa Fe Trail until the arrival of the railroad, and carried the greatest quantity of supplies over the Trail to the Military Freight Depot at Fort Union (Sperry, 1990). The railroad reached Trinidad, Colorado, on October 11, 1878 (Taylor, 1971).

The Jicarilla Apache and Moache Ute Indians were indeed removed from the Agency in Cimarron. The Utes were moved to the Southern Ute Reservation, Ignacio, Colorado. However, the Jicarillas were forcibly removed first to Abiquiu, then in 1883 to the Mescalero Reservation near Fort Stanton on a long walk of 350 miles, and finally in 1887 to the Jicarilla Apache Reservation near Dulce, New Mexico (Velarde Tiller 1992, Murphy 1972, and Pearson 1961).

The Christian Reformed Church and the Bethesda Tubercular Sanitorium were located at the corner of Section 27, 28, 33, and 34, just a mile south of the Refuge, at the corner of C-25 and C-26. The story of the young Dutch settlers, who struggled with disease and a lack of water in a new land between 1895 and 1910, when the institution moved to Denver, is an inspiring story of courage and endurance in a foreign land (Bosch, 1988).

References

- T.J. Sperry, 1990, in *Wagon Tracks*, Vol 4(3):14-17, Santa Fe Trail Association Newsletter.
Richard Loudon, 1993, in *Wagon Tracks*, Vol 7(3):7-10, Santa Fe Trail Association Newsletter.
Morris F. Taylor, *First Mail West*, 1971. University of New Mexico Press, p. 178.
Veronica E. Velarde Tiller, *The Jicarilla Apache Tribe*, 1992, University of Nebraska Press.
Lawrence R. Murphy, *Philmont, 1972*, University of New Mexico Press.
Lawrence R. Murphy, *Frontier Crusader-William F. M. Army*, 1972, Univ. of Arizona Press.
Jim Berry Pearson, *The Maxwell Land Grant*, 1961, University of Oklahoma Press.
Meindert Bosch, *Bridges Across The Years*, Denver 1988, Bethesda PsychHealth System, Inc.

Response: Suggested edits were considered and minor corrections incorporated where appropriate. While very interesting and informative, the suggested edits provide much more detail than is necessary (or appropriate) for the CCP. The two sentences in the CCP (page 58, 4th paragraph), which refer to the halt of railroad construction and the moving of the Indian Agency, were only intended to serve as brief examples of the economic hardships experienced in the area at that time. Incorporating all the detail provided in the suggested edits would change the context of the discussion in the CCP.

7. The New Mexico Environment Department provided the following comments in a letter dated February 6, 2006:

Comment: Surface Water Quality - This project is consistent with the Department's Surface Water Quality Bureau goals/standards and does not present a conflict with any rules or regulations. We support projects that create and protect aquatic and wetland habitats.

Response: Comment acknowledged and appreciated.

Comment: Ground Water Quality - It is anticipated that improvements to visitor services may include the construction of facilities at the visitor center. Any construction will likely involve the use of heavy equipment, thereby leading to the possibility of contaminant releases (e.g., fuel, hydraulic fluid, etc.) associated with equipment malfunctions. The Department's Ground Water Quality Bureau advises all parties involved in the project to be aware of discharge notification requirements contained in 20.6.2.1203 NMAC. Compliance with the notification and response requirement will ensure the protection of ground water quality in the vicinity of the project. Also, any discharges of domestic waste to wastewater systems with design flows greater than 2,000 gallons per day require a ground water discharge permit in accordance with 20.6.2 NMAC.

Response: The Service will comply with all requirements necessary to protect ground water quality.

Comments: Air Quality - Maxwell National Wildlife Refuge is located in Colfax County, New Mexico. Colfax County is currently considered to be in attainment of all state and national ambient air quality standards.

The forest, rangelands and grasslands of New Mexico are fire-adapted ecosystems where long absence of fire has led to hazardous fuel and unhealthy forest conditions. The Environment Department recognizes that in order to return ecosystems to their natural condition, there is an increased need to use prescribed fire as a tool.

Compliance with New Mexico's smoke management regulation will be required for this project. Emission reduction techniques for smoke should be developed and used. The use of at least one emission reduction technique is required for prescribed burns of more than 23 acres or 500- cubic feet of pile volume per day. Additional requirements of the smoke management program include documentation on non-use of alternatives to fire, public notification, registration, and tracking information on all requirements are available on our web site at http://www.nmenv.state.nm.us/aqb/SMP/smp_index.html.

The Comprehensive Conservation Plan as proposed would not be anticipated to contribute negatively to air quality on a long-term basis.

Response: Comments acknowledged and appreciated. The refuge's Fire Management Plan incorporates all measures necessary to comply with New Mexico's smoke management regulations.

8. The New Mexico Department of Game and Fish provided the following comments in a letter dated February 15, 2006:

Comment: The Department of Game and Fish (Department) supports Alternative B (proposed action) as it best addresses needs for wildlife habitat and restoration efforts. Promoting native prairie restoration and increased measures to enhance habitat for species of concern are emphasized with this Alternative. Invasive plant species control is also best addressed with this alternative. Cooperation between the Service and the Department on habitat issues, especially with regards to restoration of native ecosystems, will also be a part of the CCP over the next decade.

Response: The Service and refuge staff appreciate the Department's support of the proposed action (implementation of the CCP).

Comment: Also in support of the proposed action, the Department would be open to development of possible limited hunting opportunities on the refuge. Only Alternative B allows this for consideration in the future. The Department would be in support of the submission of a "Hunt Opening Package" as stated in the draft EA.

Response: The refuge looks forward to working with the Department to gather the necessary data to evaluate and potentially establish compatible hunting opportunities that do not conflict with visitor safety and/or negatively impact other refuge resources. If it is determined that wildlife populations on the refuge could sustain hunting, the refuge may sometime in the future develop a "Hunt Open Package."

9. A letter dated January 26, 2006, was received from the Vermejo Conservancy District. This letter does not specifically provide comments on the CCP, but it was received during the open comment period and it documents important negotiations regarding the refuge's lake leases. A copy of this letter, as well as other correspondence/information regarding negotiations and current status of the lake leases are included in Appendix H.

10. Comments received from individuals that attended the Open House held on January 25, 2006 are summarized below:

Comment: Two local landowners agreed with the proposed grazing and burning objectives as outlined in the CCP. They stated that they would not like to see the refuge opened up to deer hunting. They further stated that they felt it would be a shame to close the refuge if the lake leases were not renewed.

Response: Comments acknowledged. The Service and refuge staff appreciate the show of support by these members of the public.

Comment: Another member of the public indicated that there should be no hunting of any species on the refuge. The individual felt that ample hunting opportunities already existed elsewhere in the local community and felt it would be a poor use of government funds to further that effort.

Response: Hunting is one of six priority wildlife-dependent public uses of National Wildlife Refuges, so the Service is required to consider this activity; however, the Refuge must also ensure that compatible hunting opportunities do not conflict with visitor safety or negatively impact other refuge resources. If in the future it is determined that hunting can be done safely and if wildlife populations on the refuge could sustain hunting, the refuge would then go through the appropriate processes (i.e., develop a hunt plan and publish refuge specific regulations in the Code of Federal Regulations) before implementing a hunting program. This proposal would need to be approved by the Regional Office, Washington Office, and have concurrence from the New Mexico Department of Game and Fish. Additional public outreach would also be conducted.

Comment: The Maxwell School Superintendent expressed enthusiasm regarding the recent environmental education programs (Audubon New Mexico) offered at the refuge. Appreciation was also expressed for the Refuge's participation in the school's "Rural School-Led Community Revitalization Effort", a state pilot program aimed at saving rural schools through economic development of rural communities. The Refuge has been the focus of several potential projects involving members and students of the local community. Losing the refuge resource would negatively impact the surrounding community and future education efforts.

Response: The Service appreciates the support of the Maxwell School and look forward to future partnerships on providing environmental education opportunities for local classrooms.

Comment: A refuge volunteer expressed his enthusiasm for current management of the refuge and the positive opportunities it provides members of the public.

Response: The Service and refuge staff appreciate the strong show of support expressed by this member of the public.

Comment: A refuge neighbor expressed views on the positive educational values provided by the refuge and subsequent benefit to local students. The concept regarding "nature deficit syndrome" was also discussed in raising kids' awareness of natural/ecological processes. The individual was also impressed with how much the refuge gives back (financially) to the county each year through revenue sharing payments.

Response: The Service and refuge staff appreciate the positive comments and expression of support received from this member of the public.

Comment: A refuge neighbor indicated agreement with the current and proposed management of the refuge as outlined in the CCP. Concern was expressed in regards to the dried weeds in certain portions of refuge and their potential fire hazard.

Response: Comments acknowledged. The Service and refuge staff appreciate the show of support. Weedy areas of concern will be mowed in place of prescribed fire due to the current drought conditions and fire restrictions in place in Colfax County.

APPENDIX J - DISTRIBUTION / MAILING LIST

Federal Officials

- U.S. Representative Tom Udall, Santa Fe, NM
- U.S. Senator Jeff Bingaman, Santa Fe, NM
- U.S. Senator Pete Domenici, Santa Fe, NM

Federal Agencies

- USDA, Natural Resource Conservation Service, Raton, NM
- USDA, Colfax Soil and Water Conservation District, Raton, NM
- DOI, NPS, Capulin Volcano National Monument, Capulin, NM
- USFWS, Anchorage, AK; Arlington, VA; Atlanta, GA; Ft. Snelling, MN; Hadley, MA; Lakewood, CO; Portland, OR; New Mexico Ecological Services Field Office, Albuquerque, NM; New Mexico Fishery Resource Office, Albuquerque, NM; Las Vegas National Wildlife Refuge, NM

State Agencies

- New Mexico Department of Game and Fish, Springer Game Warden; NE Area Habitat Specialist, Taos, NM; Raton Office Supervisor, Raton, NM; Assistant Chief of Conservation Services Division, Santa Fe, NM; Deputy Director, Santa Fe, NM
- New Mexico Environment Department, Surface Water Quality Bureau, Santa Fe, NM
- Sugarite Canyon State Park, Raton, NM

City/County/Local Governments

- City Councilors, Village of Maxwell
- Colfax County Extension Office, Raton, NM
- Colfax County Commission, Raton, NM
- Cimarron Chamber of Commerce, Cimarron, NM
- Raton Hispanic Chamber of Commerce, Raton, NM
- Raton Chamber of Commerce and Economic Development Council
- Springer Chamber of Commerce, Springer, NM
- Superintendent, Maxwell Municipal Schools, Maxwell, NM
- Superintendent, New Mexico Boys School, Springer, NM
- Vermejo Conservancy District, Maxwell, NM

Organizations

- Audubon New Mexico, Santa Fe, NM
- Boy Scouts of America, Philmont Scout Ranch, Cimarron, NM
- New Mexico Cooperative Fish and Wildlife Unit, NMSU, Las Cruces, NM
- New Mexico Natural History Institute, Santa Fe, NM
- New Mexico Wildlife Federation, Albuquerque, NM
- NRA Whittington Center, Raton, NM
- Safari Club International, Washinton, DC
- Sierra Club, Santa Fe Group - Rio Grande Chapter, Santa Fe, NM
- The Wilderness Society, Washington, DC
- Wildlife Management Institute, Ft. Collins, CO

Libraries

- Cimarron Public Library, Cimarron, NM
- Fred Macaron Library, Springer, NM
- City of Raton Library, Raton, NM

Media Contacts

- Guadalupe Communicator, Santa Rosa, NM
- KNMX AM Radio, Las Vegas, NM
- KFUN AM & KLVF FM Radio, Las Vegas, NM

- Las Vegas Daily Optic, Las Vegas, NM
- Quay County Sun, Tucumcari, NM
- The Raton Range, Raton, NM
- Sangre de Cristo Chronicle, Angel Fire, NM
- The Santa Fe New Mexican, Santa Fe, NM
- Santa Fe Reporter, Santa Fe, NM
- Santa Rosa News, Santa Rosa, NM
- Union County Leader, Clayton, NM

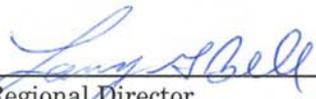
Individuals

- David Cleary
- Andrea Ernst
- Jerry French
- Ralph Godfrey
- Bill Goebel
- John Grubelnik
- Jack Horn
- Bob Hronich
- Mary Lou Kern
- Dustin Long
- Max Mance
- Bill Mobley
- Linda Mowbray
- Ray Nystul
- Rebecca Owensby
- Roger S. Peterson
- Dr. Kathleen Ramsey, DVM
- B. Salchau
- Ken Schwartz
- Carolyn Stallwitz
- Todd Wildermuth
- Vermejo Park Ranch

ENVIRONMENTAL ACTION STATEMENT

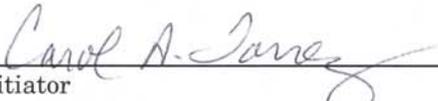
U.S. Fish and Wildlife Service
Region 2
Albuquerque, New Mexico

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA) and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and have determined that the action of implementing the Maxwell National Wildlife Refuge Comprehensive Conservation Plan (CCP) is found not to have significant impacts as determined by the *Finding of No Significant Impact* (following) and the *Draft Comprehensive Conservation Plan and Environmental Assessment*.

acting 

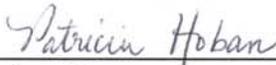
Regional Director
Region 2, U.S. Fish and Wildlife Service

6/22/06
Date



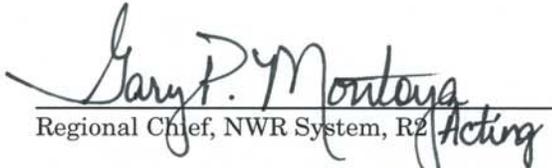
Initiator
Biologist/Natural Resource Planner

4-7-06
Date



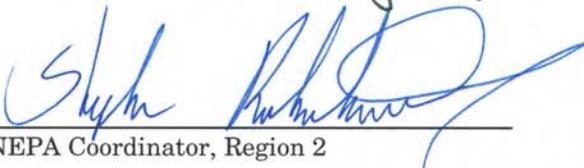
Refuge Manager
Maxwell NWR

4-7-06
Date



Regional Chief, NWR System, R2 *Acting*

6/15/06
Date



NEPA Coordinator, Region 2

6/15/06
Date

FINDING OF NO SIGNIFICANT IMPACT

Comprehensive Conservation Plan and Environmental Assessment for the Maxwell National Wildlife Refuge

The *Maxwell National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment* (Draft CCP/EA) establishes a set of management strategies to promote the conservation goals of the Maxwell NWR during the next 15 years. The goals for management of the refuges are as follows: 1) to restore, enhance, and protect the natural diversity of the refuge by implementing appropriate management programs for wildlife and habitat resources including strategies that benefit native flora and fauna, migratory birds, threatened and endangered species, and other species of concern; 2) to increase public understanding and awareness of the purpose and mission of the refuge and the culture and history of the area, through effective wildlife education/interpretation and continue to provide opportunities for safe, quality compatible wildlife-dependent public use and recreation; 3) to maintain or strengthen existing interagency and jurisdictional relationships and establish new partnerships within the community to cooperate on mutually beneficial programs for improving wildlife and habitat resources on the refuge and the Arkansas/Red Rivers Ecosystem; and 4) to develop program support sufficient to provide the necessary staffing, facilities, equipment, and funding to accomplish the purpose and goals of the refuge and fulfill the mission of the refuge system.

The CCP outlines long-range management objectives to achieve these goals. The strategies address management of habitats, wildlife, grasslands, invasive species control, waters, cultural resources, public use opportunities, and administration and staffing for the refuges. The CCP includes a summary of existing conditions, identifies ongoing data needs, and recommends actions to achieve the refuge's goals.

Alternatives Considered

The EA presented and evaluated three alternative ways of managing the Maxwell NWR to benefit migratory birds, other wildlife, and their habitats, as well as public use opportunities. It examined the environmental consequences that each management alternative could have on the quality of the physical, biological, and human environment, as required by the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations (40 CFR 1500 *et seq.*), as well as each alternative's potential to achieve the goals of the CCP. A brief summary of these alternatives follows:

Alternative A: This was the No Action Alternative in the Draft CCP/EA required by the Council of Environmental Quality's regulations on implementing NEPA. Under this alternative, there would be no change in current Refuge management practices, funding or staffing, and no adoption of a management plan. Management efforts on the refuge would continue to focus on farming, invasive species control, and preservation of native grasslands. Grazing would continue to be excluded. Efforts to use prescribed fire would continue to be limited. There would be no expansion of habitat and ecosystem management activities, inventories, or monitoring. The public use program would remain at current levels, with fishing and wildlife observation being the main focus. Environmental education and interpretation would be accommodated on a case-by-case basis. No new recreational/hunting opportunities or facilities would be developed on the refuge. Refuge management programs would continue to be developed and implemented with little baseline biological information. Current base funding and staffing levels allow for the refuge to focus on limited habitat management and maintenance projects. Any improvement to the program would occur opportunistically.

Alternative B: This alternative was the Service's Proposed Action in the Draft CCP/EA. Under this alternative a variety of habitat management techniques (prescribed burning, experimental grazing, and mechanical and chemical invasive species control methods) would be utilized to encourage ecological integrity, promote native prairie restoration, control invasive plant species, and provide/enhance habitat for grassland birds and other resident wildlife. The farming program would continue to be emphasized. Inventory, monitoring, and research would increase. The public use program would increase and/or enhance educational and outreach activities, recreational opportunities (including continued fishing,

wildlife observation, photography and consideration of hunting opportunities), community involvement, and facilities.

Alternative C: Under this alternative, Maxwell NWR would be managed as part of a complex with Las Vegas NWR and all farming efforts would be turned over to cooperative farmers. By transferring all farming activities to cooperative farmers and combining both refuge staffs, more time would potentially be made available for native grassland restoration, invasive species control, and maintenance of natural diversity. The prescribed fire program and comprehensive habitat monitoring and evaluation would be emphasized. More time could be focused on the control and containment of invasive plant species through increased efforts on inventory and mapping, monitoring, and experimental treatments of infested areas. Environmental education and interpretation efforts could improve with increased input from a Outdoor Recreation Planner on staff. Other public use programs (fishing, hunting, wildlife observations) would be similar to Alternative A. While there could be benefits from an increased number of total staff and more available expertise, it is likely that both refuges could suffer through the reduction in time and staff available to spend on site. Existing staffs are already spread too thin to accomplish the objective of one refuge, much less two refuges.

Scenarios outside the scope of the Environmental Assessment (EA) and Draft Comprehensive Conservation Plan

A *contingency statement* was published in the Draft CCP and the associated Environmental Assessment (EA) released in December of 2005 disclosing that the leases on the lakes owned by the Vermejo Conservancy District have formally expired (See Appendix H). The Service has been in negotiations with the Vermejo District for several months now and only recently agreed to a three year extension of the lease for Lake 12 and Lake 14. The contingency statement in the Draft CCP indicated that should the District decide not to renew the lease that the Service would then have to consider a substantial shift in the basis upon which management actions are made in light of the original purposes. In short, for the Service not to have jurisdiction of the lakes would mean that management actions that benefit migratory waterfowl would have to be adjusted appropriately and that it is even possible that the Service would consider seriously reducing or eliminating active management of refuge lands. This would be the situation facing the Service should the Conservancy District decide not to renew at the end of the new three year lease period. At that point, the Service will then decide what revisions to the Comprehensive Conservation Plan may be necessary.

This Finding of No Significant Impact (FONSI) is simply limited to those management actions to be taken by the Service in the event the lake leases are renewed and as described in the Draft CCP reviewed by the public. This FONSI does not attempt to evaluate the impacts of possible Service decisions that result from the Conservancy District's decision to find another party to lease the lakes. **A supplemental NEPA document will necessarily be issued prior to implementation of actions not covered by the EA and this FONSI.**

Possible Implications of Non Renewal of the Lakes to FWS

Curtailed Farming Activities: Obviously, if the Conservancy were to lease the lakes to a new party for use as a private waterfowl hunting area, the Service would then have to consider completely curtailing farming activities that would serve as a baiting mechanism for those lakes. For farming activities to continue it is essential that the lakes be under the jurisdiction of the Service so as to appropriately balance waterfowl protection under the sanctuary rule.

Unmanned Satellite of Las Vegas NWR: Curtailment of active management like farming could mean the eventual phase-out of on-sight management. Personnel could be phased out or moved to the closest field station with plans to visit the Maxwell site periodically,

Invasive Species Management: Some activities would continue per CCP: While the Service could consider reducing or eliminating permanent personnel assignments and farming activities at the refuge,

it could continue to conduct periodic activities that reduce the levels of invasive plants. Monitoring of results of this type of activities would take place under those objectives published in the Draft CCP.

Visitor Uses To Continue: Wildlife-related visitor uses would continue but diminish in terms of quality and quantity as a result of discontinuing the farming program. Without the additional food source, wildlife diversity and subsequent use of the refuge would likely decline. Fishing opportunities would not be impacted; however, wildlife viewing along county roads would decrease. With no on-site staffing, all refuge provided interpretive/environmental education programs would end.

Other Strategies Not Considered in Draft CCP: Following a decision by the Conservancy District to lease the Lakes to another party, it is likely that the Service would then contemplate alternative approaches for managing the landscape. At that point, the Service would then issue a supplemental Assessment of any possible environmental effects not covered by the EA and this FONSI.

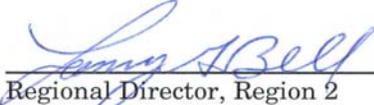
Conclusion

The alternative selected for implementation is Alternative B. This alternative (now the CCP) describes how habitat objectives will be accomplished through a combination of management activities (farming, prescribed burning, experimental grazing, and mechanical and chemical invasive species control methods) to encourage ecological integrity, promote native prairie restoration, control invasive plant species, and provide/enhance habitat for migratory waterfowl, grassland birds, and other resident wildlife. This alternative was selected because it best meets the purposes and goals of the refuge. This action will not adversely impact endangered or threatened species or their habitat. Opportunities for wildlife-dependent activities such as observation, photography, environmental education, and interpretation will be enhanced. Partnerships with county, state, and federal agencies, private landowners, and conservation groups will enable the refuge to achieve its goals and objectives, minimize costs, and bridge relationships with others. Archeological or historical resources will not be adversely impacted. Future management actions will have a neutral or positive impact on the local economy. In addition, following the recommendations in the CCP will ensure that Refuge management is consistent with the mandates of the National Wildlife Refuge System.

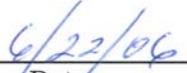
For the reasons presented above, and based on the review and evaluation of information contained in the CCP and EA, I have determined that the formal approval of refuge management goals, objectives, and strategies, as described in the CCP and Proposed Alternative of the EA (Alternative B), is not deemed a major Federal action that would significantly affect the quality of the human environment within the meaning of Section 102(2) (c) of the National Environmental Policy Act of 1969. Accordingly, the preparation of an Environmental Impact Statement is not required.

Supporting Reference:

U.S. Fish and Wildlife Service. 2005. *Maxwell National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment*, Albuquerque, New Mexico.



Regional Director, Region 2
U.S. Fish and Wildlife Service



Date