

# **THE SAN LUIS VALLEY**

## **COMMUNITY WETLANDS STRATEGY**

PREPARED BY:  
SAN LUIS VALLEY WETLANDS  
FOCUS AREA COMMITTEE  
IN COOPERATION WITH THE  
COLORADO NATURAL HERITAGE PROGRAM

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## TABLE OF CONTENTS

|  |    |
|--|----|
| FORWARD.....   | 4  |
| INTRODUCTION .....   | 4  |
| What is a Colorado Community Wetlands Strategy? .....                                  | 4  |
| What is a Wetland? .....   | 4  |
| The Department of Natural Resources Division of Wildlife Wetlands Program .....        | 7  |
| The Focus Area Concept.....  | 15 |
| The San Luis Valley Focus Area Committee - A Model.....                                | 15 |
| PART I: AN OVERVIEW OF THE SAN LUIS VALLEY AND ITS WETLANDS NATURAL HISTORY .....      | 16 |
| Geology and Climate .....  | 16 |
| Human History and Current Socio-Economic Conditions.....                               | 17 |
| The Community Focus on Wetlands.....   | 19 |
| The San Luis Valley Waterbirds and Wetlands Habitat .....                              | 22 |
| The Alamosa National Wildlife Refuge .....   | 23 |
| The Blanca Wildlife Habitat Area .....   | 24 |
| The Monte Vista National Wildlife Refuge.....  | 25 |
| The Rio Grande State Wildlife Area.....  | 26 |
| The Russell Lakes State Wildlife Area.....   | 26 |
| The San Luis Lakes State Wildlife Area.....  | 27 |
| PART II: COLORADO NATURAL HERITAGE PROGRAM INFORMATION ABOUT THE SAN LUIS VALLEY ..... | 28 |
| Introduction.....  | 28 |
| The Natural Heritage Ranking System .....  | 28 |
| Element Occurrence Ranking .....   | 29 |
| Proposed Conservation Areas .....  | 30 |
| Proposed Conservation Area Planning Boundaries .....                                   | 30 |
| Ranking of Proposed Conservation Areas .....   | 31 |
| Wetland Data Sources for the San Luis Valley and Colorado.....                         | 32 |
| How many wetlands does the San Luis Valley have and where are they located? .....      | 32 |
| What wetland types are in the San Luis Valley? .....                                   | 33 |
| What wetland functions exist? .....  | 33 |
| What is the condition of the wetlands? .....   | 34 |
| Where and how are wetlands disappearing? .....   | 34 |
| What activities are contributing to wetlands loss?.....                                | 35 |
| What are the consequences of wetlands loss?.....                                       | 35 |
| Wetland Rapid Function-Assessment Techniques.....                                      | 36 |

|   |           |
|---|-----------|
| Classifying Wetlands .....  | 36        |
| Wetland Inventories in San Luis Valley .....                              | 37        |
| <b>PART III: THE SAN LUIS VALLEY COMMUNITY WETLANDS STRATEGY.....</b>     | <b>38</b> |
| The Goals, Objectives, and Action Plan of the<br>Strategy.....            | 38        |
| Protocols of the Focus Area<br>Committee.....                             | 41        |
| Outreach.....   | 41        |
| Accomplishments of the<br>Strategy.....                                   | 42        |
| <b>PART IV: SAN LUIS VALLEY WETLANDS BIBLIOGRAPHY AND REFERENCES.....</b> | <b>50</b> |
| <b>ACKNOWLEDGEMENTS.....</b>  | <b>57</b> |

## FORWARD

Wetlands protection in the San Luis Valley of Colorado has been very successful. Having learned from the San Luis Valley experience, as depicted in this document, we now know that to develop a community wetlands strategy, participants must work together at various organizational levels. Given that the Department of Natural Resources Division of Wildlife Wetlands Program focuses entirely on voluntary, incentive-based, non-regulatory, mechanisms for protecting wetlands, it should not be a surprise that the San Luis Valley Focus Area Committee, a partner in the Wetlands Program, approached wetlands protection in a similar voluntary fashion. The result is the approach depicted in this document.

The San Luis Valley has demonstrated to all of us that a community, in assembling a wetlands protection strategy, needs to know what direction the major wetland protection participants in the state are headed in, what direction the local community wants to take, and how a strategy will guide their own action plan. This document describes these major steps. It is understood that many communities do not have a wetlands focus area committee, nevertheless, communities wanting to protect their wetlands resources will find this document very helpful.

## INTRODUCTION

### WHAT IS A COLORADO COMMUNITY WETLANDS STRATEGY?

A community wetlands strategy is an organizational tool to identify opportunities to make wetland protection programs work better; it is a process for bringing people together to help identify specific wetlands problems and realistic, equitable, solutions that achieve future wetlands protection goals. Creating a strategy is a process which seeks to involve everyone in the community with an interest in wetlands, and which seeks to identify appropriate projects worthy of community support. Such strategies develop over time. First, there must be an appreciation of the wetlands resource; then the community must gather and digest information about its wetlands and wetland characteristics. With assistance from entities such as the Colorado Natural Heritage Program, the community can select conservation priorities. With these priorities in mind, the community can then formulate a strategy, and finally, an action plan, driven by the strategy, with a time table for conservation objectives to be achieved.

### WHAT IS A WETLAND?

Wetlands are places where soils are inundated or saturated with water long enough and frequently enough to significantly affect the plants and animals that live and grow there. Until recently, most people viewed wetlands as a hindrance to productive land use. As a result, many wetlands across North America were purposefully destroyed. Wetlands in the United States are being lost at a rate of thousands acres per year. Although the current rate of wetland loss in Colorado is difficult to quantify, it is clear that many of the state's wetlands, especially around urban areas and along the major rivers, have been destroyed or profoundly altered from their pre-settlement state.

Wetlands vary throughout different geographical locations and climate. However, several key functions and defining characteristics are common among all wetlands. These characteristics allow scientists to define an area as a wetland. Wetlands can be identified by their shallow surface water, high water table, and/or saturated soils. Most wetlands

will have standing water on their surface and will contain soils and plants that tolerate saturated conditions. Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life that thrives there. These transitional habitats occur between upland and aquatic environments where the water table is at, or near the surface of the land, or where the land is covered by shallow water that may be up to six feet deep.

The people of Colorado benefit in many ways from sustaining a viable wetlands resource in the state. Wetlands provide many values and functions, such as wildlife habitat for wetlands dependent species that include fish, reptiles, amphibians, mammals, and birds (shore birds, waterfowl, and neo-tropical migratory song birds). Wetlands sustain biological diversity wherever they are located in the landscape, of both plant and animal species and, plant and animal communities. The Colorado Natural Heritage Program (CNHP) classifies many species of wetland-dependent birds and amphibians as “rare and imperiled.” If wetlands habitat loss continues, more species are likely to be similarly classified.

The following table depicts the many benefits society derives from healthy wetlands:

# Wetlands Benefit Society

*In a 1995 survey of residents of Colorado<sup>1</sup>, 83 percent agreed with the statement “Wetlands are very important and should be protected by the government.” A recent national survey revealed very similar results across various demographic groups.<sup>2</sup> The people of Colorado are aware that protecting wetlands provides numerous benefits to society.*

Wetlands are wildlife habitat for wetland-dependent species that include imperiled, threatened, endangered, increasing, and stable species. Fish, reptiles, amphibians, mammals, and birds (shorebirds, waterfowl, and neo-tropical migratory songbirds) may use wetlands during part or all of their life cycles.

Wetlands sustain the biological diversity of plant and animal species and plant and animal communities wherever they are located in the landscape.

Wetlands can provide water and forage for livestock. Wet meadows can produce excellent hay crops.

Wetlands contribute to better water quality by physically, chemically, and biologically cleansing water of pollutants and debris.

Wetlands contribute to flood attenuation by retarding the flow of fast-moving water that can be erosive and destructive and by reducing sedimentation that contributes to the pollution of water bodies. Wetlands can store large volumes of water during spring runoff and during storms and release it slowly back into the ground or the water channel.

Wetlands often contribute to ground water recharge by allowing it to infiltrate to deeper ground layers.

Wetlands provide recreational opportunities including photography, wildlife watching, hunting, fishing, and nature walks.

Wetlands provide open space, therefore, protection of wetlands simultaneously protects open space and provides all the benefits derived from open space.

Wetlands lend themselves to be studied and observed at many levels and provide tremendous informal educational opportunities and formal educational opportunities in the fields of biology, botany, zoology, ecology, and chemistry.

Wetlands provide economic value by providing all of the above and providing food, fish, and medicines. Some of the functions that wetlands perform would otherwise cost society.

1. Ciruli Associates, December 1995, *Colorado Outdoors 2000*, Public Opinion Survey on Colorado Conservation and Outdoor Recreation

2. Lake Sosin Snell Perry & Associates, January 1998, *Clean Water Network, A Presentation of Findings*

## THE DEPARTMENT OF NATURAL RESOURCES DIVISION OF WILDLIFE WETLANDS PROGRAM

In 1995, Ciruli Associates established that over 80% of Colorado residents agree that wetlands are very important and should be protected. In January of 1998 a national survey again revealed that 82% of voters believe that protecting wetlands is important to them. The survey results stated that, “across all demographic groups, voters solidly believe protecting wetlands is important to them (men/women, Democrats/Republicans, Northeast, Midwest, South, West)”. At a time when the nation and the State of Colorado are experiencing so much growth, it is encouraging that people recognize the value of this important natural resource.

In 1997 the Colorado Division of Wildlife (CDOW) launched a Wetlands Program. The CDOW has taken the approach in the Wetlands Program that much wetlands conservation can be achieved by voluntary, incentive-based, means involving “willing-to-participate landowners” and local communities. The Wetlands Program is operating in a very supportive arena, a surprise to many since wetlands protection in this country has been controversial, in particular, regulatory protection of wetlands (Section 404 of the Clean Water Act protection).

The Wetlands Program fosters cooperation among wetland protection interests. Thus, communication regarding wetlands conservation efforts has been established with several entities including federal and state agencies and private wetlands conservation companies and non-governmental organizations. The CDOW is by no means the only entity involved in wetlands conservation, but it has now become a major player in the wetlands conservation arena. The following tables depicts key aspects of the Wetlands Program and the strategies it uses to achieve its goals and objectives.

# **Goals and Objectives of the Department of Natural Resources, Division of Wildlife Wetlands Program**

## **Goals of the Wetlands Program:**

Protect wetland-dependent wildlife through incentives and voluntary means. Several wildlife species that use wetlands habitat are imperiled, threatened, or endangered; therefore, their protection is priority.

Protect wetlands habitat through incentives and voluntary means. In the program, the term “protection of wetlands habitat” refers to the use of one or all of the following actions: restoration, enhancement, management, and acquisition – of fee title or conservation easement – by a conservation entity such as a land trust, an individual, a non-governmental organization, or a government entity.

Establish and foster wetlands protection partnerships between the Division of Wildlife, communities, non-governmental organizations, state government agencies, federal government agencies, and private landowners – for example, ranchers and farmers.

Assist Colorado communities in generating a wetlands protection strategy for their community upon their request.

Encourage interaction, cooperation, and partnering among wetland protection participants and provide an organizational tool – a statewide wetlands strategy that identifies opportunities to make wetlands protection programs in Colorado work better. A statewide strategy is a process for bringing together citizens, communities, development interests, water interests, government officials, and others to help identify common wetland protection goals and workable equitable solutions that achieve those goals. The process draws on all levels of government and the private sector to focus and coordinate wetland protection efforts. (continued)



## **Key Objective of the Wetlands Program:**

Protect 100,000 acres of biologically significant wetlands and associated uplands for wetland-dependent species – imperiled, threatened, endangered, increasing, or stable – by 2005.

# Strategies of the Department of Natural Resources, Division of Wildlife Wetlands Program

|  |   |
|--|---|
| <b>WETLANDS INITIATIVE</b>   | The objective of this strategy is to protect 15,000 acres of biologically significant wetlands and associated uplands by 2000. This is a DOW partnership with Ducks Unlimited, The Nature Conservancy, Partners for Fish and Wildlife, Division of Parks and Outdoor Recreation, and Great Outdoors Colorado. A \$4.46 million GOCO grant and Partners funded this effort.  |
| <b>WETLANDS PARTNERSHIPS</b>   | This strategy promotes the opportunity for numerous entities (individuals, organizations, or agencies) to cooperate or partner with DOW and each other on wetlands protection efforts on a project-by-project basis or a long-term basis. Examples of partners: Colorado Natural Heritage Program, Ducks Unlimited, The Nature Conservancy, Division of Parks and Outdoor Recreation Natural Areas Program, USFWS Partners for Fish and Wildlife, Great Outdoors Colorado, Environmental Protection Agency, and Natural Resources Conservation Service. |
| <b>COMMUNITIES WETLANDS STRATEGIES</b>   | This strategy provides the opportunity for communities that request it to receive information and assistance in planning wetlands protection and developing a wetlands strategy. The EPA 104-b-3 Grant Program provides some of the funding.  |
| <b>NORTH AMERICAN WATERFOWL MGMT. PLAN PLAYA LAKES AND INTERMOUNTAIN WEST JOINT VENTURES IN COLORADO</b> | This strategy provides for participation in the Intermountain West Joint Venture and Playa Lakes Joint Venture of the North American Waterfowl Management Plan. The NAWMP aims to protect primarily waterfowl and shorebird species and wetlands habitat.   |
| <b>USDA FARM BILL LIASON</b>   | This strategy provides for a Farm Bill Liaison on the Wetlands Team to facilitate understanding of those programs in the 1996 Farm Bill that place an emphasis on wetlands, e.g., the Wetlands Reserve Program.   |
| <b>U.S. CLEAN WATER ACT SECTION 404 PROGRAM LIASON</b>   | This strategy provides for a Section 404 Liaison on the Wetlands Team to facilitate understanding of that program and the continuing communication with Army Corps of Engineers and EPA on Section 404.   |
| <b>COLORADO DUCK STAMP</b>   | This strategy involves the administration of the Colorado Duck Stamp Program that is funded primarily by Colorado Duck Stamp sales, DU MARSH funds, contributions from other project participants, and DOW funds. This project delivers wetlands protection projects with an emphasis on waterfowl.   |
| <b>WETLANDS PROJECTS DATABASE</b>  | This strategy involves maintaining a database that tracks numerous aspects of all DOW wetlands projects, including design, implementation, completion, project identification, funding allocations, and monitoring/evaluation efforts.  |
| <b>WETLANDS FUNDING PROCESS</b>  | This strategy facilitates securing funds for wetlands protection efforts. The WFP is a database of potential sources of funding for wetlands projects. Wetlands partners submit their requests by means of user-friendly applications. Coordination of funding efforts greatly enhances leveraging opportunities and maximizes efficiency in utilization of funds.  |
| <b>WETLANDS PROJECTS MONITORING AND EVALUATION</b>   | This strategy evaluates and monitors the efficacy of various wetlands protection efforts. Such evaluations will improve project design and refine funding allocations.  |
| <b>WETLANDS TEAM</b>   | This strategy involves a team of people that assists in project design and implementation. The Wetlands Team brings together many diverse disciplines in the DOW to address wetlands and associated wildlife. The team includes members with expertise in wetlands ecology and management, waterfowl and shorebird management, engineering, accounting, contracting, legal issues, water rights, and more.  |

## Colorado Wetlands Initiative Partners

### **Ducks Unlimited** [www.ducks.org](http://www.ducks.org)

The mission of Ducks Unlimited is to fulfill the annual life cycle needs of North American waterfowl by protecting, enhancing, restoring and managing important wetlands and associated uplands. Since its founding in 1937, DU has raised more than \$1 billion, which has contributed to the conservation of more than 9 million acres of prime wildlife habitat in all 50 states, each of the Canadian provinces and in key areas of Mexico. In the U.S. alone, DU has helped to conserve nearly 1.3 million acres of waterfowl habitat. Some 900 species of wildlife live and flourish on DU projects, including many threatened or endangered species.

### **The Nature Conservancy** [www.tnc.org](http://www.tnc.org)

The mission of Nature Conservancy is to preserve plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. TNC is an international, non-profit conservation organization dedicated to preserving species and their habitats by buying the lands needed to ensure their survival. TNC has protected many habitats, including wetlands, through its many conservation projects, totaling 416,000 acres in Colorado and more than 70 million acres worldwide.

### **Partners for Fish and Wildlife** [partners.fws.gov](http://partners.fws.gov)

The mission of the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife is to work with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. Technical and financial assistance is offered to private landowners to voluntarily restore wetlands and other fish and wildlife habitats on their land. The program has traditionally been directed at waterbird habitat through wetland, riparian, and associated upland projects. Projects directly benefiting declining species are also emphasized.

### **Great Outdoors Colorado** [www.goco.org](http://www.goco.org)

Great Outdoors Colorado awards grants with a portion of state lottery dollars for projects that protect and enhance parks, wildlife, trails, rivers and open space. A 15-member board appointed by the Governor governs the Trust, which receives approximately \$40 million annually. While GOCO has awarded more than 1,400 grants, its signature projects are called "Legacy Projects." They are projects of regional and statewide significance to which GOCO makes multi-year, multi-million dollar commitments. There are only 16 such projects in the state. The Colorado Wetlands Initiative is a GOCO Legacy Project.

### **Colorado Division of Parks and Outdoor Recreation** [www.parks.state.co.us](http://www.parks.state.co.us)

The Colorado Department of Natural Resources and its Division of Parks and Outdoor Recreation was created to develop, protect and enhance Colorado's natural resources for the use and enjoyment of the state's present and future residents, as well as for visitors to the state. The Colorado Natural Areas Program, which is housed within the Division of Parks and Outdoor Recreation, preserves some of the finest examples of Colorado's original and unique landscapes for the benefit of present and future

generations. State Parks has completed a wetlands inventory of all 40 parks in the State Parks and Natural Areas Program and noted opportunities to acquire, restore, enhance, or create wetlands.

**Colorado Division of Wildlife** *www.dnr.state.co.us/wildlife*

The Division of Wildlife of the Colorado Department of Natural Resources is responsible for management of the state's 960 wildlife species. It regulates hunting and fishing activities by issuing licenses and enforcing regulations. The Division also manages more than 230 wildlife areas for public recreation, conducts research to improve wildlife management activities, provides technical assistance to private and other public landowners concerning wildlife and habitat management, and develops programs to protect and recover threatened and endangered species. The Division has increased its emphasis on wetlands protection and management. It has a Wetlands Program that seeks to protect wetlands and wetland-dependent wildlife through voluntary and incentive-based mechanisms.

## More Wetlands Program Partners

### **Colorado Natural Heritage Program** [www.cnhp.colostate.edu](http://www.cnhp.colostate.edu)

The mission of the Colorado Natural Heritage Program is to preserve the natural diversity of life by contributing the scientific foundation that leads to lasting conservation of Colorado's biological wealth. In an effort aimed at wetland conservation, CNHP has been classifying, inventorying, and assessing Colorado's wetlands since 1992.

### **Playa Lakes Joint Venture** [northamerican.fws.gov/nawmphp.html](http://northamerican.fws.gov/nawmphp.html)

The Playa Lakes Joint Venture is an implementation component of the U.S. Fish and Wildlife Service's North American Waterfowl Management Plan, a voluntary, non-regulatory approach to conserving migrating birds and their habitat. Joint Ventures are habitat-based partnerships comprised of individuals, corporations, conservation organizations and local, state, and federal agencies. The Playa Lakes Joint Venture includes southeastern Colorado.

### **Intermountain West Joint Venture** [northamerican.fws.gov/nawmphp.html](http://northamerican.fws.gov/nawmphp.html)

The Intermountain West Joint Venture is an implementation component of the U.S. Fish and Wildlife Service's North American Waterfowl Management Plan, a voluntary, non-regulatory approach to conserving migrating birds and their habitat. Joint Ventures are habitat-based partnerships comprised of individuals, corporations, conservation organizations and local, state, and federal agencies. The Intermountain West Joint Venture includes western and northeastern Colorado.

### **Focus Area Committees** [www.dnr.state.co.us/wildlife](http://www.dnr.state.co.us/wildlife)

Focus Area Committees are local wetland working groups of farmers, ranchers, wetland enthusiasts, and local, state, and federal agencies concentrating their wetland conservation efforts on a specific geographic area. There are 10 focus areas in Colorado. They are a local implementation component of the North American Waterfowl Management Plan.

### **U.S. Fish and Wildlife Service - National Wildlife Refuge System** [www.fws.gov](http://www.fws.gov)

The U.S. Fish and Wildlife Service manages more than 500 National Wildlife Refuges encompassing more than 93 million acres. Most refuges were established to protect and enhance wetlands for the conservation of migratory birds.

### **Environmental Protection Agency** [www.epa.gov/region08/cross/wetland/wetlands.html](http://www.epa.gov/region08/cross/wetland/wetlands.html)

The mission of the Wetlands Program of the Environmental Protection Agency is to use its authorities, and to encourage and enable others, to act effectively in protecting and restoring the nation's wetlands and other aquatic resources.

### **Bureau of Land Management** [www.blm.gov](http://www.blm.gov)

The mission of the Bureau of Land Management is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.

### **Natural Resource Conservation Service** [www.nrcs.usda.gov](http://www.nrcs.usda.gov)

The mission of the Natural Resource Conservation Service is to provide leadership in a partnership effort to help conserve, improve, and sustain our natural resources and environment. Programs include the Wetlands Reserve Program, Flood Risk Reduction Program, and the Wildlife Habitat Incentives Program.

**Bureau of Reclamation** *www.usbr.gov*

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

**Colorado's Private Landowners**

Many wetlands occur on private land. The success of the Wetlands Program and other wetland protection efforts depends on the support and cooperation of private landowners.

**Note: This list highlights a few of the many Wetlands Program partners and is not intended to be all-inclusive.**

## THE FOCUS AREA CONCEPT

One of the strategies in the Division of Wildlife Wetlands Program (WP) involves the North American Waterfowl Management Plan (NAWMP). Focus Areas were initially designated to implement the NAWMP and to focus and concentrate protection efforts on wetlands in need of conservation. Ten Focus Areas were formed across the state, including the San Luis Valley, as the result of the efforts of the Intermountain West Joint Venture and the Playa Lakes Joint Venture, the Division of Wildlife (DOW), the Bureau of Land Management and other agencies.

Focus Area Committees for each of the ten designated Focus Areas were formed. The membership of the Focus Area Committees (in actuality “working groups”) is impressive in number and diversity, and, because of this, educators, recreationists, hunters, anglers, scientists, politicians, landowners, professionals, non-governmental organizations, and agencies, are now involved in the WP. The NAWMP, its joint ventures and focus areas, are a key strategy employed by the WP to accomplish its goals and objectives, as described earlier. A key consequence of the diversified membership of Focus Area Committees and the support of those members for the WP, is that there is no known opposition in the State to voluntary wetlands conservation as identified in the WP. The WP incorporates a grassroots-based strategy that modified the NAWMP focus area concept.

After the Focus Area Committees adjusted to the existence of the WP (the WP came after the Focus Area Committees were in existence), they began to prepare a strategic plan for their Focus Area . The strategic plans gave direction to project proposal generation by the committees. The committees propose projects to the WP and all its partners through the Wetlands Funding Process. The primary project delivery strategy in the WP is the Wetlands Initiative (WI). Project proposals are selected for funding by means of the Project Selection Process. Thus, the Focus Area Committees are major participants in the overall WI effort.

## THE SAN LUIS VALLEY FOCUS AREA COMMITTEE - A MODEL

The San Luis Valley Focus Area Committee is a model for communities in Colorado interested in protecting wetlands. Perhaps, the Valley possesses a higher concern for wetlands because of the many unique wetlands which occur here; wetlands which support a diverse array of wildlife species including thirteen wetland dependent breeding birds that are listed as rare and imperiled within the state; the western snowy plover, white faced ibis and black tern which are listed federally; and the ten wetland dependent birds listed as rare and imperiled by the State which migrate through the Valley, including the federally listed green-backed heron, long-billed curlews and whooping crane. Additionally, the Rocky Mountain population of sandhill cranes depend on critical migration habitat in the Valley each spring and fall. The community represented by the Focus Area Committee recognizes that even though the Valley’s water resources are presently over-appropriated, it is threatened by entities which want to transport it out of the basin. Accordingly, the Focus Area Committee is committed to protecting and enhancing the Valley’s water and wetland resources, in the Valley itself.

The genesis of the Focus Area Committee in the Valley was a DOW Wetlands Advisory Group created in 1990 which struggled over how to implement the Waterbird Plan, a DOW effort created by mitigation requirements. By analyzing those regions of the state that have abundant wetlands, associated uplands, and wetlands dependent wildlife, DOW and others decided to create the focus area.

The existing Focus Area Committee, even with its historical roots in the community, and community interest in wetlands, recognizes the importance of trying to be inclusive of all interests in the Valley community. The committee believes that the people who know they want to be involved, indeed are. For example, the people making the land management decisions are involved. However, broader interest in the work of the Committee's wetland

protection efforts in the community is needed, and interested participants are always welcomed to attend meetings and get more involved in the Committee's efforts. While the Focus Committee is not all inclusive of the entire community, it is inclusive of the wetlands concerned community.

## PART I: AN OVERVIEW OF THE SAN LUIS VALLEY AND ITS WETLANDS NATURAL HISTORY

The San Luis Valley (the Valley), located in south-central Colorado, consists of seven counties and is an 150-mile-by-45-mile-wide wishbone-shaped area, running north to south. It is considered to be the world's largest high-elevation valley. The semi-arid desert valley floor, perched at an elevation of 7,600 feet, averages less than 6 inches of rainfall a year and is completely ringed by majestic mountains, many of which are over 13,000 feet high. The Valley is a high mountain desert valley characterized by high evaporation rates, moderate winds, cold winters, moderate summer temperatures, and abundant sunshine. Because of this climate, agriculture is not possible without irrigation. Even then, the growing season is only 90-120 days. The total annual water supply to San Luis Valley averages 2,500,000 acre-feet - 1,500,000 from snowmelt and 1,000,000 is from direct precipitation.

The major mountain boundaries are the San Juan mountains to the west and the Sangre de Cristo mountains to the east. The Rio Grande main-stem rises in the San Juan mountains, flows south-easterly through the valley to Alamosa, and then runs south through a break in the San Luis hills, which border the valley on the south, into the state of New Mexico, then along the border between Texas and Mexico, emptying into the Gulf of Mexico. The Conejos River rises in the Conejos Mountains to the south-west and flows north-easterly along the southern edge of the valley, joining the Rio Grande main-stem at Los Sauces. Despite its high altitude, short growing season, and low average annual precipitation, the valley sustains a productive agricultural economy.

The Rio Grande Basin is located in south-central Colorado and encompasses about 1,955,100 ha (4,831,000 acres), about 7 percent of the state's land surface. The headwaters of the Rio Grande, the Closed Basin, and the Valley comprise the Basin. The Basin is bounded on the north and west by the Continental Divide, on the east by the Sangre de Cristo range, and the south by the New Mexico state line. All or parts of nine counties comprise the Rio Grande Basin: Rio Grande, Conejos, Costilla, Alamosa, Saguache, Mineral, Archuleta, San Juan, and Hinsdale Counties.

The Rio Grande originates in the mountains of the extreme western portion of the basin and flows easterly toward Del Norte, southeasterly toward Alamosa, and finally, south out of Colorado and into New Mexico. That portion of the basin which lies below 2483 m (8,000 ft.) is known as the San Luis Valley. The northern portion of the basin lies within a closed drainage system from which there is no surface outlet. This closed basin is separated from the Rio Grande by a low ridge several kilometers wide.

## GEOLOGY AND CLIMATE

The two mountain ranges on either side of the Valley are of quite different geologic origin and age. The majority of the San Juans are made of volcanic rocks and shallow intrusive rocks of the mid to late Tertiary. These rocks were formed from repeated outpourings of lava and ash from the San Juan Volcanic Field. These mountains form rolling foothills along their east flank and steep alpine ridges along the Continental Divide, which attain elevations in excess of 14,000 ft. The Sangre de Cristo Mountains are of more recent origin than are the San Juans, although the rocks are considerably older. These mountains form a very steep, narrow ridge and were formed as a result of faulting and upthrusting along the Rio Grande rift. The mountains are composed of sedimentary rocks of the Pennsylvanian period, along with pre-cambrian granites, gneisses, and schists. The land forms vary from steep



alpine glacial cirques to broad alluvial fans at the mouths of drainages. The Sangre de Cristos also have several peaks in excess of 14,000 ft.

The Valley is not really a "valley" but a basin filled with unconsolidated sediments eroded from the two mountain ranges at its flanks. The basin was probably formed during the Tertiary, when the large volcanic outpouring, which gave rise to the San Juans, withdrew large volumes of lava from beneath. This withdrawal of lava caused downfaulting and resulted in the structural depression. Both mountain ranges were heavily glaciated during the Pleistocene, and, during glacial retreat, large amounts of alluvium and water were carried to the basin floor. A large amount of water remained trapped within the structural rocks of the basin. The relatively flat basin floor ranges in elevation from 7,500 ft. in the sump area of the Closed Basin to 8,000 ft. on the alluvial fans. The San Luis Hills, a series of low basaltic hills and mesa, rise 500-1,000 ft. above the basin floor and are located in the southeastern portion of the basin near the town of San Luis. Active sand dunes, designated as the Great Sand Dunes National Monument, rise approximately 1,000 ft. above the basin floor along the Sangre de Cristos.

The climate of the Valley is totally influenced by the surrounding mountains. The San Juan Mountains cause a rain shadow east of the Continental Divide, since the storm tract is predominately from the West. Therefore, the Valley is very dry, and the Sangre de Cristo range is drier than the San Juans. Winter temperatures are extremely cold because the frigid air along the mountain peaks drains downslope to the Valley. Low temperatures are maintained in the Valley by air temperature inversions. High mountain portions of the Rio Grande Basin receive high amounts of precipitation resulting in significant water yields. Average annual precipitation varies from 14-45 inches in the mountains. The greatest precipitation amounts are recorded in the high mountains which form the Continental Divide; significantly less moisture falls on the Sangre de Cristo mountains. Average annual precipitation varies between 9-14 inches in the foothills and 7-9 inches for the basin floor. Temperatures range from extremely cold to moderately hot. Recorded temperature extremes average -46C (-50F) and 32.2C (90F). The Valley is considered a high mountain, cold desert, with an average annual temperature of 5.5C (42F) and average of 100 frost-free days per year.

## HUMAN HISTORY AND CURRENT SOCIO-ECONOMIC CONDITIONS

Evidence from excavated sites confirms that a Folsom culture existed within the Valley more than 10,000 years ago. The Ute Indians occupied the area when Europeans arrived in the New World. The Valley was claimed by both France and Spain, but the Spaniards were most responsible for the early exploration of the area. Prior to European invasion, the San Luis Valley was occupied by Ute and Jicarilla Apache tribes. Records from some of the Spanish expeditions into the Valley report irrigation was used by these indigenous peoples for agriculture. Spanish settlers arrived in the Valley between 1630 and 1640 and, it believed that they began to irrigate crops. Intermittent irrigation in the valley remained confined to surface water for limited farming for 250 years.

In 1779, Governor de Anza led a punitive campaign against the Comanches through the Valley. However, Spain, and later an independent Mexico, did little to settle the area until threats from Texas and increasing interest in the area by the United States led Mexico to consider filling the area with settlers. Early in the 1840's, the Mexican government began to grant land north of Santa Fe in areas south of the Arkansas River and in the Valley to "impresarios." Lands granted in the Valley were: Sangre de Cristo, Tierra Amarilla, Conejos, and Luis Maria Baca. This feeble attempt by Mexico to secure her borders had no chance to succeed because Texas had been annexed and war declared between the U.S. and Mexico by 1846. The war ended in 1848 and the peace treaty dictated that the U.S. would honor all private property rights in the ceded territory. Thus, the Sangre de Cristo, Tierra Amarilla, and Luis Maria Baca grants were confirmed, and the first permanent settlement in Colorado (San Luis) was founded. The legacy of Mexico's land grants still has a profound effect on the SLV. Large tracts of wildlife habitat that would have undoubtedly been administered by public resource agencies (USFS and BLM) lie in private ownership.

Around 1880, a large network of canals was constructed diverting an extensive quantity of surface water. The 1880's "ditch boom" was financed by the Travelers Insurance Co. of Connecticut. This was the beginning of significant artificial irrigation in the region. In 1874, railroads were built in the region and the agricultural products of the region began being exported out of the area. By 1904, all streams that entered the basin were appropriated for irrigation (USGS, 1985). The 1930=s drought conditions caused the supply of surface water to decrease, so ground water use increased. In 1887 artesian water was discovered and the inhabitants of the San Luis Valley immediately began digging wells for artesian flow. This construction continued and currently there are 7700 wells withdrawing water from the confined aquifer (artesian aquifer) and 2300 pumped wells in the unconfined aquifer.

In the 1960's "center pivot sprinklers" were introduced as a new method of irrigation. There were 262 sprinkler systems in the basin by 1973 and 1,541 by 1980 (USGS, 1985). This number has undoubtedly increased greatly since then. Surface water use has fluctuated over time, decreasing in years of low precipitation and increasing in years of high precipitation. Ground-water use mirrors surface water use. It is low when surface water use is high (high precipitation) and high when surface water use is low (low precipitation), but each high peak is higher than the last.

The first water appropriation in the Valley began on Culebra Creek in 1851 with the construction of the Peoples Ditch. The first appropriation on the Conejos river was in 1855. The first appropriation on the Rio Grande main-stem was in 1866 - the most extensive development for irrigation purposes on both rivers was between 1880 and 1890. By 1900, the natural flow of all surface streams in the Valley was over-appropriated. High spring runoff and low summer flows in valley streams, coupled with years of severe drought, resulted in undependable water supplies for irrigation; thus, farmers turned to wells and reservoirs to supplement and regulate their water supply.

Well construction in the Valley began as early as 1850. Between 1887 and 1891, about 2,000 artesian wells were drilled. Withdrawals from the confined aquifer by wells remained relatively constant until the early 1950s when a number of large capacity irrigation wells were constructed. In 1972, the state engineer ceased issuing permits for wells to be drilled into the confined aquifer after determining that both aquifers were tributary to the surface streams in the Valley, based on studies by the United States Geologic Survey and state water agencies. There are more wells on land irrigated by surface water from the Rio Grande main-stem than on land in the Conejos River Basin because wells in the Conejos River Basin west of Antonito must be drilled to such depths that pumping them is uneconomical.

Since before the turn of the century, Valley water users have had to contend with out-of-state demands for Rio Grande water. In 1896, complaints and claims for damages from the Republic of Mexico led the United States Department of Interior to deny permission for the utilization of federal land in the construction of most reservoirs planned for the Valley. The dispute with Mexico was resolved by treaty, but the next year, the United States Supreme Court articulated the doctrine of equitable apportionment, opening the door for the assertion of rights to Rio Grande water by the states of New Mexico and Texas.

To avoid litigation, Colorado, New Mexico, and Texas began, in 1923, to make efforts towards a negotiated apportionment of Rio Grande water. Negotiators from the three states signed a permanent compact in 1938. The compact obligates Colorado to deliver water in the Rio Grande at the New Mexico border based upon two schedules tying delivery obligations to levels of inflow, as measured at upstream gauges on the Rio Grande main-stem and the Conejos River, to which is added the flow of the Los Pinos and San Antonio rivers (tributaries of the Conejos) measured near Ortiz, New Mexico. The amount of required discharge varies according to natural supply. In low water years, small deliveries are required; in high water years, large deliveries are required. The compact fixes Colorado's overall obligation in the equitable interstate apportionment of the Rio Grande at a level intended to protect water use as it existed from 1928-1937 (the compact study period). In recognition that variations from predicted performance for each river would occur in the future because of the sequencing of wet and dry years, variable runoff patterns, and new depletions, the compact allows accumulated debits up to 100,000 acre-feet.

Beginning in 1952, Colorado accumulated debits in excess of 100,000 acre-feet. Colorado water officials did not curtail surface appropriations to satisfy the compact, and by the end of 1965, Colorado's accrued debit was 939,900

acre-feet. In 1966, Texas and New Mexico brought a law suit before the United States Supreme Court seeking repayment by Colorado of the accrued debit. In 1968 a stipulated agreement was reached between the three states which allowed Colorado to meet its delivery obligation on an annual basis, without an allowance for accumulated debits, by using all available administrative and legal powers, including curtailment of diversions, to assure annual compliance. Accordingly, the state engineer was required to administer the Conejos River and Rio Grande mainstem on the basis of projected annual runoff. Since 1968, when the state engineer began enforcing the stipulation, water users on both the Conejos and Rio Grande have experienced substantial curtailments of their diversions. In 1985, because of Elephant Reservoir, the stipulation was set aside.

Today, the Valley has an economy based on irrigation agriculture, tourism, commercial livestock production, and mining. The basin's population reflects the general decline occurring in rural areas of the U.S. The basin's population reached a high of 49,000 in 1940 and reached a low of 37,000 in 1970. Currently, the basin's population is estimated to be 42,000. Approximately 45 percent of the basin's population is Hispanic and 55 percent is Anglo. Conejos and Costilla counties have a Hispanic-majority population, and the remainder of the basin has an Anglo majority.

Cropland (90 percent irrigated) comprises about 9 percent of the basin and is found primarily on the basin floor; 4.3 percent of the basin is utilized as irrigated pasture land. In total, these irrigated lands account for only 13.3 percent of the total land area, but provide the basis for the basin's economy by providing grain, vegetables, hay, and forage. Grazing utilizes 41 percent of the basin. Grazing is an important land use on public as well as private lands and is the major land user in the area. Although agriculture forms the primary economic base, the total number of farms and cultivated acreage has declined in the past decade. Total production and farm income significantly increased during this period. Center pivot sprinkler systems (which began to be widely used in 1975) have reduced farm labor demands, resulted in more efficient water use, and allowed production on marginal soils. The irrigated cropland (orange) forms the basis of the Valley's economy. Crops grown in these areas include: barley, wheat, oats, alfalfa, potatoes, vegetables, grass and grain hay. Cropland comprises about 9 percent of the basin, while an additional 4.3 percent of the basin exists as irrigated hay meadow.

## THE COMMUNITY FOCUS ON WETLANDS

Obviously, water in the San Luis Valley, essential for agriculture, wildlife and the quality of life it brings to the human communities which have grown around these precious natural resources, is a defining issue for this place. Perhaps Denver Post staff writer Jim Hughes captured this history, and the Valley's connection to its water resources best in his piece, "Emotions Run Deep in the Valley", when he wrote from the town of Center:

*"Sin agua no hay vida".* Ever since Spanish settlers first arrived in the San Luis Valley, this has been the undisputed motto here, a truism proven by fields whose promise is turned into reality by massive pivot sprinklers: Without water, there is no life. . . Water here means survival for those who can get it, riches for those who control it and bankruptcy or moving trucks for those left without it. Disputes over water are frequent and often intense. . . So common and so fierce is the push-and-pull over water rights here that it has, in many ways, become "The Issue", the defining topic central to the way valley residents think about their communities and about their relationship to the rest of the state and the West.

During the spring of 1999 several members of the San Luis Valley Focus Area Committee were asked for their personal recollections of wetlands and water issues in the Valley. Clearly, the battles to preserve agriculture in the Valley by fighting to keep water from being diverted, has drawn a diverse group of interests together. In fact, this history has encouraged cooperation among many: environmentalists and farmers; fiercely independent individuals and federal administrators; those who love wildlife to watch and those whose livelihood depend on livestock. The winner has been the water and wetlands resource. A sampling of the important lessons learned from the relatively recent past follows.

Excerpts from personal recollections:

*Earliest recollections of wetlands and their importance to the health of the community often came from parents imparting their concepts of water conservation during the mid 1960s. Duck hunting in the sloughs and flood irrigation on the farm seemed of common importance. A lot of awareness was even found among those who lived in the towns, possibly because the 1968 Rio Grande Compact suit, which went to the United States Supreme Court was a catalyst for interest. People valued water for agriculture because the Valley would not look like it does if there was no water. Some people ran cattle on the Monte Vista Wildlife Refuge managed by the U.S. Fish and Wildlife Service, and gained a sense of wetland projects which worked, and those that did not. The concept of wetlands seemed to be always in conjunction with the refuge, referring to man-made places under water. There were no negative connotations; a wetland was a great place to be as a kid - a place for kids to hunt.*

*In 1979-80, when the U.S. Corp of Engineers (Corp) became very active in its (404) enforcement efforts the agricultural community began to respond critically to limitations imposed on the use of wetlands. Many people in the Valley were unaware of wetlands issues until a golf course project was proposed and wetlands mitigation was required by the Corp – some said that people were not happy with the Corp, although some understood. Most agricultural interests resented the federal role on private land.*

*AWDI brought the environmental interests into the community. When AWDI was proposed, the USFWS, the Corp, DOW, and the community worked together, realizing a common goal: to put the Valley's water to good use in the Valley. Non-governmental groups like Ducks Unlimited, also became very active and informed people in a non-threatening manner, working with, not against, agriculture. AWDI caused communication among the various interests. It scared a lot of people, and suddenly the federal agencies became a weapon to fight AWDI. Wetlands became a tool to fight AWDI through the process. Suddenly wetlands, which had been considered useless for agricultural purposes, became a valuable tool to protect agriculture. AWDI caused people to come to San Luis Valley and explain the concept of wetlands.*

*San Luis Valley cooperation on water and wetlands issues developed over time. In 1968 a federal court decision began the process of cooperation when it required allocations of water between the several states which were using water from the Rio Grande River. Other issues followed, such as the 1974 well regulations, then the slurry pipeline; finally AWDI. The Closed Basin project opened the door for the concept for AWDI. Beginning in early 1980's DOW was interested in the Closed Basin Project. DOW started the communication process before AWDI, through the mitigation plan, and that jump-started the Waterbird Plan. Fighting over the drops was irrelevant once people realized the entire community might lose the water resource altogether. DOW became more focused on waterfowl management, after the USFWS Closed Basin mitigation report. DOW developed a different attitude, a more active biological role, after the Closed Basin project. After the USFWS evaluated Mishak Lakes, and the State Engineer regulated the free flowing artesian in 1981-82, Russell Lakes became the focus of the USFWS mitigation for the Closed Basin project. DOW became very active due in large part to requirements for consultations found in the Fish and Wildlife Coordination Act*

*An attitude of "problem solving with the government agencies" now exists and led to the wetlands focus area committee. The federal agencies are now involved in the community and willing to develop relationships. Not too long ago, there was a lot of tension between DOW and the water users. Every drop of water was fought over. The tension reached a critical mass level and DOW decided to develop a Waterbird Plan, to alleviate the tension, which described what DOW intended to do with the water created by the mitigation plan resulting from the refuge. DOW used*

*community input to develop the plan and productive exchanges occurred. Citizen involvement in the process was, and still is, the key to expanding acceptance of concepts, and when agencies get involved in the community they find greater acceptance as well. In other communities growth issues could become a similar catalyst, especially if the threat was from a specific outside influence.*

*Funding for wetland projects also drew interest. In 1986 the Duck Stamp Program had started to develop funding. Partners For Wildlife began around 1990, funded by USFWS, then matched by DU, state and other partners around 1990, and that prompted organization. DU Marsh Money was coming into the community around 1994 and people got a sense of what else they could do. In January 1996 the existing focus area committee was formed in response to funds available to it through the Wetlands Initiative. DU had a State Convention in Blanca about the same time, which toured the wetlands, and some powerful people became interested in the area, or so it seemed. The Agricultural community became involved because some money was available for projects of benefit both to agriculture and wildlife habitat. The refuge started to work through the Partners for Wildlife program with private land owners to buy hail damaged grain and try to disperse birds from refuge to avoid avian diseases. The Refuge was also working with private land owners to develop shallow water resources for water conservation, landowner interest.*

# THE SAN LUIS VALLEY WATERBIRDS AND WETLANDS HABITAT

The San Luis Valley is the most important duck breeding area in Colorado. Numerous species of waterbirds breed, raise their young, molt, stage and winter in the Valley. As one of the "mountain parks" the Valley is high (above 2438 m) with cool summers and cold winters. The Valley floor is relatively flat and is drained by the Rio Grande and its tributaries. Surface waters consist of rivers, creeks, lakes, reservoirs, wetlands and inter-basin diversions. The northern portion of the Valley is a closed basin with no surface drainage outlet. Ground water in the closed basin exists as both confined and unconfined aquifers.

Dabbling ducks comprise over 90% of the breeding and molting population in the Valley. Mallards (Ana platyrhynchos) make up about one-third of the breeding population, down from about one-half of the breeding population in the late 1970's. Breeding ducks numbered about 60,000 in the 1960's and 1970's but declined to around 30,000 in recent years. The largest reductions have occurred north of the Rio Grande river in the intensive agricultural area. Duck breeding concentration areas include the Monte Vista National Wildlife Refuge (MVNWR), Alamosa National Wildlife Refuge (ANWR), Blanca Wildlife Management Area and Russell, San Luis-Head and Adams lakes.

The Valley is used by migrant ducks during fall and spring. Mallards remain the numerically dominant species, but comparatively large numbers of pintail (Anas acuta) and green-winged teal (A. crecca) are also present. Mallards are also most numerous in spring as some of the other species by-pass the Valley in northward migration. Mallards make up about 95 percent of the wintering ducks in the Valley. January inventories indicate that wintering duck numbers have fluctuated between a high of about 50,000 in the early 1970's to a low of about 12,000 in the early 1980's. Wintering Mallards are concentrated on the MVNWR. During some winters, death occurs from avian cholera (Pasturella multocida) and starvation.

Canada geese (Branta canadensis) were reestablished in the Valley beginning in 1955. More than 600 birds breed in the Valley and remain as year-round residents. All geese nesting, molting and wintering in the Valley are giant Canada geese (B.C. maxima). Most sub-adults and unsuccessful nesting adults leave the Valley to undergo post-breeding molt in south-central Wyoming and South Park, Colorado. Successful breeders accompanied by broods use brood-rearing wetlands during post-breeding molt. Breeding geese from South Park are the only known non-resident population wintering in the Valley. The January Valley population numbers about 4,500 geese and continues to expand. Winter feeding sites, primarily harvested barley fields, are dispersed across the Valley. South Park breeding geese wintering in the Valley depart in late March-early April.

Four other waterbird game species, the American coot (Fulica americana, common snipe (Capella gallinago), the sora rail (Porzana carolina) and the Virginia rail (Rallus limicola) reside in the Valley. Little background material has been collected on these species. Virtually the entire Rocky Mountain Population (RMP) of greater sandhill cranes is in the Valley in October and March. Management of the 18,000-22,000 bird population is guided by a plan formulated by Pacific and Central Flyway resource managers. Numerous other nongame waterbirds occur in the Valley at various times of the year. These species will be managed by providing the specific wetland habitat types required. The four types of habitat are emergent marsh, wet meadow, playa (mud flat) and open water. The objectives for nongame waterbirds are to manage 25 percent of the wetland habitat specifically to fulfill the requirements of those species.

# THE ALAMOSA NATIONAL WILDLIFE REFUGE

The 11,169 acre Alamosa National Wildlife Refuge was established in 1962. It consists of wet meadows, river oxbows and riparian corridors, primarily within the flood plain of the Rio Grande, and dry uplands vegetated with greasewood and saltbush. These areas support songbirds, water birds, raptors, mule deer, beaver and coyotes. Alamosa NWR has a wilder character than Monte Vista NWR, and to preserve this wildness, is less intensively managed. However, water is still manipulated and other management tools such as burning and grazing are used. Water from the Rio Grande is supplemented by artesian wells and pumped water from the Closed Basin Project. A wide variety of avian species use the refuge. In late winter, bald eagles concentrate in the southern end of the refuge where the open water of the Rio Grande provides feeding opportunities. In the summer, black-necked stilts and avocets may be seen feeding on exposed mud-flats. Migrating and nesting songbirds, as well as rough-legged hawks, utilize the important riparian areas along the river. The Refuge is located approximately three miles southeast of Alamosa, Colorado in the San Luis Valley - the bulk of the refuge lies in Alamosa County, with a small portion extending into Costilla County. It is currently the headquarters for both Alamosa and Monte Vista National Wildlife Refuges which are managed together as a complex. The 11,169 Acre Refuge consists primarily of Rio Grande River bottomland, with some upland and farmland. Elevations range from 7,505 feet near the river to 7,576 feet on Hansen Bluff along the eastern edge of the refuge. Habitat management practices include high intensity-short duration grazing, prescribed burning, moist-soil plant management, farming, and water management.

Alamosa NWR contains nearly 8,000 acres of wetlands, including open water with extensive cattail stands, and baltic rush/wet meadow communities. About 14,000 acre feet of water is annually applied to these areas for management of summer brood habitat, and wintering areas of open water. Water flows are provided by various artesian wells, and water diverted from the Rio Grande River and Closed Basin Project.

Alamosa NWR provides habitat year-round for waterfowl and Canada Geese, as well as seasonal habitat needs for a variety of other waterbirds. Waterfowl species include cinnamon and blue-winged teal, mallard, gadwall, shoveler, redhead, and pintail. An estimated 8,000 ducks and 500 geese remain on Alamosa NWR during nesting, and as many as 6,000 ducks and 300 geese are produced annually. Waterfowl populations peak at 12,000 birds during spring and fall migration, and approximately 500 ducks and 1,000 geese remain on the refuge over winter. A large nesting colony (700+ nests) of white-faced ibis, snowy and cattle egrets, and black-crowned night herons was discovered on the NWR in 1989. Efforts to maintain this colony and locate others in the valley will be given special emphasis. In addition to waterbirds, Alamosa NWR provides habitat for a variety of other nongame birds and raptors, including three federally endangered species (whooping crane, bald eagle, peregrine falcon), and a state endangered species (Greager sandhill crane).

Public visitation at Alamosa NWR continues to increase annually, especially for such captivities as wildlife viewing, photography, and environmental education. Hunting of waterfowl, geese, dove, pheasant, and rabbit is permitted on the southern half of the refuge during waterfowl season.

# THE BLANCA WILDLIFE HABITAT AREA

The Blanca Wetlands Area (BWA) is in east central Alamosa County, Colorado. This part of the county receives about 7 inches of annual precipitation and averages 107 frost-free days per year. Temperatures range from cold winters to cool summers (-30 degrees F to 85 degrees F). The area is relatively flat with no significant topographic features. Sparsely vegetated sand dunes with intermingled depressions and historical playa basins characterize the landscape. Elevation at the BWA ranges between 7,500 and 7,540 feet. Soils are highly alkaline (pH between 8.5 and 10.5) with low levels of organic matter. Vegetation of the uplands is greasewood, rubber rabbit, salt grass, sandhill muhly, and sand dropseed. Wetlands emergent vegetation includes softstem bulrush, cattail, alkaline bulrush, and spike rush. Some important aquatic vegetation species are sago pondweed, longleaf pondweed and watermilfoil. Original BWA development was associated with local and nationwide loss of waterfowl breeding habitat. Historical natural BWA values were lost because of human related factors, primarily lowering the water table by pumping and redirecting surface waters for irrigation throughout the Valley over the last century. This resulted in surface drying, development of dry lake beds, and loss of wetland associated wildlife species, loss of water-related recreation, and an overall change in vegetation. To offset these altered conditions, the BLM took the lead during the 1960s to initiate project developments, including drilling artesian wells, the construction of water control dikes and related support developments (road system, parking areas, trails, toilets, etc.).

The BWA is a wetlands development and restoration area administered by BLM with an existing habitat management plan developed in cooperation and with technical help from the U.S. Fish and Wildlife Service and the Colorado Division of Wildlife. The present level of development provides 207 wetland sites (2,500 acres) consisting of fresh water ponds, marshes, and meadows; alkali ponds, marshes, and meadows; and playa lakes. Portions of this area have inadequate water supplies to meet their potential. This wetland habitat has become increasingly important for a variety of wetland wildlife species and is identified by the DOW in the San Luis Valley Wetlands Plan as a core production area necessary for the initial recovery and survival of waterbird and amphibian populations in the valley. The existing management identifies the primary objective of the area as a waterbird production site, but allows for other uses compatible with this objective. Potential development for this area is 4,700 acres of wetlands.

Endangered species using the area include the bald eagle and the peregrine falcon. A portion of the area is managed for bald eagle winter use. The snowy plover and the white-faced ibis have Category II classifications under the *Threatened and Endangered Species Act* and are documented nesters on these wetland areas. The following list of species has been determined to be "Species of Management Priority" by the CDOW and have been documented in this wildlife habitat area. All, except the snowy egret and Forsters tern, and western grebe are documented nesters.

|                  |                         |                        |
|------------------|-------------------------|------------------------|
| American Bittern | Avocet                  | Common-yellow throat   |
| Eared Grebe      | Forester's Tern         | Greater sandhill crane |
| Northern Harrier | Savanna Sparrow         | Snowy Egret            |
| Snowy Plover     | Sora Rail               | Western Grebe          |
| White Faced Ibis | Yellow Headed Blackbird |                        |

The BWA is considered one of the most diversified shore bird habitat in the SLV. The existing developments provide habitat for one of the largest concentrations of nesting avocets documented, and supports the only known snowy plover nesting population occurring in the Valley. Other important nesting species include the Wilson's phalarope, black-necked stilt, spotted sandpiper, killdeer, common snipe, and black-crowned night-heron.

Wetlands improvement contributed to a significant increase of waterfowl use and nesting over the past 15 years. Besides important spring and fall migration habitat in the flyway corridor, the BWA provides the most concentrated Canada goose breeding population in the valley. Goose production now averages 400 to flight annually. Other important breeding waterfowl include various ducks (cinnamon, bluewinged, and greenwinged teal; gadwall, mallard, shoveler, pintail, redhead and ruddy ducks), pied-billed and eared grebes, and american coots. an estimated 6,000 waterfowl are produced to flight annually.



The most abundant amphibian on the wetlands is the Great Plains toad. This toad is well distributed across the area and represents possibly the best population base for this species in the Valley. Other documented species of importance include the plains spade toad, striped chorus frog, leopard frog, and the tiger salamander. The overall species diversity and potential for the increased diversity of amphibians are very good. Considering the apparent decline in populations, and lingering questions about the status of the Great Plains toad, this area could become critical for conservation of the amphibian populations in the Valley.

Mammals of significance include the least chipmunk, a subspecies common to the greasewood parks adjoining the wetlands and Ord kangaroo rat, which occupy the sand dunes and, several species of bats which frequent the wetland areas. Muskrats and coyotes are present and have benefited greatly from wetland habitat development. Mule deer and elk are now seen frequently either passing through or seasonally using the wetland area.

Of the total acreage of wetlands, managed fisheries ponds represent 2.5 percent of the Blanca Core Area. Fish impoundment's are usually small, relatively deep, and less used by waterbirds than typical larger, marsh habitat. Because fish pond characteristics are not optimal for waterbirds that only a low percentage are maintained as fisheries. Fishing, although limited, is one of the major recreational attractions in the BWA. A seasonal closure from February 15 to July 15 further limits disturbance from fishing during sensitive times of the year, i.e., nesting periods and when migrating waterbirds concentrate on the areas.

## THE MONTE VISTA NATIONAL WILDLIFE REFUGE

Monte Vista NWR was established by the Migratory Bird Conservation Commission in 1953 to provide a place for wildlife, particularly waterfowl, in the San Luis Valley. Water is intensively managed using numerous dikes and other water control structures to create wetland habitats ranging from shallow wet meadows to open water. Artesian wells, pumped wells and irrigation canals, some dating to the "ditch boom" of the 1880's, supply water. Many other management tools, including mowing, grazing, prescribed burning and farming are also used to ensure that refuge lands continue to provide food, cover and nesting habitat for waterfowl and other water birds.

The refuge is a major stopover for migrating greater sandhill cranes moving between their wintering area around Bosque del Apache National Wildlife Refuge in New Mexico and breeding grounds in the northern United States and southern Canada. Up to 20,000 cranes pass through in the spring and again in the fall. Three remaining endangered whooping cranes from a failed attempt to establish a wild migratory population in the 1980's can be seen migrating with their foster species, the sandhill crane. Beginning in the 1980's, a herd of elk began using the refuge. At present, several hundred elk may be seen on the refuge seeking winter food and sanctuary from hunting pressure on nearby public lands. Monte Vista National Wildlife Refuge is located six miles south of Monte Vista, Colorado in the San Luis Valley. The bulk of the refuge lies in Rio Grande County, with a small portion extending into Alamosa County. The refuge was established in 1953, and it was the first national wildlife refuge in Colorado. The 14,189 acre refuge consists primarily of flat terrain sloping eastward, with elevations ranging slightly from 7,685 to 7,585 feet.

Monte Vista NWR has nearly 8,000 acres of wetland habitat, primarily baltic rush/wet meadow communities and open water interspersed with cattail and bulrush stands. Approximately 26,500 acre feet of water is applied annually to these areas to manage for seasonal waterbird needs; such as spring breeding pair habitat and summer brood habitat. Water is provided through numerous artesian wells and pumps, and canal water diverted from the Rio Grande River. Other habitat management practices include high intensity-short duration grazing, prescribed burning, farming, and moist-soil plant management.

Monte Vista NWR was originally purchased to control winter crop depredation, by waterfowl, but it has since developed into an important area year-round for nesting, migrating, and wintering waterfowl and Canada geese. About 17,000 ducks and 500 geese remain on Monte Vista NWR during nesting, producing an estimated 20,000 ducks and 300 geese annually. Monte Vista NWR represents one of the most productive waterfowl refuges in North

America. In addition, as many as 35,000 waterfowl and 1,000 Canada geese remain on the NWR in winter, and migratory populations peak around 25,000 in spring and fall.

White-faced Ibis, snowy and cattle egrets, and black-crowned night herons nest on the refuge, as well as avocets, black-necked stilts, and various other shorebirds. Monte Vista NWR is also an important wintering area for bald and golden eagles, as well as other raptors. Thousands of greater sandhill cranes use the refuge extensively for resting, feeding, and staging during spring and fall migration. Whooping cranes that were foster-raised by sandhill cranes also use the refuge and surrounding lands as they migrate through the Valley with the sandhill crane population.

Nonconsumptive use on Monte Vista NWR continues to increase, with wildlife viewing, photography, and environmental education being popular activities. The annual spring Monte Vista Crane Festival draws in countless visitors to view the cranes on the refuge. Hunting for waterfowl, geese, dove, pheasant, and rabbit is permitted on a third of the refuge during waterfowl season.

## THE RIO GRANDE STATE WILDLIFE AREA

This 870 acres of cottonwood groves and marshes lie just east of Monte Vista at an elevation of 7,600'. Four miles of the Rio Grande River wind through the property and numerous oxbows are scattered along either side of the river. The area is located 1 1/2 miles east of Monte Vista and there are various points of entry to the property.

The Division of Wildlife purchased this area in 1951 to provide habitat for nesting waterfowl, upland game, and wintering birds. Birds nesting here include Canada geese, mallards, gadwalls, teal, blue herons, white-faced ibis, snowy egrets, and black-crowned night herons as well as a variety of raptors including red-tail hawks, marsh hawks, great horned owls, and kestrels. Both bald and golden eagles are frequent winter visitors and sandhill cranes use the area during their annual fall and spring migrations.

Game species such as cottontail rabbits, doves, and pheasants may be found on the property. The area is used for hunting, wildlife observation, and photography. Fishing is also available. Warmwater fish such as largemouth bass and channel catfish may be caught in the oxbows and there are northern pike in the Rio Grande River. Area is closed to all use February 15 through July 15 to avoid any interference with nesting birds.

## THE RUSSELL LAKES STATE WILDLIFE AREA

The Russell Lakes State Wildlife Area comprises about 4560 acres of land approximately 9 miles south of the town of Saguache in Saguache County, Colorado. The Wildlife Area is bounded on the north by County Road R, and the west by U.S. 285, and on the south by County Road N. The Colorado Division of Wildlife began acquisition of the area by purchasing three tracts of land from Carrol Wetherill in 1967, 1981 and 1982, totaling 793 acres. The Bureau of Reclamation (BOR) added 3040 acres of purchased land in 1989, and will add 1520 acres of State school lands, as partial fulfillment of mitigation for the loss of 8460 acres of wetlands due to the Closed Basin Project.

A long-term agreement between the CDOW and the BOR was signed in 1989 describing management of the Wildlife Area. The Wildlife Management Plan stipulates that the primary goal of the Russell Lakes State Wildlife Area is to provide nesting and brood rearing habitat for waterfowl and shorebirds. A secondary goal is to provide public use of the area for hunting, trapping, and non-consumptive use of the wildlife resources.

## THE SAN LUIS LAKES STATE WILDLIFE AREA

The San Luis Lakes SWA contains approximately 2369 total acres of property, of which 400 acres are water. Most of the water makes up San Luis and Head Lakes. The remaining water areas are found in intermittent sloughs and small ponds that develop during the spring runoff. The San Luis Lakes SWA is made up of sand dunes vegetated with salt, rabbit and greasewood. There are also grassy meadows which are usually flooded during the spring runoff. The San Luis Lakes State Wildlife Area is located 13 miles north of Alamosa, between State Highways 17 and 150.

San Luis Lakes SWA is an important waterfowl nesting/production area. The property provides waterfowl and small game hunting as well as fishing recreation. San Luis Lake is a popular water skiing area during the summer months. The property also supports a small deer herd. Aside from the game animals and fish, San Luis Lakes SWA provides habitat for numerous nongame species. Tiger salamanders and toads are found in large numbers in the area, as well as raptors and small mammals. There have been reported sightings of Peregrine Falcons on the property.

The north end of the property is closed from February 15 through July 15 every year for waterfowl nesting.

# PART II: COLORADO NATURAL HERITAGE PROGRAM INFORMATION ABOUT WETLANDS IN THE SAN LUIS VALLEY

## INTRODUCTION

The Colorado Natural Heritage Program (CNHP) is considered by many to be the state's primary, comprehensive biological diversity data center. The mission of CNHP is to preserve the natural diversity of life by contributing the scientific foundation that leads to lasting conservation of Colorado's biological wealth. In cooperation with other partners, CNHP has developed a wide-ranging program to help identify and document high quality examples of biological diversity and to set conservation priorities. This section of the SLV Wetlands Strategy describes how the committee utilized CNHP's products.

CNHP is part of an international network of conservation data centers that use the Biological and Conservation Data System developed by The Nature Conservancy. CNHP has developed effective relationships with several state and federal agencies, including the Colorado Natural Areas Program, Colorado Department of Natural Resources and the Colorado Division of Wildlife, the U.S. Environmental Protection Agency, Bureau of Land Management, and the U.S. Forest Service. Numerous local governments and private entities also work closely with CNHP. Use of the data by many different individuals and organizations, including Great Outdoors Colorado encourages a proactive approach to development and conservation thereby reducing the potential for conflict. Information collected by the Natural Heritage Programs around the globe provides a means to protect species before the need for legal endangerment status arises. CNHP is located in Fort Collins at Colorado State University and is a sponsored program of the College of Natural Resources.

The primary goal of the CNHP's Wetlands Program is to identify significant wetlands in Colorado and make this information available to land managers and other interested parties. In order to do this, CNHP determines which wetlands in the state support rare and imperiled plants, animals, and natural plant communities. Concentrating on site-specific data CNHP can evaluate the significance of each wetland to the conservation of Colorado's, and indeed the nation's, natural biological diversity of wetlands. By using species imperilment ranks and quality ratings for each location, priorities can be established for the protection of the most sensitive or imperiled sites. A continually updated location database and priority-setting system such as that maintained by CNHP provides an effective, proactive land-use planning tool. To supplement the biological information, CNHP also assesses all the other functions and values attributed to each wetland. The second goal of CNHP's Wetlands Program is to facilitate better understanding of the ecological role of wetlands that occur in Colorado, and thus, extend overall knowledge of wetlands in the west.

## THE NATURAL HERITAGE RANKING SYSTEM

Information is gathered by CNHP on Colorado's plants, animals, and plant communities. Each of these species and plant communities is considered an **element of natural diversity**, or simply an **element**. Each element is assigned a rank that indicates its relative degree of imperilment on a five-point scale (e.g., 1 = extremely rare/imperiled, 5 = abundant/secure). The primary criterion for ranking elements is the number of occurrences, i.e., the number of known distinct localities or populations. This factor is weighted more heavily because an element found in one place is more imperiled than something found in twenty-one places. Also of importance is the size of the

geographic range, the number of individuals, trends in both population and distribution, identifiable threats, and the number of already protected occurrences.

Element imperilment ranks are assigned both in terms of the element's degree of imperilment within Colorado (its State or S-rank) and the element's imperilment over its entire range (its Global or G-rank). Taken together, these two ranks give an instant picture of the degree of imperilment of an element. CNHP actively collects, maps, and electronically processes specific occurrence information for elements considered extremely imperiled to vulnerable (S1 - S3). Those with a ranking of S3S4 are "watch-listed," meaning that specific occurrence data are collected and periodically analyzed to determine whether more active tracking is warranted. A complete description of each of the Natural Heritage ranks is provided in Table 1.

## TABLE 1. DEFINITION OF COLORADO NATURAL HERITAGE IMPERILMENT RANKS.

Global imperilment ranks are based on the range-wide status of a species. State imperilment ranks are based on the status of a species in an individual state. State and Global ranks are denoted, respectively, with an "S" or a "G" followed by a character. **These ranks should not be interpreted as legal designations.**

**G/S1** Critically imperiled globally/state because of rarity (5 or fewer occurrences in the world/state; or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction.

**G/S2** Imperiled globally/state because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range.

**G/S3** Vulnerable through its range or found locally in a restricted range (21 to 100 occurrences).

**G/S4** Apparently secure globally/state, though it might be quite rare in parts of its range, especially at the periphery.

**G/S5** Demonstrably secure globally/state, though it may be quite rare in parts of its range, especially at the periphery.

## ELEMENT OCCURRENCE RANKING

Actual locations of elements, whether they be single organisms, populations, or plant communities, are referred to as element occurrences. The element occurrence is considered the most fundamental unit of conservation interest and is at the heart of the Natural Heritage Methodology. In order to prioritize element occurrences for a given species, an element occurrence rank (EO-Rank) is assigned according to their ecological quality whenever sufficient information is available. This ranking system is designed to indicate which occurrences are the healthiest and ecologically the most viable, thus focusing conservation efforts where they will be most successful. The EO-Rank is based on 3 factors:

**Size** - the extent of the occurrence.

**Condition** - an integrated measure of the quality of biotic and abiotic factors, structures, and processes *within* the occurrence and the degree to which they affect the continued existence of the element occurrence.

**Landscape Context** - an integrated measure of the quality of biotic and abiotic factors, structures, and processes *surrounding* the occurrence.

Each of these factors are rated on a scale of A through D, with A representing an excellent grade and D representing a poor grade. These grades are then averaged to determine an appropriate EO-Rank for the occurrence. If there is insufficient information available to rank an element occurrence, an EO-Rank is not assigned. Possible EO-Ranks and their appropriate definitions are as follows:

- The occurrence is relatively large, pristine, defensible, and viable.
- The occurrence is small but in good condition, or large but removed from its natural condition and/or not viable and defensible.
- The occurrence is small, in poor condition, and possibly of questionable viability.
- The occurrence does not merit conservation efforts because it is too degraded or not viable.

## PROPOSED CONSERVATION AREAS

In order to successfully protect populations or occurrences, it is necessary to recognize proposed conservation areas. These proposed conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element occurrence of natural heritage significance. Proposed conservation areas may include a single occurrence of a rare element or a suite of rare element occurrences or significant features.

The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element occurrence or suite of elements occurrences depends for their continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. The proposed boundary does not automatically exclude all activity. It is a hypothesis that some activities will prove degrading to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the proposed conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

## PROPOSED CONSERVATION AREA PLANNING BOUNDARIES

Once the presence of rare or imperiled species or significant natural communities has been confirmed, the first step towards their protection is the delineation of a proposed conservation planning boundary. In general, the proposed boundary is an estimate of the landscape that supports the rare elements as well as the ecological processes that allow them to persist. In developing such boundaries, CNHP staff considered a number of factors that include, but are not limited to:

- the extent of current and potential habitat for the elements present, considering the ecological processes necessary to maintain or improve existing conditions;
- species movement and migration corridors;
- maintenance of surface water quality within the site and the surrounding watershed;
- maintenance of the hydrologic integrity of the groundwater, e.g., by protecting recharge zones;

- land intended to buffer the site against future changes in the use of surrounding lands;
- exclusion or control of invasive exotic species;
- land necessary for management or monitoring activities.

As the label "conservation planning" indicates, the boundaries are for planning purposes. They delineate ecologically sensitive areas where land-use practices should be carefully planned and managed to ensure that they are compatible with protection goals for natural heritage resources and sensitive species. All land within the conservation planning boundary should be considered an integral part of a complex economic, social, and ecological landscape that requires wise land-use planning.

## RANKING OF PROPOSED CONSERVATION AREAS

One of the strongest ways that the CNHP uses element and element occurrence ranks is to assess the overall biodiversity significance of a site, which may include one or many element occurrences. Based on these ranks, each site is assigned a (or B-) **rank**:

- B1 Outstanding Significance:** only site known for an element or an excellent occurrence of a G1 species.
- B2 Very High Significance:** one of the best examples of a community type, good occurrence of a G1 species, or excellent occurrence of a G2 or G3 species.
- B3 High Significance:** excellent example of any community type, good occurrence of a G3 species, or a large concentration of good occurrences of state rare species.
- B4 Moderate or Regional Significance:** good example of a community type, excellent or good occurrence of state-rare species.
- B5 General or Local Biodiversity Significance:** good or marginal occurrence of a community type, S1, or S2 species.

# WETLAND DATA SOURCES FOR THE SAN LUIS VALLEY AND COLORADO

To identify problems leading to wetland loss and the best mechanisms for dealing with those problems, the San Luis Valley community needs to address a series of questions regarding the following basic issues:

- The location, quantity, type, condition, and functions of the wetlands resource, and;
- The resource's status and trends (e.g., causes and rate of loss, areas where the loss is concentrated)

This report has presented and discussed these questions as they relate to the appropriate protection mechanisms to include in a wetland strategy. These questions will be repeated below, along with suggested sources of data and data-collection methods.

The data sources introduced below, with their associated questions, are divided into three levels. **Level 1** sources yield information at relatively low cost, usually with lower overall accuracy and precision and at larger scales. **Level 2** and **Level 3** sources entail considerably greater costs but may yield greater accuracy and precision. It should be noted that Level 1 information is adequate in many instances; more is not necessarily better.

## HOW MANY WETLANDS DOES THE SAN LUIS VALLEY HAVE AND WHERE ARE THEY LOCATED?

### **Level 1 Database:**

- Obtain National Wetland Inventory (NWI) maps to determine locations. Internet access to digital, large scale, NWI maps for portions of the San Luis Valley are available at <http://www.nwi.fws.gov/>. Hard copy maps can be requested from U.S. Fish and Wildlife Service-- (605) 688-5894.
- Obtain data from the Natural Resources Conservation Service (NRCS) Soil Surveys of Colorado counties (Note: the use of hydric soil maps alone to identify the location and extent of wetlands may lead to inaccurate results. There is no direct correlation between hydric soils and wetlands).
- Obtain data from the Colorado Natural Heritage Program (CNHP). Data for riparian wetlands has been collected since 1990 and for all other types of wetlands since 1994.
- Obtain data from the Colorado Division of Wildlife (CDOW). The CDOW has been mapping riparian habitat using aerial infrared photography and photointerpretive techniques since 1990.
- Obtain data from agency management plans. For example in the San Luis Valley (SLV) these include the Blanca Wetlands: Integrated Activity Plan/Environmental Assessment (U.S. Bureau of Land Management 1995; San Luis Valley Waterbird Plan (Torbit et al. 1995), Rio Grande National Forest Management Plans, U.S. Fish and Wildlife Refuge Management Plans).
- Obtain digital coverage of wildlife habitat (includes amphibians and fish), vegetation patterns, conservation sites, high priority habitat, and development patterns from the Natural Diversity Information Source (NDIS) at: <http://ndis.nrel.colostate.edu/>.



**Level 2 Database:**

- Update NWI maps using satellite imagery or ground truthing.
- Field checking the Colorado Division of Wildlife (CDOW) Riparian Maps (see box).
- Begin a comprehensive wetland inventory of Colorado counties (including private and public lands). The Colorado Natural Heritage Program has completed county wetland inventories and assessments for the following counties in SLV: Saguache, Rio Grande, and Conejos.

**Level 3 Database:**

- Update NWI maps, perhaps through use of Thematic Mapper (TM) imagery and/or field check existing NWI maps.

## WHAT WETLAND TYPES ARE FOUND IN THE SAN LUIS VALLEY?

**Level 1 Database.**

- Use NWI maps to identify and classify wetlands using U.S. Fish and Wildlife Service (USFWS) classification scheme (Cowardin et al. 1979).
- Use CDOW Riparian Maps.
- Use CNHP riparian classification project (Osborn et al. 1998) (see box).

**Level 2 Database:**

- Continue the Comprehensive Statewide Wetland Classification and Characterization Project initiated in 1999 by CNHP (see box).

## WHAT WETLAND FUNCTIONS EXIST?

**Level 1 Database:**

- Examine existing literature reviews (see bibliography); consult with experts.

**Level 2 Database:**

- Apply rapid assessment field techniques for functional evaluations to a representative sample of each wetland type. For Colorado there are two widely used functional techniques: the Army Corps of Engineers Wetland Evaluation Technique (WET) (Adamus et al. 1991) and the Hydrogeomorphic Method (HGM) (Brinson 1993; Colorado Geologic Survey et al. 1998). CNHP has utilized a modified WET (Cooper 1988) and the Montana Wetland Field Evaluation form (Berglund 1996) for the County Wetland Inventory and Assessments.

**Level 3 Database:**

- Direct measure functions of representative wetlands.

## WHAT IS THE CONDITION OF THE WETLANDS?

**Level 1 Database:**

- Examine wetlands-related trends data such as Breeding Bird Surveys and Clean Water Act Section 305(b) state water quality reports.
- Review USFWS Status and Trends reports.

**Level 2 Database:**

- Use the Wetland Bioassessment Method (Index of Biological Integrity) developed by the U.S. EPA to evaluate a wetland's condition and ability to support biota.
- Overlay land cover maps or data with NWI or hydric soil maps to quantify land uses with potential impacts.
- Consult local and state growth planning studies to identify where impacts from growth may have occurred.

**Level 3 Database:**

- Directly measure functions (e.g., biological surveys, Bureau of Reclamation hydrologic instrumentation) of representative wetlands or watersheds.
- Compare sets of aerial photographs to locate where growth or wetlands alterations have occurred over time (e.g., changes in vegetation cover can indicate degradation of wetlands).

## WHERE AND HOW ARE WETLANDS DISAPPEARING?

**Level 1 Database:**

- Obtain state data from FWS Status and Trends report, which provide a basic picture of both recent and long-term trends.

**Level 2 Database:**

- Sponsor intensified estimations of FWS Status and Trends reports in more localized areas by using updated aerial photography, remotely sensed data, and field-based updating of NWI maps.
- Review local growth planning studies to identify where losses are occurring or may occur in the future.

## WHAT ACTIVITIES ARE CONTRIBUTING TO WETLANDS LOSS?

### **Level 1 Database:**

- Discuss threats with regulatory staff, scientists, land managers, Focus Area Committee, and the community.

### **Level 2 Database:**

- Identify conversions from a time series of representative aerial photographs.
- Analyze permit data files to determine which types of activities are associated with permitted losses.
- Overlay land cover maps or data with NWI or hydric soil maps to quantify land uses with potential impacts.
- Correlate population, economic, and agricultural statistics with wetlands loss data.

### **Level 3 Database:**

- Conduct a field inventory of representative wetlands and adjacent land uses to quantify observable stress/response situations.
- Directly measure impairment of wetland functions (e.g., bioindicator species, sediment contamination) and correlate with surrounding land cover.

## WHAT ARE THE CONSEQUENCES OF WETLANDS LOSS?

### **Level 1 Database:**

- Using technical literature or experts, compile accounts of wetland species disappearance, increased flooding, and other landscape functional losses.

### **Level 2 Database:**

- Correlate long-term changes in wildlife, water pollution, and/or stream flow regime with measured losses of wetlands.
- Compile economic data on resources (e.g., timber, hay, waterfowl hunting licenses), hazards (e.g., downstream flooding, water quality degradation), and economic hardships suffered by industry (e.g., hunting, recreation) related to wetlands loss.

### **Level 3 Database:**

- Measure a large enough sample of wetlands to eliminate non-wetlands factors that may confound the interpretation of correlation analyses just described; link to economic losses where appropriate.

## WETLAND RAPID FUNCTION-ASSESSMENT TECHNIQUES

One of the first function assessments used was the Wetland Evaluation Technique (WET) (Adamus et al. 1991). WET was developed by the U.S. Army Corps of Engineers for the Federal Highway Administration and is a broad-approach to wetland evaluation, and is based on information derived from predictors of wetland functions that can be gathered relatively quickly. WET can be used to compare ratings of a wetland for future uses in management and planning. This technique was developed to assist planners, regulators, and others to assess the probability that a particular wetland performs specific functions, and to provide insight as to the local, regional, and national significance of those functions. However, this technique developed by Adamus et al. (1991) has not been adequately regionalized to local conditions in the western United States, but the method does provide an accurate framework for evaluating wetland functions. The ratings, however, are based on the “Best Professional Judgment.”

The ratings for each function are not based on quantitative data, and only a limited amount of data on these functions is available. Some of the functions (e.g., groundwater recharge and nutrient retention) are very difficult to assess accurately in a rapid manner. Also, the scientific understanding of many of these functions as performed in the Rocky Mountains is based on sparse and disparate data from many sources, often for eastern or Pacific Coast wetlands. Absolute assessments of wetland functions can be known only after extensive (generally multi-year) data have been collected at a site.

Currently, CNHP utilizes a function assessment based on the Montana Wetland Field Evaluation Form prepared by Morrison-Maierle Environmental Corporation (Berglund 1996). This technique is designed to provide rapid, economical, and repeatable wetland evaluation results. This form minimizes subjectivity and variability between evaluators, provides a means of assigning wetlands overall ratings, and incorporates some of the principles of the hydrogeomorphic (HGM) assessment method. It also classifies each wetland using the Cowardin et al. (1979) classification system.

The methodology assigns each of the functions ratings of “low” or “moderate” or “high,” and scores each on a scale of .1 (lowest) to 1 (highest) “functional points.” The scoring scale for each function is similar to that of HGM, although HGM does not generally consider values and not all of the variables considered by HGM with respect to a given function were included in this method. Functional points are summed on the form and expressed as a percentage of the possible total. This percentage is then used in conjunction with other criteria to provide an overall wetland ranking into one of four categories. Category I is the highest overall ranking a wetland can receive, Category IV the lowest. Functional points are also multiplied by the total acreage in the assessment area to determine the total “functional units” for a given site.

## CLASSIFYING WETLANDS

Wetlands have been classified since the early 1900s, beginning with peatland classifications of Europe and North America (Mitsch and Gosselink 1993). The U.S. Fish and Wildlife Service (FWS) classification (Cowardin et al. 1979) is the most widely used classification system in the United States. It describes 20 wetland types based on flooding depth, dominant forms of vegetation, and salinity regimes. The FWS classification uses a hierarchical approach based on systems, subsystems, classes, subclasses, dominance types, and special modifiers to define wetlands and deepwater habitats precisely. In Colorado, there are three systems represented: riverine, lacustrine, and palustrine.

Another classification scheme is the hydrogeomorphic method (HGM). HGM is based on classifying wetlands according to their hydrology (water source and direction of flow), geomorphology (landscape position and shape of the wetland), and water chemistry (Brinson 1993). The HGM approach first classifies wetlands based on their differences in functioning, second it defines functions that each class of wetlands performs, and third it uses reference to establish the range of functioning of the wetland. There are four hydrogeomorphic classes present in Colorado: riverine, slope, depression, and mineral soil flats. Within a geographic region, HGM wetland classes are

further subdivided into subclasses. A subclass includes all those wetlands that have essentially the same characteristics and perform the same functions. In Colorado, the hydrogeomorphic, or HGM, approach to wetland function assessment is being developed by the Colorado Geological Survey, with help from the U.S. Army Corps of Engineers, other government agencies, academic institutions, the Colorado Natural Heritage Program, and representatives from private consulting firms (Colorado Geologic Society et al. 1998).

The Colorado Natural Heritage Program initiated a Comprehensive Statewide Wetland Classification and Characterization in 1999. The goal of this project is to develop an additional tool for community-based conservation and protection of Colorado's wetlands and their biodiversity. Major objectives are: 1) to collect and synthesize existing and new wetlands information and data, to produce a wetland type database and mapping product; 2) to coordinate with other related projects (e.g., CDOW Riparian Mapping Project, CNHP Riparian Classification) so as to create uniformity in concepts and terminology and to maximize synergy; 3) to characterize and classify wetland types by assessing the full range of wetland types in Colorado. This classification scheme will be floristically based on plant associations or communities. Communities will be recognized according to specific groups of species which occur together repeatedly on the landscape and differ substantially in plant species composition from other groups of species. Plant communities are named after one or two dominant and/or diagnostic plant species in the community, and are distinguished by floristic and structural similarities in both overstory and undergrowth characteristics.

## WETLAND INVENTORIES IN SAN LUIS VALLEY

Since 1994, CNHP's Wetlands Program has systematically assessed wetlands within Park, Larimer, Routt, Rio Grande, Conejos, and Summit counties, as well as wetlands in watershed areas such as the Closed Basin (Saguache and northern Alamosa counties) and the Uncompahgre River Basin (Ouray and eastern Montrose counties). The purpose of these projects is to provide local planners, resource managers, and citizens with information on the status and value of their riparian and wetland areas. Increasingly, local Colorado governments, particularly in rapidly growing parts of the state, are expressing a desire to better understand their natural heritage resources, including wetlands. CNHP has approached wetland protection with the intent of addressing this need.

In 1997, CNHP conducted a comprehensive biological survey of the wetlands and riparian areas within the Closed Basin watershed of the San Luis Valley. The Closed Basin contains a diverse array of wetlands that support a wide variety of plants, animals, and plant. At least 7 plants, 11 birds, 2 fish, 2 mammals, and 45 major wetland/riparian plant communities from CNHP's list of significant elements are known to occur in or associated with Closed Basin wetlands. Several of these elements (e.g., the slender spiderflower) are globally significant: if they are not protected in the San Luis Valley they may be lost forever. Others have statewide significance; they are found in few if any other places in Colorado.

As a follow-up to the inventory done on the Closed Basin in 1997, CNHP will be conducting an inventory and assessment in Rio Grande and Conejos counties during the summer of 1999. The study area includes the upper Rio Grande watershed, which has not yet received the full attention of an inventory, and careful classification of the wetlands. This project will supplement the information gathered on the Closed Basin wetlands in order to develop a comprehensive understanding of the wetland systems and overall ecology of the entire SLV. This knowledge will then provide for the sound protection and management of functioning, dynamic ecosystems which will help ensure habitat for all species (including humans) which rely on the area's wetland systems for survival (Kotliar 1994).

The San Luis Valley contains many shallow depressions (e.g., Russell Lakes, San Luis Lakes, Mishak Lakes, and Blanca Wetlands) which support a variety of wetland types. The basins fill from snowmelt runoff in late spring and most are dry by late summer. Heavy monsoon precipitation can cause some basins to refill in late summer, but summer rains are generally of secondary importance. The soils in the lake basins are alkali clays with low rates of water infiltration allowing rapid evaporation at the water surface and accumulation of salts. They support a flora adapted to seasonal soil saturation and saline conditions. The lakes vary greatly in depth, salinity, and period of inundation.

Regularly flooded basins support well developed aquatic and shoreline emergent vegetation, such as pondweeds (*Potamogeton* spp.), spikerush (*Eleocharis palustris*), hardstem bulrush (*Scirpus acutus*), and American three-square (*Scirpus pungens*). Basins with irregular or short duration flooding contain saltgrass (*Distichlis stricta*) and/or western wheatgrass (*Pascopyrum smithii*) meadows, or barren salt flats. Basins that dry by mid-summer often support seasonal stands of salt tolerant annuals that complete their life cycles after surface water evaporates and the late summer rains begin. Several locally common species include seablite (*Suaeda calceoliformis*), seaside heliotropium (*Heliotropium curassavicum*), and red glasswort (*Salicornia rubra*). Adjacent alkali flats and dunes are dominated by greasewood (*Sarcobatus vermiculatus*) and rabbit (*Chrysothamnus* spp.) vegetation, respectively.

The playa lake ecosystems of the San Luis Valley floor depend upon a complex interaction of surface and groundwater sources that undergo characteristic seasonal and inter-annual fluctuations. Water uses that perturb the timing or magnitude of surface flows, or affect the valley bottom water table, are likely to affect these wetlands detrimentally. Changes in the water depth or duration of inundation in the basins can have profound effects on soil salinities and wetland vegetation (Cooper and Severn 1992). Wetland dependent fauna, such as waterbirds, amphibians, or vertebrates may be affected by even brief changes in wetland hydrology.

## PART III: THE SAN LUIS VALLEY COMMUNITY WETLANDS STRATEGY

### THE GOALS, OBJECTIVES, AND ACTION PLAN OF THE STRATEGY

In the Introduction to this document it was stated that

“A community wetland strategy is an organizational tool to identify opportunities to make wetland protection programs work better; it is a process for bringing people together to help identify specific wetlands problems and realistic, equitable, solutions that achieve future wetlands protection goals. Creating a strategy is a process which seeks to involve everyone in the community with an interest in wetlands, and which seeks to identify appropriate projects worthy of community support. Such strategies develop over time. First, there must be an appreciation of the wetlands resource; then the community must gather and digest information about its wetlands and wetland characteristics. With assistance from entities such as the Colorado Natural Heritage Program, the community can select conservation priorities. With these priorities in mind, the community can then formulate a strategy, and finally, an action plan, driven by the strategy, with a time table for conservation objectives to be achieved.”

This document is the very “community wetland strategy” mentioned above, albeit, the written description of it, for a community wetland strategy is more than a document – it is the actions and the results of those actions taken by the community that result in wetlands protection. A strategy is a dynamic thing. This document was created to capture on paper the actions of the people in the San Luis Valley community that have resulted in substantial protection of their wetlands resources. The community used a “process for bringing people together to help identify specific wetlands problems,” i.e., the focus area committee process, developed by many interested in wetlands protection and refined by the Wetlands Program of the Division of Wildlife (because the Division’s mission requires it to protect wildlife habitats, such as wetlands habitat, and the wildlife species that depend on that habitat). Furthermore, in creating this San Luis Valley strategy, there was (and continues to be) involvement by everyone interested in wetlands. As mentioned above “there must be an appreciation of the wetlands resource” before a strategy can be developed – in the San Luis Valley there was (and is) such an appreciation (as described in this document). Finally,

with “assistance for entities such as the Colorado Natural Heritage Program” and the USFWS Refuges and the BLM and Ducks Unlimited and The Nature Conservancy and the Division of Wildlife, the community, via the focus area committee, developed a set of wetlands priorities and acted on them (despite the fact that a detailed action plan is not yet complete). The accomplishments of the focus area committee described below are a testament to the effectiveness of the San Luis Valley Community Wetlands Strategy – this document and its active counterpart. In other words, the San Luis Valley community now has “an organizational tool to identify specific wetlands problems and realistic, equitable, solutions that achieve future and current wetlands protection goals.”

The San Luis Valley Focus Area Committee has stated its purpose and goal to be:

“The San Luis Valley Focus Area Committee is a working group of public and private partners organized to facilitate the development of projects that educate about, protect, enhance and restore wetlands and that benefit compatible socio-economic and environmental needs. The Focus Area Committee’s goal is to sustain wetland areas that are of quality and quantity sufficient to maintain healthy and viable natural communities and wetland dependent species; and to support the planning and implementation efforts of wetland community managers by pursuing applicable resources, including those available through the CDOW Wetlands Funding Process.”

In order to achieve this goal the Committee has established the following sub-goals, all of which are capable of measurement and analysis for success in the future:

- Sustain wetlands through creation, enhancement, restoration, and protection on public and private lands by obtaining and directing public and private resources.
- Sustain wetlands by inventorying and monitoring wetland communities, describing the current wetlands base through the CHNP process.
- Sustain wetlands by encouraging the development of informational resources focusing on wetland communities by directing public and private resources.
- Sustain wetlands by completing an action plan (suggested that it be a five year plan, with a ten year vision, reviewed annually).

To accomplish these sub-goals the Committee intends to pursue the following actions:

**1. To sustain wetlands through creation, enhancement, restoration, and protection on public and private lands by obtaining and directing public and private resources it will:**

- Participate in the North American Waterfowl Management Plan, Intermountain West Joint Venture, US. Farm Bill Programs, CDOW Wetlands Program and other similar efforts.
- Restore/enhance existing wetlands as appropriate.
- Acquire, protect, create and manage key private wetlands through appropriate methods.
- Restore historically significant wetlands.

**2. To sustain wetlands by inventorying and monitoring wetland communities through the CNHP process it will:**

- Inventory, Classify and characterize the SLV wetland resource.

- Establish a baseline of wetland communities.
- Monitor wetlands functions and projects.
- Inventory and monitor native and priority species.

**3. To sustain wetlands by encouraging the development of informational resources focusing on wetland communities by directing public and private resources it will:**

- Develop information sharing for wetlands protection efforts in the SLV.
- Develop wetland partnerships in the community protection, education, recreation.
- Support wetlands awareness in the school systems.
- Support watchable wildlife opportunities and interpretive projects
- Develop and support existing educational programs and institutions that participate in wetlands outreach, including an SLV Wetlands Projects Data-base.
- Inform (and coordinate) local, state, regional and national agencies, organizations and communities about SLV wetlands and wetland projects.

**4. To sustain wetlands by completing an action plan (suggested that it be a five year plan, with a ten year vision, reviewed annually) it will:**

- Develop a draft in cooperation with the Division of Wildlife Wetlands Program and its wetlands partners.
- Approve a final plan.



## PROTOCOLS OF THE FOCUS AREA COMMITTEE

The San Luis Valley Focus Area Committee is working at the highest level of collaboration. This protocol emphasizes voluntary participation and is informal. The fact that a diverse group of individuals discussing a sensitized subject can pursue projects successfully through such a mechanism is a tribute to the committee and its leadership. The Committee is working at an ideal level, accomplishing consensus driven projects through implied consensus which is verified by the absence of objection within the group. This protocol is the other extreme from use of the Robert's Rules procedure (which is a technique to avoid fist fights in an otherwise adversarial situation).

The protocol appears to be derived from identification of a goal by members of the group, discussion and incorporation of comments, voluntary participation to accomplish the goal, hearing for objections to proceed, proceeding by either voluntary committee or other voluntary measures. The basis of the process was trust in the representative quality of the committee as a whole, the willingness of the individuals to express themselves, and the commitments of the volunteers to accomplish the goals, without demands from participants for different priorities. The Committee is willing to compromise because its members believe it is more important to maintain momentum towards the larger goal (the historical coalescence of groups to protect water resources and wet lands) than to pursue unnecessary criticism. In response members with project proposals are very sensitive to the needs of the other Committee participants and willing to accept constructive criticism and suggestions in order to accomplish unobjectionable goals.

Recently the Focus Area Committee has enlisted the services of the San Luis Valley Community Connections office and considers its efforts as part of the healthy communities efforts sponsored by that office in other aspects of community development. In many ways the health of the wetland resource in the Valley is representative of the health of the broader human community as well.

## OUTREACH

The Committee is committed to a process that ensures the group continues to be in touch with the diversity of the community, seeking participation from within all geographic regions and among the various ethnic and identified communities of interest in the Valley. At the Refuges, the focal point for outreach about wetlands is part of a continuous process. The visitor centers, brochures, the Crane Festival, and other mechanisms exist to bring attention to wetlands and water resources in the SLV.

Planned and discussed outreach efforts include possible development of a web-site, a video, a CD ROM product, and also other low tech efforts such as a display board, a two color brochure for each project with a map which explains how each project fits into the broader effort to protect wetlands and, a focus in the schools perhaps in connection with EcEc. Other methods include, workshops, one-on-one meetings, and presentations to groups. To this end, in March 1999, the Committee presented material at a booth during the annual Crane Festival.

Three graphic boards have been developed: (1) Wetland Protection Efforts in the SLV map (2) A narrative board with short description of efforts by group, "Highlights of Wetland Protection Efforts in the San Luis Valley", and, (3) Map showing the statewide scope of the Colorado Division of Wildlife Wetlands Program.

The Committee is interested in various perspectives including banking, agriculture/ranching, media, education (higher and secondary), the faith community, law enforcement, industry, water, business, government, utilities, youth, outdoor interests, telecommunications, and real estate and invites all interested persons to contact the Committee Chairman (currently Mike Blenden, at the Alamosa/Monte Vista Refuge Complex).

## ACCOMPLISHMENTS OF THE STRATEGY

The accomplishments of the San Luis Valley Community Wetlands Strategy are numerous. The following are a few highlights. (For more information on accomplishments please visit the Wetlands Program web page at [www.dnr.state.co.us](http://www.dnr.state.co.us)).

## *San Luis Valley Focus Area*

# **L Cross Ranch Project**

**T**he L Cross Ranch, located in southwestern Saguache County along the western foothills of the San Luis Valley, consists of approximately 8,021 acres of deeded land and 55,015 acres of state and federal lease lands. This project protected wetland and riparian areas on the ranch and the water rights on Carnero and La Garita creeks that flow through the ranch. Carnero Creek supports important riparian vegetation and a healthy native fish population of Rio Grande cutthroat trout. Other wildlife using the ranch include waterbirds, peregrine falcon, bighorn sheep, elk, deer, pronghorn, mountain lion, and black bear.

Waters from the Carnero and the La Garita likely contribute to the ground water that currently support the Russell Lakes/Mishak Lakes Wetland Complex in the San Luis Valley. The area around the L Cross Ranch is known for its excellent fishing, big-game hunting, camping sites, and Native American rock art.

The Nature Conservancy has successfully accomplished protection of the entire ranch and its wetlands by obtaining a conservation easement on the property. Like many of the other component projects, this venture involved a willing landowner who appreciates the value and benefits of wetlands.

### **PROJECT FACTS**

**Wetland Type:** Riparian and Wet Meadow

**Wetland Acres:** 3,593

**Total Project Acres:** 63,036

**Project Action:** Purchase of Conservation Easement

**Project Leader:** The Nature Conservancy

**Project Cost:** \$2,035,000

### **PROTECTION OF HABITAT FOR:**

Greater sandhill crane\*

White-faced ibis\*

American dipper

Common snipe

Wilson's warbler

Beaver

Muskrat

Meadow vole

Rio Grande cutthroat trout\*

Northern leopard frog

*State Special Concern*

*\* tracked by CNHP*

### **LAND STATUS**

**Ownership:** Private

**Public Access:** At owner's discretion

**For Information:** TNC (303) 444-2950

## *San Luis Valley Focus Area*

# Alamosa National Wildlife Refuge Project

The Alamosa National Wildlife Refuge, located approximately two miles southeast of the City of Alamosa, is the second largest publicly owned wetland area in the San Luis Valley. This 11,169-acre refuge is owned and managed by the U.S. Fish and Wildlife Service. The Alamosa National Wildlife Refuge contains a wide variety of wetland habitat types including riparian habitats along the Rio Grande River, semi-permanent wetlands associated with river oxbows, as well as seasonally flooded vegetation. The refuge provides habitat for a wide variety of wildlife species including mallards, cinnamon teal, sandhill cranes, American avocets, black-necked stilts and bald eagles.

The Wetlands Initiative has restored and created more than 300 acres of wetland habitat on two sites on Alamosa National Wildlife Refuge. Foremost of these projects is the Alamosa National Wildlife Tour Wetlands project that will provide year-round wildlife viewing opportunities.

### **PROJECT FACTS**

**Wetland Type:** Marshland

**Wetland Acres:** 300

**Total Project Acres:** 400

**Project Action:** Restoration

**Project Leader:** Ducks Unlimited

**Project Cost:** \$260,000

### **PROTECTION OF HABITAT FOR:**

Greater sandhill crane\*

Snowy egret\*

White-faced ibis\*

Black-necked stilt\*

Wilson's phalarope\*

Canada goose

Mallard

Northern pintail

Cinnamon teal

Ruddy duck

*State Special Concern*

*\*tracked by CNHP*

### **LAND STATUS**

**Ownership:** U.S. Fish and Wildlife Service

**Public Access:** Yes

**For Information:** USFWS (719) 589-4021

**Opportunities:** photography, bird watching, hunting, fishing

## *San Luis Valley Focus Area*

# Monte Vista National Wildlife Refuge Project

**M**onte Vista National Wildlife Refuge is the largest contiguous block of publicly owned wetland habitat in Colorado, covering more than 14,189 acres. Water in the Refuge is managed by irrigation canals, wells, numerous levees, and ponds. This system provides excellent waterbird habitat and makes up an essential part of the San Luis Valley wetland complex. Mallards, pintail, teal, and Canada geese are common, as are American avocets, killdeer, white-faced ibis, egrets, and herons. Populations peak during September and October when more than 35,000 ducks are present. The refuge is a major resting and feeding area for sandhill cranes during fall and spring migrations.

The Wetlands Initiative enhanced, restored, or created 1,350 acres of wetland habitat, which greatly increased both the quantity and quality of refuge wetland habitat. Accomplishments included improving and expanding levees, replacing water control structures, and improving water delivery systems, which will increase the overall carrying capacity of the area for waterbirds.

Monte Vista National Wildlife Refuge is accessible year-round. Within the refuge is a self-guided auto tour route as well as county roads that offer a view of wetland wildlife.

### **PROJECT FACTS**

**Wetland Type:** Marshland

**Wetland Acres:** 1,350

**Total Project Acres:** 1,350

**Project Action:** Restoration

**Project Leader:** Ducks Unlimited

**Project Cost:** \$260,000

### **PROTECTION OF HABITAT FOR:**

Greater sandhill crane\*

Snowy egret\*

White-faced ibis\*

Black-necked stilt\*

Wilson's phalarope\*

Willet\*

Mallard

Blue-winged teal

Redhead

Slender spiderflower\*

*State Special Concern*

*\*tracked by CNHP*

### **LAND STATUS**

**Ownership:** U.S. Fish and Wildlife Service

**Public Access:** Yes

**For Information:** USFWS (719) 589-4021

**Opportunities:** photography, bird watching, hunting, fishing

## *San Luis Valley Focus Area*

# Blanca Wetlands Project

**B**lanca Wetlands is located eight miles northeast of the City of Alamosa. Thousands of years ago, this area was the site of a diverse and productive complex of lakes and marshes, but due to the lowering of the ground water table and decreasing runoff from the Sangre de Cristo Mountains, most of these wetlands have all but disappeared. Through the efforts of the Bureau of Land Management, this 2,500-acre wildlife area now supports one of the highest diversities of wetland wildlife in the state, including a wide variety of waterbirds.

The Wetlands Initiative, through a series of well rehabilitation projects, has restored 350 acres of wetlands on the Blanca Wildlife Habitat Area. Through this increase in water availability for wetland management, the Bureau of Land Management will be able to continue to restore and rebuild this historic wetland complex.

### **PROJECT FACTS**

**Wetland Type:** Marshland

**Wetland Acres:** 350

**Total Project Acres:** 450

**Project Action:** Restoration

**Project Leader:** Ducks Unlimited

**Project Cost:** \$270,000

### **PROTECTION OF HABITAT FOR:**

Western snowy plover\*

Mallard

Northern shoveler

Green-winged teal

Blue-winged teal

Pied-billed grebe

American avocet

Spotted sandpiper

Rio Grande chub\*

Slender spiderflower\*

*State Special Concern*

*\* tracked by CNHP*

### **LAND STATUS**

**Ownership:** Bureau of Land Management

**Public Access:** Yes

**For Information:** BLM (719) 274-8971

**Opportunities:** photography, bird watching, hunting, fishing

## *San Luis Valley Focus Area*

# Higel Ranch State Wildlife Area Project

**H**igel Ranch State Wildlife Area is located on the Rio Grande and is an essential part of the San Luis Valley wetland complex. The 1,100-acre ranch was purchased by the Colorado Division of Wildlife in July 1997 and is managed as a state wildlife area. The Higel Ranch is used intensively by migrating waterbirds including sandhill cranes.

The Wetlands Initiative was instrumental in surveying and mapping this newly acquired property. Detailed maps and other survey information are being used to improve irrigation of the wetland basins on the area and develop collateral projects, including the Higel Centennial Wetland project and the Higel Oxbow Restoration project. More than 900 acres of wetland habitat on the Higel State Wildlife area have been enhanced through this project, including 30 acres of restored wetland basins.

### **PROJECT FACTS**

**Wetland Type:** Marshland

**Wetland Acres:** 30

**Total Project Acres:** 40

**Project Action:** Restoration

**Project Leader:** Ducks Unlimited

**Project Cost:** \$20,000

### **PROTECTION OF HABITAT FOR:**

Greater sandhill crane\*

Black-necked stilt\*

Wilson's phalarope\*

White-faced ibis\*

Mallard

Cinnamon teal

Redhead

Snowy egret\*

Willet\*

Western chorus frog

*State Special Concern*

- *tracked by CNHP*

### **LAND STATUS**

**Ownership:** Colorado Division of Wildlife

**Public Access:** Yes

**For Information:** DOW (719) 587-6900

**Opportunities:** photography, bird watching, hunting, fishing

*Western chorus frog  
photo by David Leatherman*

## *San Luis Valley Focus Area*

# Rio Grande State Wildlife Area Project

**T**he Rio Grande State Wildlife Area, located one mile east of the City of Monte Vista, is an important component of the Rio Grande wetland complex. The 1,213-acre area is owned and managed by the Colorado Division of Wildlife to provide for the habitat needs of wildlife and public recreation. The mature cottonwood galleries and semi-permanently flooded river oxbow wetlands found in this area provide essential habitat for many bird species, including breeding and migrating waterfowl, sandhill cranes, great blue herons, bald eagles and a host of songbird species.

The Wetlands Initiative has restored 35 acres of important shallow water wetlands on this area through the construction of a low-level levee and the installation of water control structures. This shallow water wetland will complement the existing deep-water wetlands on the Rio Grande State Wildlife Area and increase the number and diversity of wetland wildlife species at this site.

### **PROJECT FACTS**

**Wetland Type:** Marshland

**Wetland Acres:** 35

**Total Project Acres:** 40

**Project Action:** Restoration

**Project Leader:** Ducks Unlimited

**Project Cost:** \$27,000

### **PROTECTION OF HABITAT FOR:**

Greater sandhill crane\*

White-faced ibis\*

Snowy egret\*

Mallard

Gadwall

Marsh wren

Sora

Northern leopard frog

Rio Grande chub\*

Slender spiderflower\*

*State Special Concern*

*\* tracked by CNHP*

### **LAND STATUS**

**Ownership:** Colorado Division of Wildlife

**Public Access:** Yes

**For Information:** DOW (719) 587-6900

**Opportunities:** photography, bird watching, hunting, fishing



## *San Luis Valley Focus Area*

# Russell Lakes State Wildlife Area Project

The Russell Lakes State Wildlife Area, at more than 4,000 acres, is the largest contiguous wetland area managed by the Colorado Division of Wildlife. This State Wildlife Area, located 10 miles south of Saguache, is one of the key components of the expansive San Luis Valley Wetland Complex. The area provides habitat for numerous wildlife species including mallard, gadwall, cinnamon teal, redhead, black-crowned night herons, Wilson's phalaropes, American avocets and peregrine falcons.

The Wetlands Initiative has played a key role in restoring and enhancing wetlands on the Russell Lakes State Wildlife Area. Three projects have been delivered on this area and include a well rehabilitation, improvements in the water delivery system, and a 480-acre wetland restoration. In all, more than 700 acres of wetlands have been enhanced on the area. Through these efforts, Division of Wildlife managers are able to provide more and better quality wetland habitat for wildlife species and increased recreational opportunities for human visitors.

### **PROJECT FACTS**

**Wetland Type:** Marshland

**Wetland Acres:** 700

**Total Project Acres:** 900

**Project Action:** Restoration and Enhancement

**Project Leader:** Ducks Unlimited

**Project Cost:** \$432,000

### **PROTECTION OF**

#### **HABITAT FOR:**

Greater sandhill crane\*

Long-billed curlew\*

Black-necked stilt\*

Snowy egret\*

American bittern

Wilson's phalarope\*

White-faced ibis\*

Lesser yellowlegs

Marbled godwit

Slender spiderflower\*

*State Special Concern*

*\* tracked by CNHP*

### **LAND STATUS**

**Ownership:** Colorado Division of Wildlife

**Public Access:** Yes

**For Information:** DOW (719) 587-6900

**Opportunities:** photography, bird watching, hunting, fishing

## PART IV: SAN LUIS VALLEY WETLANDS

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