

SOUTH PLATTE RIVER, COLORADO WETLAND FOCUS AREA STRATEGY

**A VISION FOR LANDSCAPE LEVEL
WETLAND CONSERVATION**

PREPARED BY:

**SOUTH PLATTE WETLAND FOCUS AREA COMMITTEE
AND
CENTENNIAL LAND TRUST**

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EXECUTIVE SUMMARY

The South Platte Wetland Focus Area Committee (SPWFAC) is a working group of public and private partners organized to facilitate the development of wetland conservation projects. The purpose is to conserve wetlands that provide an array of ecological and societal benefits to the Colorado South Platte basin community. The SPWFAC is the local implementation arm of the Colorado Division of Wildlife Wetlands Program, the Intermountain West Joint Venture, and the Playa Lakes Joint Venture (North American Waterfowl Management Plan).

The primary mission of the SPWFAC is to conserve wetlands that sustain the natural integrity of the South Platte ecosystem. By identifying and conserving a sufficient quantity of quality wetlands that are distributed strategically across the landscape, we hope to maintain viable natural communities and wetland dependent species. Further, the SPWFAC is designed to facilitate wetland conservation efforts of local wetland managers by sharing information, synthesizing knowledge, forming partnerships, and pursuing financial resources, including those available through the Colorado Division of Wildlife Wetlands Program. We support wetland education programs, research to further our knowledge of wetland resources, and monitoring efforts to insure that objectives of wetland conservation projects are met.

The SPWFAC promotes the conservation of wetlands through an array of methods encompassing protection (land purchase or conservation easement), restoration/enhancement, creation, research/monitoring and education. We work with willing public and private landowners on projects ranging from a few critical acres to landscape level wetland complexes. This program is strictly voluntary and does not involve regulatory protection through permitting or mitigation. Further, our approach to wetland conservation is non-political and we do not play an advocacy role. The Committee is an informal group and anyone with interest in issues associated with wetland conservation in the South Platte basin is invited to participate.

The Wetland Focus Area Committee's vision for wetland conservation involves three components. An approach to wetland conservation that is ecologically significant requires that we take a broad view of wetland conservation. Ours is a landscape level strategy to conserve healthy functioning wetlands of all types present in the region that are geographically distributed throughout the Valley in an ecologically significant pattern. Second, we recognize that wetlands are important centers for biological diversity and they provide habitat for a majority of the region's wildlife; typically they are the most productive and diverse communities within arid regions. Our strategy focuses on the conservation of wetland dependent wildlife and plant species. The third component of our wetland conservation strategy involves the recognition that hydrological functions of wetlands are ecologically significant and socio-economically important. Wetlands help sustain water flows, recharge aquifers, store flood water, and purify water that flows through them. Each of these functions is ecologically significant and helps sustain human populations. By protecting hydrological functions of wetlands, the ecological integrity of wetlands is conserved and society benefits through life support and economic savings.

Wetland Conservation efforts in the South Platte basin have already occurred; this initiative is meant to promote collaboration and communication among a diversity of partners. Further, national and state wetland conservation programs have been implemented and the SPWFAC provides a mechanism to deliver these programs locally. This Strategy is an evolving document that outlines the purpose, objectives, and vision of the Wetland Focus Area Committee for regional wetland conservation. Further, the strategy provides background information on wetlands of the area, outlines a criteria for wetland project prioritization, provides a list of available wetland resources and literature pertinent to wetland conservation, and documents some of the completed wetland projects.

INTRODUCTION

The South Platte Wetland Focus Area Committee (SPWFAC) is a working group of public and private partners organized to facilitate the development of wetland conservation projects. The purpose is to conserve wetlands that provide ecological services and societal benefits. The SPWFAC is the local implementation arm of the Colorado Division of Wildlife Wetlands Program, the Intermountain West Joint Venture, and the Playa Lakes Joint Venture (North American Waterfowl Management Plan).

Many of the wetlands originally present in the South Platte basin have been lost and/or degraded due to land conversion and as a result of numerous land and water management practices. While society has recently recognized the importance of wetlands, historically, these ecosystems were viewed as wastelands. Today, most land users understand that wetland conservation is important for the long-term sustainability of the region's economy and natural integrity. The role of the SPWFAC is to promote wetland conservation efforts that reverse the historic trend of wetland loss. This promotional role is well accepted by custodians of public lands within the South Platte Wetland Focus Area.

A more important target audience is perhaps the private landowner sector. Private agricultural lands make up the vast majority, of the acres within this Wetland Focus Area. For that reason protection, enhancement, and development of private wetlands is critical to the success of this Strategy. Historic and current land uses of agricultural cropping and livestock grazing lend themselves more readily to conservation practices than would intense threats by suburban and rural development. Concerns by farmers, ranchers, and other water users about water availability in drought years continues to increase. These concerns are expected to open some doors for wetland development and conservation in the form of multiple use water augmentation ponds, off-channel storage reservoirs, and underground storage. The challenge will be to form partnerships with private interests so project designs beneficial to wildlife can be incorporated into individual projects.

The Wetland Focus Area Committee's goal is to conserve wetlands that sustain the natural integrity of the ecosystem. By identifying and conserving a sufficient quantity of quality wetlands that are distributed across the landscape, we hope to maintain viable natural communities and wetland dependent species. Further, the SPWFAC is designed to facilitate wetland conservation efforts of local players involved with wetland issues by sharing information, synthesizing knowledge, forming partnerships, and pursuing financial resources, including those available through the Colorado Division of Wildlife Wetlands Program. We support wetland education programs, research to further our knowledge of wetland resources, and monitoring efforts to insure that objectives of wetland conservation projects are met.

We promote the conservation of wetlands through an array of methods encompassing protection (land purchase or conservation easement), restoration/enhancement, creation, research/monitoring and education. We work with willing public and private landowners on projects ranging from a few critical acres to landscape level wetland complexes. This program is strictly voluntary and does not involve regulatory protection through permitting or mitigation. Further, our approach to wetland conservation is non-political. We do not play an advocacy role.

¹ *Defined as the action of a landowner who voluntarily forfeits development rights in perpetuity on his/her property for a one-time fee based on difference between appraised value of land with and without development. Each conservation easement is unique and reflects the values that the landowner wishes to perpetuate, but all have the common goal of protecting the open space quality of the landscape.*

The Committee is an informal group and anyone with interest in issues associated with wetland conservation in the lower South Platte basin of Colorado is invited to participate.

One tool for wetland conservation in our Wetland Focus Area is acquisition of conservation easements¹ or development of long-term management agreements with landowners. Of equal urgency is the enhancement of existing wetlands and restoration of degraded wetlands. An additional strategy is to create additional wetland acreage. In some cases, priority projects may be driven by immediacy in that a property may be marked for quick development. In other cases, priority projects may have particularly important habitat, species, or functions. As such this strategy and action plan is flexible enough to accommodate these types of situations, but strict enough to ensure that each wetland protection project has been targeted as a result of meeting certain criteria.

Landscape Level Wetland Conservation

The SPWFAC's vision for wetland conservation involves three components. First, we recognize that a diversity of wetland types exists throughout the Valley, and that varied environmental processes create and maintain these wetlands. An approach to wetland conservation that is ecologically significant requires that we take a broad view of wetland conservation. Ours is a landscape level strategy to conserve healthy functioning wetlands of all types present in the region that are geographically distributed in an ecologically significant pattern.

Second, we recognize that wetlands are important centers for biological diversity and they provide habitat for a majority of the region's wildlife (up to 90% of Colorado's wildlife use wetlands at some time during their life cycle). Wetlands are typically the most productive and diverse communities within arid landscapes. Many species that live in wetlands are rare or declining in abundance and some are ecologically significant as indicators of the health of the wetland ecosystem. Therefore, our strategy focuses on the conservation of wetland-dependent wildlife and plant species (wildlife is used here as an inclusive term referring to all species present in the wild).

The third component of our wetland conservation strategy involves the recognition that hydrological functions of wetlands are ecologically significant and important to South Platte basin residents. Wetlands help sustain water flows within the river system and its tributaries. They recharge our ground water supply and act as temporary storage areas for flood water when rivers swell beyond their banks. By slowing the flow of water, they allow impurities to settle therefore cleansing water. Each of these functions is ecologically significant and helps sustain human populations in the area. By protecting hydrological functions of wetlands, the ecological integrity of wetlands is conserved and society benefits through life support and economic savings.

Geographic Boundaries of this Strategy

The South Platte Wetland Focus Area includes the South Platte drainage from the Denver/Adams County line downstream to the Colorado/Nebraska state line. Several physical, biological, ecological, political, and socioeconomic differences exist between the upper reach (between Denver and Greeley), and the lower reach (from Greeley to the state line) of the South Platte River in Colorado. Along the Front Range there are increased issues of human population growth, habitat and property ownership fragmentation, and higher cost/benefit ratios of significant wetland conservation projects. Opportunities to provide truly landscape level conservation projects within identified priority areas are considerably greater in the reach below Greeley. The partners have concentrated since 1997 on developing and protecting wetlands where they will have the largest ecological impacts for waterbirds, waterfowl, and other wetland dependent species. The SPWFAC will concentrate its efforts primarily on the region extending eastward and downstream from Greeley to the Colorado/Nebraska state line.

History of the South Platte Wetland Focus Area Committee

In 1997 the South Platte Wetland Focus Area Committee was formed to facilitate wetland restoration and protection projects in the basin. Valuable wetland projects on state and private lands were being proposed and completed independently by the Colorado Division of Wildlife and U. S. Fish and Wildlife Service without community-wide knowledge or input. A committee to represent this important wetland area was a logical step following formation of wetland focus committees in the western one-half of the state within the initial geographic boundaries of the Intermountain West Joint Venture of the North American Waterfowl Management Plan. The initial committee was composed of state and federal agency personnel, Ducks Unlimited, water interests, other non-governmental organizations, and a strong component of private landowners. Wetland projects on private lands are key in this area. Primary project funding sources were the Colorado State Waterfowl Stamp Program, Ducks Unlimited, Inc. MARSH (Matching Aid to Restore State Habitats) program and the US Fish and Wildlife Service's Partners For Fish and Wildlife program. An initial wetland strategy was completed in 1997 based on the knowledge of wetland restoration and protection opportunities at that time.

Recognition of the importance, the potential, and most importantly, funding opportunities for wetland work have increased dramatically since Committee inception. Prime examples are:

- The CDOW Wetlands Program has dramatically increased funding opportunities.
- Ducks Unlimited has identified the South Platte River as 1 of 3 priority areas in Colorado and provided a local staff of biologists, technicians and engineers.
- The Intermountain West Joint Venture boundaries have been expanded to include the South Platte basin.
- The U. S. Department of Agriculture's Natural Resource Conservation Service has become active in wetland protection through the Wetland Reserve Program.
- Centennial Land Trust has been established as a private non-profit organization to acquire and hold Conservation Easements on agricultural, wetland, and other habitat and open space properties.
- The South Platte Lower River Group (SPLRG), (a consortium of water users and water providers concerned with best management practices for Colorado's South Platte River water rights, and the obligations Colorado has to the State of Nebraska and identified endangered species issues) has been active in developing partnerships and leveraging funds for several multiple –benefit projects on public and private lands.
- The USFWS Partners for Fish and Wildlife has identified the South Platte drainage as a priority area.

Much has been accomplished since establishment of the initial strategy. However, with increased opportunities it is time to reassess the initial strategy and expand it to a landscape level. We believe a current and expanded strategy will help us identify appropriate wetland projects worthy of community support. In this document we further elucidate our original strategy and outline a method for prioritizing projects according to societal and biological values. This expanded strategy will help us to identify and prioritize wetland protection projects appropriate for SPWFAC support.

WETLANDS, HABITATS, AND WILDLIFE

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. For wetlands to exist, one or more of the following characteristics must occur:

- The area supports predominantly wetland vegetation (hydrophytes);
- The area is saturated or covered by water during some period of the growing season in most years;
- The soils possess predominantly hydric characteristics (contain little or no oxygen as a result of saturation).

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 of 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 and streams, have been destroyed or profoundly altered from their pre-settlement condition. It has been estimated that in Colorado, 10 million acres of wetlands have been lost since pre-settlement times (Dahl 1990).

Wetlands vary throughout different geographical locations and climate. In the South Platte Wetlands Focus Area, wetlands occur in the form of seeps and sloughs, marshes, wet meadows, ponds, riverine riparian areas and playas. Several key functions and defining characteristics are common among all wetlands. These characteristics allow scientists to define an area as a wetland. The presence of hydrophilic (wetland) plants, hydrology (water), and hydric soils, are the three components necessary in defining and delineating wetlands. Most wetland types have ground water levels near or above the soil surface during part of the year. These saturated conditions form wetland soils and support wetland plants. Water is the primary abiotic factor shaping the life histories of plants, animals, and all living organisms adapted to wetland sites. Wetlands may be transitional habitats 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 public benefits in many ways from sustaining a viable wetland resource. Wetlands provide many values and functions, such as wildlife habitat for wetland- dependent species that include fish, invertebrates, reptiles, amphibians, mammals, and birds. Wetlands sustain biological diversity of plant and animal species and provide high levels of community diversity. (Figure 1)

The SPWFAC envisions wetland conservation that recognizes the many specific functions of a wetland and emphasizes that each wetland type has distinct functions and values. Our conservation strategy recognizes that wetlands are dynamic ecosystems and our projects attempt to account for the ecological variability and unpredictability of wetlands over long time frames. For example, wetlands created by stream processes over time change into upland habitats, but they are replaced by newly formed wetlands. A larger perspective on processes that form wetlands is required to assure a long-term viability the wetland complex.

Figure 1

Wetland Values and Benefits

Wetlands are wildlife habitat for wetland-dependent species that include imperiled, threatened, endangered, increasing, and stable species. Fish, invertebrates, reptiles, amphibians, mammals, and birds (waterbirds 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.

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. They maintain streamflow even after the snow has melted from the peaks.

Wetlands often contribute to ground water recharge by allowing water 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 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, and medicines. In the absence of wetlands, society must find more costly ways to perform the same functions.

Major Habitat Types in the South Platte Wetlands Focus Area

The NRCS recognizes four ecological site types in the South Platte Focus Area: Sandsage/Midgrass, Shortgrass, Riparian meadow, and Riparian woodlands (USDA/NRCS eco-site descriptions, Morgan County Colorado Field Office). In addition, embedded within these systems are wetland types found in the South Platte basin (Figure 2). This wetlands table is one simplified way to identify most of the naturally occurring and man-made wetlands existing within the lower South Platte basin. Although other classification methods exist, the SPWFAC has elected to use this format based on form and function, which most closely defines wetland systems as related to their natural, economic, and social values, while not totally disregarding the forces and environmental conditions that created those wetlands. Below are descriptors for important wetland habitats as well as the major NRCS ecological site types.

Figure 2.
Wetland types in the South Platte Focus Area

TYPE	DESCRIPTION
Submerged Aquatic	<ul style="list-style-type: none"> • Small permanent ponds, both natural and artificial. • Semi-permanent to permanent flooding • Dominated by submerged vegetation.
Emergent Marsh	<ul style="list-style-type: none"> • Cattail-dominated marsh • Seasonal or semi-permanent flooding • Dominated by perennial emergent vegetation (cattail or bulrush) • Occurs predominantly in poorly drained areas
Wet Meadow	<ul style="list-style-type: none"> • Surface water usually absent but with seasonally high water table • Dominated by grasses, sedges and rushes • Occurs primarily on flat riverine floodplain with silty loam topsoils
Riverine wetlands	<ul style="list-style-type: none"> • Riparian woodlands • Occurs along the South Platte River channels and associated flowing water wetlands • Includes irrigation canals and ditch systems
Warm water seeps, springs, and sloughs	<ul style="list-style-type: none"> • Important subset of Riverine Wetlands • Return-flow streams that do not normally freeze • Includes seep ditches and toe drains below reservoirs
Lakes and Reservoirs	<ul style="list-style-type: none"> • Mostly irrigation reservoirs with highly fluctuating water levels • Large, deep water bodies with wave-formed shorelines • Usually lack emergent vegetation
Playas	<ul style="list-style-type: none"> • Temporary (ephemeral) lakes in pastures or farmground • Usually circular depressions in areas with no external drainage • Seasonally, or less often, flooded • Located on clay soils away from stream channels in shortgrass prairie (or cultivated fields)
Artificial Wetlands	<ul style="list-style-type: none"> • Constructed wetlands • Moist-soil units are managed to provide shallow water habitat dominated by annual seed producing plants • Temporary flooding usually occurs in spring and autumn

Sandsage/Midgrass. The Sandsage/Midgrass community, composed of Deep Sand and Sandy Plains Range sites, dominates the upland portion of the valley outside of the riparian plain. The landscape can be gently sloping to choppy and dunelike and can have high, wide valleys. The native plant community is composed of 75-90% grasses, 5-15% forbs, and 5-10% shrubs. No trees are native to this site. Sand bluestem, prairie sandreed, yellow indiagrass, needle and thread, and switchgrass are the dominant native grasses in these communities while sand sagebrush, fringe sagebrush, and sand cherry are the most prevalent shrubs. Cattle grazing is the dominant agricultural use of these communities. Overgrazing decreases the most common dominant native vegetation species and increases less desirable species.

This community type is a fragile environment, highly susceptible to wind erosion. Nutrient and water cycling are critical to the long-term health of dominant, deep-rooted grasses, which requires adequate ground cover and incorporation of dry matter into loose, dry soils for decomposition to be effective.

Although most of these soils are extremely permeable, wetlands do occur in these communities. Some are naturally occurring where impermeable soils lie exposed or near the surface, trapping subsurface water. Irrigation water draining off agricultural fields can increase the water available for these wetlands in certain situations. Additionally, in recent years “recharge wetlands” or “augmentation ponds” have been established in these communities (see below). Vegetation in sandsage/midgrass community wetlands can be diverse depending on soil types and water quality.

Recharge/Augmentation Ponds. In recent years, many “recharge” or “augmentation” ponds have been created for the purposes of recharging the South Platte River to increase flows downstream and later in the year. These ponds are designed to supply water at presumed rates to the river system, and provide augmentation sources during particular months for other known depletions to the river. The wildlife benefits of such ponds are relatively undocumented and may vary considerably from site to site, according to the design of the ponds (shape, depth, and dominant vegetation).

Shortgrass. The landscape of these sites is level to gently rolling with some steep slopes. This prairie type is mostly found outside of the riverine plain with extensive tracts in the strategy area north of the Platte River. Clayey Plains, Loamy Plains, and Loamy Slopes Range Sites are combined under this ecological site description. These sites are dominated by sod-forming type short grasses. Ideally, this community should be 80 to 90% grasses, 5 to 10% forbs, and 2 to 10% shrubs. Native dominant grasses are blue gramma, buffalograss, western wheatgrass and green needlegrass, while four-wing salt bush, yucca, and winterfat are dominant in the shrub layer. No trees are native to this site.

Grazing is the dominant agricultural use of these sites. With heavy grazing, the dominant native grasses will decrease in abundance, and non-native plants proliferate. Water erosion on steeper slopes is a threat here, particularly in areas where vegetation has been removed or is in poor condition.

Although some small drainages traverse this type, playa basins are common and widespread throughout the shortgrass ecosystem (see description below).

Playas. Playas, or playa lakes, are generally circular basins on clay soils that collect rainfall seasonally. Found throughout the southern portion of the Great Plains, these are generally located in the Shortgrass Ecological type in Colorado. Unaltered playas have no surface inlets or outlets and only receive water from precipitation and lose water through evaporation. These wetlands are temporary, depending on weather cycles, and may be dry for multiple years before a wet cycle. This wet-dry cycling produces a highly productive system when the playas are wet, especially in terms of seed-producing annual plants and invertebrates. Playas therefore provide particularly high-quality stopover habitat for waterfowl and shorebirds. Playas throughout their

range are imbedded in working landscapes and historically have been heavily impacted by disturbances including high sedimentation rates due to tillage adjacent or in the playa, pit excavation, road construction, feedlot runoff, urban development, overgrazing, and deliberate filling.

Riparian Meadow. The topography of these sites is flat to gently rolling. These sites, occurring within the area of influence of the riverine plain and impacted by irrigated agriculture, are composed of Salt Meadow and Wet Meadow range sites. Most areas can be broadly classified as wetland, although upland soils and vegetation types are widely interspersed. It is common to find marsh, meadow, and upland habitats within a few feet of each other. Soils can be saturated to well drained, but generally are characterized by seasonally high water tables and silty-loam deposits from river channel deposition. (This NRCS Ecological site corresponds to the Wet Meadow category in Figure 2.)

Native vegetation on Salt Meadow sites is 80 to 90% grasses, 5 to 10% forbs, and 5 to 10% shrubs. Alkali sacaton is the dominant plant at Salt Meadow sites. The Salt Meadow shrub component is primarily four-winged saltbush and willows. Wet Meadow sites are dominated by rushes, spike-rushes, sedges, and grasses including switchgrass, indian-grass, prairie cordgrass and big bluestem. Ground cover, almost exclusively grasses, on Native Wet Meadow sites may exceed 60%. Cottonwood and willow, normally present in adjacent riparian communities, may invade both of these sites.

Heavy grazing on Salt Meadow sites over time can completely eliminate most native species and create a sodbound stand of inland saltgrass. When vegetative cover is reduced on Wet Meadow sites the plant community is invaded by kochia thistle, marsh-elder, greasewood, and rabbitbrush.

Many of these sites are natural seasonal wetlands. Irrigation drain ditches traverse these sites as they flow toward the South Platte River helping maintain a high water table. This zone of riverine bottomlands, with a high water table, is popular for creating additional wetland types.

Riparian Woodlands. This site occurs primarily along and adjacent to river corridors. Soils are extremely variable, from deep gravel to silty loam to clay, due to river channel deposition. Willow and even-aged stands of cottonwood in open to tightly closed overstories are typical. The understory is extremely varied and can range from bare ground to tall grasses, forbs and shrubs, to inland saltgrass. Some invading noxious plants are Tamarisk, Russian olive, purple loosestrife, Canada thistle, perennial peppergrass, and leafy spurge.

Wetlands are predominantly those typical of riverine systems. Along small drainages, the geographic influence of the stream on adjacent land can be very narrow. Along the South Platte the band of influence can be narrow in locations where the river channel is incised or wide where the channel is braided and has been allowed to meander. Off-channel sloughs have been created along meander scars within the riparian zone. Wetlands influenced by the South Platte can be very dynamic depending upon river flows. Change in local directional flows creates new channels leaving old oxbows and sloughs in the old channel, particularly in the heavily braided sections of the river. Plant succession along these channels eliminate the channels over-time if they are not scoured during high water period. Irrigation drain ditches which flow into the river create additional wetland habitat. Man-made deep pits filled with groundwater from which gravel was extracted are common throughout the length of the South Platte River.

Warm-water Seeps, Springs, and Sloughs. Warm-water Seeps, Springs, and Sloughs occur along the South Platte River and provide vital wildlife habitat, especially in winter. Warm-water sloughs provide thermal cover and food resources for waterfowl and other wildlife species during cold spells. These wetlands are created when relatively warm, subsurface water percolates into remnant meander scars or oxbows within the floodplain of rivers and creeks. Historically, flood events associated with these rivers and creeks would scour clean these sloughs and maintain their habitat value. However, water development on the South Platte River has altered the

hydrology of these sloughs and they have become choked with silt and vegetation, diminishing their value for wintering waterfowl. Efforts to restore this important habitat have been ongoing by the Division of Wildlife and partners since 1992. The restored functionality of these warm-water sloughs benefits a variety of waterfowl species including Mallard, Gadwall, and Wood Duck.

Wildlife of the South Platte Basin

The South Platte basin wetland ecosystem, consisting of cottonwood forests, seasonal emergent wetlands, wet meadows, oxbows, sandbars and warm-water sloughs support a myriad of wetland species and is complemented by water storage reservoirs, associated sandstone and shortgrass prairie upland, pastureland and agricultural fields. This extensive complex supports an amazing abundance of migratory wetland-dependent bird species, particularly during the spring and fall migratory seasons. Northeastern Colorado is also the terminal wintering site for about three-fourths of the Hi-Line population of Canada Geese and one-fourth of the Shortgrass Prairie Canada Goose population. The juxtaposition of prairie, riparian and wetland habitats harbors an amazing array of species, from Upland Sandpipers and Long-billed Curlews in shortgrass prairie habitats, Northern Harriers and American Bitterns nesting in wet meadows, to Swainson's Hawk, Red-headed Woodpecker and Bell's Vireo found in riparian areas.

Wetlands in the South Platte basin support numerous waterbirds throughout the year. In the spring, breeding waterfowl are evident throughout the valley. Specific to wetland habitat, an estimated 20,000 duck pairs breed within the South Platte basin with the primary species being Mallard ($\bar{x} = 12,468$ prs.), Gadwall ($\bar{x} = 2,229$ prs.), Redheads ($\bar{x} = 1,844$), Northern Shoveler ($\bar{x} = 1,572$ prs.), Blue-winged Teal ($\bar{x} = 977$ prs.), and Canada Geese. Wood Ducks use plains cottonwood woodlands. White Pelicans, Double-crested Cormorants, Western and Clark's grebes, Sora, Virginia Rail, American Coot, Killdeer, Spotted Sandpiper, and American Coot are other wetland dependent birds that breed in the South Platte basin. Both Red-winged and Yellow-headed blackbirds and Marsh Wrens use emergent wetland vegetation in the valley for nesting. During fall migration, the breeding species are joined by many North American species of shorebirds with Western and Baird's sandpipers being the most abundant. Franklins, California, and Ring-billed gulls are abundant in fall, along with both Forester's and Black terns. In winter, with many wetlands ice-covered, waterbird species are primarily Canada Geese (Dec. $\bar{x} = 46,280$, Jan. $\bar{x} = 38,132$, 1990-2000), mallards (about 98% of the duck population; Dec. $\bar{x} = 40,875$, Jan. $\bar{x} = 27,378$, 1990-2000), Common Goldeneye, and Common Mergansers. Both species of rail, common snipe, and killdeer utilize thermally attractive micro-habitats along open water seeps and drainage ditches. Bald Eagles forage on wintering waterfowl and roost in plains cottonwoods along the river channel and adjacent to reservoirs.

The Colorado Division of Wildlife has officially listed the status of twelve wetland dependent species inhabiting the SPWFA as either species of concern, threatened, or endangered in Colorado. Appendix E lists approximately one hundred wetland dependent species, including several species of amphibians and endangered fishes, that occur in the SPWFA. The species are listed from the most imperiled species to the least imperiled species. Ranking scores were derived from the CDOW COVERS database using total biology scores. The Colorado Natural Heritage Program also classifies many species of same wetland-dependent birds and amphibians as "rare and imperiled." If wetland habitat loss continues, more species will likely decline and become rare or imperiled.

Wetlands in the Rocky Mountain region are experiencing declines at a rapid rate. Colorado's economy continues to boom, resulting in a burgeoning human population. Urban development often means a loss in palustrine wetlands as land use practices change. South Platte River water is over-appropriated, which has led to reductions in river flows at certain times of the year. Water development projects, such as water storage reservoirs and diversions, have altered the hydrology of the river by regulating river flows. These hydrologic changes have resulted in a more constant flow with a decrease in seasonal peak flows, fewer over-bank flooding events and a

declining water level in the alluvial aquifers, the dynamic characteristics that make wetlands so productive. These processes have eliminated wetlands that once provided seasonal migration habitat for waterfowl. Recent mid-December waterfowl surveys of the South Platte region reveal a 66% decline in waterfowl numbers over the last 28 years, from 300,000 in 1972 to about 100,000 today. A decrease in the quantity and quality of wetlands habitat is implicated in the decline. Similar observations have been made in riparian habitats, where grazing practices and a lack of disturbance by flood events has led to even age stands of mature cottonwoods, decreasing population and community diversity and perhaps causing population declines in many species dependent on these diverse habitats.

Other habitats also provide critical wildlife habitat in the South Platte basin, such as the shortgrass prairie, which is home to declining or imperiled species. According to the U. S. Geological Survey Breeding Bird Survey (BBS), grassland birds are declining at a faster rate than any other guild of birds in North America. Rocky Mountain Bird Observatory has identified 24 species of particular concern within the Shortgrass Prairie Bird Conservation Region, many of which are already federally or state listed as threatened or species of concern including the Ferruginous Hawk, Mountain Plover, Upland Sandpiper, Long-billed Curlew, and the Burrowing Owl.

Physical Conditions in the South Platte Basin

Natural History of South Platte Wetland Systems

The South Platte River originates near the Continental Divide in the mountains of central Colorado. It is fed as it flows northeasterly by several perennial tributary streams, including Clear Creek, Boulder Creek, St. Vrain River, Big Thompson River and finally the Poudre River, whose confluence with the South Platte is just east of Greeley. The South Platte basin in northeast Colorado, as defined in this strategy, consists of approximately 240 river miles, more or less, running through the adjacent, historically irrigated flood plain lands of the Front Range piedmont region in the west, across the eastern high plains, and exiting Colorado into Nebraska at an elevation of approximately 3470 Feet. In 1842, the South Platte was described as a river of mud and sand, a mile wide and an inch deep. River flow was intermittent with high flows in the spring and early summer resulting from snow melt in the mountains in the upper portion of the drainages, and nearly non-existent flows in the late summer and winter. Over bank flooding during high water periods created a myriad of temporary wetlands along the river.

The historical wetland system of the South Platte drainage has been completely altered through the development of urban communities and irrigated agriculture. Water diversions from the South Platte and its contributing streams begin at the headwaters and continue throughout the length of its flow in Colorado. Reservoirs developed in and near the mountains are used to supply an increasing urban population along the eastern foothills, while off-channel reservoirs east of Greeley supply seasonal irrigation water for agriculture. Additionally, the South Platte system is used as a conduit to deliver trans-mountain water from the western slope of Colorado to water users throughout the northeastern plains. The result has been a controlled river with few flood events and virtually no naturally occurring wetlands as had occurred prior to about 1875.

Diverting river water for agriculture has resulted in widening the historical geographic band adjacent to the river on which river related wetlands can occur. Generally, major diversion ditches follow elevation contours as they move easterly, gradually moving away from the river channel to reach lands that previously had not been directly influenced by river water. Many of these ditches terminate at large irrigation water storage reservoirs. Most of the land between the ditches and reservoirs, and the river channel can be irrigated by flood irrigation or sprinklers, using water provided through a series of lateral ditches. These methods of water use result in a general raising of the water table within the basin, and a considerable number of relatively small

irrigation ponds, ponds from irrigation tail water, and drainage ditches. The water originally diverted from the river may be used a number of times before it eventually returns to the river. It may also be diverted a number of times from the river before it reaches the state line. The South Platte River system supports hundreds of miles of irrigation ditches and canals, several hundred small irrigation and water augmentation ponds, most of less than 10 surface acres, and approximately 4000 irrigation wells.

Water and water rights

By definition, water is one inescapable requirement for the existence of any wetland. And water is also seasonally in short supply in this area of the arid west. There are several points that need explanation concerning Colorado Water Law and water rights and their effect on wetlands and available flows in the South Platte system.

1. In Colorado, there exists a system of appropriations for water rights called the Doctrine of Prior Appropriation. In short, this means that the party owning the most chronologically senior rights as decreed by Colorado Water Court and administered by the Colorado Division of Water Resources (State Engineer) has first right to available water. This includes primarily surface flows without regard for geographic location on the system. In this Reach of the South Platte River, the most senior rights date back to the late 1800's. The most junior have been entered into the Court system within the last month, and more continue to be filed.

2. Surface and ground water rights are classified by, and must be used for, recognized legal Beneficial Uses. These may include municipal, industrial, irrigation, livestock watering, augmentation, exchange, fisheries, wildlife, and residential. Wetland creation, although not specifically a recognized Beneficial Use, often occurs in several forms. Augmentation pond development, seepage losses from irrigation canal systems, and tailwater returns from irrigation fields often yield seasonal wetlands as a side benefit. Wetlands irrigation is recognized as a beneficial use as long as the water is diverted from a stream and applied for the purpose of the growth, irrigation, and maintenance of wetland plants. The water courts have granted new irrigation water right decrees in recent years that claim wetlands as being the type of beneficial use that will occur. Case law has stated that irrigation occurs when there is a contribution to the growing of plants. If it is not contributing to the greening or growing of plants, then it is not considered irrigation. The fact that the water right holder is changing the types of crops historically grown under the irrigation water right is not viewed as a change of water rights, and is consistent with the State Engineer's historical decisions concerning a change in crop type. The State Engineer's Office has decided that it will not challenge the use of existing irrigation water rights to grow wetland plants under the following conditions.

1. The irrigated wetlands are grown on lands that were historically irrigated by the water rights in question.
2. Ground water will not be exposed as part of the construction of the wetlands or growing of the wetlands.
3. The water that is applied to the wetlands is diverted when the water right is in priority.
4. When irrigation water is applied to the plants, it should not result in the ponding of the water for more than 48 hours that was applied to flood the plants. Multiple applications of irrigation water could occur which might result in the continuous flooding of the plants during the irrigation season. In order for this to occur, under ditch systems that are otherwise considered water short, it is envisioned it would require the irrigator to reduce the number of acres that were historically irrigated.
5. Irrigation water will not be applied when plants no longer need water for growth or is necessary to sustain the plants.

3. Because of return flows from uses such as municipal, irrigation and augmentation diversions, the South Platte River is a 'gaining' system. This means that water taken out of the

system upstream, used or stored, will have some portion of that water returned to the system via underground flows, allowing for the same water to be diverted and used again and again.

4. The health and wealth of the South Platte system is primarily dependent upon winter snow pack within the Upper South Platte Watershed, described as the area east of the Continental Divide between the Palmer Divide south of Denver and the Colorado-Wyoming state line. Generally speaking, in periods of normal to above normal winter snowpack, all water rights can be sufficiently fulfilled. Significant spring and summer thunderstorm events within the watershed also help to augment water deliveries.

5. Additional water is delivered to the South Platte River via trans-mountain pipelines, bringing water owned by east slope entities from the west slope drainages of Colorado.

6. All diversions from the river or alluvial systems that are determined to have a depletive effect to the system must be fully augmented by some other source to prevent any injury to all senior water rights.

7. Colorado has a long-standing legal obligation to provide a minimum of 120 cubic feet per second (cfs) within the river proper at the Colorado-Nebraska state line from April to October every year. Wyoming has similar obligations from the North Platte River system.

8. The US Fish and Wildlife Service (USFWS) has identified endangered species issues that may require significant changes in the amount and timing of deliveries to central Nebraska. The USFWS, Nebraska, Colorado and Wyoming have been negotiating several potential remedies to this situation. Colorado is developing several augmentation sites, off-channel reservoirs and well systems to help provide water to the system in Nebraska to satisfy Endangered Species Act requirements and fulfill the Compact obligations.

9. The most significant demands on the system occur during the spring and summer months, as might be expected. Crop irrigation and reservoir filling rights are most senior and in priority at this time, and municipalities must meet higher residential demands for landscape irrigation. That leaves little extra for junior appropriations and most wetland uses except in the spring during the main snowmelt period and in the fall and late winter when other senior appropriations have been fulfilled. This is not significantly detrimental however, as wetlands across this geographic zone are historically seasonal and ephemeral, with most perennial wetlands occurring only along the portions of the river course where water availability was consistent.

10. Colorado, and the South Platte System in particular, is currently experiencing one of the worst drought periods ever recorded. Below normal snowpacks in the upper reaches of the watershed has been the rule for the last three years, and the growing seasons of 2001 and 2002 were extremely dry. These conditions, coupled with continuing higher demands from growing front range human populations, reduced return flows to the river system due to lower off channel diversions to irrigation and augmentation systems, and other aquifer depletions that exceed accretions have created a significant concern for water users and providers. Best estimates are that it will take at least three years of normal snowfalls and normal summer precipitation to get the system back to a 'normal' condition. Current predictions are for the drought to continue, at least into this early winter.

11. Another legal ramification that has developed in 2002 stems from a recent Supreme Court ruling. The Court found that the Colorado State Engineer did not have the authority to grant approval of Temporary Substitute Supply Plans where there was no permanent source of augmentation and a water Court decree application was not pending or approved. This has caused shock waves throughout the South Platte basin in Colorado. Northern, Central, and Lower South Platte Water Conservancy Districts, and Groundwater Appropriators of the South Platte (GASP) all have wells 'covered' by these temporary plans. Much of the water used for

augmentation of these wells has been provided under short-term agreements with municipalities that, until this current drought developed, believed they had a comfortable surplus of water and water rights. In order to comply with the law as decreed by the Supreme Court ruling, these wells will need to be augmented by more permanent sources, and the State Engineer must develop concise Rules and Regulations for the operation of Temporary Substitute Supply Plans. These Rules and Regulations are not expected to be ruled on by the Court until early 2003. Several law suits are pending between water users, and providers, and the State Engineer concerning these Rules and Regulations and potential, perceived, and felt injuries to senior rights.

All of these facets of water law, water delivery, hydrology, and water politics will continue to have a marked affect on wetlands in the near future. One long-term result may be the development of more small water augmentation systems and off-channel storage facilities, which will yield an increase in potential wetland acres and functions. In the short-term, it is expected that watered wetland acres may decrease due mainly to the drought and reduced water delivery potentials.

Land forms and soils

Lands within the South Platte River bottom are generally flat to slightly sloping, supporting wet meadow, salt grass meadow and relatively flat forest ecosystems. Adjacent to the river bottom, the terrain becomes hilly to gently rolling as a result of wind and water erosion.

Numerous individual soil types, ranging from tight clay and shale to deep sand, are evident throughout the area. Impermeable shale underlies the entire valley at depths ranging from 0 to over 90 feet. River bottomlands generally are underlain with sand and gravel, ranging in size from 2 inches to fine sand, interspersed with layers and lenses of silt loam and clay. Most river bottom soils have resulted from flood and drought cycles and historic changes in the river course. Deposition of loam and silt has created a flat soil surface of high quality for farming. NRCS Range Sites in the riparian corridor include Sandy Bottomland, Salt and Wet Meadow and Shale and Gravel breaks. Sandy Plains and Deep Sand Sites, generally eroded by wind, cover most areas outside the riparian plain. These sand sites show little variation in profile, are extremely well drained, and are highly susceptible to wind and water erosion. Loamy Plains and Slopes and Clayey Plains, which are well suited for native short grass and mid grass prairie species, are interspersed in certain areas outside the riparian plain.

Climate

The South Platte basin is relatively arid, with extreme seasonal temperature ranges. Average precipitation ranges from 11.12 inches at Greeley to 16.32 inches at Julesburg near the Nebraska State line, with about 75% falling between April and September. Average snowfall is about 36 inches, with two-thirds of that total falling between January and April. Most precipitation during the growing season falls either as severe localized thunderstorms that may drop from 2 to 4 inches within minutes or as light showers of less than 0.5 inch. Generally, heavy downpours of more than one inch result in runoff, while light showers do little for soil moisture. Neither type of precipitation event appreciably increases soil moisture nor provides water for plants. Drying westerly winds are common immediately after storm events, causing exposed soils to quickly lose moisture, and evaporating snow before it has a chance to soak in to the frozen ground. The average number of days per year with more than 0.1 inches of precipitation is 31. The evaporative loss from open water sources is about 45 inches per year.

The average daily maximum temperature in July is about 90 F, and temperatures exceeding 100 F are common in mid-summer. The average daily minimum temperature in January is 10 F degrees, and temperatures as low as -35 F are not uncommon in mid-winter. The last killing frost (28 F or below) in spring occurs between April 25 and May 11. The first autumn killing frost occurs between September 25 and October 11. The average length of the growing season is about 150 days.

Land Ownership

Private. Approximately 89% of The South Platte Focus Area is privately owned. Therefore, wetland programs which are directed at private lands are a very important part of this strategy. The largest share of privately held land is being used directly for agricultural cropping or livestock grazing. The majority of these private agricultural acres are still held and controlled by individuals and small family corporations, with a few larger holdings being controlled by large corporate interests. The economic climate of agriculture today requires the landowner to squeeze as much profit from his or her property as possible, and reduces the possibilities for setting aside lands strictly for wildlife habitat purposes. In addition, idling private lands for conservation or recreation over the long term has in some cases caused property taxes to severely increase².

Other private property holdings, considered to be industrial, commercial, or residential, are generally located within or adjacent to existing municipalities and along primary access corridors. All industry and commerce, with the possible exceptions of oil and gas production and the building trades, directly or indirectly supports the livelihood and lifestyle of farmers and ranchers.

Irrigation and water conservation districts in the area also own and control some lands. Property owned by these entities is considered to be private. Some of the property controlled by these entities actually is federal land, particularly some parts underlying and adjacent to some irrigation reservoirs, and are also considered to be privately controlled by the various ditch boards.

Local Government. Municipal and county parks holdings, are relatively small, totaling less than 2000 acres confined mostly to being within or adjacent to existing communities. No county 'parks and open space' holdings are known to be operated, owned or managed in the rural areas of the six northeast Colorado counties.

State. Colorado state holdings, excluding state highways, consist of Colorado Division of Wildlife properties, about 30,000 acres managed for wildlife habitat and recreation; 7600 acres managed by the Colorado Division of Parks and Outdoor Recreation including Jackson Lake and North Sterling Reservoir; and about 477,000 acres controlled by the State Land Board, generally leased to private agricultural interests. All of these lands are to be managed for the 'public good' of the people of Colorado. Each of these agencies has specific guidelines and mandates concerning the highest and best use of properties under their control, and generally are 'watch-dogged' by the public to assure that their concerns are met. In most cases, wildlife protection considerations are weighed strongly when determining a specific management strategy for these properties.

Federal. Federal lands total about 11,000 acres within the SPWFAC area. Most of these are managed by the Bureau of Reclamation. Some of these lands were purchased from willing private sellers in the early 1970's, when it was believed that the Narrows Dam project would be built. Most of those lands are now leased to private agriculture interests for cropping and grazing practices. Other federal holdings underlie or are adjacent to portions of Jackson, Prewitt, Riverside, Bijou #2, and Empire Reservoirs. Although these lands are owned by the United States, they are, with some federal restrictions and guidelines, managed by the Irrigation companies that control the lake surface.

In most cases, land ownership and management responsibility are one in the same. In the case of reservoirs, and some irrigation ditch easements, jurisdictions can overlap. Because these

² *It is important to note, however, that new demands for water and an opportunity for farmer/ranchers to help sustain their own water uses through water augmentation plans and partnerships is helping to shift the tide toward more multiple-use conservation acres. Also, the use of conservation easements can effectively protect these conservation acres from higher property tax levies as well as from development.*

reservoirs are of paramount importance to local agriculture, and to many wildlife populations, cooperation and solid working relationships between federal, state, and private entities are required.

Maps of Pertinent Features

Mapping of the important geographic features, completed SPWFAC and partners' projects, priority areas, land use, and protected lands is ongoing. Ducks Unlimited has developed baseline maps that include the entire SPFA at a workable scale as part of this Strategy. Improving and updating these baseline maps will be a continuing, periodic process as additional projects are completed and GIS data is gathered and digitized. (Appendix F)

South Platte Wetland Focus Area Strategy Accomplishments

The accomplishments of the South Platte basin 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).

Centennial Valley Ranch SWA

The Centennial Valley Ranch, located along the South Platte River, 9 miles east of Kersey in Weld County, consists of 1,953 acres of deeded land and 1 share of Box Elder Ditch water. This project protects approximately 2 miles of the South Platte River, and adjacent wetland and riparian areas on both sides of the river. Water rights purchased with the ranch will be used to irrigate meadows and saltgrass pastures on the south side of the river, as has been done historically. An off-channel (slough) which meanders along old river oxbows and remains ice-free during below freezing weather provides a moderate micro-climate for wintering migratory birds, particularly waterfowl. Other wildlife using the ranch include other waterbirds, bald eagle, turkey, mourning dove, white-tailed deer, and mule deer.

The area is now managed by the Colorado Division of Wildlife with access restrictions during certain times of the year and limited access for waterfowl hunting. Developed shallow water wetlands are planned for area south of the river.

PROJECT FACTS

Wetland Type: Riparian and Wet Meadow

Wetland Acres: 20

Total Project Acres: 40

Project Action: Fee Title Purchase

Project Leader: The Colorado Division of Wildlife

Project Cost: \$148,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

Common snipe

Wood duck

Beaver

Muskrat

Common Garter Snake

Northern leopard frog

Bold – Species of Concern or T&E)

LAND STATUS

Ownership: Colorado Division of Wildlife

Public Access: Yes

For Information: Larry Rogstad District Wildlife Manager (970) 472-4418

Opportunities: Hunting, Birdwatching, Photography

Brush Prairie Ponds SWA

The 1,600 acre Brush Prairie Ponds State Wildlife Area, located 2 miles south of the town of Brush, is leased by the Colorado Division of Wildlife from the City of Brush. Before the area was leased to the CDOW, the land was farmed with only a small number of wetland basins in a portion of the property. In 1987, the City of Brush purchased the property to use as a recharge site for its municipal wells. That same year the CDOW entered into an agreement with the City of Brush and the Fort Morgan Ditch Company to design and construct a water delivery system, establish native cover on the abandoned farmlands and manage the area as a quality waterfowl

hunting area. The water control developments increased the recharge value of the property while at the same time creating habitat for wetland birds. Compatible with recharge water application, the wetland basins are managed primarily to provide habitat for migratory waterfowl during fall and spring migration. Warm season grasses, predominately switchgrass, are now established on the 840 acres of previously farmed land providing cover that is very attractive to upland birds and nesting waterfowl. The DOW continues to develop and improved the property for migratory waterfowl and shorebirds. D.U. and DOW biologists are currently working together to further refine wetland management strategies within the augmentation plan constraints. Access to the area is limited to curtail disturbance during the spring and summer, and provide a quality hunting experience during fall waterfowl seasons. To date, one hundred and forty-nine species of birds have been documented on the property that was recently designated as an Important Birding Area by the Colorado Audubon Chapter. Brush Prairie Ponds has earned the reputation of being one of the best quality waterfowl hunting areas in the State, and was the first State Wildlife Area in Colorado to employ a reservation hunting system.

Construction the of 12 main water diversions and associated delivery ditches was financed with Colorado Division of Wildlife duck stamp monies, matched with Ducks Unlimited, Inc. MARSH (Matching Aid to Restore State Habitats) funds. The initial project was the first wetland enhancement project in Colorado to received DU MARSH matching funds.

PROJECT FACTS

Wetland Type: Permanent / Semi Permanent & Seasonal

Wetland Acres: 70

Total Project Acres: 150

Project Action: Restoration/ Creation

Project Leader: Colorado Division of Wildlife

Project Cost: \$ 75,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

Northern Pintail

Lesser Scaup

Hooded Merganser

Sora

Virginia Rail

Long-billed Dowitcher

American Avocet

American Bittern

Long-billed Curlew

American White Pelican

Upland Sandpiper

Black Tern

White-faced Ibis*

Bold- Species of Concern or T&E

**tracked by CNHP*

LAND STATUS

Ownership: City of Brush, Colorado

Management: Colorado Division of Wildlife

Public Access: Yes

For Information: CDOW (970) 842-6300

Opportunities: photography, bird watching, hunting



Elliott SWA

Elliott State Wildlife Area is located approximately five miles northeast of Snyder on the South Platte River. In 1989 a critical 200 acre in-holding of the Elliott SWA was purchased with Colorado Duck Stamp and Ducks Unlimited Donor funds. The purchase provided the DOW with complete ownership of the Union Slough, and the ability to restore and develop the wetland resources of the area. Ducks Unlimited was contracted by the DOW to design and develop a project that would create shallow seasonal wetlands like the wetlands that would have naturally occurred due to over bank flooding. Water for the project was purchased from the Union Ditch by D.U. In 1999 construction of a series of low level spreader terraces, creating 120 acres of shallowly flooded meadows was completed. The water in each wetland cell can be managed independently, thus the ability to emulate historical spring wetland conditions and create fall habitat for migrating waterfowl. Since water is applied to these wetlands primarily in the spring and fall, there is little conflict with agricultural users during the heavy summer irrigation season. To provide water for longer periods during the fall, the DOW filed for a 2000 storage water right. D.U is currently under contract by the DOW to provide water management and to a development moist soil management plan for the project. This project is a component of the wetland complex around Elliott SWA which includes the South Platte River, several warm-water sloughs including the Union Slough, the proposed wetland developments on the adjacent Hamlin acquisition, and the wetland projects and habitats found on adjacent private lands including agricultural fields. As required by the 404 permit, CNHP will monitor vegetative and document plant community changes within the project area until 2004.

Access to a portion of the area is limited during spring and summer to curtail disturbance to migrating and nesting birds. Waterfowl hunting in the same area is limited to increase success and allow undisturbed use of the wetlands during fall migration. Permanent regulations regarding public access and use of the project will be developed during the next few years to balance hunting opportunity with quality.

PROJECT FACTS

Wetland Type: Marshland

Wetland Acres: 1,181

Total Project Acres: 1,724

Project Action: Purchase of Fee Title and Restoration

Project Leader: Ducks Unlimited and the Colorado Division of Wildlife

Project Cost: \$1,074,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

Green-winged teal

Blue-winged teal

Marsh Wren

Great blue heron

Western Sandpiper

White-faced ibis*

Wilson's phalarope*

Western chorus frog

Common Garter Snake

Bold- Species of Concern or T&E

** tracked by CNHP*

LAND STATUS

Ownership: Colorado Division of Wildlife

Public Access: Yes

For Information: CDOW (970) 842-6300

Opportunities: photography, bird watching, hunting,

Hamlin Tract at Elliott SWA

The wetland creation project on the Hamlin Tract of Elliott State Wildlife Area will provide the limited seasonal habitat required by waterfowl during their spring and fall migration. The proposed development will flood over 150 acres of wetlands in 9 impoundments located throughout the 300-acre property acquired by the CDOW in 1999. Ducks Unlimited biologists and engineers have carefully designed this complex for maximum flexibility of water management. This assures that water can be maintained at proper depths (6-12") to attract waterfowl and provide managers with the capability to manage habitat and promote naturally occurring plant species known to be highly nutritious for waterfowl. Construction is scheduled to begin in the winter of 2002

A dependable source of water provides the site with ample supplies to flood the basins in the spring and fall and irrigate the wetlands in the summer. This water is diverted directly off the South Platte River and delivered to the site via the Union Mutual Ditch, of which, Ducks Unlimited Inc., and the CDOW own the majority share along with private landowners. This water has an irrigation right that allows irrigation of the wetlands for promotion of wetland plants when the ditch is in priority.

In addition, the proposed wetland development will complement a wetland project located on the adjacent property, which is also part of Elliott SWA. Ducks Unlimited completed construction on this project in 1999 with the financial assistance of the Tim Travis Family. In conjunction with the Travis Family Project, the new project would help restore 370 total wetland acres on Elliott SWA. Completion of this project will increase the diversity of habitats in the area and make this section of river one of the most productive waterfowl migration areas on the South Platte River.

PROJECT FACTS

Wetland Type: Seasonal

Wetland Acres: 150

Total Project Acres: 300

Project Action: Creation / Restoration

Project Leader: Ducks Unlimited Inc.

Project Cost: \$250,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

Lesser Scaup

Northern Pintail

Lesser Yellowlegs

Long-billed Curlew

Northern Leopard Frog

Common Garter Snake

Stilt Sandpiper

White-faced ibis*

American Avocet

Marbled Gotwit

Bold – Species of Concern or T&E

**tracked by CNHP*

LAND STATUS

Ownership: Colorado Division of Wildlife

Public Access: Yes

For Information: (970) 842-6300

Opportunities: photography, bird watching, hunting,



Tamarack SWA

The Tamarack State Wildlife Area, own and managed by the Colorado Division of Wildlife, is located one mile south of Crook. The 10,500 acre property includes approximately 15 miles of the South Platte River and the adjacent riparian including a continuous grove of plains cottonwood trees throughout the entire length of the property. The property includes a number of old river channels that now flow year round providing attractive thermal environments to wintering waterfowl. The Tamarack SWA also has about 6000 acres of sand sage grasslands most of which lie south of I-76.

Over the past 6 years Tamarack SWA has been the site of extensive water developments as a result of the Tamarack Plan in the Three State Agreement with Nebraska and Wyoming. These developments are described in more detail in the South Platte Lower River Group accomplishment section on page 23. In short, these developments are a water augmentation/regulation demonstration project intended to benefit wildlife species in Colorado and Nebraska through the timing of return flows.

The Wetlands Initiative provided funding for the creation of approximately 50 acres of seasonal wetlands designed by D.U. engineers and biologists. Construction of the three wetland sites was accomplished through a cooperative agreement between Initiative partners and the South Platte Lower River Group. The sources of water for the project are returns flows from the "live minnow stream" and an adjacent irrigation well that was funded by D.U. Complete build out and operation of the Tamarack Plan is expected to have significant impacts to the wetlands and sloughs on and adjacent to the property.

PROJECT FACTS

Wetland Type: Marshland

Wetland Acres: 50

Total Project Acres: 60

Project Action: Restoration

Project Leader: Ducks Unlimited

Project Cost: \$85,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

American wigeon

Plains Minnow

Suckermouth Minnow

Brassy Minnow

Plains Topminnow

Long-billed Curlew

White-faced ibis*

Wilson's phalarope*

Canada goose

Bold-Species of Concern or T&E

** tracked by CNHP*

LAND STATUS

Ownership: Colorado Division of Wildlife

Public Access: Yes

For Information: DOW (970)842-6300

Opportunities: photography, bird watching, hunting, fishing

Red Lion SWA

Red Lion SWA consists of both extensive upland, wetland and lacustrine habitats. The property covers 1297 acres, of which 17 acres are permanent or semi permanent wetlands, and approximately 80 acres of seasonal wetlands. The diversity of habitats supports many species of migrating and local wildlife. Water stored in the lacustrine habitat on the property, known as Jumbo Annex Reservoir, is delivered to various seasonal wetland sites on the property via pipe, ditch, or by subsurface water seeping naturally from the reservoir. The presence of subsurface water over time has created large areas of monolithic cattail stands in the two lowest wetland cells. To resolve this problem a project was just completed that will provide control of the water and allows drainage of the wetland basins. This will allow managers to use moist soil management techniques to support beneficial wetland plants and also to control wetland water levels to maximize migratory bird usage. Like several other recent SWA wetland projects, specific water management strategies and plans will be developed in the next few years.

PROJECT FACTS

Wetland Type: Permanent / Semi-permanent / Seasonal

Wetland Acres: 97

Total Project Acres: 213

Project Action: Restoration / Enhancement

Project Leader: Ducks Unlimited Inc.

Project Cost: \$95,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

Lesser Scaup

Northern Pintail

Lesser Yellowlegs

Long-billed Curlew

Northern Leopard Frog

Common Garter Snake

American Avocet

Yellow-headed Blackbird

Great Blue Heron

Bold- Species of Concern or T&E

** tracked by CNHP*

LAND STATUS

Ownership: Colorado Division of Wildlife

Public Access: Yes

For Information: DOW (970)842-6300

Opportunities: photography, bird watching, hunting, fishing

SOUTH PLATTE LOWER RIVER GROUP, INC.

The South Platte Lower River Group, Inc. (SPLRG) is a coalition of water users and the State of Colorado formed to preserve existing water uses while enhancing stream flows and water related wildlife habitat. The area of focus for SPLRG is the lower South Platte River in Colorado (Water District 64) from Brush downstream to the state line at Julesburg. SPLRG's first meeting was in December 1995. SPLRG became a Colorado non-profit corporation in the Spring of 1996. An Advisory Committee and a four member Board of Directors meet monthly to discuss, coordinate, and plan water management activities. The Colorado Division of Wildlife (CDOW), Colorado Water Conservation Board (CWCB), and the Colorado Division of Water Resources are active participants in SPLRG along with agricultural and municipal water users in the lower river.

SPLRG received a grant from CWCB for \$75,000 in 1996 and \$300,000 for use in 1997 through 2002. SPLRG also received a grant for \$30,000 from the U.S. Bureau of Reclamation (USBOR) for activities in 1998 and 1999. In addition, four water user organizations each contributed \$5,000 in each year from 1996 through 2001 and are planning on continuing their financial support in future years. Additional funds have also become available as described below. These four organizations each appoint a Director to SPLRG. The four organizations are the Lower South Platte Water Conservancy District (LSPWCD), Groundwater Appropriators of the South Platte (GASP), Northern Colorado Water Conservancy District (NCWCD), and the Platte River Project (PRP). The Platte River Project is a coalition of water users formed to assist the State of Colorado in discussions with the U.S. Department of Interior and the States of Wyoming and Nebraska on the development of a Platte Basin Endangered Species Act (ESA) Program for endangered species in central Nebraska.

The main work tasks of SPLRG are; (1) hydrologic analysis and database development, (2) project identification, (3) demonstration project development, and (4) establishment of long-term project agreements and funding. The work effort is done by in-kind services of the SPLRG's participants. The participants of SPLRG in conjunction with IDS (Integrated Decision Support Group) at CSU have developed computer tools which allow easy access and analysis of data to help in the development and management of South Platte water resources. These computed tools called SPMAP (South Platte Mapping and Analysis Program) provide GIS data bases and analysis software for consumptive use and return flow computations. SPMAP is also being expanded to provide analysis for wildlife habitat potential.

The major focus of SPLRG has been the identification and development of managed groundwater recharge demonstration projects. Such projects involve the diversion of excess river flows to groundwater recharge basins. Seepage from the basins returns through the groundwater aquifer to the river at a later time to augment river flows. These return flows, or accretions, can be used to maintain the reliability of existing well augmentation plans and enhance stream flows and improve riparian habitat for many wetland dependent species including several imperiled native minnows. These return flows can also provide credit at the state line for Colorado in a future Platte Basin ESA Program.

The three states of Colorado, Nebraska, and Wyoming and the U.S. Department of Interior are currently involved in a Cooperative Agreement for developing a future Platte Basin ESA Program to address endangered species (whooping crane, least tern, piping plover, and pallid sturgeon) issues on the Platte River in central Nebraska. With the establishment of a Platte Basin ESA Program in probably the year 2003, Colorado will commit to re-regulating excess South Platte river flows above the Colorado-Nebraska State line through mainly managed groundwater recharge. This re-regulation effort is called Colorado's 'Tamarack Plan' and will be developed on public and private lands in the lower 30 miles of the South Platte River in Colorado.

SPLRG initially budgeted \$10,000 for demonstration recharge projects under the Julesburg Irrigation District and \$40,000 for demonstration projects at the CDOW's State Wildlife Areas (SWA) at the Tamarack Ranch near Crook and the Pony Express near Julesburg. The Tamarack Ranch SWA Demonstration Recharge Project was started in the Fall of 1996 and is a multipurpose project for demonstrating how recharge activities for augmenting river flows can also be designed and operated to optimize wetland and waterfowl habitat. The initial water supplies for recharge at Tamarack Ranch SWA come from one new well drilled next to the river with buried plastic pipeline going from the well to the recharge basins. This one well has pumped on average 1,064 ac-ft/year during the winters of 1997, 1998, and 1999. In addition, a live stream section has been constructed for studying and propagating native South Platte minnow species of concern. A water rights application was filed in 1996 with Division 1 Water Court for the new Tamarack Ranch SWA well and the proposed well at Pony Express SWA. Depending on the different activities (i.e., recharge, minnow stream, and/or waterfowl, wetland habitat), water from new wells at Tamarack Ranch SWA can be supplemented by water from an existing well and the Tamarack Ditch that are part of the CDOW's decreed water rights at Tamarack Ranch SWA.

Extensive monitoring activities for groundwater levels, water quality, and river accretions are part of the recharge project at Tamarack Ranch SWA. This monitoring shows that managed groundwater recharge activities have the potential to enhance warm water sloughs and wetland complexes in the meadows along the river. Along with SPLRG, CDOW is contributing personnel time, equipment, and funds to the Tamarack Ranch SWA Demonstration Recharge Project. The development of the recharge project continued at Tamarack in the Fall of 1998 with the drilling of two additional wells next to the river for supplying recharge basins. Another water right was filed in 1998 for the additional development at Tamarack Ranch SWA. This expansion is funded through \$240,000 of the second CWCB grant and the \$30,000 USBOR grant. Additional wells for a total of 10, buried pipelines, and recharge basins/ponds were constructed in 1999-2001 using these existing grants, an additional \$209,000 from CDOW, \$375,000 from the Species Conservation Trust Fund of the State of Colorado, and in-kind services and funds from SPLRG participants. Ducks Unlimited, Inc. through the Colorado Wetlands Initiative, which receives GOCO funding, contributed \$85,000 and expertise to the development of water supplies and wetland/waterfowl habitat at Tamarack Ranch SWA. The aquatic division of CDOW budgeted \$25,000 each year for 1997, 1998, and 1999 to finish the work on the 1/4-mile of minnow stream including well/pipeline construction and the construction of holding ponds that will warm the groundwater supply to the ponds to a suitable temperature in the summer before introduction into the minnow stream. As of 2002, three declining minnow species (suckermouth, brassy, and plains) have been transplanted into the stream/pond complex at Tamarack, which has been flowing continuously since August 2001. The 10 recharge wells were all operational in 2001 resulting in 15 acres of recharge ponds and associated pond habitat. To date the electrical payments for well pumping have come from the CWCB grants and water user contributions. In 2001, 5,130 acre-feet were pumped to the recharge ponds during mainly the period of January through June 2001. The warm groundwater pumped to the recharge ponds in the winter months provided unfrozen open water surfaces used extensively by waterfowl.

Just as the initial demonstration project started at the Tamarack Ranch SWA in 1996 has helped in the planning and development of additional recharge activities, initial demonstration projects with private ditch companies such as the Julesburg Irrigation District have led to longer-term recharge opportunities. SPLRG utilized \$20,000 of their funds to develop a successful demonstration recharge site into a permanent site through a cooperative agreement between SPLRG, the Julesburg Irrigation District, and the Town of Julesburg. This project pumps water from the Peterson Ditch into natural depressions that exist at the Town's old well field in order to recharge the groundwater aquifer. This groundwater recharge will provide accretions to the South Platte River for well augmentation and may also be pumped from the aquifer to provide a better water quality for the Town of Julesburg. Ducks Unlimited, Inc. and LSPWCD signed an agreement in 2002 to further expand this project. SPLRG also budgeted \$80,000 to work with private entities to enhance recharge and well augmentation that was used to provide additional sources of augmentation water during the extreme drought of 2002.

DT Ranch Conservation Easement

The DT Ranch is located along the South Platte River directly south of Weldona, about 15 miles northwest of Fort Morgan. The ranch has been managed as a hunting club for approximately 30 years. The ranch is composed of the riparian area and associated upland pastures primarily along the south side of the river. Old river oxbows, a substantial drainage ditch that remain ice-free during winter, and several constructed shallow water flood fields and wet soils management units comprise the wetlands on this 2300 acre ranch. Mallard ducks and Canada geese use the drain ditch extensively during inclement weather. The developed shallow water wetland basins are managed as moist-soil plant units that provide feeding areas for wetland dependent birds during fall and spring migration. Shallow water basins are an important wetland component along

the South Platte. About one half of the properties uplands are farmed. Controlled grazing occurs over much of the irrigated and sub-irrigated pastures during the growing season.

Centennial Land Trust, in cooperation with Ducks Unlimited, is purchasing a Conservation Easement on 809 acres of the property through a North American Wetlands Conservation Act grant. The acreage includes about one half the length of the before mentioned drainage ditch, the adjacent riparian zone, and approximately 306 acres of off-channel wetlands.

PROJECT FACTS

Wetland Type: Riparian, Marshland, salt and wet meadow

Wetland Acres: 461

Total Project Acres: 809

Project Action: Conservation Easement

Project Leader: Centennial Land Trust

Project Cost: \$300,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Wilson's phalarope*

Mallard

Northern Leopard Frog

Common Garter Snake

Northern shoveler

Green-winged teal

Blue-winged teal

Canada goose

Great blue heron

Bold- Species of Concern or T&E

** tracked by CNHP*

LAND STATUS

Ownership: DT Ranch, Inc.

Public Access: No

For Information: Centennial Land Trust (970) 645-2471

USFWS Partners For Fish and Wildlife Projects

The South Platte River has been heavily impacted through diversions, flood control, agriculture, and development. The natural hydrograph has been altered such that spring flooding is reduced in both frequency and magnitude as water is stored for irrigation, municipal, and industrial use. A cottonwood-dominated riparian forest now occupies what was historically a grassland and wet meadow floodplain. Cropland and pasture are the dominate streamside activities. Agricultural use is being replaced by recreational activities in several areas as river bottom land is purchased by private and public interests for hunting and fishing access.

The South Platte River is an important migration stopover for waterfowl, shorebirds, and neotropical migrants. Restoration of the habitat values historically provided by overbank flooding is our major effort. Additionally, assisting in efforts to address flow issues in the Platte River through Nebraska is also a focus of our efforts along the South Platte.

Intensive water development in the South Platte River Basin has been the primary factor affecting historic habitat in this Focus Area. Agricultural and related activities have been the major land disturbance in the Focus Area. However, future residential development is a increasing concern as the Denver metro area grows eastward. Interest in acquiring South Platte River property for wildlife-based recreation is high and will help slow future development.

Since 1997 the Partners For Wildlife program has been the primary vehicle selected by the SPWFAC to develop wetland projects on private lands in the focus area. The committee has allocated a block funding grant each year to the Partners for Wildlife program to fund these projects.

Partners for Fish and Wildlife projects are completed primarily on private lands through a cooperative long-term (15 to 20 years) contractual agreement with the landowner. This approach assures the Landowner is closely involved with the habitat project itself, and provides for long-term benefits and maintenance of the project. In the South Platte Wetland Focus Area there are currently two major types of projects:

Floodplain restoration projects usually utilize irrigation water to re-establish the effects of overbank flooding. These projects use contour berm and water control to establish wet meadow vegetation in former crop or pastureland in the South Platte River floodplain. Working with landowners and our other partners, projects are designed and managed to provide spring and fall foraging sites for migratory water birds. Costs average \$400/acre for wetland restorations.

Ground water recharge projects are part of the State of Colorado's approach to address both in-state water rights issues and Endangered Species Act concerns in and along the Platte River through Nebraska. Partners for Fish and Wildlife, working with water users groups, the State of Colorado, Ducks Unlimited, and others, assists in the design of recharge projects to establish temporary wetland habitats at the site. A longer term benefit is increase in base flows to the Platte River through Nebraska as the recharge efforts increase and expand. Costs have generally averaged \$400/acre for recharge projects although recharge is still too new a concept to estimate.

In working with cooperating landowners, the Partners for Fish and Wildlife program in the South Platte Wetland Focus Area has developed funding and planning relationships with the Colorado Division of Wildlife, Great Outdoors Colorado, Natural Resources Conservation Service, Ducks Unlimited, North American Wetland Conservation Act funding, Northern Colorado Water Conservancy District, Centennial Land Trust, South Platte Lower River Group, Lower South Platte Water Conservancy District, and several smaller water providers. Partners for Fish and Wildlife projects in this focus area now account for 981 wetland acres, 12 miles of riparian fencing, and 3,000 acres of associated upland habitats.

PROJECT FACTS

Wetland Type: marshland, riparian,

Wetland Acres: 981

Total Project Acres: 3000

Project Action: Restoration/Creation

Project Leader: Bob Timberman

Project Cost: \$825,000

PROTECTION OF WETLAND HABITAT FOR: (non-inclusive list)

Mallard

Snowy egret*

White-faced ibis*

Black-necked stilt*

Wilson's phalarope*

Canada goose

Northern pintail

Cinnamon teal

Common Garter Snake

Northern Leopard Frogs

Bold – Species of Concern or T&E

**tracked by CNHP*

LAND STATUS

Ownership: U.S. Fish and Wildlife Service

Public Access: Landowner Permission Required

For Information: USFWS (303) 275-2305

Opportunities: with Permission of Landowner photography, bird watching, hunting, fishing

Wetlands Reserve Program Projects

The Wetlands Reserve Program (WRP) and Emergency Wetland Program (EWP) are voluntary programs that provide technical and financial assistance to eligible landowners to restore, enhance, and protect wetlands. Landowners have the option of enrolling lands through permanent Conservation Easements, 30-year easements, and restoration cost-share agreements.

Colorado has growing interest in WRP, and has participated in the program since 1995. Since 1995 the program has provided significant partnering opportunities to help stretch NRCS dollars and staff. Key partners include U.S. Fish and Wildlife Service, Ducks Unlimited, and Colorado Division of Wildlife. The program has been used to improve a variety of wildlife habitats with emphasis towards declining wetland species. The program is also being used to improve a variety of habitat types needed for migratory birds.

In Colorado, there were 11 participants in 2001 approved for funding on 1,310 acres. In 2001, there were five perpetual easements, five 30-year easements, and one restoration cost-share agreement. There were 643 acres of wetlands restored during 2001. There are currently 11 unfunded applications involving over 5,000 acres.

Within the SPWFAC, a total of 9 participants have conserved 1537 acres of wetlands and associated upland habitats in 30 year Conservation Easements, and 8 participants have protected and enhanced an additional 1316 acres in perpetuity through this program. Three Conservation Easements involving some 413 acres are pending or in the closing process.

State contact

Stuart Simpson, Assistant State Conservationist for Programs, 655 Parfet Street, Room E200C, Lakewood, CO 80215-5517. Phone-720-544-2804.



Goals and Strategies

The Mission of the South Platte Wetland Focus Area Committee (SPWFAC) is to facilitate the development of wetland conservation projects that conserve wetlands with an array of ecological and societal benefits to the Colorado South Platte basin community, and that sustain the natural integrity of the South Platte ecosystem. The goals of the SPWFAC, and the strategies and actions to achieve those goals are predicated on two key elements of project selection protocol.

Project Selection Protocol

- First, participation by landowners and other entities is completely voluntary. It is important to note that projects can originate from within, or from outside the committee for action and funding. Each project proposal will be reviewed by the committee and judged on its own merit. Special consideration will be given to projects located within priority areas or contributing to wetland complexes. The Colorado Division of Wildlife Wetlands Program Funding Application has been designed to assist Wetland Focus Areas in project reviews. SPWFAC expects to use that application as a guideline to describe individual projects. (Appendix B)
- Second, the SPWFAC desires to build viable wetland complexes distributed throughout the South Platte Wetland Focus Area. A complex is loosely defined as a geographical area of sufficient size containing a sufficient quantity, quality, and diversity of wetland types to satisfy the life history requirements of several wetland dependent plant and animal species.

GOAL 1

Conserve a sufficient quantity, quality, and diversity of wetlands to maintain and enhance existing biodiversity.

Strategy 1: Develop, enhance and protect wetland complexes.

Actions: Identify and map existing complex priority areas
Identify and map potential complex priority areas
Seek Conservation Easement (or similar) protections
Complete enhancement and restoration projects

Note: Protection, enhancement, and restoration efforts are ongoing. Baseline wetland area mapping is to be kept current and updated periodically. SPWFAC will use this information to further develop complex priority areas.

Strategy 2: Provide recommendations for wetland enhancement and management on State Wildlife Areas.

Actions: Identify and develop plans for new projects
Encourage development and implementation of management plans for existing projects

Note: These actions are ongoing and current, in participation with our wetland partners, particularly CDOW and DU.

Strategy 3: Consider impacts on species of concern during evaluation, development, and monitoring of all projects.

Actions: Develop and maintain a list of all wetland dependent species within the Focus Area listed as endangered, threatened, or of concern
Identify habitat requirements for listed species

Map known and potential sites for conservation efforts
Seek Conservation Easements and Management Agreements
for species protection
Complete species targeted enhancement projects

Note: A current wetland dependant species list has been completed and prioritized using the COVERS system. Habitat requirements information and mapping will continue using the best scientific data available, provided in part by our wetland partners such as CDOW Habitat and Terrestrial sections, RMBO, DU, and others. Protection and enhancement projects will be developed and completed within the confines of this gathered information and the project criteria developed for this Strategy.

Strategy 4: Conserve playas and other temporary wetlands occurring within cropped and prairie lands.

Actions: Identify and map existing playa basins
Encourage protection through management plans for those playas existing on public lands
Seek Conservation Easement protection on private lands
Encourage restoration and reclamation of altered basins

Note: Little work has been done concerning conservation of playas within the SPWFA. The SPWFAC expects to begin developing new partnerships, plans and Strategies within the next 18 months for these important wetland areas.

Strategy 5: Support land use practices that maintain water quality and quantity, and enhance or compliment wetlands.

Actions: Promote integration of USDA Farm Bill and other federal conservation programs into wetland projects
Participate in Locally Led Conservation Groups and South Platte Watershed Steering Committees
Promote and support CDOW programs that protect and enhance wetland habitat

Note: SPWFAC continues to cooperate with several other agencies and non-profit organizations to promote this Strategy.

GOAL 2

Create an informed local community through broad information and education programs, leading to strong partnerships.

Strategy 1: Develop multi-faceted outreach products

Actions: Develop printed materials (Brochure) for public distribution
Prepare and have published news articles
Provide availability to electronic information technology such as list servers and website(s)
Organize and host workshops and tours for public participation

Note: SPWFAC expects to prepare electronic and brochure information available for public access and distribution within the next twelve months. News articles promoting SPWFAC accomplishments are expected as

projects develop, and Public workshops, informational meetings, and wetland tours will continue in cooperation with several of our wetland partners.

Strategy 2: Strengthen existing partnerships and build new ones.

Actions: Participate in Locally Led Conservation Groups and South Platte Watershed Steering Committees
Participate in water user group meetings
Solicit active participation in SPWFAC from a broad range of water, land use and wetland interests

Note: *SPWFAC's presence on several intra-agency boards, panels, and water user groups is well established, and participation and promotion, and education of our goals and objectives within these groups will continue indefinitely.*

GOAL 3

Monitor and evaluate wetland programs and projects to ensure best management practices for continued long-term program success.

Strategy1: Promote and support inventory and monitoring of wetlands and associated plant and animal species.

Actions: Support Colorado Natural Heritage Programs wetland inventory of the Lower South Platte drainage
Support CDOW Monitoring of completed projects on public and private lands
Annually review SPWFAC accomplishments and adjust project guidelines and criteria as necessary

Note: *SPWFAC will continue to promote and support wetland monitoring and evaluation programs and projects by our partners and others. A formal, annual review of projects, guidelines, and accomplishments is to be scheduled to assure Goals of this Strategy are being met, and our mission continues to be focused for the best conservation and management of the wetland resources.*

Strategy 2: Evaluate local activities influencing wetlands.

Actions: Review water and land use plans by agencies and local governments
Comment on land use plans for impacting wetlands

Note: *Municipalities, Counties, State and Governmental agencies developing land use plans that impact wetland environments will be encouraged to seek input by the SPWFAC. Our partners and participants are encouraged to bring available project information to the SPWFAC's attention.*

Appendix A. Colorado Wetlands Partnership Structure

Revised 11-21-02

DIVISION OF WILDLIFE WETLANDS PROGRAM WETLANDS FOCUS AREAS AND COMMITTEES

JOINT VENTURES AND WETLANDS FOCUS AREAS

Nationwide, Joint Ventures are the regional implementation arms of the North American Waterfowl Management Plan (NAWMP). Wetlands focus areas are the local implementation arms of a particular joint venture. In Colorado, two joint ventures exist and include most of the state – they are the Intermountain West Joint Venture and the Playa Lakes Joint Venture. Ten wetlands focus areas have been designated in Colorado based on the occurrence of wetlands on the landscape and their importance to wetland-dependent species, particularly waterfowl and other water birds. Designation of the ten wetlands focus areas was approved by both joint ventures *circa* 1990. To a great degree, science drove the designation of wetlands focus area boundaries, therefore, the wetlands focus areas are viewed by the Wetlands Program as priority areas - given that the Program cannot take on the task of protecting all wetlands in the state. Further prioritization of which wetlands to protect takes place at the committee level and is driven by overlaying the goals, objectives, and plans of each of the many partners involved.

Each wetlands focus area has a corresponding committee (working group). The importance of wetlands focus area committees cannot be overemphasized. They truly are the local implementation arm, “where the tire meets the road,” where protection of wetlands truly happens. Since wetlands focus areas are those parts of the landscape in Colorado that have been designated to be of higher priority, work by the committees within these areas results in progress towards the protection of the most important wetlands in the state. Since 1997, the wetlands focus area committees are administered and managed by the Wetlands Program.

THE JOINT VENTURE STATE STEERING COMMITTEE

The two Joint Ventures Implementation Plans require a Joint Venture State Steering Committee (also known as the State Action Group). The Colorado Joint Venture State Steering Committee is made up of the Wetlands Initiative Partners, many of the ten wetlands focus area committee chairpersons, and several non-government organizations. The Joint Venture State Steering Committee is administered and managed by the Wetlands Program. The Program provides coordination of the major wetland protection activities of the Colorado wetlands partnership, including joint venture based activities, in a variety of ways including the following. The Program seeks out funds, acquires funds and allocates funds for projects. The Program also provides project management on a large scale – approximately \$20,000,000 worth of projects have been completed since 1997.

THE JOINT VENTURE STATE STEERING COMMITTEE AND JOINT VENTURE MANAGEMENT BOARDS

The Joint Venture State Steering Committee works with the Joint Venture Management Boards primarily through the Wetlands Program Coordinator who in turn works with the two joint venture coordinators. In addition, Colorado has a representative on each of the Joint Venture Management Boards. These greatly effective communication links have made the Colorado Wetlands Program, and all the different aspects of it, including the wetlands focus area committees, very successful. The Wetlands Program views the joint venture approach as one its strategies to achieve wetlands protection; the joint ventures view the Wetlands Program as one of their partners in wetlands protection within Colorado.

In summary, in Colorado there is one Joint Venture State Steering Committee for both joint ventures in Colorado. There is one Joint Venture State Steering Committee Chairperson (the Wetlands Program Coordinator) who fulfills the obligations of that position as defined in both the IWJV Implementation Plan and the PLJV Implementation Plan. By design, the Joint Venture State Steering Committee involves the same group of people/entities that are engaged in the greater wetlands protection effort in Colorado (not all wetland protection efforts in Colorado are joint venture based). The result is that voluntary, incentive-based, non-regulatory, wetlands protection efforts in Colorado are strategic, comprehensive, effective, and significant.

Colorado Joint Venture State Steering Committee (for IWJV and PLJV)

(The Wetlands Initiative Partners:)

- Ducks Unlimited, (Bob Sanders, rsanders@ducks.org)
- The Nature Conservancy, (Nancy Smith, nsmith@tnc.org)
- Partners For Wildlife, (Bill Noonan, bill_noonan@fws.gov)
- Colorado Division of Parks and Outdoor Recreation (Bob Finch, bob.finch@state.co.us)
- Colorado Division of Wildlife (Alex Chappell, alex.chappell@state.co.us)

(The Wetlands Focus Area Committee Chairpersons)

- South Platte WFAC Chairperson (Shane Briggs, shane.briggs@state.co.us)
- South Park WFAC Chairperson (Stephanie Howard, Stephanie Howard/R2/USDAFS)
- Gunnison WFAC Chairperson (Pat Magee, pmagee@western.edu)
- Yampa WFAC Chairperson (Jim Haskins, jim.haskins@state.co.us)
- Lower Colorado WFAC Chairperson (John Toolen, john.toolen@state.co.us)
- San Luis Valley WFAC Chairperson (Mike Blenden, mike_blenden@mail.fws.gov)
- Arkansas WFAC Chairperson (vacant)
- Southwest Colorado (Catherine Ortega, Ortega_C@fortlewis.edu)

Colorado State Steering Committee Chairperson

- Alex Chappell, alex.chappell@state.co.us

Colorado IWJV Board Representative

- Walt Graul, walt.graul@state.co.us

Colorado PLJV Board Representative

- Alex Chappell, alex.chappell@state.co.us

IWJV Coordinator

- Jim Cole, iwvj@xmission.com

PLJV Coordinator

- Mike Carter

Appendix B
 Colorado Division of Wildlife Wetlands Program
 Wetlands Funding Process Application

Administrative Fields – Assigned by Wetlands Program Office			
Tracking #	Project Type	Wetland Type	Categorical Objective
Received			

Hit TAB to select next field. Hit ENTER for carriage return within fields. Do Not use double quotes (“”)

Project Name						
Contact Person(s)	1			2		
Contact Person(s) phone #						
Contact Person(s) address						
Contact Person(s) e-mail address						
Focus Area						
Complete physical address of project and legal description						
UTM Location	Zone		Easting		Northing	
Nearest town to project						
Drainage name						
Project site owner						
Wetland acres of project	Pre				Post	
Upland acres of project	Pre				Post	
Owner/adjudication of water						
Public access	<input type="checkbox"/> Open					

Please provide a concise narrative description of the project. This section should communicate the essence of what your project intends to accomplish and how it contributes to the Wetlands Program goal of protecting biologically significant wetlands in Colorado. Please forward graphics, maps, etc., as separate email attachments.



In addition to your summary above please answer all of the following questions. Please note that wetlands protection may entail acquisition of fee title or conservation easements; restoration or enhancement of wetland functions; creation of a new wetland; and management, education, or assessment (inventory, monitoring, evaluation). Please note that ‘wetlands’ means all wetland types in Colorado, including riparian wetlands.

1. How does the project site relate to the overall landscape? Describe adjacent habitat types and land-use patterns. Is the project site located within a larger wetland complex?

2. What are the **current habitat conditions** at the projects site? Include information on **hydrology** (water sources, timing of flooding, duration of flooding, average depth and range of depths during flooding, percent of project area that is currently surface-flooded each year) if any wetlands currently exist on the project site. Also include information on **vegetation** (dominant species, percent coverage and distribution on project site, an assessment of height, density and vigor [increasing, decreasing, dead, alive, etc.], presence of any weeds), and past/current **land use** (e.g., grazed pasture, irrigated grain).

3. What are the **expected habitat conditions** to be produced and sustained at the site as a result of the project? What are the expected hydrologic characteristics, vegetation community, and land use patterns at the site (compare to same information above)?

4. How will the desired habitat conditions be **produced** and then **maintained**? Is the project site currently protected (e.g., project is on a SWA)? Provide details on planned water delivery and control, if applicable. Provide details on any direct vegetation manipulation (e.g., loosestrife control, fence manipulation, etc.). Provide details on what kind of management/maintenance activities are expected and who will conduct them. What are the provisions for stewardship and how will it be funded, implemented, and monitored?

5. Use the following table to describe the primary wildlife benefit(s) expected from the project. Comments on these benefits may be provided below.

Species	Life Cycle Event	Measurable Benefit
---------	------------------	--------------------

Comments:		

6. Characterize the urgency, jeopardy, and opportunity, around this project. Is this a unique opportunity in time to protect the project site? Why does the site need to be protected? What is the immediacy and nature of the threat to the site? What are the consequences if the site is not protected? Will the completion of the project promote other projects in this area?

--

7. What are the societal values of the site – for wildlife viewing, photography, angling, hunting, education, or outreach?

--

8. Please use the following table to develop a project budget describing requested and matching funds– from whom and how much – federal or non-federal – as well as in-kind contributions.

Funding Partner	Cash	In-kind
Federal		
Non Federal		
Wetlands Program Request		

9. Does the project have local community support? If this project is in a focus area, has the project been presented to the focus area committee? If so, then please summarize their reaction to the proposal.

--

Please save your application as a MS-Word document (.doc) and e-mail the document with all appurtenant attachments to: alex.chappell@state.co.us

APPENDIX C.

South Platte Wetland Focus Area Committee Participants.

Name	Affiliation	e-mail
1. Shane Briggs, Chair	Colo. Divsn of Wildlife	shane.briggs@state.co.us
2. Bill Miles	Colo. Divsn of Wildlife	bill.miles@state.co.us
3. Ed Gorman	Colo. Divsn of Wildlife	ed.gorman@state.co.us
4. Eric Odell	Colo. Divsn of Wildlife	eric.odell@state.co.us
5. Jim Gammonley	Colo. Divsn of Wildlife	jim.gammonley@state.co.us
6. Larry Budde	Colo. Divsn of Wildlife	larry.budde@state.co.us
7. Larry Crooks	Colo. Divsn of Wildlife	larry.crooks@state.co.us
8. Tim Davis	Colo. Divsn of Wildlife	tim.davis@state.co.us
9. Alison Banks	Rocky Mntn. Bird Observatory	alisonbanks@rmbdo.org
10. Allen Maez	Natural Resource Cons. Svc.	allen.maez@co.usda.gov
11. C.W. Scott	Natural Resource Cons. Svc.	c.w.scott@co.usda.gov
12. Dan Mereno	Natural Resource Cons. Svc.	daniel.mereno@co.usda.gov
13. Dawn Jackson	Natural Resource Cons. Svc.	dawn.jackson@co.usda.gov
14. Bill Noonan	U.S. Fish and Wildlife Service	bill_noonan@fws.gov
15. Bob Timberman	U.S. Fish and Wildlife Service	bob_timberman@fws.gov
16. Cat Shrier	Colorado State University	watercat90@hotmail.com
17. Randal Ristau	Colorado Water Quality	randal.ristau@state.co.us
18. Denise Culver	Colorado Natural Heritage	dculver@lamar.colostate.edu
19. Don Chapman	Riverside Irrigation	noworries@twol.com
20. Kathy Samples	Bijou Irrigation	bijouirrig@twol.com
21. Dave King	G.A.S.P.	gasp@fki.net
22. Jon Altenhoffen	Northern CO. Water Cons. Dist.	jaltenhoffen@ncwcd.org
23. Tom Cech	Central CO. Water Cons.	tcech@juno.com
24. Dist Luan August	Landowner	prewittranch@twol.com
25. Rich Carpenter	Landowner	rich.carpenter@colorado.edu
26. Chuck Thrailkill	Centennial Land Trust	thrklk@aol.com
27. Rick Sandquist	Centennial Land Trust	rquist@concentric.net
28. Greg Gamble	The Nature Conservancy	ggamble@tnc.org
29. Greg Kernohan	Ducks Unlimited	gkernohan@ducks.org
30. Jill Olsen	Landowner	jolsen@systemation.com
31. Dean Forest	Landowner	

APPENDIX D. Information References and Resources

- Cafaro, K. A. (2000). Important Bird Areas of Colorado, Colorado Audubon, Boulder, Colorado. Location: Alison Banks and available upon request (and a re-printing fee) from Colorado Audubon, 3107 28th Street, Suite B, Boulder CO 80301, (303)415-0130.
- Natural Resource Conservation Service (undated) geographic information system (GIS) maps with map layers specific to watershed projects. Location: NRCS and possibly on a web site.
- Pecarsky, B. L., S. I. Dodson, and D. J. Conklin, Jr. (Undated). A key to the aquatic insects of streams in the vicinity of the Rocky Mountain Biological Lab, including chironomid larvae from streams and ponds. Rocky Mountain Biological Laboratory and Colorado Division of Wildlife.
- Andrews R, and R. Righter (1992) Colorado Birds: A Reference to Their Distribution and Habitat, Denver Museum of Natural History. Denver, Colorado.
- Kingery, H. ed. (1988) Colorado Breeding Bird Atlas, Colorado Bird Atlas Partnership and the Colorado Division of Wildlife. Denver, Colorado. Location: Alison Banks and available to be ordered at www.cfo-link.org/leadpage.html.
Comments: database associated with the Atlas is available upon request from Rocky Mountain Bird Observatory and Colorado Natural Heritage Program. Includes descriptions of breeding bird habitat use and habits.
- Colorado State Soil Conservation Board (1995?) Conserving Wetlands on Colorado's Agricultural Lands; Opportunities and Benefits for Farmers and Ranchers. Published by the Board, Denver, Colorado, 41 pages.
- Colorado Geological Survey, Colorado School of Mines and Colorado State University (1998) Characterization and Functional Assessment of Reference Wetlands in Colorado - A Preliminary Investigation of Hydrologic (HGM) Classification and Functions for Colorado's Wetlands, Colorado Geological Survey, Denver, Colorado, 241 pages plus appended material.
Comments: provides assessment methodology and chemistry along with extensive bibliography.
- Federal Interagency Stream Restoration Working Group (2000) Stream Corridor Restoration; Principles, Process, and Practices. USDA - Natural Resources Conservation Service, Washington D.C., multiple sections with about 1200 pages.
Comments: available on www; comprehensive and practical foundation.

Koehler D. A., and A. E. Thomas. (2000) Managing for Enhancement of Riparian and Wetland Areas of the Western United States: An Annotated Bibliography. General Technical Report RMRS-GTR-54, U.S. Forest Service - Rocky Mountain Research Station, Fort Collins, Colorado, 369 pages. Comments: comprehensive and cross indexed.

Payton, J. (1995) Constructed Wetlands Bibliography. Published on www as James Payton's Constructed Wetlands Page, University of Maryland, about 170 pages. Comments: annotated and organized by categories with references to pages in citations.

Web Sites

Non-Government Organizations

Rocky Mountain Biological Laboratory

<http://www.rmbl.org>

search page for wetland bibliography with emphasis on water resources researchers: Barbara Pecarsky, Scott Wissinger, and Howard Whiteman.

Rocky Mountain Bird Observatory

<http://www.rmbo.org>

Ducks Unlimited

<http://www.ducks.org>

Federal Agency sites:

Federal Geographic Data Committee

<http://130.11.52.184/> <<http://130.11.52.184/>> & list of Clearinghouses

http://clearinghouse4.fgdc.gov/registry/clearinghouse_sites.html

<http://clearinghouse4.fgdc.gov/registry/clearinghouse_sites.html>

BLM

<http://www.blm.gov/gis/> <<http://www.blm.gov/gis/>>

<http://www-a.blm.gov/gis/narsc/index.html>

<<http://www-a.blm.gov/gis/narsc/index.html>>

NASA Databuy - Free landsat data: <http://zulu.ssc.nasa.gov/mrsid/>

<<http://zulu.ssc.nasa.gov/mrsid/>>

National Park Service <http://www.nps.gov/gis/> <<http://www.nps.gov/gis/>>

New England GIS <http://www.edc.uri.edu/ftsc/> <<http://www.edc.uri.edu/ftsc/>>

NIMA Geoengine <http://geoengine.nima.mil> <<http://geoengine.nima.mil>>

NOAA Mapfinder

<http://mapfinder.nos.noaa.gov/mapfinderHTML3/surround/photos/photos.html>

<<http://mapfinder.nos.noaa.gov/mapfinderHTML3/surround/photos/photos.html>>

<http://rimmer.ngdc.noaa.gov/coast/> <<http://rimmer.ngdc.noaa.gov/coast/>>

Natural Resource Conservation Service (NRCS)

http://www.ncg.nrcs.usda.gov/nsdi_node2.html

<http://www.ncg.nrcs.usda.gov/nsdi_node2.html>

EPA

<http://www.epa.gov/epahome/gis.htm> <<http://www.epa.gov/epahome/gis.htm>>
http://www.epa.gov/enviro/html/spatial_data.html
<http://www.epa.gov/enviro/html/spatial_data.html>
www.epa.gov/watertrain/wetlands/

Regions 1, 2 & 3

<http://www.epa.gov/region02/gis/gis.htm>
<<http://www.epa.gov/region02/gis/gis.htm>> &
<http://www.epa.gov/region02/gis/atlas/online.htm>
<<http://www.epa.gov/region02/gis/atlas/online.htm>>
<http://www.epa.gov/reg3giss/> <<http://www.epa.gov/reg3giss/>>

Fish & Wildlife Service

<http://www.fws.gov/data/gishome.html> <<http://www.fws.gov/data/gishome.html>>
Region 5 GIS Lab Home Page <http://www.fws.gov/r5gis/labframe.html>
<<http://www.fws.gov/r5gis/labframe.html>>
Contaminant Information Management and Analysis System (CIMAS)
http://ecos.fws.gov/cimas_98/ <http://ecos.fws.gov/cimas_98/>

Forest Service

Forest Inventory and Analysis <http://www.fs.fed.us/ne/fia/>
<<http://www.fs.fed.us/ne/fia/>>
<http://www.srsfia.usfs.msstate.edu/ewdata/ewrec.htm#North>
<<http://www.srsfia.usfs.msstate.edu/ewdata/ewrec.htm#North>> East

USGS

<http://www.usgs.gov> <<http://www.usgs.gov>> & <http://mapping.usgs.gov/>
<<http://mapping.usgs.gov/>>
USGS State Products: <http://mcmcweb.er.usgs.gov/status/>
<<http://mcmcweb.er.usgs.gov/status/>>
USGS National Atlas <http://nationalatlas.gov/index.html>
<<http://nationalatlas.gov/index.html>> &
<http://www.nationalatlas.gov/atlasftp.html>
<<http://www.nationalatlas.gov/atlasftp.html>>
USGS EROS <http://edcwww.cr.usgs.gov/dsprod/prod.html>
<<http://edcwww.cr.usgs.gov/dsprod/prod.html>>
USGS GNIS <http://mapping.usgs.gov/www/gnis/>
<<http://mapping.usgs.gov/www/gnis/>>
USGS Biological Resources Division
National Biological Information Infrastructure <http://www.nbii.gov/>
<<http://www.nbii.gov/>>
USGS BRD Geotech Centers <http://biology.usgs.gov/geotech/centers.html>
<<http://biology.usgs.gov/geotech/centers.html>>
USGS BRD Geotech Activities <http://biology.usgs.gov/geotech/activities.html>
<<http://biology.usgs.gov/geotech/activities.html>>

Thematic Sites:

Hydrology (& Elevation):

"Get Reach file 3 and the 7.5 min Elevation Quads"

EPA BASINS 2.01 <http://www.epa.gov/OST/BASINS/download.htm>

<<http://www.epa.gov/OST/BASINS/download.htm>>

BASINS 3.0 Beta has been released:

<http://www.epa.gov/ost/ftp/basins/system/BASINS3/areadb3.htm>
<<http://www.epa.gov/ost/ftp/basins/system/BASINS3/areadb3.htm>>

Elevation Data

<http://edcnts12.cr.usgs.gov/ned/> <<http://edcnts12.cr.usgs.gov/ned/>>
Online viewer: <http://edcnts12.cr.usgs.gov:8181/NEDStore/viewer.htm>
<<http://edcnts12.cr.usgs.gov:8181/NEDStore/viewer.htm>>
FTP: http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/7_min_dem/states.html
<http://edcwww.cr.usgs.gov/doc/edchome/ndcdb/7_min_dem/states.html> "but
also check state data centers"
To order large chunks: <http://edcnts12.cr.usgs.gov/ned/Data.htm>
<<http://edcnts12.cr.usgs.gov/ned/Data.htm>>

Landcover:

MultiResolution Land Characteristics (MRLC) Consortium
<http://www.epa.gov/mrlc/data.html> <<http://www.epa.gov/mrlc/data.html>> The
National Land Cover Datasets (NLCD):
<http://edc.usgs.gov/programs/lccp/nationallandcover.html>
<<http://edc.usgs.gov/programs/lccp/nationallandcover.html>> Twenty-one
classes of land cover <http://edc.usgs.gov/programs/lccp/classes.html>
<<http://edc.usgs.gov/programs/lccp/classes.html>> Download
<http://edcwww.cr.usgs.gov/pub/edcuser/vogel/states/>
<<http://edcwww.cr.usgs.gov/pub/edcuser/vogel/states/>> Old Land Cover
("GIRAS"):
http://edcwww.cr.usgs.gov/Webglis/glisbin/guide.pl/glis/hyper/guide/1_250_lu
<http://edcwww.cr.usgs.gov/Webglis/glisbin/guide.pl/glis/hyper/guide/1_250_lu
[u](#)> lc FTP GIRAS:
http://edcwww.cr.usgs.gov/glis/hyper/guide/1_250_lulcfig/states.html
<http://edcwww.cr.usgs.gov/glis/hyper/guide/1_250_lulcfig/states.html>
EPA EMAP for Mid Atlantic http://www.epa.gov/emap/html/cdrom/ma_atlas/
<http://www.epa.gov/emap/html/cdrom/ma_atlas/>
NOAA Coastal Watch North East Landcover
<http://www.csc.noaa.gov/crs/lca/northeast.html>
<<http://www.csc.noaa.gov/crs/lca/northeast.html>>

TNC's Vegetation Classification System

<http://consci.tnc.org/library/pubs/class/index.html>
<<http://consci.tnc.org/library/pubs/class/index.html>>

Wetlands:

National Wetlands Inventory <http://www.nwi.fws.gov/>
<<http://www.nwi.fws.gov/>>
Data Download <ftp://www.nwi.fws.gov/arcdata/>
<<ftp://www.nwi.fws.gov/arcdata/>>
On line Wetlands Interactive Mapper http://ecos.fws.gov/nwi_mapper/
<http://ecos.fws.gov/nwi_mapper/>
Status Map <http://wetlands.fws.gov/images/webstat.gif>
<<http://wetlands.fws.gov/images/webstat.gif>>
Wetlands in the Chesapeake Bay Mapping with Radar
<http://www.geog.umd.edu/resac/wetlands.htm>
<<http://www.geog.umd.edu/resac/wetlands.htm>>

Soils

STATSGO <ftp://ftp.ftw.nrcs.usda.gov/pub/statsgo/>
<<ftp://ftp.ftw.nrcs.usda.gov/pub/statsgo/>>

Protected Areas

Protected Areas Database <http://www.consbio.org/cbi/what/pad.htm>

<<http://www.consbio.org/cbi/what/pad.htm>>

Managed Areas Database <http://www.ncgia.ucsb.edu/sb/mad/mad.html>

<<http://www.ncgia.ucsb.edu/sb/mad/mad.html>>

Biodiversity:

<http://www.nbio.gov/issues/biodiversity/>

<<http://www.nbio.gov/issues/biodiversity/>>

<http://www.gap.uidaho.edu/> <<http://www.gap.uidaho.edu/>>

<http://www.esri.com/conservation/aaearth.html>

<<http://www.esri.com/conservation/aaearth.html>>

<http://www.fs.fed.us/ne/burlington/research/ne4454/ned/product.htm>

<<http://www.fs.fed.us/ne/burlington/research/ne4454/ned/product.htm>>

<http://151.199.74.229/wapiti/home.htm#what>

<<http://151.199.74.229/wapiti/home.htm#what>>

<http://www.natureserve.org/> <<http://www.natureserve.org/>>

<http://www.itis.usda.gov/> <<http://www.itis.usda.gov/>>

Invasive Species:

<http://www.invasivespecies.gov/> <<http://www.invasivespecies.gov/>>

<http://www.uconnecgia.uconn.edu/invasive.html>

<<http://www.uconnecgia.uconn.edu/invasive.html>>

Topo maps

<http://www.topozone.com> <<http://www.topozone.com>>

<http://www.terraserver.com> <<http://www.terraserver.com>>

<http://www.runet.edu:8800/%7Egeoserve/DRGs.html>

<<http://www.runet.edu:8800/%7Egeoserve/DRGs.html>>

USGS Photofinder

http://edcwww.cr.usgs.gov/Webglis/glisbin/finder_main.pl?dataset_name=NAPP

<http://edcwww.cr.usgs.gov/Webglis/glisbin/finder_main.pl?dataset_name=NAPP>

USGS Orthophoto Info <http://mapping.usgs.gov/www/ndop/>

<<http://mapping.usgs.gov/www/ndop/>> &

<http://www-wmc.wr.usgs.gov/doq/> <<http://www-wmc.wr.usgs.gov/doq/>>

USGS Earthexplorer <http://earthexplorer.usgs.gov>

<<http://earthexplorer.usgs.gov>>

Appendix E

Wetland Dependant Species of the South Platte Wetlands Focus Area

Below is a list of 98 wetland dependent vertebrate species that are known to occur in the South Platte Focus Area. This list is not a comprehensive list of all wildlife species inhabiting focus area wetlands, nor a list of all species that potentially could benefit from wetland projects in the basin. It is simply a list of target species to consider while evaluating, prioritizing, designing, and developing wetland projects in the Lower South Platte Basin. This list should continually be amended as new species data becomes available or as declining species lists change. Species are listed in descending order from the most imperiled species (highest score) to the least imperiled (lowest score). The ranking scores were derived from the Colorado Vertebrate Ranking System database using the total biology scores for each species. Species appearing in bold type are classified as either Species of Concern (SC), State Threatened (ST), Federally Threatened (FT), State Endangered (SE), or Federally Endangered (FE). Brief descriptions of resident status and wetland habitat type association are provided for each species to assist in assessing potential project benefits to individual species. Finally, species habitat associations are defined according to the general habitat types given in Table 2, page 15.

RANK	COMMON NAME	CLASS.	RESIDENT STATUS	WETLAND HABITAT ASSOCIATION	TABLE 2
72	Piping Plover	FT, ST	very rare migrant	reservoir beaches, mud/sand flats	4,6
65	Snowy Plover	SC	very rare migrant	reservoir beaches, mud/sand flats	4,6
61	Least Tern	FE, SE	casual-rare migrant	reservoir beaches, mud/sand flats	4,6
60	Plains Minnow	SE	very rare native	main river channel	4
57	Stilt Sandpiper	n-game	pass through migrant	ponds, marshes and mudflats	2,4,6,7,8
54	Black Tern	n-game	pass through migrant	shallow wetlands	2,4,6,7,8
53	Long-billed Curlew	n-game	resident - breeder	wetmeadows, marshes, mudflats	1,2,3,4,7,8
52	Northern Leopard Frog	SC	rare native	shallow isolated wetlands & streams	1,2,3,4,7,8
52	American Bittern	n-game	rare -uncommon breeder	emergent marsh	2
51	Upland Sandpiper	n-game	resident - breeder	open grasslands near wet sites	3,7
51	Suckermouth Minnow	SE	rare native	shallow riffles w/ sand & gravel	4
51	Red-necked Phalarope	n-game	pass through migrant	shallow wetlands w/ open water	1,2,7,8
50	Bald Eagle	FT, ST	winter migrant/breeder	reservoirs & river corridor	4,6
50	Sandhill Crane	n-game	pass through migrant	reservoirs & agricultural fields	3,4,6,7
50	American Avocet	n-game	common migrant - breeder	wetlands w/ open water	2,6,7,8
49	Marbled Godwit	n-game	pass through migrant	reservoir shorelines & flooded fields	6,7,8
48	Am. White Pelican	SC	resident - breeder	reservoirs, ponds, and river	1,4,6
48	Least Bittern	n-game	Rare migrant-occas. breeder	cattail marshes near trees	2
48	Wilson's Phalarope	n-game	resident - breeder	emergent marshes, mudflats, playas	2,6,7,8
47	Lesser Scaup	game	pass through migrant	open water wetlands, sloughs, reservoirs	1,2,4,5,6,7,8
46	White-faced Ibis	n-game	pass through migrant	shorelines of reservoirs and lakes	3,6,7,8
46	Northern Pintail	game	resident - breeder	shallow wetlands, sloughs, & reservoirs	4,5,6,7,8
46	Western Sandpiper	n-game	pass through migrant	large mudflats	3,4,6,7,8
45	Belted Kingfisher	n-game	resident -breeder	open water streams-lakes & wetlands	4
44	Sora	game	resident- probable breeder	shallow wetlands w/ emergent vegetation	2
43	Clark's Grebe	n-game	resident- possible breeder	deepwater ponds and reservoirs	6

43	Virginia Rail	game	resident - probable breeder	wetlands & marshes > 1 ha.	2
43	Black-necked Stilt	n-game	resident - possible breeder	shallow wetlands & ponds	2,6,7,8
43	Forster's Tern	n-game	resident - possible breeder	reservoirs, streams, and wetlands	4,6
43	Lesser Yellowlegs	n-game	pass through migrant	reservoir & lake shorelines, wet meadows	2,4,6,7,8
43	Semipalmated Sandpiper	n-game	pass through migrant	reservoir & lake shorelines	4,6,7,8
42	Hooded Merganser	game	rare migrant/winter resident	open water wetlands, sloughs, reservoirs	5,6
41	Great Egret	n-game	rare resident - unlikely breeder	wetlands & associated habitats	1,2,3,6,7,8
41	Snowy Egret	n-game	resident - possible breeder	wetlands & associated habitats	1,2,3,6,7,8
41	Killdeer	n-game	resident - breeder	variety of open habitats	1,2,3,4,6,7,8
41	Willet	n-game	pass through migrant	shorelines of reservoirs & wet meadows	3,6,7,8
41	Marsh Wren	n-game	resident breeder	variety of marshlands	1,2,8
41	Pectorial Sandpiper	n-game	pass through migrant	shorelines of reservoirs & wet meadows	2,3,6,7
41	Long-billed Dowitcher	n-game	pass through migrant	shallow wetlands, mudflats, flooded fields	2,6,7,8
40	Osprey	n-game	resident - nonbreeding	lakes and stream with fish populations	4,6,7
40	Yellow-headed Blackbird	n-game	year round resident	deep water wetlands w/ emergent veg.	1,2
40	Common Tern	n-game	non-breeding summer resident	reservoirs and river	4,6
39	Brassy Minnow	SE	resident - breeder	small tributary streams	4
39	Plains Topminnow	SC	resident - breeder	river backwaters w/ sand-gravel bottom	4
39	Spiny Softshell	n-game	resident - breeder	reservoirs & river	4,6
39	Pied-billed Grebe	n-game	resident - possible breeder	wetlands w/ emergent vegetation	1,2
39	Black-crowned Night Heron	n-game	year round resident	wetlands & associated habitats	1,2
39	Sanderling	n-game	pass through migrant	shorelines of lakes & reservoirs	4,6
38	Canvasback	game	migrant - winter resident	open water wetlands, sloughs, reservoirs	4,5,6,7,8
37	Eared Grebe	n-game	resident - possible breeder	wetlands & reservoirs	1,2,4,6,7,8
37	Great Blue Heron	n-game	resident breeder	wetlands, reservoirs, & riparian areas	1,2,4,6,7,8
37	American Beaver	game	resident - breeder	streams, ditches, river	4
36	Tiger Salamander	n-game	resident breeder	various habitats near water	1,2,4,7,8
35	Western Grebe	n-game	resident - possible breeder	deepwater ponds and reservoirs	4,6
35	Baird's Sandpiper	n-game	pass through migrant	shorelines of reservoirs	4,6
34	Great Plains Toad	n-game	resident -breeder	flood plain of streams and river	1,2,3,4,6,7,8
34	Snapping Turtle	game	resident -breeder	variety of permanent wetland habitats	1,4,6
34	Northern Water Snake	n-game	resident - breeder	streams, ditches, river	4
34	Greater Yellowlegs	n-game	pass through migrant	shorelines of reservoirs & wet meadows	3,4,6,7,8
32	Plains Spadefoot	n-game	resident - breeder	temporary pools	7,8
32	Double-crested Cormorant	n-game	resident - possible breeder	lakes & reservoirs	4,6
31	Red-winged Blackbird	n-game	resident - breeder	wetlands and riparian habitats	1,2,8
30	Painted Turtle	n-game	resident - breeder	permanent bodies of water	1,4
30	Green Heron	n-game	resident - breeder	variety of wetland habitats	1,2,4,6,7,8
30	Gadwall	game	resident - breeder	wetland associated habitats	4,5,6,7,8
30	Snow Goose	game	pass through migrant	reservoirs & agricultural fields	6,7
29	Common Garter Snake	SC	resident - breeder	marshes, ponds, stream edges	1,2,3,4,8
29	Franklin's Gull	n-game	common migrant	reservoirs, and various wetland habitats	4,6,7
28	Spotted Sandpiper	n-game	resident - breeder	open water streams-lakes & wetlands	4,6,7,8
28	California Gull	n-game	resident	reservoirs & lakes	4,6,7
28	Least Sandpiper	n-game	pass through migrant	variety of wetland habitats	4,6,7,8
26	Common Muskrat	game	resident - breeder	streams, ditches, river	1,2,4
25	Western Chorus Frog	n-game	resident - breeder	shallow wetlands with emergent vegetation	1,2,3,7,8
24	Bonapart's Gull	n-game	pass through migrant	reservoirs & river corridor	4,6,7
23	Cattle Egret	n-game	resident	variety of habitat types	1,2,3,7,8
22	Horned Grebe	n-game	migrant - winter resident	open water streams-lakes & wetlands	1,2,4,5,6
21	Woodhouse's Toad	n-game	resident - breeder	various wetland habitat types	1,2,3,4,6,7,8
21	Ring-billed Gull	n-game	migrant - winter resident	reservoirs & river corridor	4,6
21	Mink	game	resident - breeder	riparian corridors	4
19	American Wigeon	game	resident - breeder	shallow wetlands	4,5,6,7,8
19	Bufflehead	game	pass through migrant	open water streams-lakes & wetlands	4,5,6,7,8

18	Ruddy Duck	game	resident - breeder	shallow wetlands	4,5,6,7,8
17	Cinnamon Teal	game	resident - breeder	shallow wetlands	4,5,6,7,8
17	Ross's Goose	game	pass through migrant	reservoirs & agricultural fields	4,6
17	Greater White-fronted Goose	game	pass through migrant	reservoirs & agricultural fields	4,6
15	Wood Duck	game	resident - breeder	riparian corridors	4,5,6,7,8
15	Redhead	game	resident - breeder	large wetland complexes	4,5,6,7,8
15	Common Goldeneye	n-game	migrant - winter resident	open water streams-lakes & wetlands	4,5,6,7,8
14	Blue-winged Teal	game	resident - breeder	variety of wetland habitats	4,5,6,7,8
12	Northern Shoveler	game	resident - breeder	shallow wetlands	4,5,6,7,8
12	Green-winged Teal	game	resident - breeder	shallow wetlands & riparian corridors	4,5,6,7,8
12	Common Merganser	game	winter resident	reservoirs and river	4,5,6,7,8
12	Common Snipe	n-game	resident - breeder	marshes, wet meadows	2,3,5
10	Mallard	game	resident - breeder	shallow wetlands	4,5,6,7,8
10	Ring-necked Duck	game	pass through migrant	open water streams-lakes & wetlands	4,5,6,7,8
8	American Coot	n-game	resident - breeder	wetlands with tall emergent vegetation	1,2
3	Canada Goose	game	resident - breeder	permanent bodies of water	4,6

Appendix F

Wetland Maps

Maps depicting land use, wetland areas, protected areas, and other items of geographic and biological importance have been completed by Ducks Unlimited for this Strategic Plan. Ducks Unlimited has supplied SPWFAC with “poster-sized” maps at appropriate working scale for this project, and 11 by 17 inch copies for incorporation in this printed document. SPWFAC has forwarded those completed maps to DNR in 11 by 17 inch color format as well as a copy on CD. SPWFAC will include those maps in this appendix in all other hard copies to be distributed. Inclusion of additional point and polygon data will be ongoing as the GIS database is improved for this geographic region. SPWFAC has met with and intends to enlist the services of, and gather data from, Colorado State University, Ducks Unlimited, Colorado Division of Wildlife, Colorado Natural Heritage Program, Northern Colorado Water Conservancy District, and others. This ongoing GIS gathering partnership will give SPWFAC and its partners an easily accessible database for all wetland conservation and protection projects in the lower South Platte Basin of Colorado.