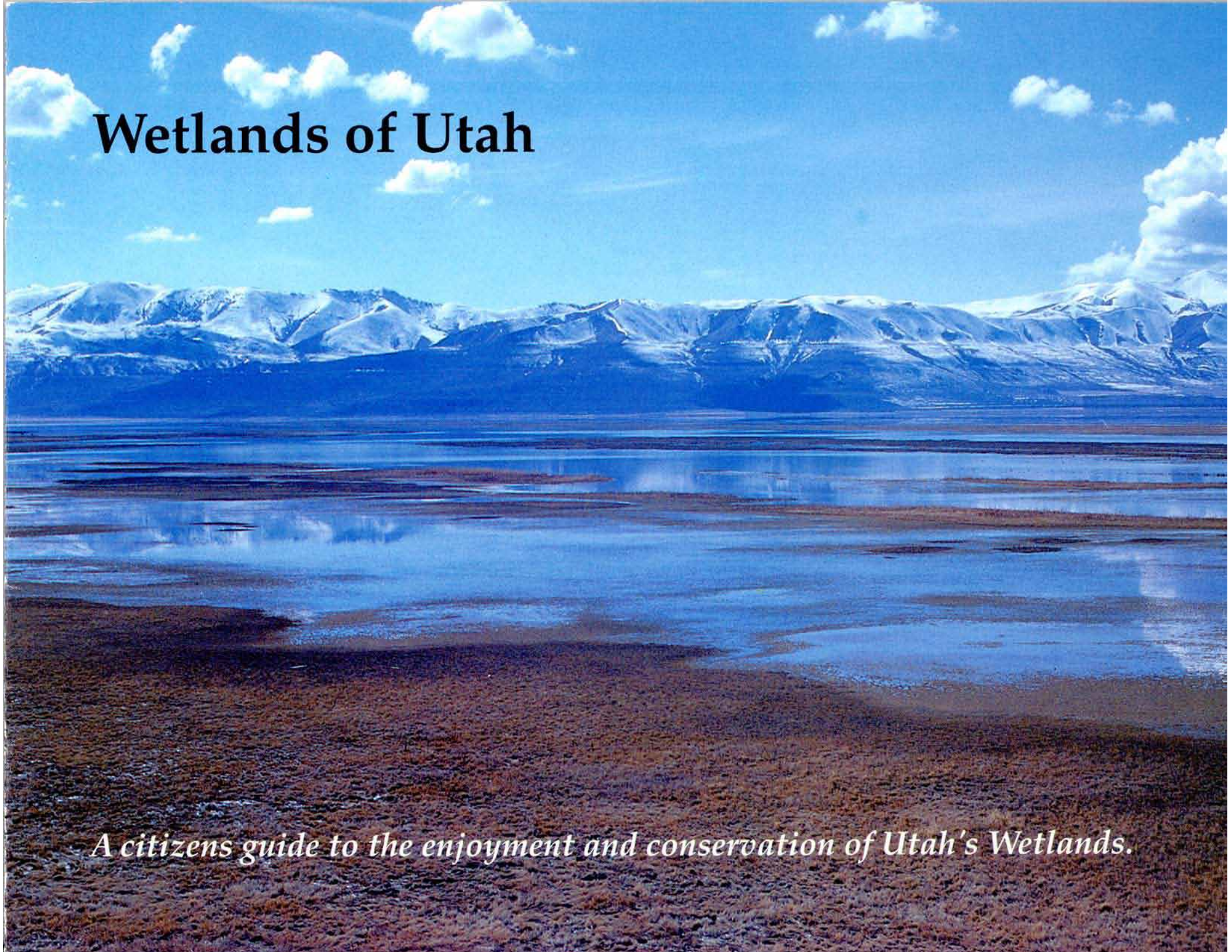
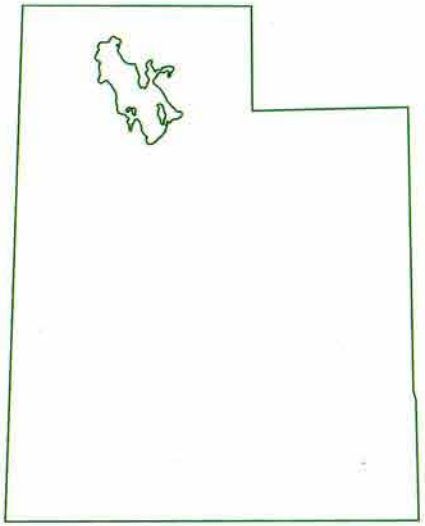
Wetlands of Utah



A citizens guide to the enjoyment and conservation of Utah's Wetlands.



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Authors

Daniel Vice
Graduate Research Assistant
Department of Fisheries and Wildlife
College of Natural Resources
Utah State University
Logan, Utah

Dr. Terry Messmer
Assistant Professor and Extension Wildlife Specialist
Department of Fisheries and Wildlife
College of Natural Resources
Utah State University
Logan, Utah

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INTRODUCTION

Wetland conservation is an important topic for many organizations and individuals. Emphasis has been placed on the importance of wetland quality in a healthy environment. We know that ducks need wetlands, but beyond that, what value do they actually have? Traditional uses such as hunting, fishing, and wildlife watching are the most recognizable roles of wetlands, but in reality wetlands play a major part in our natural world. Important wetland functions, in addition to wildlife and fisheries habitat, include flood and erosion control, groundwater recharge, and wastewater purification.

Why are we concerned about the status of our wetlands? In the United States, it has been estimated that more than 50% of the historical wetlands have been lost. In Canada, more than 18 million acres of wetlands have been converted to other uses. Numerous factors are contributing to the alteration of our remaining wetlands. Wetland drainage, although now federally regulated, is a primary cause of wetland loss.

The definition of wetland has become controversial with regard to wetlands conservation legislation. The term wetland can be qualified by a simple set of criteria, however. Any area fitting one or more of these categories is a wetland: (1) is temporarily or permanently inundated with water during a portion of the year (2) supports water-loving plants, or hydrophytes, such as cattails, rushes, or sedges; and/or (3) contains undrained, wet soil (hydric soil) which is anaerobic, or lacks oxygen, in the upper region.

Frequently, wetlands are only wet during a portion of the year, and sometimes they are dry for more than a year at a time. Because of this, wetland identification can be difficult.

WHAT KIND OF WETLAND IS THIS?

Cowardin et. al. (1979) developed a classification system for all wetlands and deep-water habitats in the United States. There are numerous other classification systems available throughout the country, but the Cowardin system is thought to be a compilation of all other systems. The Cowardin system contains five basic categories: (1)Lacustrine, or lake-like, (2) Riverine, or river, (3) Palustrine, or pond-like, (4) Estuarine, or estuary, and (5) Marine, or oceanic. The Cowardin system is a standard wetland classification, but application to Utah's unique wetlands requires some interpretation. For example, the Great Salt lake is a saline, or salty, environment and therefore may appear to be a Marine system, but it is actually a Lacustrine system.

The first three wetland types are present in Utah. There are no true Marine or Estuarine wetlands in the state. Lacustrine wetlands include permanently flooded lakes and reservoirs and intermittent lakes. These wetlands exceed 19.2 acres (8 hectares) in size and are deeper than six feet (2 meters). Riverine systems are wetlands contained in a channel with either flowing or nonflowing water. Palustrine wetlands include marshes, bogs, ponds, swamps, and prairie potholes.

Every Utah wetland falls under one of these three categories. Each classification can be further broken down into subsystems and classes, based upon vegetation type, bottom or substrate type, and water permanence. This publication will not classify to subsystem and class, but if more information is desired, Cowardin et. al. (1979) is available from:

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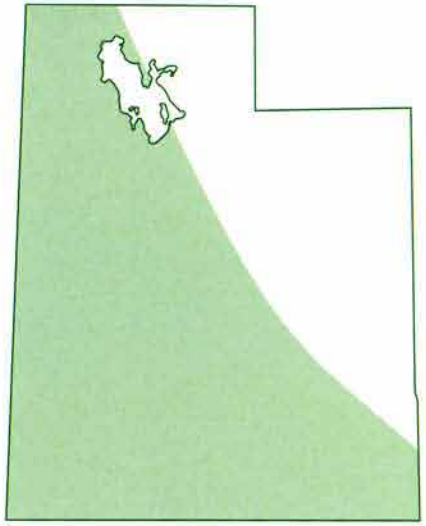
The following pages contain an overview of Utah's wetlands arranged under the Cowardin system.

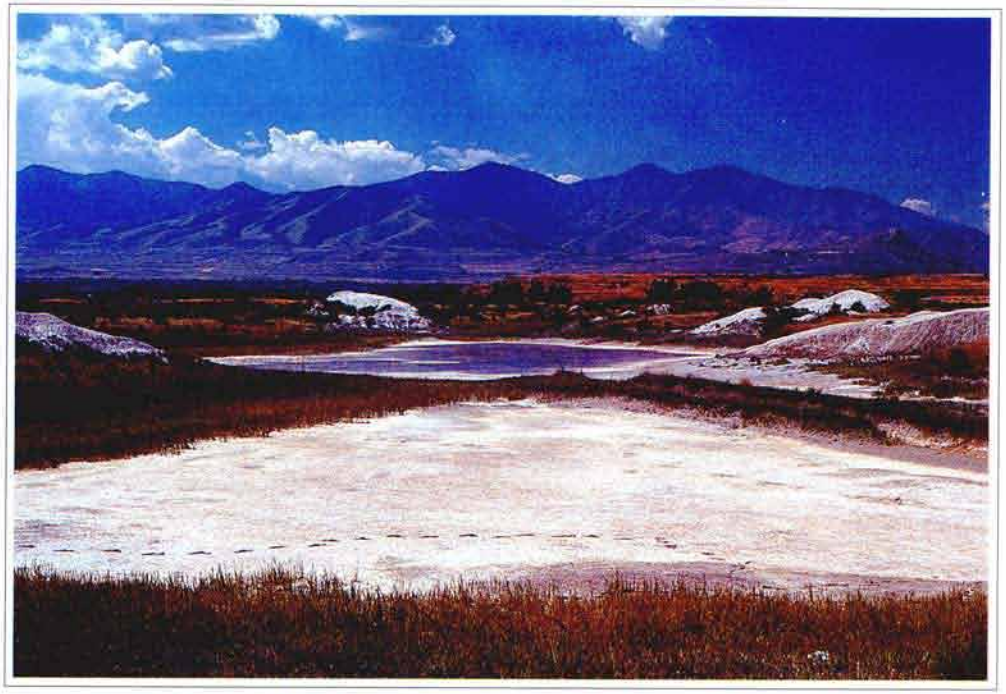


Lacustrine

(Lake-like)

A. Dry playas/Salt flats

The salt flats of the Great Basin don't appear to be wetlands, but these flat expanses actually are. Water located under the soils is derived from nearby mountain run-off. As water evaporates from any depression in the salt flats, a layer of salt is left behind. Over many years, this process fills in the depressions on the landscape. The result is one of the flattest areas on earth. Occasionally, heavy downpours may inundate a portion of the salt flats, leaving a temporary wetland called a playa. Playa lakes can cover hundreds of acres, although they tend to be very shallow. Playa lakes occur in closed watersheds; their main input is precipitation and there are no outlets other than evaporation and seepage. After a rainfall, playas provide drinking water for mammals in the area. Because there are no wetland corridors leading to and from playas, aquatic mammals such as beaver and muskrats generally do not utilize these wetlands.



Playa lakebeds, which are often dry, show a characteristic white color from salt deposits on their surface.

Playa wetlands are frequently used as grazing areas. Moderate grazing may stimulate seed crops for wildlife food and increases shorebird usage. Overgrazing, however, can cause erosion problems and a decrease in water quality.

Because playas tend to form in warm areas, their evaporation rate is quite rapid. Playas are found in the playa lakes region of New Mexico, Nebraska, Oklahoma, Kansas, and Texas, and in other arid to semi-arid regions of the western United States.

Associated vegetation: *salt grass (Distichlis spicata)*

Salt grass is a plant adapted to growing in moist, alkaline conditions. Because of this, it is well-suited to growing in the saline environment surrounding a playa lake or salt flat. Salt grass tends to grow in uniform stands, often covering large areas. Salt grass is common around the Great Salt Lake and areas with saline soils. Waterfowl often build their nests in salt grass, and livestock use salt grass as forage.

There are several other plant species that are indicative of alkaline or saline soils. These include Nuttall alkali-grass (Puccinellia airoides), sea blight (Suaeda calceoliformis), pickleweed (Salicornia spp.), alkali bulrush (Scirpus maritimus), and arrowgrass (Triglochin maritima).

Associated wildlife: *northern pintail (Anas acuta)*

The pintail is one of North America's most elegant ducks. At one time, the pintail was one of the most abundant ducks in the western United States. Drought and loss of habitat have pushed the pintail to population levels 60% lower than historic numbers. While the pintail, or sprig, is not in danger of

Salt grass is a salt tolerant plant frequently found around playa lakes and the Great Salt Lake.

disappearing, it can be a barometer of the state of our wetlands. Pintails often use playa lakes as stop-over points during migration and they may nest in the vegetation surrounding playas.

Recent estimates have calculated that more than two million migrating waterfowl use playa lakes throughout the country every year. In addition, about 400,000 sandhill cranes (90% of the continental population) use playas during migration. Numerous shorebirds, such as American avocets and black-necked stilts, rely on these areas for feeding and resting spots.

Locations: *Salt flats and playa lakes are found throughout the southern and western parts of Utah.*

B. Mudflats

Mudflats are essentially wetlands with little or no standing water and no emergent vegetation. A mudflat may fill with water after a rainstorm, but the water usually disappears rapidly. Depending upon their size, a mudflat could be considered a Lacustrine or a Palustrine wetland. The majority of mudflats in Utah are Lacustrine. These mudflats are found around the Great Salt Lake in substantial numbers and provide important habitat for shorebirds such as American avocets, several types of sandpipers, and dowitchers. These mudflats also provide loafing sites for the resident and migratory Canada geese that use the Great Salt Lake basin.

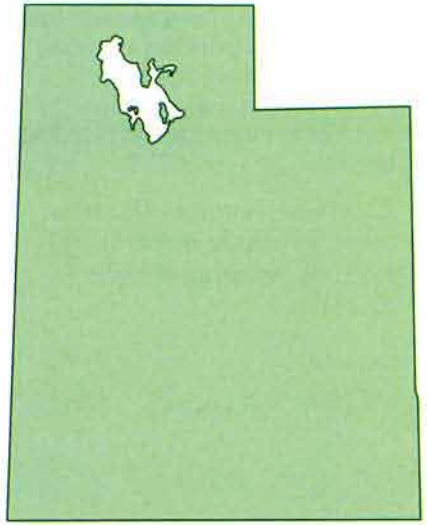
Locations: *Mudflats in Utah are primarily found around the perimeter of the Great Salt Lake.*

C. Natural lakes and man-made reservoirs

Areas such as the Great Salt Lake, Utah Lake, or Flaming Gorge Reservoir are sometimes called Lacustrine systems, but they are actually deep-water habitats under the Cowardin et. al. (1979) classification. These systems provide recreation areas, fisheries habitat, and municipal water sources. In addition, lakes and reservoirs provide breeding, loafing, and feeding sites for resident birds along with rest areas for migrating waterfowl, shorebirds, and wading birds. The Great Salt Lake ecosystem has been included in the Western Hemisphere Shorebird Reserve Network, indicating its importance to migrating and breeding shorebirds.

Locations: *Natural lakes and reservoirs may be found throughout Utah, primarily at higher elevations.*

The pintail duck frequently uses playa lakes as migration stop-overs and may nest in the vegetation surrounding playas.



Riverine

(River-associated)

A. Riverine

Riverine systems are contained within a channel. A Riverine system often connects two larger bodies of water. Land adjacent to a Riverine system may include uplands, agricultural land, or other wetlands. The green vegetation zones found around rivers, creeks, and springs are known as riparian zones. Despite being somewhat uncommon, riparian zones are among the most productive habitats for plants and wildlife. In a region with low annual precipitation, these areas provide an oasis for life.

Riverine wetlands are important for many reasons. Agriculture is often dependent upon the water available in a Riverine system for irrigation. Communities may depend on larger Riverine systems for municipal water supplies, as is the case with the Colorado River. The types of plants and animals found in a Riverine system vary greatly, as do the river systems themselves. Plants and animals utilizing a montane Riverine system frequently are not the same as those associated with a Riverine system in a valley. Water in a Riverine system may or may not be moving. Frequently, water velocity determines the type of plant and animal community present.

Riverine systems, which vary greatly in their physical makeup, are found throughout the state of Utah.

Associated vegetation: *bluebells (Mertensia spp.)*

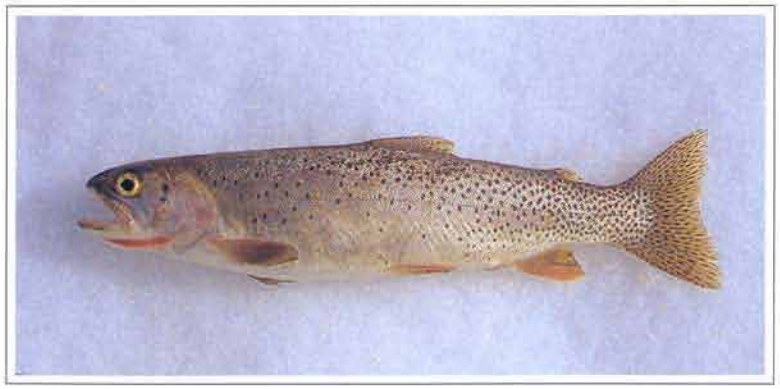
Bluebells are, as the name implies, blue colored, bell shaped flowers. These plants are found inhabiting a number of ecosystems in Utah. They bloom in late spring, often into early summer. The streamside bluebell, Mertensia ciliata, is found along streams and meadows up to the alpine level. In some areas, bluebells are considered a weed, but their pleasant color is welcome on any wetland.

Other plants found near Riverine systems include cottonwood trees (Populus spp.), willows (Salix spp.), river birch (Betula fontinalis), and twinberry (Lonicera involucrata).

Associated wildlife: *cutthroat trout (Salmo clarki)*

The cutthroat trout, named for the distinctive red markings under its throat, is the only native trout in Utah. It inhabits cold water streams throughout the state. Cutthroats are usually found throughout a river as long it has suitable habitat, but in early spring, they migrate toward the head of the stream to spawn. They are especially vulnerable when spawning, and predators such as osprey and bald eagles take advantage of this available food. The cutthroat was an important food source for Native Americans and early settlers in this region. Many native populations have been eliminated or are on the verge of elimination. Stocking efforts have restored some populations and created new ones. The Bear Lake cutthroat, native to Bear Lake and it's tributaries, is the primary strain of cutthroat used to stock Utah's waters.

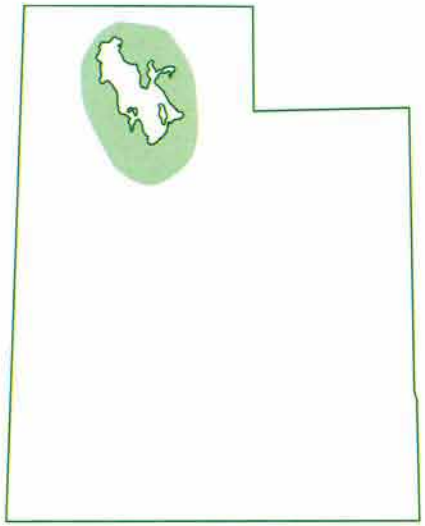
Bluebells are one of a number of wildflowers found along Riverine systems in Utah.



The cutthroat trout is the only trout native to Utah.

Riverine systems are important for many of Utah's reptiles and amphibians. The only salamander found in Utah, the tiger salamander, lives in moist areas, frequently around streams. This animal serves as a food source for various birds and mammals. Many birds such as bald eagles, American dippers, and belted kingfishers rely on Riverine systems and riparian areas for feeding and nesting.

Locations: *Riverine systems are located throughout the state of Utah. They are found in mountain canyons, adjacent to the Great Salt Lake, and in the southern desert.*



Palustrine

(pond-like)

A. Freshwater ponds

Freshwater ponds are the wetlands that most people are familiar with. This classification encompasses the majority of the wetlands found at lower elevations in Utah. These wetlands collect precipitation run-off and act to filter pollutants that may be present in the run-off. During the Great Salt Lake floods of the mid-1980's, nearly 300,000 surface acres of wetlands around the Great Salt Lake were inundated with saline water. While nearly 100,000 of these acres were already saline wetlands, this salt water virtually destroyed the freshwater ecosystems. These wetlands only now are returning to normal water chemistry.

Aside from periodic flooding, another problem facing many freshwater wetlands is the invasion of an exotic plant called purple loosestrife (Lythrum salicaria). This is a pleasant looking plant, but it tends to overtake native vegetation in a wetland. Areas that are vegetated by cattails, reeds, or rushes are prone to rapid invasion. This plant may push out the existing native vegetation, leaving a large uniform stand of loosestrife. Pulling the plants has been the only effective method of stopping the encroachment of loosestrife, but in large stands, this is a fruitless cause. Purple loosestrife appears to severely reduce waterfowl and furbearer activity. Purple loosestrife is still rare in Utah, but it is rapidly expanding its range.

Freshwater ponds are extremely important to wildlife. Palustrine areas serve as breeding sites, feeding sites, and migratory stop-overs for a number of different species. In Utah, numerous shorebirds, waterfowl, and other wading birds such as white-faced ibis utilize Palustrine wetlands.

Freshwater ponds come in a variety of shapes and sizes.

Associated vegetation: sago pondweed (Potamogeton pectinatus)

Sago pondweed is a submersed plant (roots and leaves primarily underwater) found in wetlands with stable water levels. Sago can be found in wetlands throughout the world. This plant is an important food source for waterfowl. Migrating birds, particularly diving ducks and swans, utilize sago extensively. Beds of sago provide habitat for numerous invertebrates, which in turn serve as food for young waterfowl. Seeds of sago can survive periods of high salinity or extended drought, and are quite tolerant of polluted water. Dried sago is excellent cattle food, although no techniques have been found to efficiently harvest the plant.

Sago pondweed provides an important food source for many animal species.

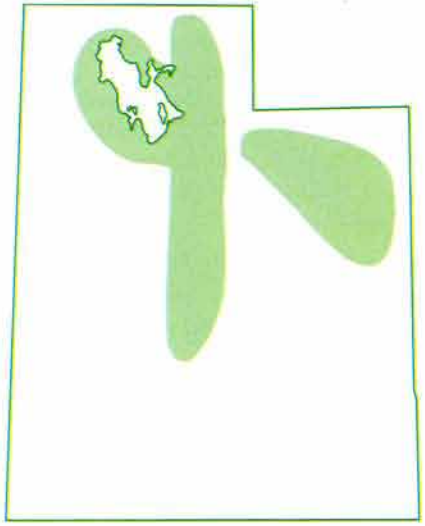
Carp, an introduced fish, can eliminate sago from a wetland. These fish feed by rooting around the bottom of a pond or lake, uprooting the aquatic vegetation. Wetlands with high carp numbers tend to have murky water as a result of their foraging behavior. Although sago is quite tolerant of environmental changes, water turbidity is one factor that will eliminate the plant. Wintering bald eagles may feed on carp in the wetlands surrounding the Great Salt Lake, although the numbers they take are not enough to control carp populations.

Associated wildlife: *northern harrier (Circus cyaneus)*

If you see a medium-sized hawk flying low across the tops of a marsh or meadow, chances are it is a northern harrier. Harriers, or marsh hawks, are distinguished by the large white patch above their tail. Male harriers are grey above, while female harriers are dark brown above. They eat primarily mice and voles. Harriers breed throughout Utah wherever suitable habitat is found. Nests are built on the ground, usually in heavy grass. These birds may be seen in Utah year-round, although most birds leave the northern part of the state during winter. Other birds of prey that use ponds and mudflats include short-eared owls, great horned owls, bald eagles, and red-tail hawks. Freshwater wetlands surrounding the Great Salt Lake support a large breeding population of white-faced ibis along with substantial numbers of snowy egret and black crowned night heron.

Locations: *Numerous examples of freshwater ponds are found along the northern and eastern shores of the Great Salt Lake. Sites include Salt Creek Waterfowl Management Area and the Bear River Migratory Bird Refuge.*

The northern harrier nests on the ground, caring for its young until they are ready to fly.



Palustrine

(pond-like)

B. Wet Meadows

Wet meadows are important, but frequently overlooked, wetlands. Their heavy vegetation often covers any water present, making them appear dry. Wet meadows are frequently found near Riverine systems. These wetlands may include low-lying grass meadows in a mountain valley, or they may be found on high elevation mountain plateaus. No matter their location, they are valuable to many species of wildlife. Shorebirds, raptors, and various songbirds all use wet meadows at different times of the year. In addition, mammals such as mule deer, elk, moose, and red fox use these areas to feed and rest. Wet meadows serve as a prime livestock grazing area and produce hay when they are dry enough to cut. However, these wetlands are quite susceptible to overgrazing and subsequent erosion.

Associated vegetation: *wild iris (Iris missouriensis)*

The wild iris, or Rocky Mountain iris, is found primarily in wet meadows and along streambanks. In Utah, the wild iris is

Wet meadows can be found throughout Utah at almost any elevation.

The wild iris is a beautiful flower, but is found in limited habitats in Utah.

found mainly in the Wasatch and Uinta ranges. It is a particularly beautiful plant which blooms in May and June. The flower varies in color from whitish to violet-blue with darker veins along its petals. This iris is mildly poisonous, causing skin irritations in some individuals if contacted. The bulb is the most poisonous part, and can be lethal to livestock both fresh and in hay. In an overgrazed wet meadow, wild iris may become very abundant.

Other plant types common in wet meadows include tufted hairgrass (Deschampsia cespitosa), mint (Mentha spp.), bistort (Bistorta bistortoides), and American vetch (Vicia americana).

Associated wildlife: *common snipe (Gallinago gallinago)*

The snipe is a fairly common but somewhat unrecognized bird of Utah wetlands. Most people are acquainted with snipe only through a "snipe hunt," a prank played to initiate someone to the outdoor world.

The common snipe inhabits moist areas throughout Utah.

In the spring, male snipe "winnow" to declare their territory. This involves flying to high altitudes and plunging towards the ground. Winnowing creates a distinctive sound as the wind rushes through the bird's wings and tail. When flushed, the snipe can easily be identified by its fast darting flight and loud "scaip" call. Snipe may nest around a wet meadow. They also use the areas as feeding sites and stop-over points during migration.

Wet meadows serve as important feeding sites for wild turkeys. Young birds eat exclusively insects, and wet meadows provide excellent areas for these birds to find food. In wet years, waterfowl may nest in wet meadows and use the areas as migration rest areas.

Locations: *Wet meadows can be found at middle to high elevations throughout the state.*

THE WETLANDS FOOD WEB

CATTAILS AND BULRUSHES are important sources of energy and mineral nutrients in the marsh food web. Muskrats and many insects live on them. Waterfowl eat the seeds.

ALGAE and small pieces of organic plant matter are eaten by a variety of microscopic animals, small crustaceans, tadpoles, and insects.

SMALL CRUSTACEANS AND INSECTS are eaten by tadpoles and a variety of fish. Many water birds feed on insects. Mallards eat mosquito and midge larvae, which feed on microscopic animals. Frogs eat insects. Carp live on the small plant and animal life and the dead organic matter found at the bottom of the marsh.

AVOCETS and other marsh birds eat insects and small crustaceans as well as insect larvae.

TUNDRA SWANS feed on the sego pond weed and tuberous plants while visiting the Great Salt Lake marshes.

GARTER SNAKES eat frogs and tadpoles. Small fish are also a part of their diet.

MUSKRATS are one of the few larger animals that feed primarily on the plant life of the marsh.

GREAT BLUE HERONS, EGRETS, CORMORANTS AND MERGANSERS are among the larger predators of fish. Herons also will eat snakes and frogs.

NORTHERN HARRIERS AND SHORT-EARED OWLS prey on small ducks, frogs, voles and mice.

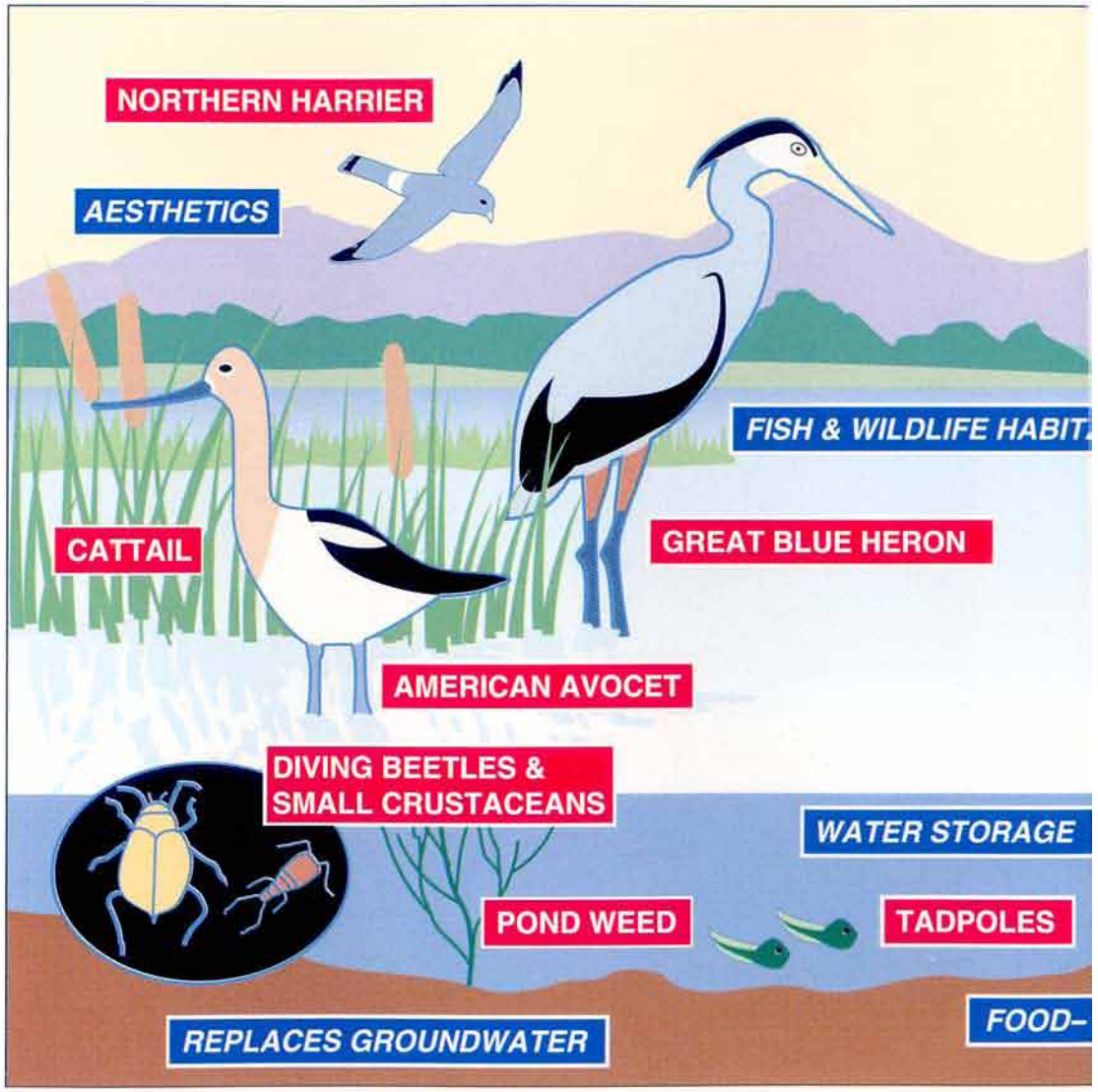
PEREGRINE FALCONS eat shore-birds, blackbirds of various kinds, and small ducks.

MINKS, SKUNKS, RACOONS, RED FOXES, AND WEASELS eat mainly small birds, frogs, mice, voles and snakes. Minks will feed on muskrat. Red foxes eat ducks. All of these mammals supplement their diet with insects and some vegetation.

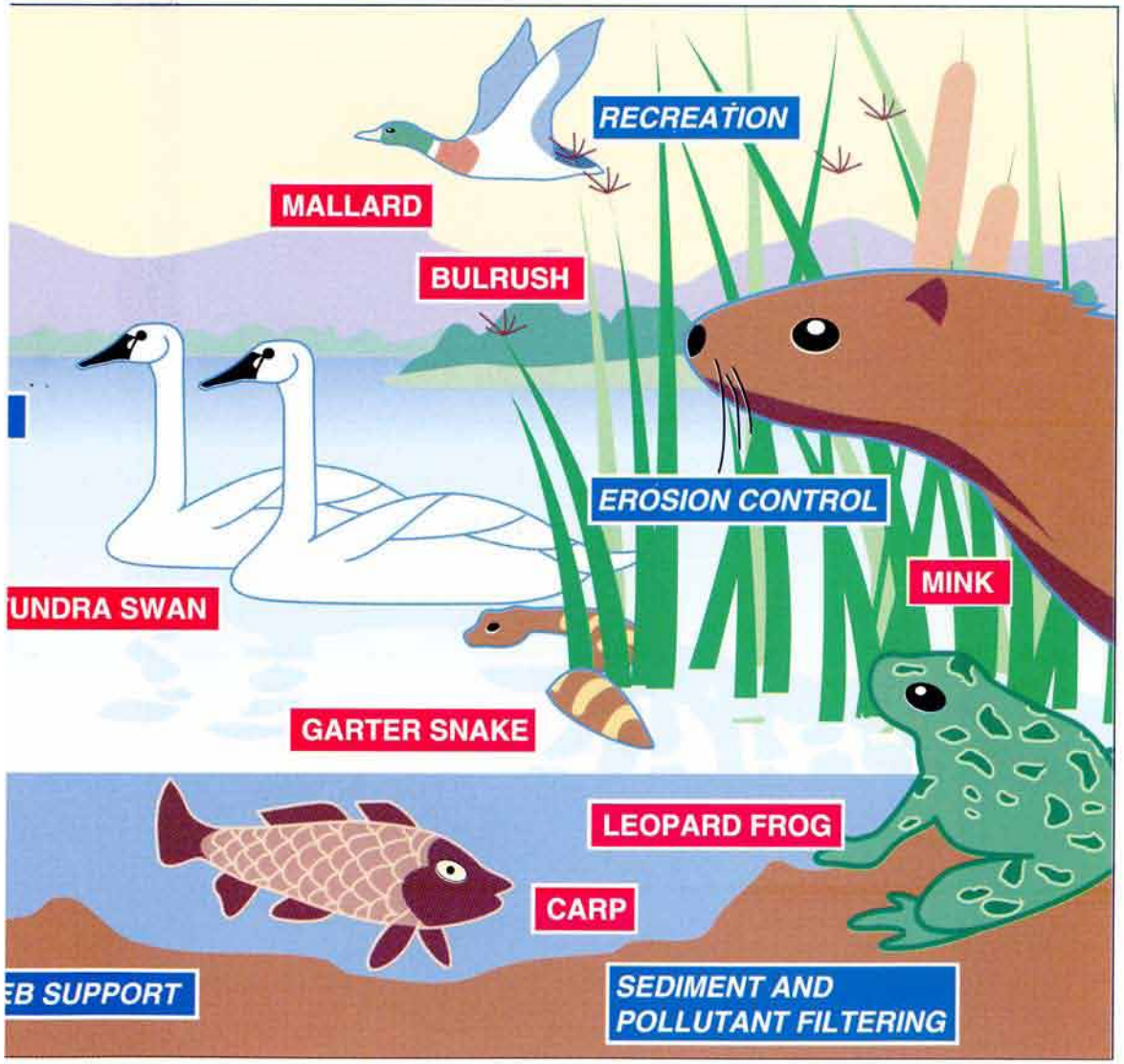
BALD EAGLES eat the larger water-fowl, including geese and herons, when the marsh is frozen. During thaws, they eat mostly large carp.

HUMANS eat a variety of ducks. Some cultures value the carp as a delicacy. Fremont Indians ate cattails as well as various waterfowl.

HOW WETLANDS WORK: A GREAT S



ALT LAKE FRESHWATER MARSH



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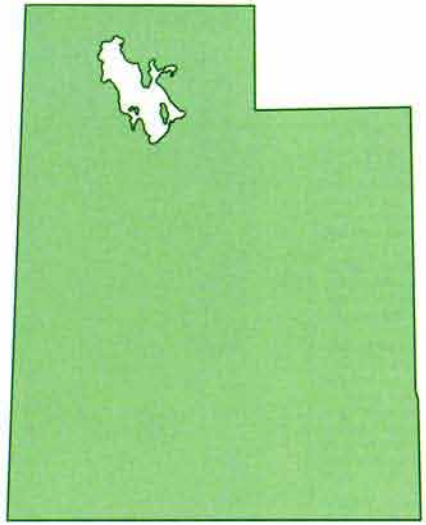


Palustrine

(pond-like)

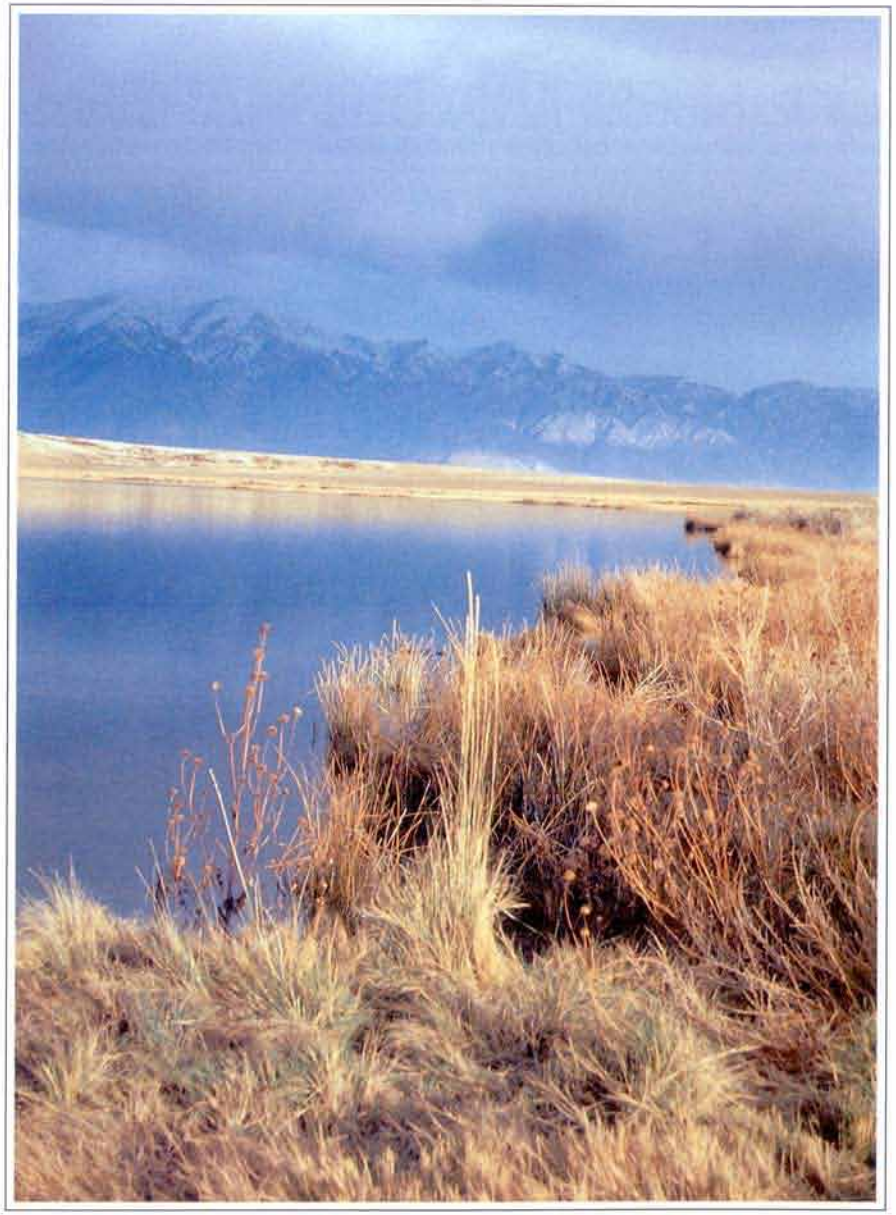
C. Wet lake margins

Wet lake margins come in many forms, from cattail-inhabited sloughs to flooded timber. They may be along natural lakes or near man-made reservoirs. These wetlands are quite susceptible to fluctuating water levels and are frequently the first to dry up during a drought period.

Associated vegetation: *cattails (Typha angustifolia and T. latifolia)*

Cattails are frequently the most recognizable plants in this wetland. Cattails are found in shallow, slow-moving water where they frequently form thick, uniform stands. These plants require mudflats in order to germinate, and therefore spread quite rapidly during low water years. In years of high water, cattails in deep water die off and are replaced by open water or other plants that can survive deeper water.

Cattails and bulrushes (Scirpus spp.) provide important food and cover for numerous wildlife species. Ducks and other aquatic birds nest in stands of cattails and rushes. Cattails are the main food source for muskrats. If cattails become too thick in an area, muskrats may thin the stands by feeding on them. Conversely, if muskrats are high in numbers, they may eat a high percentage of cattails in a wetland.



Wet lake margins may occur anywhere a natural or man-made lake is present.

The muskrat builds a lodge of predominantly cattails and mud. These lodges serve as homes for not only muskrats but nesting Canada geese and other smaller rodents.

Wet lake margins may contain a wide variety of other plants including bulrushes (Scirpus spp.), cottonwood trees (Populus spp.), blue vervain (Verbena hastata), and buttercups (Ranunculus spp.).

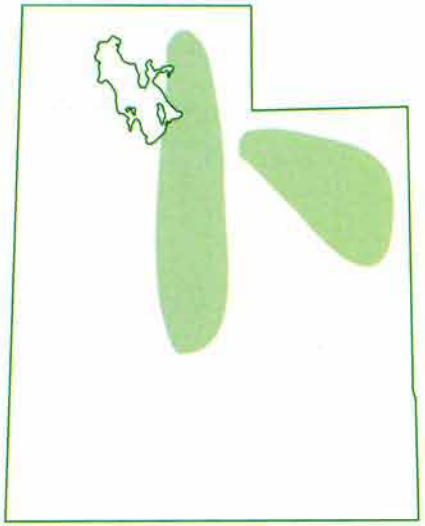
Associated wildlife: *muskrat (Ondatra zibethica)*

Muskrats are large aquatic rodents that inhabit almost all wetland types. They eat roots and shoots of aquatic plants, primarily cattails. Muskrats build "lodges" out of mud and cattails. These lodges serve as winter homes and sites to raise their young. Muskrats are prolific animals that serve as a food source for several other animals. Mink are especially adept at locating and killing muskrats for food.

Canada geese may nest in wet lake margins, especially if muskrat or beaver lodges are present. By placing their nests on top of lodges, geese are able to see potential predators from a long distance. If there are no lodges available, geese may nest on artificial platforms placed by humans.

Locations: *Wet lake margins are found adjacent to nearly any natural lake or reservoir.*

Cattails are one of the most readily recognized wetland plants.



Palustrine

(pond-like)

D. Subalpine/montane wetlands

Subalpine wetlands occur in several types, including ponds, marshes, fens, and glacial lakes. Water at higher elevations is not often considered to be a vital part of our aquatic world, but mountain springs and ponds often serve as the source for water found at lower elevations. Mountain spring water is frequently used for municipal purposes. It also serves as the source for state-run fish hatcheries. Because of the many uses, proper conservation of this resource is critical. Subalpine and montane wetlands are heavily impacted by summer home developments, grazing, and ski area development.

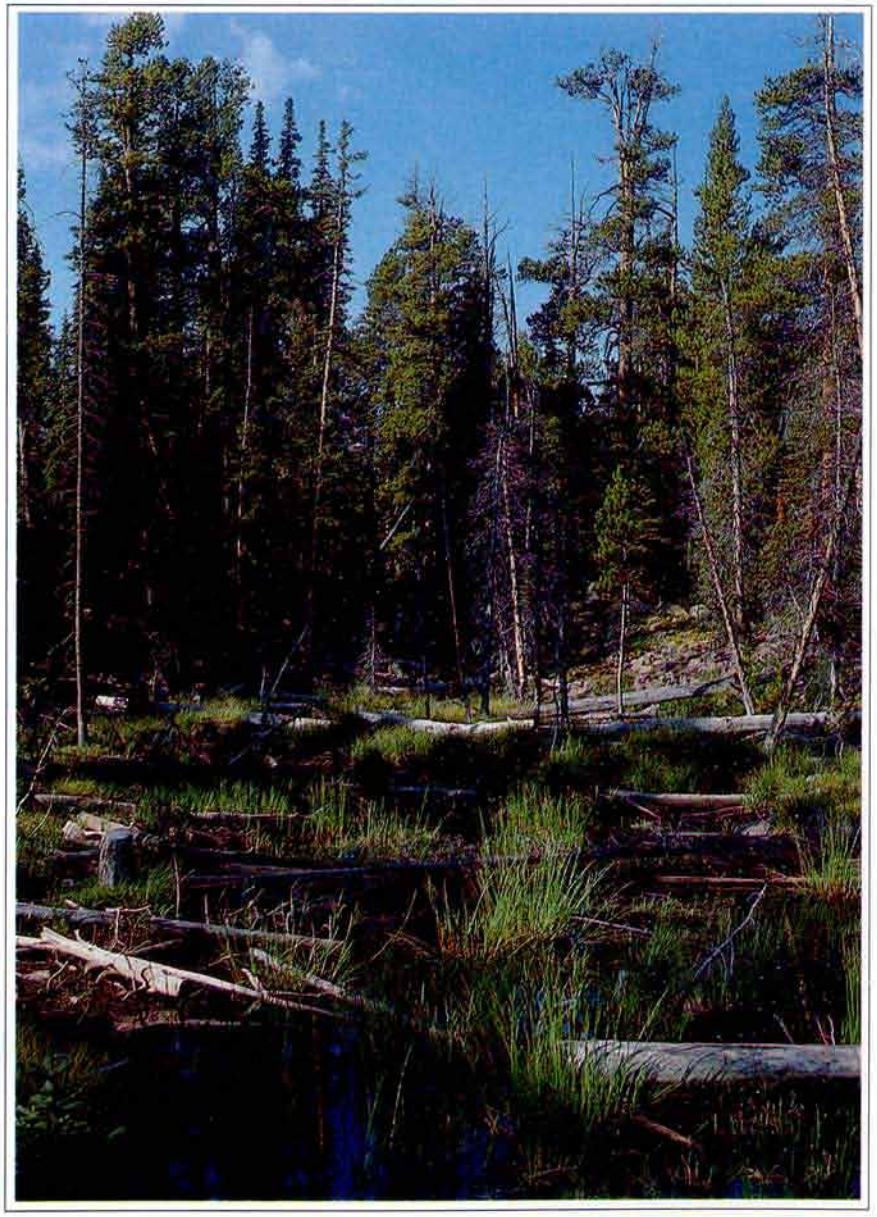
Associated vegetation: *marsh marigold (Caltha leptosepala and C. biflora)*

The marsh marigold is an early blooming flower found at higher elevations near subalpine or above timberline wetlands. There are two varieties found in Utah; one has a single flower per plant (C. leptosepala) and the other one has two flowers per plant (C. biflora).

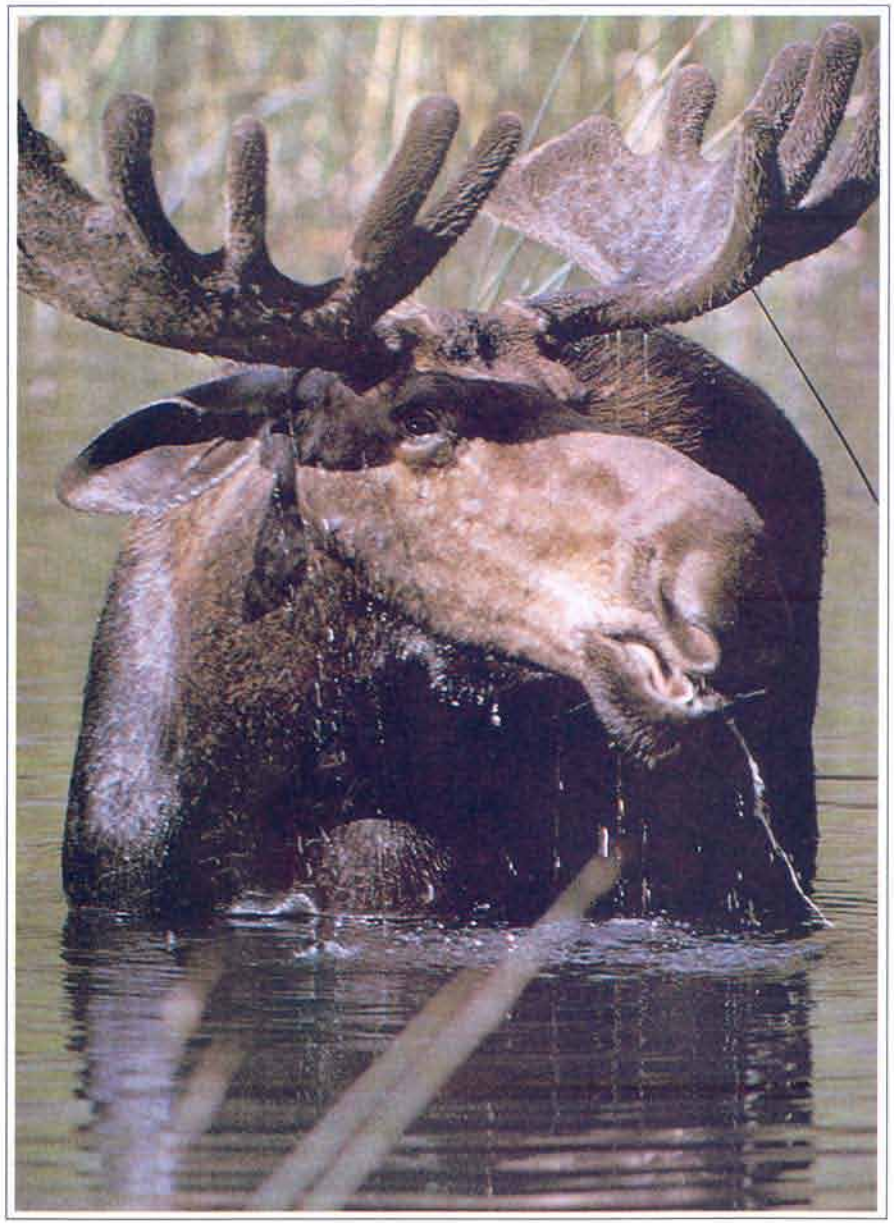
Other plants found in high elevation wetlands include water sedge (Carex aquatilis), Canadian reed-grass (Calamgrostis canadensis), manna grasses (Glyceria spp.), and few-flowered spikerush (Eleocharis pauciflora). The sedge family, Cyperaceae, tends to be the most common group of plants in montane/subalpine wetlands.

Associated wildlife: *moose (Alces alces)*

Moose are found primarily in the northern reaches of the United States and into Canada, but their range extends south along the Rocky Mountains. They are



Subalpine/montane wetlands come in a variety of forms, including beaver ponds, fens, and marshes.



Wetlands provide food for moose throughout the summer and fall months.

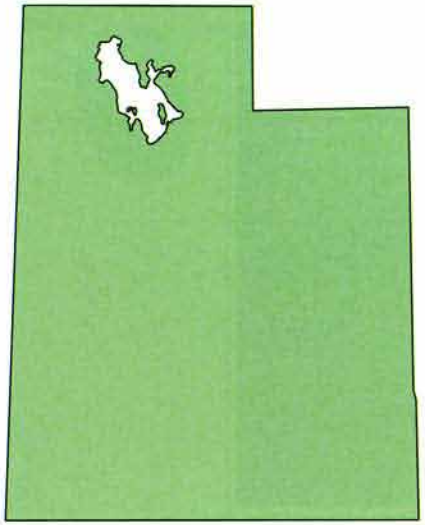
The marsh marigold(Caltha leptosepala) is one of the earliest blooming flowers at high elevations in Utah.

closely associated with wetlands, where they feed on aquatic vegetation. In Utah, moose are found at high elevations during the summer but may wander to lower elevations in the winter. Summering moose frequent wetlands in the Wasatch and Uinta ranges.

In addition to moose, other large mammals that utilize montane and subalpine wetlands include black bear, mule deer, elk, and beaver.

Birds of prey such as Cooper's hawk and goshawks, along with numerous songbirds such as song sparrows, yellow warblers, and fox sparrows utilize these wetlands and surrounding habitats. The mallard duck also uses montane and subalpine wetlands for nesting and feeding sites.

Locations: *Subalpine/montane wetlands, which are located at high elevations, are especially numerous in the Uinta range.*



Palustrine

(pond-like)

E. Wet river margins

Wet river margins, although located in the floodplain of a Riverine system, are still considered Palustrine wetlands. Many of Utah's important wetlands are located in the floodplains of rivers in the Great Salt Lake basin. Water levels in wet river margins tend to fluctuate with the water level in the river. Because of this, what appears to be a dry, nonmarsh area may actually be a wetland. Wet river margins occur at any elevation, as long as a suitable flat area is adjacent to the Riverine system.

Associated vegetation: *quaking aspen (Populus tremuloides)*

The quaking or trembling aspen is a common tree, found both in upland areas and near streams or moist areas. The aspen is often the first tree to begin growing in a freshly burned or logged area. Because one plant can grow via "suckers" or underground shoots, a single tree can become a dense stand of aspen trees in just a few years. The quaking aspen is named for the rustling sound its leaves make during the fall of the year. "Quakies" are the primary food source for beavers and provide habitat for a number of woodland animals including moose and ruffed grouse. The aspen is different from other trees in that its bark carries on photosynthesis. In other trees, only the leaves carry on this process. Aspen trees were at one time a source of aspirin.

Other vegetation in a wet river margin is quite variable, depending on the location of the wetland. At higher elevations, box elder trees (Acer negundo), willows (Salix spp.), and

Wet river margins are highly productive areas, often attracting large numbers of birds and animals to feed and rest.

The trembling aspen is widespread in Utah, inhabiting both uplands and wetland margins.

small burreed (Sparganium minimum) may occur. At lower elevations, cottonwood (Populus spp.), and marsh milkweed (Asclepias incarnata) may be found. At any elevation, cattails (Typha spp.) and bulrushes (Scirpus spp.) are likely to be found.

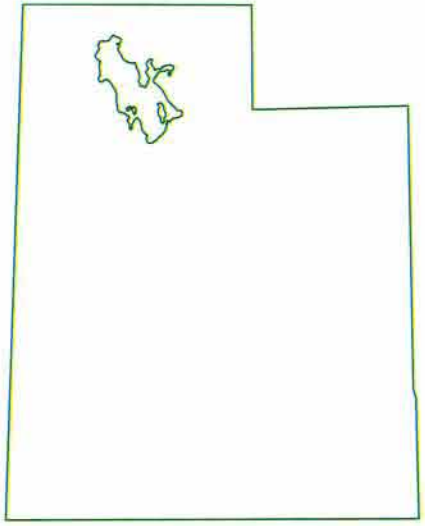
Associated wildlife: *beaver (Castor canadensis)*

The beaver is North America's largest rodent. Once highly prized for its pelt, beavers were nearly exterminated by trapping. The removal of old growth forests and subsequent intrusion of aspen and willow trees have now allowed beavers to expand their historical range. Beavers are dependent upon aspen and willows for food, and require water in order to build their lodges. This water can come from existing lakes and ponds or from ponds created by damming streams and rivers. Beavers are strong gnawers and can cut down trees over 18 inches in diameter.

Other wildlife likely to be encountered within a wet river margin include mink, raccoon, great blue heron, and black-crowned night heron. These animals feed upon the abundant frogs, insects and fish available in river margins.

Locations: *Wet river margins are located along almost any Riverine system in the state. Some good examples are found along the Bear River and along the Sevier River.*

The beaver is easily recognized by its large size and its flat tail.



A Concerned Citizen's Guide To Wetlands Conservation

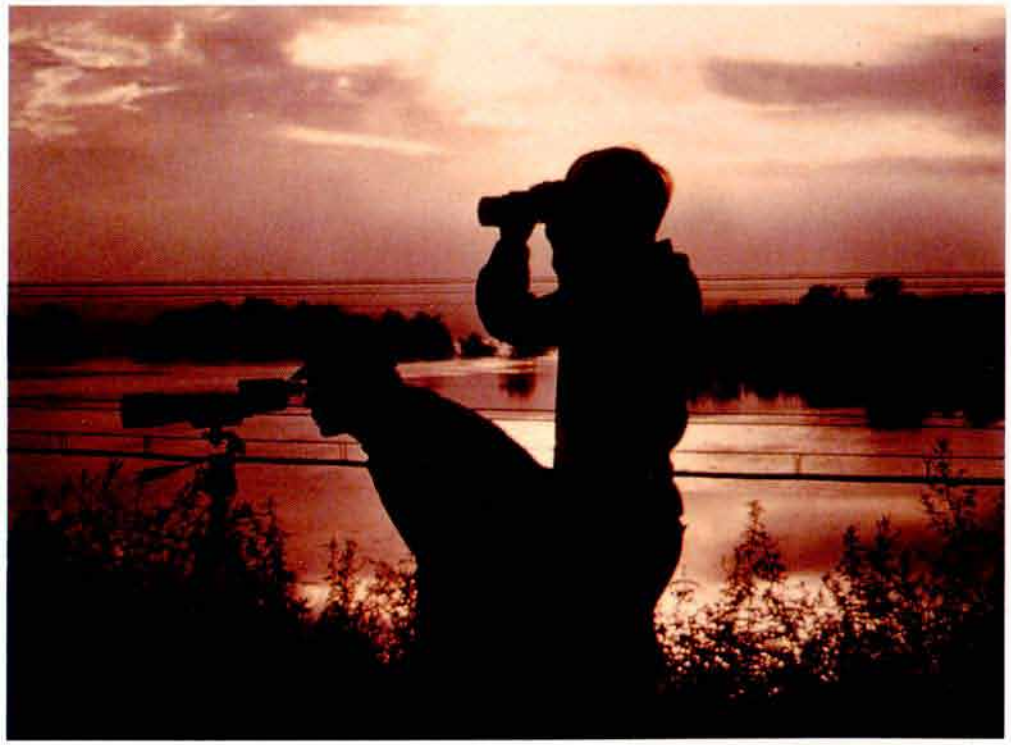
There are numerous federal, state, and private organizations that help landowners who are interested in wetland conservation. Addresses for these organizations are provided on page 20.

These groups function in different ways, including consulting and acquisition. On the federal level, the United States Fish and Wildlife Service has recently implemented a program called **Partners for Wildlife**. This program is designed to enhance wildlife productivity on private lands. This is accomplished through the establishment of a Wildlife Management Agreement (WMA). Several methods may be employed in a WMA, including, but not limited to: wetland creation or restoration, implementation of grazing systems, and addition of waterfowl nesting structures.

The Natural Resources Conservation Source (NRCS) is a nationwide agency involving conservation practices on private land. Landowners can develop a farm or ranch conservation plan which has been approved by the NRCS. The NRCS may share costs for landowners interested in wetland conservation, and are also available for consultation.

State agencies involved in wetlands conservation include the Division of Wildlife Resources (DWR), the Division of Water Rights, the Division of Parks and Recreation, and the Division of State Lands and Forestry.

Several private groups function in similar ways. Groups involved in wetland conservation include Ducks Unlimited,



the Nature Conservancy, the Utah Wetlands Foundation, the Utah Wildlife Federation, and the Utah Audubon Society.

Ducks Unlimited is a continent-wide program that focuses its attention on critical wetlands. Habitat improvement projects often encompass large areas of private land. Projects may include wetland acquisition, restoration, or long-term easements.

The Nature Conservancy is committed to preserving habitat for rare or sensitive species. The main method used by the Conservancy to conserve wetlands is acquisition, but they also do easement programs and property exchanges. In Utah, the Conservancy is well known for the Layton Marsh project, but they have been involved with numerous other projects. Much of the land obtained by the Conservancy is co-managed with the DWR.

The Utah Wetlands Foundation (UWF) is a nonprofit organization working to preserve, restore, and develop Utah's wetlands. The UWF is not a land holding or land management agency, but instead works with other groups such as the DWR or the Nature Conservancy to acquire and manage wetlands.

The Utah Wildlife Federation is a state-wide organization which currently has sixteen affiliate organizations and is affiliated with the National Wildlife Federation. It's objectives and purposes are to develop, promote, and support comprehensive educational and action programs for the restoration, wise use, management, and conservation of wildlife and natural resources essential to wildlife.

The National Audubon Society is a national nonprofit conservation organization the directly affects wetland policy in Utah through lobbying efforts in the U.S. Congress. The Audubon Society participates in public debate of wetland issues in Utah and conducts public information programs concerning the conservation of Utah's natural resources.

Some programs listed in this section are funded entirely through private donations; however, every program in this section can benefit from donations of time or money. Private donations help insure the protection of our vital water resources. Wetlands conservation requires public awareness of their importance. Educating yourself on the diverse nature and value of our wetlands is the first step. Sharing this knowledge with someone else is the next. Appreciation of the value found in wetlands can be contagious!

Acknowledgements

Thank you to those who contributed photos or graphics to this publication. Thank you also to those who reviewed the manuscript, including Patricia Lock (DWR), John Kadlec (Utah State University), Clark Johnson, Bob Williams, and Bob Freeman (USFWS), and Al Trout and Vicki Roy (Bear River Migratory Bird Refuge). Roger Banner helped tremendously with some last minute photo searching. Thanks to Remani Rajagopal, for assistance in getting this publication printed, and to Mark K. Minson for layout and design.

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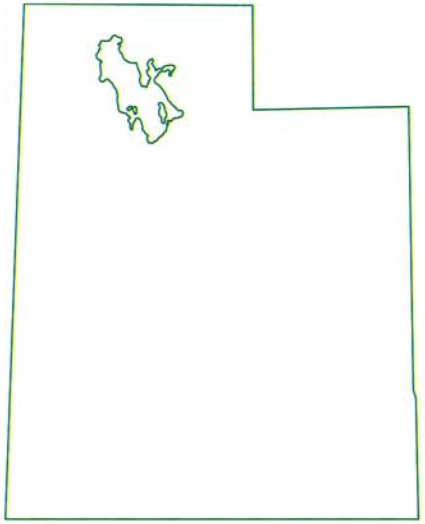

Environmental Protection Agency, Region 8
Wetland Management-Water Quality Division
999 18th St.
Suite 500
Denver, CO. 80202

State Conservationist
Natural Resource Conservation Service
P.O. Box 11350
Salt Lake City, Utah
84147-0350

Utah Wetlands Foundation
520 East 100 North
Brigham City, Utah
84302-2208

Division of Wildlife Resources
1596 W. North Temple
Salt Lake City, Utah
84116

Ducks Unlimited
Western Regional Office
9823 Old Winery Place
Suite 16
Sacramento, California
95827

Nature Conservancy
P.O Box 11486
Salt Lake City, Utah
84103

Utah Wildlife Federation
P.O. Box 526367
Salt Lake City, Utah 84152-6367

National Audubon Society
549 Cortez Street
Salt Lake City, Utah 84103-2122

Utah Partners For Wildlife
Bear River Migratory Bird Refuge
866 S. Main
Brigham City, Utah 84302

Utah State University Cooperative Extension Service
Utah State University
College of Natural Resources
— Department of Fisheries and Wildlife
— Wildlife Damage Management
— Berryman Institute
Logan, Utah 84322-5210

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Denver, CO

Environmental Protection Agency
Region VIII
Denver, CO

Utah Division of Wildlife Resources
1596 West North Temple
Salt Lake City, Utah

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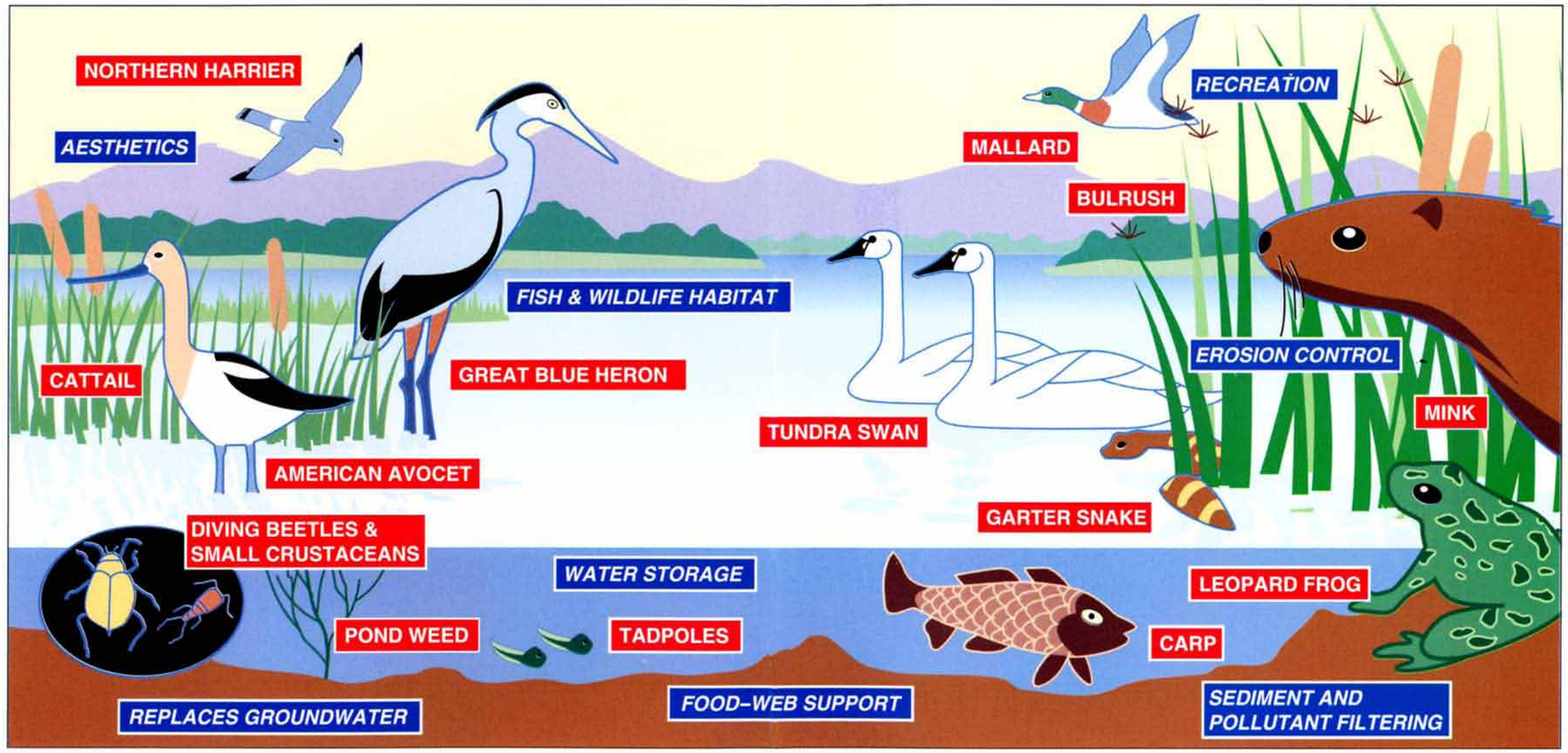
HOW WETLANDS WORK: A GREAT SALT LAKE FRESHWATER MARSH



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