



IZAAK WALTON LEAGUE OF AMERICA

Fact Sheet

Types of Wetlands

Tidal Saltwater Marsh



Tidal saltwater marshes are found in flat, low-lying areas near the coast. Situated at the boundary between the ocean and the shore, these wetlands are primarily influenced by the ebb and flow of the tides. In the United States, most tidal saltwater marshes extend along the eastern shore from Maine to Florida, and along the Gulf of Mexico. Though at first glance a tidal saltwater marsh may seem pretty ordinary and devoid of life, these habitats are virtually buzzing with the activity of thousands of organisms, making the tidal marsh one of the most productive ecosystems on the planet.

Any avid birdwatcher will tell you that tidal saltwater marshes are some of the best places on the planet for spotting all kinds of birds. These ecosystems provide secluded nesting and feeding sites for hundreds of species of waterfowl and wading birds, as well as resting spots for a wide variety of migrants. Additionally, the thick clumps of *Spartina* grass, sedges and other types of vegetation serve as perfect hiding spots for vulnerable little fish, protecting them from the predators that are lurking in the big sea. Some of our all-time favorites like salmon, bluefish, winter flounder, striped bass, blue crab, and lobster owe their very existence to healthy, functioning tidal wetland ecosystems.



Walter Clifton

Thanks to current laws and regulations, the deliberate destruction of our coastal saltwater marshes has been greatly reduced. Yet because over half of our nation's population now lives and/or works near the coast, many of our day-to-day activities are posing serious threats to these valuable ecosystems. Pollutants, such as motor oil, fertilizers and pesticides that seep from agricultural land, roadways and housing developments, are causing serious problems for many tidal wetlands. Another problem facing our tidal

marshes is the invasion of Phragmites, a non-native grass that chokes out native grasses and lowers regional biodiversity.

Mangrove Swamp



What happens when the tidal saltwater marsh meets the steamy tropics? There is only one place in the continental U.S. where this happens, and that is along the extreme southern edges of Florida. Here, the prairie-like expanses of *Spartina* grasses found in coastal marshes up north give way to an impenetrable tangle of vines, woody vegetation and a curious tree called the mangrove. One of the mangrove's most recognizable characteristics is the way it stands above the water on its roots, as if it were on stilts. These roots not only provide a support structure, they allow the mangrove to take in the oxygen and nutrients that are only found in only the uppermost layers of soil.

Because of the large amounts of nutrients cycled through mangrove swamps, the productivity of these ecosystems is often compared to that of rainforests and coral reefs. What's more, 80% of the fish and shellfish harvested in Florida rely upon the maze of prop roots that lies beneath the surface of a mangrove swamp at some point during their life cycle. Mangrove forests provide an abundant source of food, hiding spots, and calm waters not only for young fish, but also the endangered manatee.

Despite the fact that mangrove swamps are now recognized to be highly valuable to both our economy and the environment, these ecosystems are among the most threatened in the nation. Coastal development is the leading cause in mangrove destruction in Florida. This loss has devastating consequences not only for the resident wildlife, but also to nearby human communities that rely upon these natural barriers to protect them from flooding and erosion.

Tidal Freshwater Marsh



If you were to follow a river system inland from the coast, you would notice that different kinds of plant and animal communities gradually become more predominant as the influence of the ocean diminishes. In some of the surrounding marshes, there would be a mixture of the species that are found in saltwater and those found in freshwater systems. These unique wetlands are called tidal freshwater marshes. Located mostly along the middle and south Atlantic coastal plains, tidal freshwater marshes are some of the richest ecosystems in terms of species diversity. Even though these transitional wetland areas still get periodically inundated by extra high ocean tides, many plants that are less salt-tolerant can grow here because of heavy freshwater inputs from frequent rains and many rivers. Because of this variety of plant life, wildlife diversity in these ecosystems is also incredibly rich. Studies have

indicated that coastal freshwater marshes probably support the largest and most diverse bird populations of all wetland habitats. Additionally, many endangered animals rely heavily on these ecosystems for their continued survival, including the California red-legged frog, Western pond turtle, American swallow-tailed kite, and coho and steelhead salmon.



Unfortunately, coastal freshwater marshes themselves are becoming increasingly rare. Because of their location in the broad, flat coastal plains along freshwater streams, these wetlands are typically located near urban centers. As a result, coastal freshwater marshes often become the final resting place for large, concentrated amounts of wastewater and polluted run-off. In addition to the direct harm caused by these human impacts, the increased flow of freshwater run-off from parking lots and other hard surfaces is allowing the spread of invasive species into areas that previously had been too salty for them to grow.

Prairie Potholes



For most people, potholes are pockmarks in the pavement that range in size from mildly annoying to downright dangerous. Prairie potholes are a different story. These small isolated wetlands decorate portions of five northcentral states and three Canadian provinces, capturing precious water in a relatively dry prairie landscape. The states with the highest concentration of prairie potholes are South Dakota, North Dakota, Montana, Minnesota,

and Iowa. Potholes were formed as glaciers moved across this region and scoured out nearly 25 million of these low spots in the landscape. This amazing density of wetlands – an average of 83 potholes per square mile – can be found nowhere else in North America.

From piping plovers to bald eagles, more than 300 bird species rely on these small wetlands as resting places and feeding grounds. Ducks and geese that migrate do not simply take off in Mexico and land in Canada. During their difficult migratory journeys, waterfowl stop to rest and re-fuel at a variety of small wetlands found along the route. Migratory birds depend upon the insects, insect larva, crustaceans, algae, submerged plants, and other life within the prairie potholes for food. Almost three quarters of the



waterfowl in North America, including many species of ducks and geese, are hatched in the prairie pothole region.

Prairie potholes are in danger of being destroyed as more land is used for agriculture and development. This is causing a drastic decline in the numbers of many birds that depend upon these ecosystems. For example, from the 1970's to the early 1990's, northern pintails had declined by more than 63 percent, blue-winged teal by 31 percent, lark buntings by 55 percent, and grasshopper sparrows by 69 percent.

Vernal Pools

Vernal pools are small, shallow low spots in grasslands or forests that are dry during most of the year. Vernal means spring in Latin, which is a good name for these wetlands because they become pools of water in late winter and early spring when snow melts and rainfall is heavy, or when the groundwater table rises. Forested vernal pools are common in the eastern and mid-western United States, supporting many species of amphibians. Grassy pools, on the other hand, are more common on the West Coast, providing habitat for many kinds of rare plants and animals.



Many types of frogs and salamanders rely on vernal pools for reproduction. Frog and salamander eggs that are laid in vernal pools are safe from hungry fish that cannot survive in these shallow ponds. Some of the species that rely on vernal pools in the northeastern United States include mole salamanders, red-spotted newts, wood frogs, spring peepers, green frogs, fairy shrimp, and many types of insects. Turtles, including spotted, painted and snapping turtles visit the pools regularly to dine on frog and salamander eggs and insects.

Vernal pools face increased development pressure, especially because these wetlands are so small. More than 90% of California's vernal pools have already been lost. Great efforts are being made to protect the remaining vernal pools, as their disappearance marks the loss of important habitat and rare plant and animal species.

Pocosins

Pocosins are dense thickets of shrubs and vines with scattered pine trees perched over pools of water and wet soil. The name pocosin comes from an Algonquin Indian term meaning "swamp on a hill." Some pocosins can be found on



hills, but most are found in shallow depressions or in valleys in North Carolina and surrounding states. Like bogs and fens, pocosins have peat soils that include large quantities of undecomposed plant material. There are two types of pocosins – tall and short. Short pocosins are characterized by limited plant growth and stunted trees, due to their acidic and nutrient-poor conditions. Tall pocosins, on the other hand, have trees that tend to grow to normal height. This is because these wetlands have a greater degree of water flow and, therefore, more nutrients.



Pocosins are important to wildlife because of their excellent cover and heavy berry crop. Because they tend to be located in large, isolated areas, pocosins are frequently inhabited by black bear, bobcat and red wolf. Songbirds, such as the pine warbler, as well as small mammals, snakes, and amphibians, also use pocosins. These wetlands also are popular with hunters because of the abundance of wildlife.

The greatest threat to pocosins is draining for agriculture or pine farming. There have also been proposals to mine peat from pocosins to produce power. These mined pocosins would then be converted to agricultural land.

Playas

Playas are shallow circular wetlands found in the Southern High Plains, a 54-county area in the panhandle of Texas, western Oklahoma, eastern New Mexico, southwestern Kansas, and southeastern Colorado. Because this area is usually very dry, most people would not expect to see wetlands. The more than 25,000 playas in the region are flooded by rain showers and snow melt and are surrounded by farms growing wheat, corn, cotton, and sorghum. Many of these wetlands are used as a water source to irrigate farms, providing between 10 and 25 percent of the annual irrigation water in some counties. Functioning playas are also important to waterfowl. The Southern High Plains area is within the migratory corridor known as the Central Flyway. During winters with high rain and snow fall, more than one million ducks, more than 500,000 geese, and more than 350,000 sandhill cranes use playas to rest and breed during migration. Also, one hundred sixteen species of non-waterfowl birds live in playas or use them as a rest stop during migration.



The largest threat to playas remains agriculture. Today, some playas are appreciated and protected because of their value to wildlife. Farmers are also beginning to recognize their value as water storage sites, and are adopting playa-friendly farming techniques like planting native vegetation around playas to filter sediment, fertilizer, and pesticides from the runoff that provides playas' water supplies. An emerging threat to playas is that some

farmers in the Southern High Plains are returning to dry farming techniques, which means less rainwater reaches playas.

Bottomland Hardwood Swamp



Bottomland hardwood swamps, also called riparian wetlands, can be found along streams and rivers throughout the U.S. Although the specific types of vegetation and wildlife vary with climate and topography, all riparian wetlands are directly influenced by rivers along which they grow. In the west, riparian wetlands tend to be located in narrow forested strips along the edges of the river channel. Bottomland hardwood forests also occur in the river floodplains of the eastern states. However, the broad expanses of cedar forest in the southern U.S. are what most people are thinking of when they refer to bottomland hardwood swamps. There is an incredible amount of biodiversity that finds food and shelter in these complex ecosystems. From the wood ducks that nest in the canopy, to the otters that frolic along the river bank, bottomland hardwood forests provide necessary habitat for many species that require vast territories to survive. While a long history of logging and development pressure has decimated thousands of acres of these majestic forested wetlands, remnants can still be found along the rivers of Arkansas, Mississippi, Louisiana and parts of Texas.



With the rediscovery of the ivory-billed woodpecker in the cedar swamps of Arkansas, the Southern bottomland forest is an ecosystem that has recently come into the spotlight. Formerly thought extinct, the recent sighting of the ivory-billed woodpecker has renewed the hopes of conservationists that the beautiful, but increasingly rare, bottomland hardwood forests of Louisiana and Arkansas will be protected from further destruction. In a landmark proposal termed the *Cooperative Conservation Initiative*, the Department of the Interior has partnered with the Department of Agriculture to commit over \$10 million in federal funds to protecting this highly endangered bird. The initiative's 10-year goal is to restore 200,000 more acres of forest.

Cypress Domes

Step into a cypress dome, and it feels like a fantasy land. Majestic bald cypress trees with bulging trunks tower above, feathery Spanish moss hangs down from the branches, and roots stick up out of the water like knees. These shallow, circular depressions are dome-shaped because the trees in the center of the dome are taller, thicker and older than those on the outer edges of the circle. The soil is made up of peat with acidic sand and limestone underneath. The domes are



typically wet for 6 to 9 months each year, with the center staying wet the longest. Cypress domes are named for their majestic bald cypress trees, which have needles and cones like pines and firs, but shed their needles in autumn like oaks and maples. The cypress “knees” are roots that stick up out of the water. Although no one has proven exactly how the knees benefit the tree, some scientists believe the cypress use their knees like snorkels to let roots breathe air. Others think the knees anchor the trees in the soggy soil. Other plants that grow in domes include pond cypress, swamp tupelo, slash pine, and swamp bay. The feathery Spanish moss is an air plant, which grows hanging on trees instead of in the soil. Cypress domes provide important habitat for a wide variety of amphibians, reptiles and birds. Fire is critical to the maintenance of a cypress dome. Because it tends to stay wet, fire does not usually enter the center of the dome;, but the outer edge must burn every three to five years to prevent other types of plants from moving in and turning the cypress dome into a wet forest or bog. Development and logging pressure are the two biggest threats to these unique ecosystems.

Bogs and Fens



Bogs are found in northern areas where it is cold enough that most of the water does not evaporate, and usually receive their water from rain and snow melt. Bogs have a special type of soil called peat, which has a lot of partially decomposed plant matter. Because bogs are waterlogged all year long and the water usually contains a lot of acid, plant matter is preserved and does not decompose. The waterlogged and acidic conditions of bogs also limits the types of plants that can grow in them. Sphagnum moss, other mosses, and shrubs usually grow in bogs. Sphagnum moss often forms thick mats on the surface of the water, with trees and shrubs growing in the midst of the sphagnum mats. If you were to jump up and down on a mat of sphagnum moss, you could watch all the shrubs and trees in the bog move up and down with you, as if you were in a raft floating on a lake.

Cranberries that are used in fruit drinks and muffins grow in bogs. Other plants that grow in bogs include carnivorous plants, such as sundews and pitcher plants. Even though carnivorous plants make their food from sunlight, they also trap and digest insects to obtain extra nitrogen, a nutrient needed for growth that is scarce in waterlogged bogs. Fens, like bogs, also have peat soils that include lots of preserved plant parts. But fens often get their water from underground springs, so more types of plants can be found growing in fens. Fen plants include grasses, sedges, and reeds. Beavers, snowshoe hares, lynx, deer, and black bear use bogs and fens for shelter or food, but do not always live in them year round. Many birds use bogs and fens throughout the year as well.



Historically, the biggest threat to bogs and fens has been from mining and draining for cropland, fuel and fertilizer. Bogs and fens take hundreds of years to form. Although there are some types of wetlands that people have been able to recreate to mitigate for wetland losses, bogs are very complex and people have not been able to replicate them. When a bog is destroyed, a unique place is lost to us and to wildlife forever.

Wet Tundra



Wet tundra wetlands are similar to bogs and receive water from rain and snow. Because the air is so cold, there is little decomposition and, therefore, not many nutrients.. The lower soil layers are permanently frozen, and the upper layers go through freeze and thaw cycles. Lichens, sphagnum mosses, grasses, sedges and dwarfed trees and shrubs are some of the only plants able to grow in these harsh environments.

An astounding feature of wet tundra is the variation in plant types over very short distances. In low areas of these wetlands, there is lush green vegetation. Only a meter or so higher in elevation are very dry areas covered with lichen. In temperate regions this is the sort of change in vegetation that would be seen over a mile or so of relief, going from lowland valleys up into dry mountain tops. Wet tundra is marked by extreme moisture gradients over tiny differences in elevation. Some wet tundra in Alaska is threatened by possible oil exploration.

Wet Meadows and Wet Prairies

Wet meadows and wet prairies look like marshes, but are not as wet. Most of the water in these wetlands comes from rain and snow melt. Sometimes underground springs can contribute to the water in these wetlands. For most of the year wet meadows are without standing water, though the high water table allows the soil to remain saturated. A variety of water-tolerant grasses, sedges, rushes, and wetland wildflowers grow in the highly fertile soil of wet meadows. Wet meadows often occur in areas where farming is prevalent, leading historically to draining and filling of these wetlands for agricultural uses.



Founded in 1922, the Izaak Walton League of America is dedicated to common sense conservation that protects America's hunting, fishing, and outdoor heritage relying on solution-oriented conservation, education, and the promotion of outdoor recreation for the benefit of our citizens. The League has more than 40,000 members and supporters in 21 state divisions and more than 300 local chapters in 32 states.