

# The biology of wetlands essay

[Environment](#)



**ASSIGN  
BUSTER**

The term “ wetlands” is often associated with the image of the coastal marsh - a muddy area that is teeming with a variety of animal life and emergent vegetation such as mangroves, rush and cord-grass. But wetlands are actually areas that are characterized by the formation of hydric soils and the existence of flora and fauna due to the presence of standing water during all or part of the year (Spray and McGlothlin, xiii). Some wetlands cover hundreds or thousands of square kilometers and are therefore homes to a wide variety of plant and animal life.

Examples of wetlands include the Florida Everglades, the Hudson Bay Lowlands, the Mekong Delta and the Danube Delta (Van der Walk, 1). At present, there is no universal classification scheme for wetlands. However, wetlands are usually categorized according to their hydrologic flow regimes, vegetation types and hydrogeomorphology. The United States Environmental Protection Agency (EPA), for instance, classifies wetlands according to four major types - marshes, swamps, bogs and fens. This basic but simplified scheme was intended to “(promote) understanding (of) the diversity of wetland ecosystems” (Spray and McGlothlin, xiv). Marshes are regions whose soil is either periodically or continually inundated with water. Marshes are classified into two types - tidal and non-tidal. Tidal marshes are found in areas that have erratic soil moisture due to ocean tides but do not experience heavy wave action.

Tidal marshes can be freshwater, brackish or saline. Non-tidal marshes, on the other hand, are freshwater or brackish marshes that undergo episodes of drought (Spray and McGlothlin, xiv). Swamps are wetlands that are

characterized by saturated soils during the growing season and standing water at other times of the year.

Consequently, swamps are home to many species of plants and animals. The Great Dismal Swamp, a 109-acre forested wetland situated between northeastern North Carolina and southeastern Virginia, is dominated by bald cypress, tupelo, red maple and black gum. It is likewise the habitat of animals like the white-tailed deer, river otter, bats, raccoons, mink, black bear, bobcat, snakes, turtles and at least 200 bird species (Spray and McGlothlin, xv). Unlike marshes and swamps, bogs are wetlands that possess various types of soil and vegetation. Some of the substances found in bogs are peat deposits, acidic water and sphagnum moss.

Furthermore, bogs derive their hydration mostly from precipitation instead of from groundwater, streams or runoff - they are therefore sometimes referred to as precipitation-dominated wetlands. Examples of bogs include pocosins (evergreen-shrub bogs located in the southeastern United States) and northern bogs (found in the Northeast and Great Lakes regions of the United States) (Spray and McGlothlin, xv). Akin to bogs, fens are wetlands known for their peat deposits. What differentiates fens from bogs, however, is that the former receive their water supply from groundwater inputs instead of from precipitation. Furthermore, fens have less acidic water and higher nutrient levels than bogs (Spray and McGlothlin, xv).

Wetlands play many important roles in preserving the Earth's ecosystem. Scientists refer to wetlands as the "kidneys of the Earth" - they filter the water that moves through them of pollutants such as toxins and organic and

inorganic nutrients. Wetlands therefore have high levels of sediment-water exchange and mineral uptake, which, in turn, render it suitable for plant and animal life. Wetlands likewise acquire sediments and particles by decreasing the flow velocity of the running water which enters them (Spray and McGlothlin, xvi).

Other functions of wetlands include providing flood control, preventing coastal erosion and serving as a critically important habitat for plants and many endangered species. As of 2000, wetlands made up about 3.5% of the land area of the United States and were the primary habitat of around 50% of the 209 animal species that were listed as endangered 1986. Scientists and environmentalists thus argue that the preservation of wetlands is crucial for environmental health - wetland ecosystems are neither artificially created nor easily regenerated (Spray and McGlothlin, xvi). Wetlands are home to many species of plants - the former are sometimes classified according to the types of hydrophytes present in them. There are three kinds of hydrophytes - submersed, emergent and obligate. Submersed refers to plant species that are completely submerged.

Emergent (also known as terrestrial) is identified with plants whose stems and roots are found underwater, but reaches to or above the surface.

Obligate (also known as facultative) pertains to plants that thrive both in wetlands and in certain upland habitats (Dennison and Berry, 57). Wetland plants play a key role in the survival of wetland ecosystems. Most wetland animals, as well as many non-wetland ones, depend on wetland plants as their primary food source.

Wetland plants also assist in the thermoregulation of many wetland animals and provide cover from predators. When wetland plants undergo decomposition by fungi and bacteria, they immediately become a source of nutrients for animals and other wetland plants (Dennison and Berry, 59). Wetland plants, specifically seed-producing ones, are very important in the regeneration of wetlands after periods of drawdown and drying. Other groups of organisms that inhabit wetlands, such as algae, fungi and bacteria, are also crucial for the survival of wetland ecosystems. Apart from making nutrients available to other organisms by decomposing dead plant and animal material, they likewise enable wetlands to survive certain weather and climatic conditions. The blue-green algae, for instance, may form a “periphyton” mat which has the capacity to withstand prolonged periods of drought. Consequently, the presence of a periphyton layer is considered as a possible sign that an area is a wetland (Dennison and Berry, 60).

During the winter, many wetlands are transformed into valuable wildlife habitats. Evergreen forested wetlands (cedar swamps), for example, are the winter homes of deer and moose. Black ducks live in northeastern coastal marshes during the winter, while other waterfowl consider bottomland hardwood swamps as their winter refuge. In the Upper Midwest, migratory waterfowl start arriving in pothole wetlands even before winter starts.

Male red-winged blackbirds are among the first migratory birds that return to freshwater marshes in the Northeast for the winter (Tiner, 28). In the winter and early spring, floodplain forested wetlands become important fish habitats. During these seasons, various fish species use the flooded wetlands either as spawning areas or nursery grounds. Some amphibians, however,

<https://assignbuster.com/the-biology-of-wetlands-essay/>

start breeding in vernal pool wetlands in the northeastern United States even before winter begins. At the start of the year, the Jefferson salamander is the first amphibian to breed in vernal pools. According to animal experts, it “migrates over the snow on rainy nights in late winter to slip into the pond (vernal pool) through cracks in the ice” (Tiner, 28). But there is likewise significant breeding activity even before the start of winter. Marbled salamanders, for instance, migrate to dry vernal pools in the Northeast from late August to October.

Males leave sperm sacks at the bottom of the pools for the females to fertilize their eggs with when they later arrive. The fertilized eggs are then left beneath leaf litter or rocks in the pool. The eggs hatch in the fall, with the larvae feeding on aquatic invertebrates (Tiner, 28). The pitcher-plant bog crayfish is another animal species which share the same type of life history requirement.

They are active from late fall to late spring – periods when Mississippi’s pitcher-plant bogs are flooded. Pitcher-plant bog crayfishes begin to mate in the late spring, with the females retaining the fertilized eggs before depositing them in the flooded bogs in the winter (Tiner, 28). Apart from the suitability of breeding sites, other factors that control the distribution of animals within wetlands include the level of protection from predators, the speed of travel within a certain area and the availability of particular food sources (Galatowitsch and Van der Valk, 19). Some wetland animals thrive in most wetland habitats. Examples of these are the tiger salamanders, American toads, painted turtles and snapping turtles. This flexibility is required in order to meet changing requirements over their life cycles

<https://assignbuster.com/the-biology-of-wetlands-essay/>

(Galatowitsch and Van der Valk, 20). Some animals, however, require very specific environments for feeding or nesting.

Wet prairies, for instance, have tall and dense grass vegetation. In addition, they thaw and dry up earlier than deeper wetlands. Consequently, wet prairies are characterized by an abundant food supply and a grass cover that provides excellent protection against predators. Birds that live in wet prairies include ground-nesting birds like the northern harrier, short-eared owl, savannah sparrow, swamp sparrow and the common yellowthroat.

The short-tailed shrew and the Franklin's ground squirrel, meanwhile, are some examples of the mammals that live in wet prairies (Galatowitsch and Van der Valk, 20). Sedge meadows thaw early and remain moist even in summer, turning it into another early source of food and protection. Large sedges and grasses provide a close canopy but an open understory, allowing animals to move about more freely while keeping them protected from predatory birds (Galatowitsch and Van der Valk, 20). The aforementioned wet prairie birds can also nest in sedge meadows, along with other birds such as American bittern, common snipe, sedge wren, marsh wren and LeConte's sparrow (Galatowitsch and Van der Valk, 21).

Other mammals are likewise drawn to sedge meadows because of the latter's reliable invertebrate populations. The masked shrews and the pygmy shrews, for instance, feed on plants and seeds that inhabit sedge meadows. Meadow voles, on the other hand, can be found on the moist parts of the meadow due to their diet of rushes, sedges, grasses, insect larvae and fungi.

Meadow jumping mice have a diet that adapts to seasonal changes - invertebrates in the spring and seeds, fruits and fungi during the summer.

Although chorus frogs thrive in different wetland habitats, they breed only in those with a lush growth of lusher, sedges and grasses - the vegetation effectively conceals their mating call against predators (Galatowitsch and Van der Valk, 21). Shallow emergent marshes are characterized by dense vegetation and prolonged standing water. As a result, they provide effective concealment and reliable source of food. Shallow emergent marshes are inhabited mostly by birds that build nests that are either floating on water or are anchored on emergent vegetation. The horned grebe, eared grebe, least bittern, Virginia rail and American coot are some examples of birds that inhabit shallow emergent marshes (Galatowitsch and Van der Valk, 21). It is often said that everything in this planet is interconnected. A seemingly "useless" insect may actually turn out to be an important cross-pollinator.

A huge, leafy but fruitless tree might be the only source of food for animals in the forest during the summer season. A bacterium living in the ocean could have the capacity to filter the latter of pollutants. Thus, it is very important that wetlands be preserved.

Although they may appear to be large mud puddles with lush vegetation, wetlands are in truth home to various organisms that depend on each other to sustain life on this planet. The extinction of wetlands, therefore, will spell the end of many plants and animals on which humans are dependent on for survival.