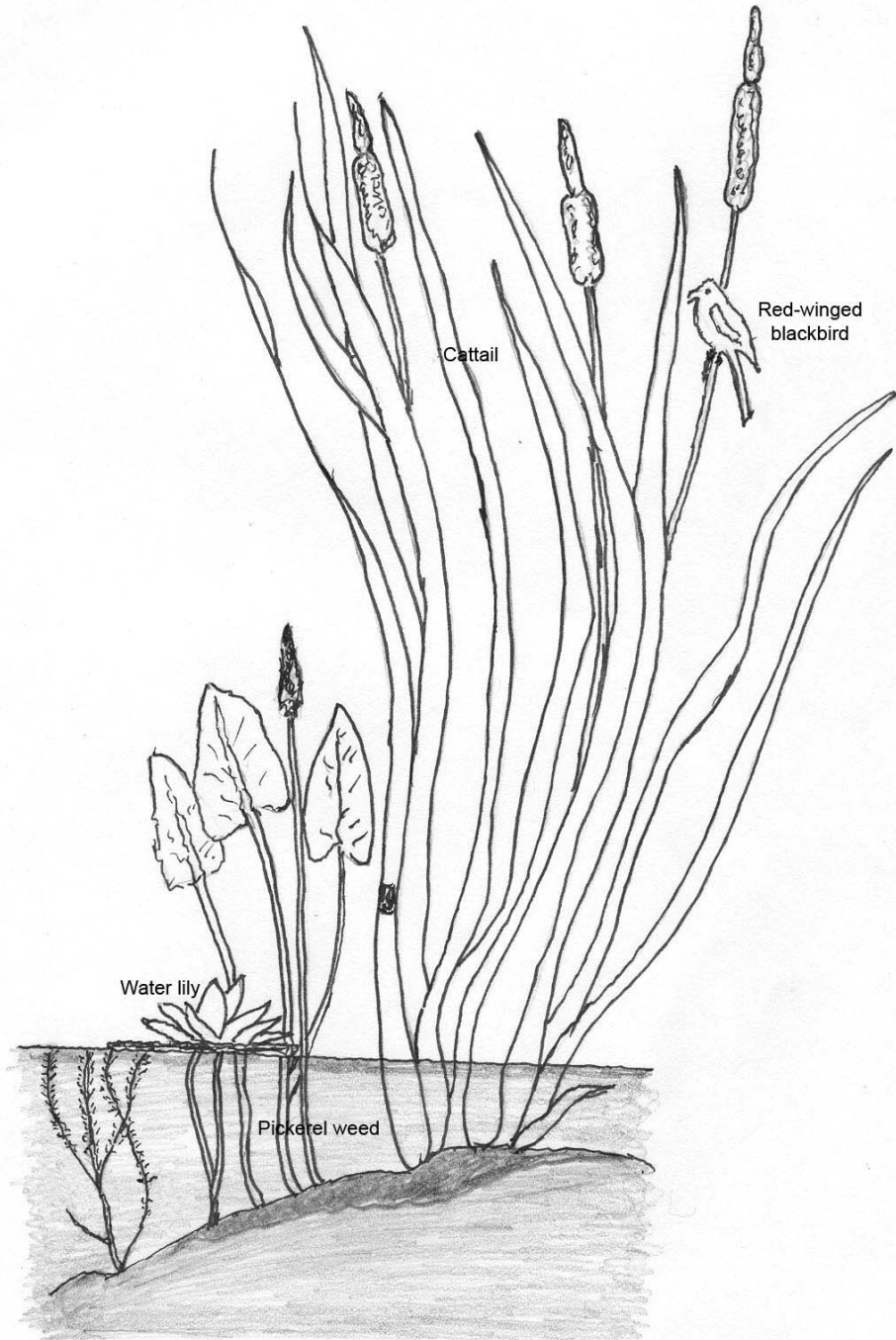


WETLANDS

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INTRODUCTION

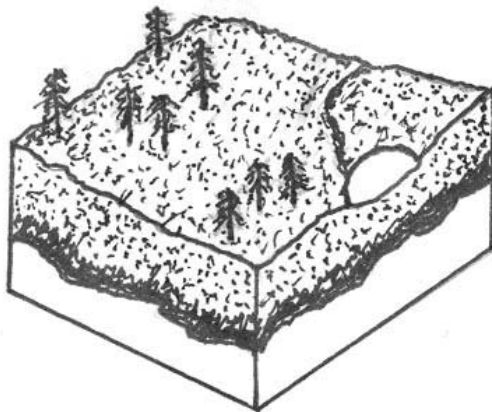
The word "wetlands" is a relatively newcomer to the language, an invention of the age of ecology. Most people used to be content to speak of marshes and swamps and let it go at that without even knowing the difference - the difference being that a MARSH is a wet place with herbaceous vegetation, while a SWAMP is a wet place dominated by shrubs and trees. Long dismissed as noxious, unprofitable places, wetlands are now prized as one of the richest ecosystems on earth. And yet their destruction continues. Wetlands are producers of life, some being equal in output to a same-size chunk of tropical rain forest. They are habitat for hundreds of kinds of birds and fish.

Wetlands lock up large amounts of carbon - especially in the form of peat - thereby preventing it from entering the atmosphere as carbon dioxide, the principal culprit in global warming. Wetland provide feeding, spawning, and nursery grounds for the saltwater fin - and shellfish and for most of freshwater gamefish as well. They are habitats of resident bird species, more than half of migrating birds.

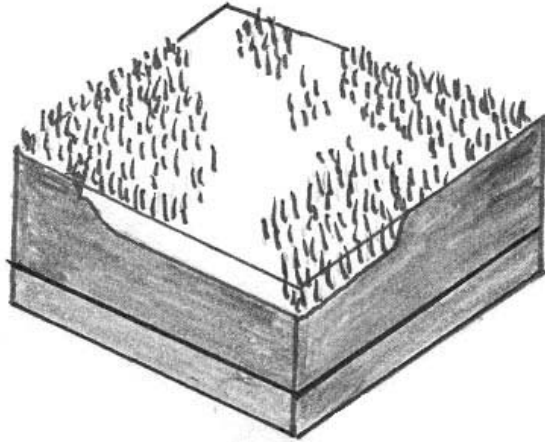
Wetlands absorb and filter pollutants that would otherwise degrade lakes, rivers, reservoirs, and aquifers. People need protection from too much water in the wrong places at the wrong times. Coastal wetlands buffer the impact of storm tides on populated uplands; inland marshes sponge up runoff, reducing flood crests downstream. Wetlands stabilize shorelines and riverbanks. They are the glue that hold the lands together.

ECOSYSTEM OF WETLANDS

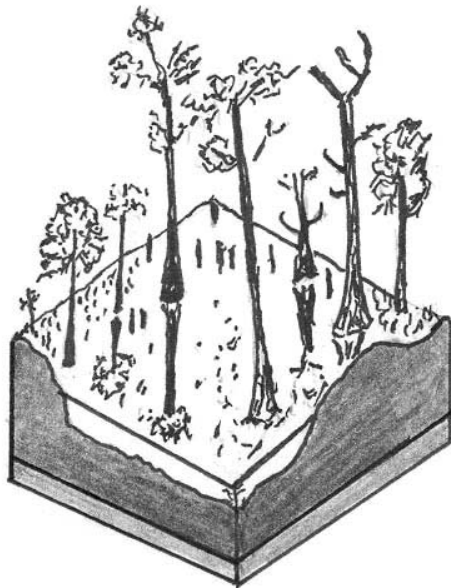
BOG, MARSH, SWAMP - scientifically describe strikingly different wetlands.



Bog



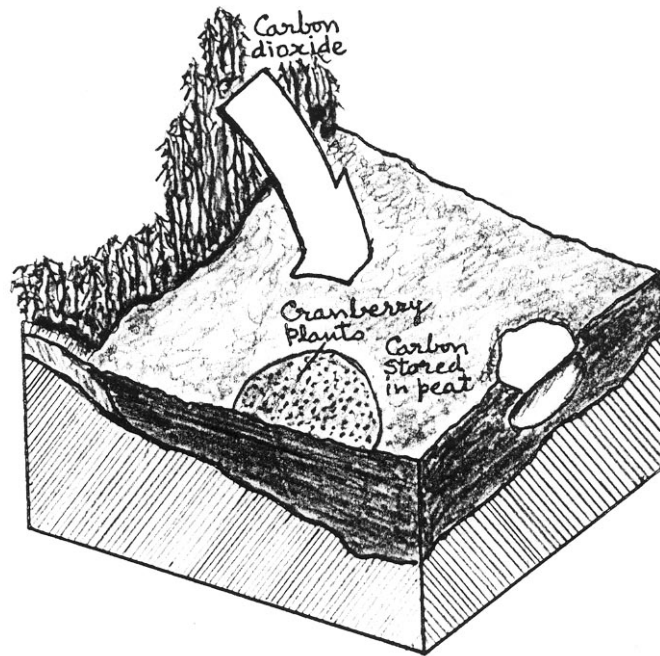
Marsh



Swamp

BOGS are dominated by sphagnum mosses and heaths, MARSHEs by grasses, and SWAMPS by shrubs and trees.

A BOG bouquet on a block of sphagnum moss gathers plants adapted to this deceptively hostile environment. Water abounds, but anaerobic conditions limit bacteria and fungi from breaking down nutrients in the peat. The thick leaves of leatherleaf and bog rosemary help conserve nutrients from photosynthesis. Acid-loving fungi in the roots of the arethusa release peat nutrients to the orchid. Amid hardy sedges, the carnivorous pitcher plant and sundew catch their own nourishing insect meals.



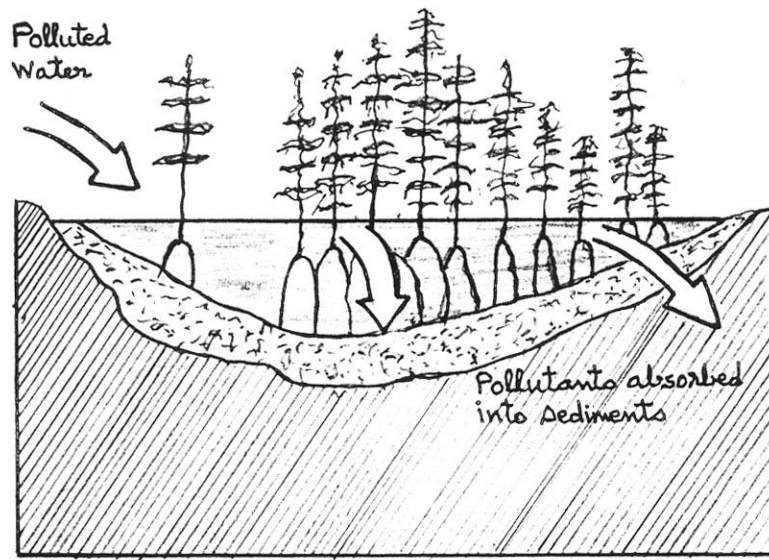
Able to absorb many times its weight in water, sphagnum moss is valued in horticulture as a soil conditioner. Left wet and undisturbed, the mossy, waterlogged environment of a bog plays a vital role in regulating climate. By storing carbon in the form of decaying plant material, bogs reduce the amount of carbon dioxide released into the atmosphere. Found in damp, cool places, these low-energy wetlands feature carpets of sphagnum moss mixed with shrubs, cotton grass, and stunted spruce. In the fall wild cranberries are ripe for harvest.

Wetland Plants

To survive in the flooded conditions of a freshwater marsh, wetland plants take in oxygen in specialized ways. The spongy feel of a cattail leaf testifies to a dense network of air spaces through which oxygen reaches the roots. The flat leaves of the water lily are riddled with tiny air holes on their tops. In the deeper, less oxygenated regions, the water milfoil can grow while totally submerged, thanks to its porous roots.

Cypress Domes

Natural purifiers, cypress domes - small swamps with tall cypress trees at the center - act to eliminate wastes carried in water. Fed domestic sewage, cypress domes remove most of the harmful nitrates and phosphates, binding them up in mud and tree roots. Scientists caution that wetlands, vital as pollution traps, could suffer from overloading of contaminants.



More often than not the wastewater reaching the marshes is tainted with salts or trace elements such as selenium, a leachate resembling sulfur that becomes more concentrated as it moves up the food chain. Some years ago, the selenium buildup got so bad at the Kesterson National Wildlife Refuge that massive die-offs of migratory birds occurred.







































Wetlands are home to many species of birds.

Wetland birds are determined by the kind of habitat and the seasonal movement of migrating species.

Species Totally Dependent on Wetlands
































These birds depend on wetland habitats for their survival. Most nest within wetlands, a few such as the Great Blue Heron nest elsewhere but feed extensively in wetlands, and others such as the Wood Duck nest away from wetlands but rear their young in marshes and fens.



☞ indicates the preferred habitat is predominately herbaceous marshes and fens. ♠ indicates the preferred habitat is predominately woody swamps and bogs.

Pied-billed Grebe 
 Red-necked Grebe 
 American Bittern 
 Least Bittern 
 Great Blue Heron  ♠
 Great Egret 
 Cattle Egret 
 Green-backed Heron  ♠
 Black-crowned Night-Heron  ♠
 Mute Swan 
 Canada Goose 
 Wood Duck 
 Green-winged Teal 
 American Black Duck  ♠
 Mallard  ♠
 Northern Pintail 
 Blue-winged Teal 
 Northern Shoveler 
 Gadwall 
 American Widgeon 
 Redhead 
 Ringed-necked Duck 
 Hooded Merganser  ♠
 Ruddy Duck 
 Yellow Rail 
 King Rail 
 Virginia Rail 
 Sora 
 Common Moorhen 
 American Coot 
 Little Gull 
 Forster's Tern 
 Black Tern 
 Olive-sided Flycatcher ♠
 Acadian Flycatcher ♠
 Marsh Wren 
 Prothonotary Warbler ♠
 Northern Waterthrush ♠
 Common Yellowthroat  ♠
 Lincoln's Sparrow  ♠
 Swamp Sparrow  ♠
 Yellow-headed Blackbird 

Species Partially Dependent on Wetlands

These birds use wetland habitats extensively for breeding or feeding, as well as other types of habitat. If wetlands are destroyed, the population of these birds would decline.

Osprey  
 Bald Eagle  
 Northern Harrier 
 Broad-winged Hawk 
 Wilson's Phalarope 
 Common Tern 
 Barred Owl 
 Short-eared Owl 
 Northern saw-whet Owl 
 Yellow-bellied Sapsucker 
 Hairy Woodpecker 
 Alder Flycatcher 
 Tree Swallow 
 Northern Rough-winged Swallow 
 Brown Creeper 
 Winter Wren 
 Sedge Wren 
 Blue-gray Gnatcatcher 
 Yellow-throated Vireo 
 Yellow Warbler  
 Cerulean Warbler 
 Louisiana Waterthrush 
 Mourning Warbler  
 Canada Warbler 
 White-throated Sparrow 
 Red-winged Blackbird  

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