



Wildlife Division

Connecticut Department of Environmental
Protection

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www.ct.gov/dep

Part 1: Wetland Wildlife Values



Presentation Objectives



- ✓ Introduce wetland wildlife concepts
- ✓ Identify different types of freshwater wetlands using the U.S. Fish and Wildlife (USF&W) Wetland Classification System
- ✓ Identify wetland wildlife values

Introduction to Wetland Wildlife Concepts





Introduction

Wetlands are highly productive ecosystems with diverse habitats and vegetative structure.

The various types of wetlands provide food and cover for a variety of wildlife.





Introduction

For example, a vernal pool, which is temporarily flooded, provides critical spring breeding habitat for salamanders but is not suitable for beavers which require permanently flooded areas.



Biogeography of Wetland Wildlife



Wildlife Distribution Factors

- ✓ Open water to vegetation ratio
- ✓ Adjacent land-use
- ✓ Topography



Biogeography

Generally speaking the larger the wetland, and the more diverse the habitat, the greater the wildlife diversity. This concept is called biogeography.

The park area in the photograph, while aesthetically pleasing, provides little cover and food for wildlife because of minimal habitat diversity.





1. The size and shape of the wetland
2. The adjacent topography, landscape, water depth and water quality
3. Type and structure of vegetation present in the wetland
4. The amount of open water and time of year it is present



Wetland Wildlife Distribution Factors



The distribution of vegetation in comparison to the amount of open water, is also important.

Muskrats, for example, prefer 20% open water versus 80% vegetation. Waterfowl, on the other hand, prefer a one to one ratio between open water and vegetation.



Open Water to Vegetation Ratio



The upland habitat surrounding the wetland is important because it provides breeding habitat for some species and it may act as a corridor for the movement of wildlife in fragmented landscapes.



Adjacent Land-Use



Red-spotted newts utilizes gently sloping banks for easy access to and from the water for breeding and feeding.



Topography



Type and Structure of Vegetation

The tree canopy surrounding vernal pools moderates the water temperature and local humidity. Leaves, in addition, become a food source for insects, crustaceans, and mollusks. Fallen branches and vegetation provide surfaces on which amphibians can lay egg masses.



Branches & Veg.



Egg mass



Vernal pool

USF&W Freshwater Wetland Types and Wildlife



USF&W Freshwater Wetland Classification



- Palustrine Wetlands
 - ✦ Forested
 - Red-maple swamp
 - Spring seeps
 - Vernal pools
 - ✦ Scrub-shrub
 - ✦ Emergent
- Lacustrine Wetlands
 - ✦ Lakes and reservoirs
- Riverine Wetlands
 - ✦ Rivers and streams

*Please Note: The U.S. Fish and Wildlife Wetlands Classification System utilized in this presentation classifies wetland types by **soils, hydrology, and vegetation**. In CT, wetlands, however, are legally defined by the Inland Wetlands and Watercourse Act using **soil type**.*



Palustrine Wetlands

This is the first major category of wetland. The wetland is dominated by shallow water hydrology and surface water may only occur intermittently.

The three subclasses are determined by vegetation type.

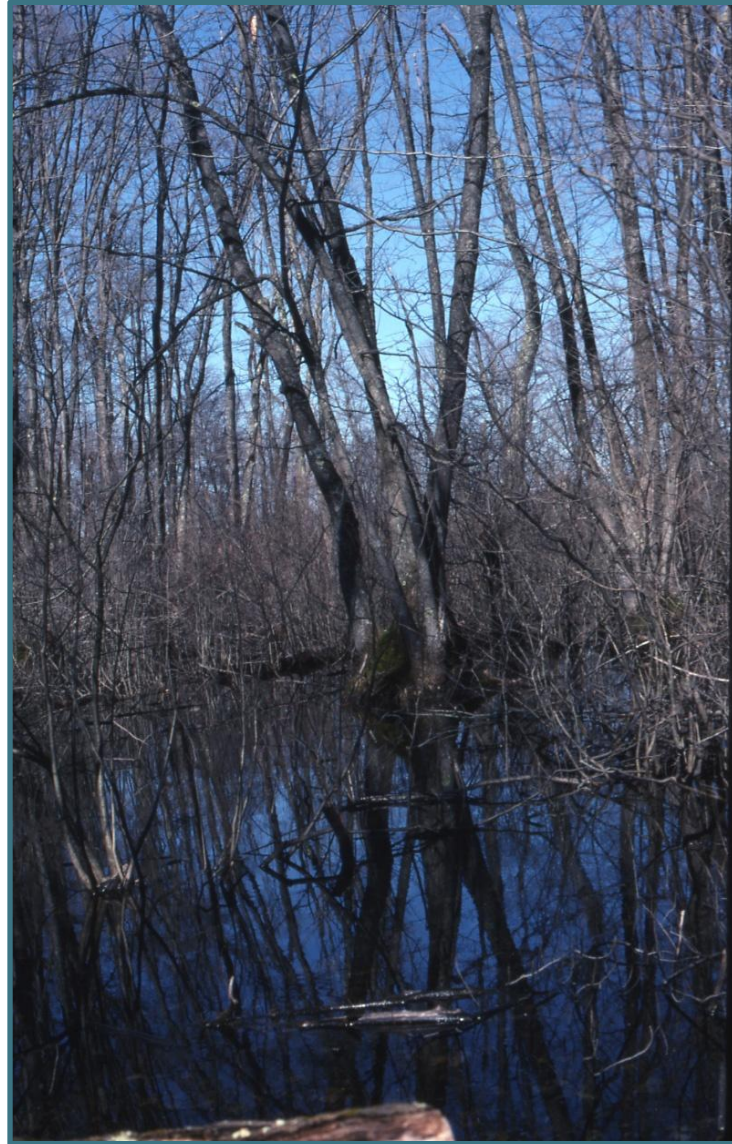


Found at <http://www.dnrec.delaware.gov/Admin/DelawareWetlands/Pages/default.aspx>



Forested Wetlands

This Red-maple swamp is an example of a Palustrine forested wetland sub-class. It is the most abundant and widely distributed type of wetland found in CT. The vegetation is dominated by trees that are greater than 20 feet in height.

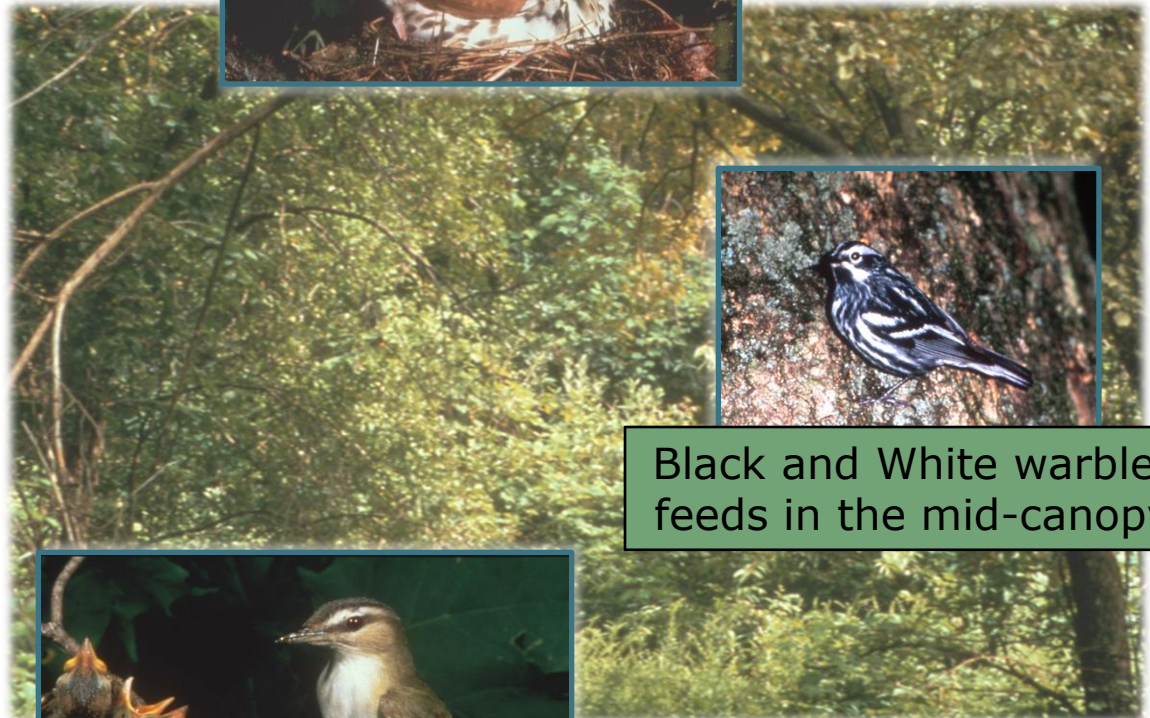




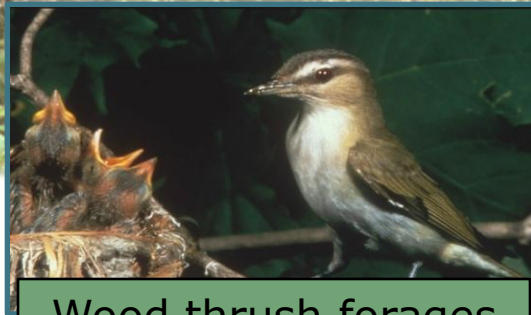
Forested Wetlands: Birds

This wetland type often contains a well-developed vegetation structure with tree, shrub, and herbaceous layers. Structural diversity of the vegetation increases the variety of species.

Red-eyed vireo feeds in upper canopy



Black and White warbler feeds in the mid-canopy



Wood thrush forages in the ground litter



Forested Wetlands: Snags

Snags are dead and dying trees which are often found in forested wetlands. They provide a rich source of insects and provide holes and cavities for wildlife. Smaller snags provide feeding and nesting sites for woodpeckers and songbirds such as the Black-capped chickadee and White-breasted nuthatch.





Forested Wetlands: Cavities

Large diameter den or cavity trees are particularly valuable. They can serve as daytime roost sites for bats and owls. Dens are also used by mammals like raccoons and fishers. Waterfowl such as the Wood duck use them as well.





Springs Seeps

Seeps are a relatively common Palustrine forested wetland sub-class found in the ledge rock and basalt hill areas of CT. They are often inconspicuous in the landscape. Never the less, these shallow areas can be important for wildlife during severe winters as they tend to be snow free and have very early vegetation.



Characteristics of a Vernal Pool



- Vernal pools are a Palustrine forested wetland subclass and they contain water for at least two months during the year
- Dries out during most years, usually by late summer
- Occurs within a confined basin; no permanent outlet stream
- Lacks a fish population
- Provides critical breeding habitat for amphibians

*Note: **Vernal pools** are considered **a wetland** in the USF&W wetland classification system, however, they are defined as **a watercourse** in Connecticut's Inland Wetlands and Watercourses Act*

Ask yourself: Is this a vernal pool?

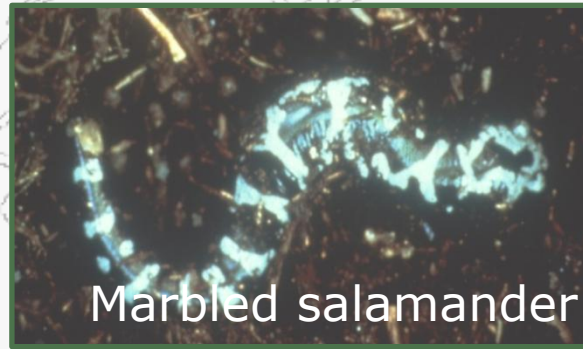


*Vernal pools can be difficult to identify in the field because of their ephemeral nature. Look for evidence of them in topographic depressions: leaves stained grey, or dark waterlines on trees. Both of these images are the **same** vernal pool area.*



Vernal Pool: Species

Certain amphibians such as the Spotted salamander, the Marbled salamander, and the Wood frog require vernal pools for breeding.



Marbled salamander



Wood frog



Spotted salamander



Vernal Pool: Species

Other amphibians such as the Blue-spotted salamander and the Fowler's toad use vernal pools in addition to other wetland types.



Blue-spotted salamander



Fowler's toad



Vernal Pools: Uplands

The upland areas surrounding vernal pools are important. Salamanders, for instance, migrate into upland feeding sites after laying their eggs in the spring.

Forest fragmentation as well as other types of land cover change can disturb this process.



Egg mass

Vernal pool



Branches & Veg.



Scrub-Shrub Wetlands

The Palustrine scrub-shrub wetlands are dominated by woody saplings and shrubs less than 20' tall. The dense thickets provide perching sites for swallows and other birds that feed on flying insects. These wetlands also provide nesting habitat for songbirds and contain a variety of berry-producing shrubs for birds and mammals.



Found at http://www.csc.noaa.gov/crs/lca/class_groups/pssw.html





Scrub-shrub Wetland: Birds

The American woodcock frequents dense thickets of alder and willows in wetlands where the soils are not flooded. They nest on the ground and feed on earthworms.



White-throated sparrow



American woodcock



Emergent Wetlands

The Palustrine emergent wetland typically has year around standing water or saturated soils and is dominated by grasses, sedges, and other non-woody plants that grow in waters less than 2' deep.





Emergent Wetlands: Wet Meadows

Emergent wetlands, such as this wet meadow, are extremely productive biologically and contain an abundance of insects that attract songbirds such as swallows and Eastern Bluebird. Predators such as the Northern Harrier also favor these areas for hunting and nesting.



Northern harrier



Eastern bluebird



Eastern mole



Swallows

Wet meadow image found at: http://botit.botany.wisc.edu/images/veg/Wetlands_I_Plants/Wet_prairie,_meadows_VK.low.jpg



Emergent Wetlands: Marshes

Marshes contain approximately a 1:1 mix of open water and emergent vegetation which provides prime feeding and nesting habitat for waterfowl. Wading birds such as the Great Blue Heron feed on invertebrates, fish, and amphibians they find in the shallows. Dabbling ducks such as mallards and black ducks can use shallow areas to tip up and feed on plant stems, insects and amphibians on the bottom.

Image found at <http://www.pleasant-river.org/lilypond.html>



Great blue heron

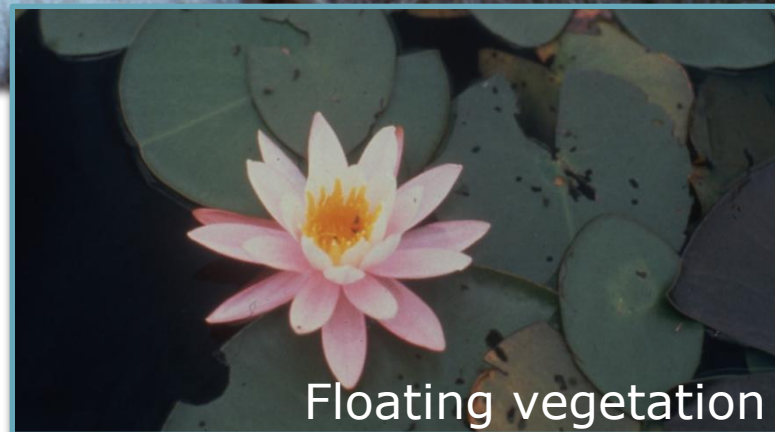


Black duck



Lacustrine Wetlands

Lacustrine wetlands are the second major category of wetlands. These areas include permanently flooded lakes and reservoirs exceeding 20 acres in size. They are located in topographic depressions or in impounded rivers and streams. They lack trees, shrubs, and persistent emergent vegetation. These wetlands, however, may have significant areas of submergent or floating vegetation that thrives in clear water 3-4' deep and provides feeding, breeding, and cover areas for fish.



Floating vegetation



Lacustrine Wetlands: Wildlife

A primary attraction of these wetlands to both wildlife and people is the presence of fish, including trout, pickerel, and bass. Fish-eating birds, such as, eagles and mammals, such as, otters feed here and often den or nest nearby. Many waterfowl uses lakes for roosting or resting during migration to reduce the threat of predation.



Bald eagle

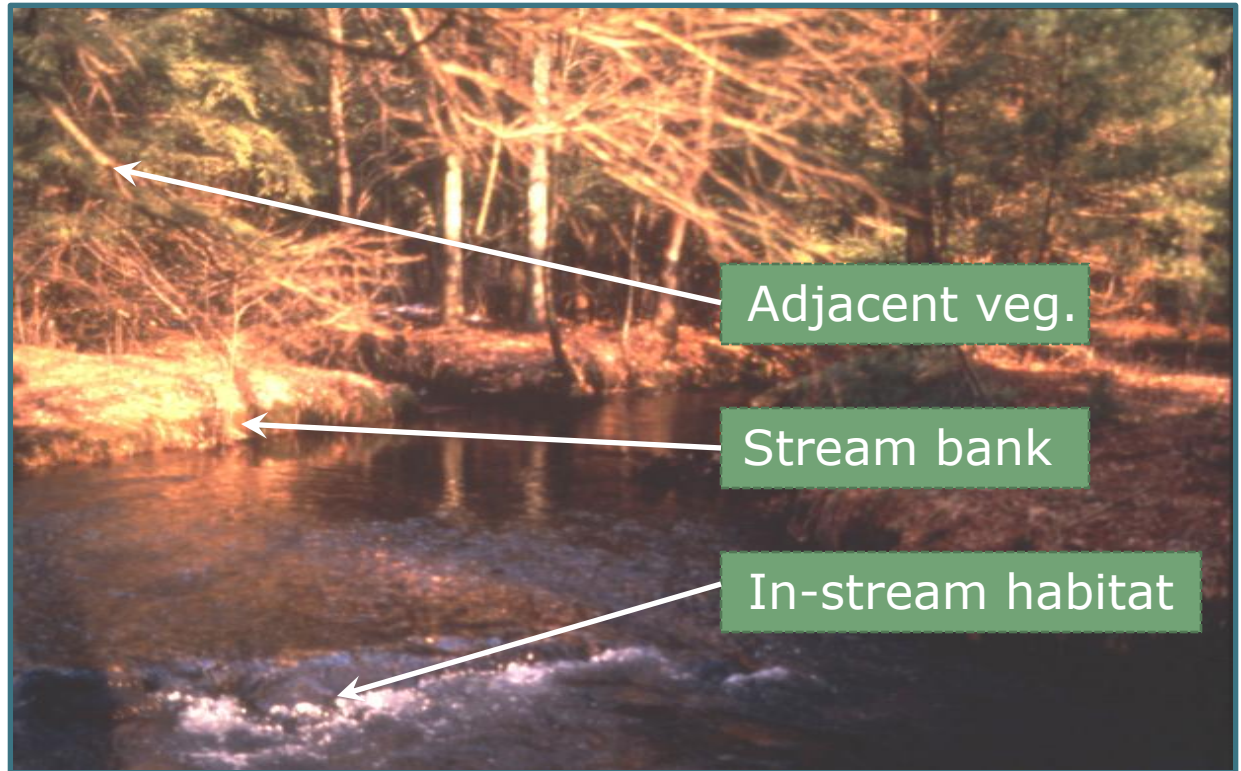


River otter



Riverine Wetlands

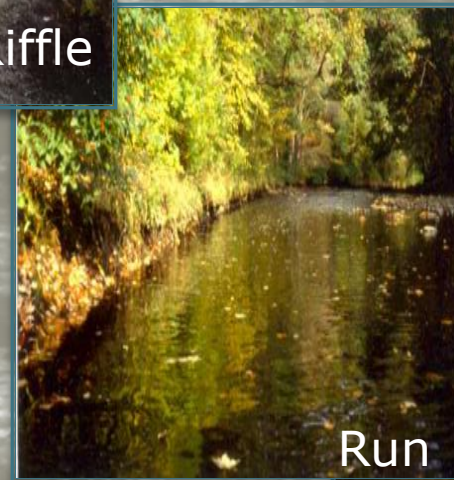
Riverine wetlands are the third major category of wetlands. The two most important areas for wildlife are the in-stream habitat and the riparian zone which includes the stream bank and adjacent vegetation.





In-stream Habitat

Riffles, runs, and pools are the three primary in-stream habitats for fish in rivers and streams. They are classified as being part of Riverine wetlands.





In-stream Habitat: Riffles

Riffles are biologically productive areas with high gradient flow and turbulence.





In-stream Habitat: Runs

Runs have coarse bed material and high flow velocities with little surface turbulence. These areas can have diverse wildlife.





In-stream Habitat: Pool

Pools are low gradient areas that provide cover, shelter, and feeding areas for fish. During periods of low water they may become refuge areas for insects and fish.





Riparian Zones: Benefits

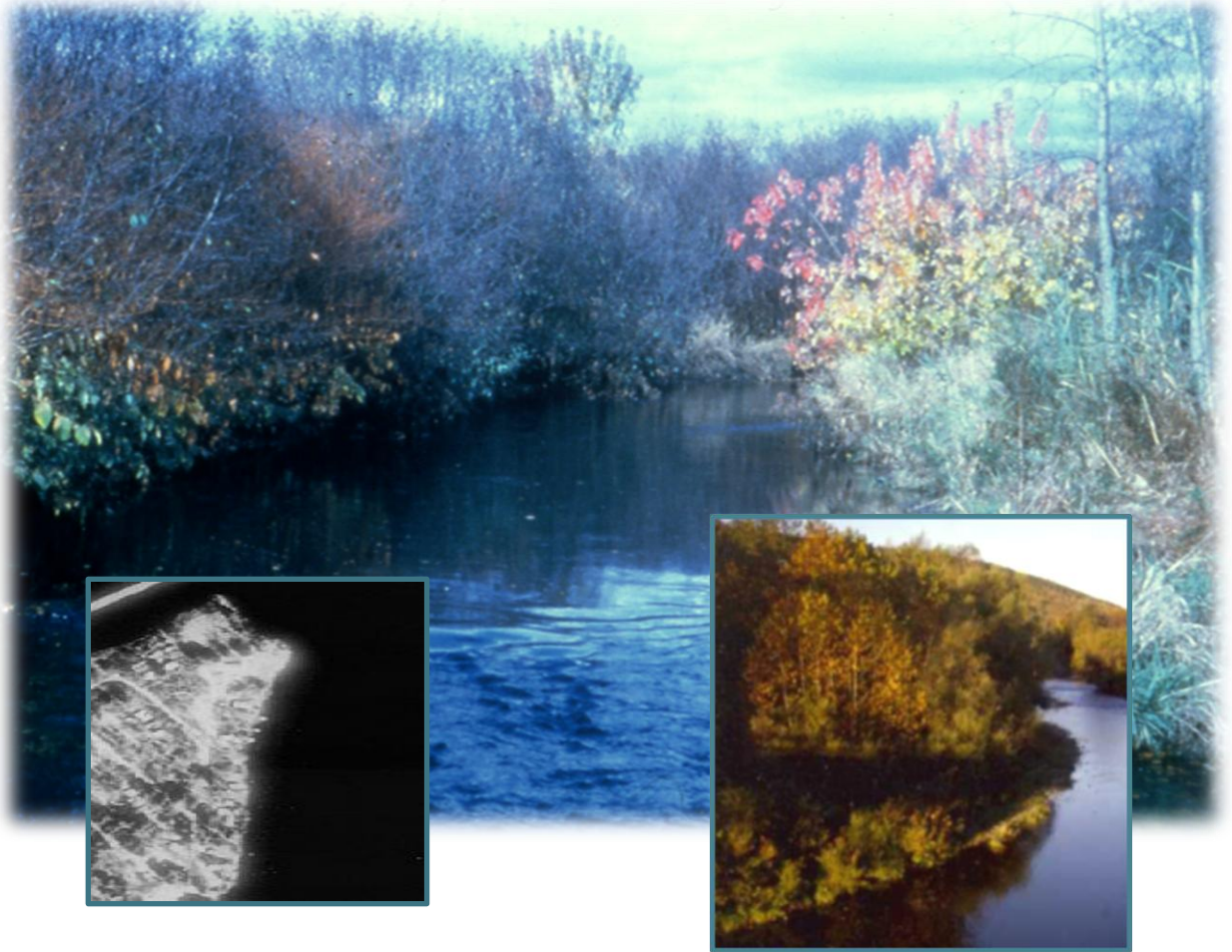
The vegetation in these corridors play a critical ecological role by stabilizing soils, reducing thermal pollution, controlling water quality, and providing food and cover for wildlife.





Riparian Zones: Providing Connections

These areas act as travel corridors for wildlife as they traverse the landscape for food, nesting sites, and mates. In addition, they allow for connections between animal populations as habitats are fragmented by development and other activities.

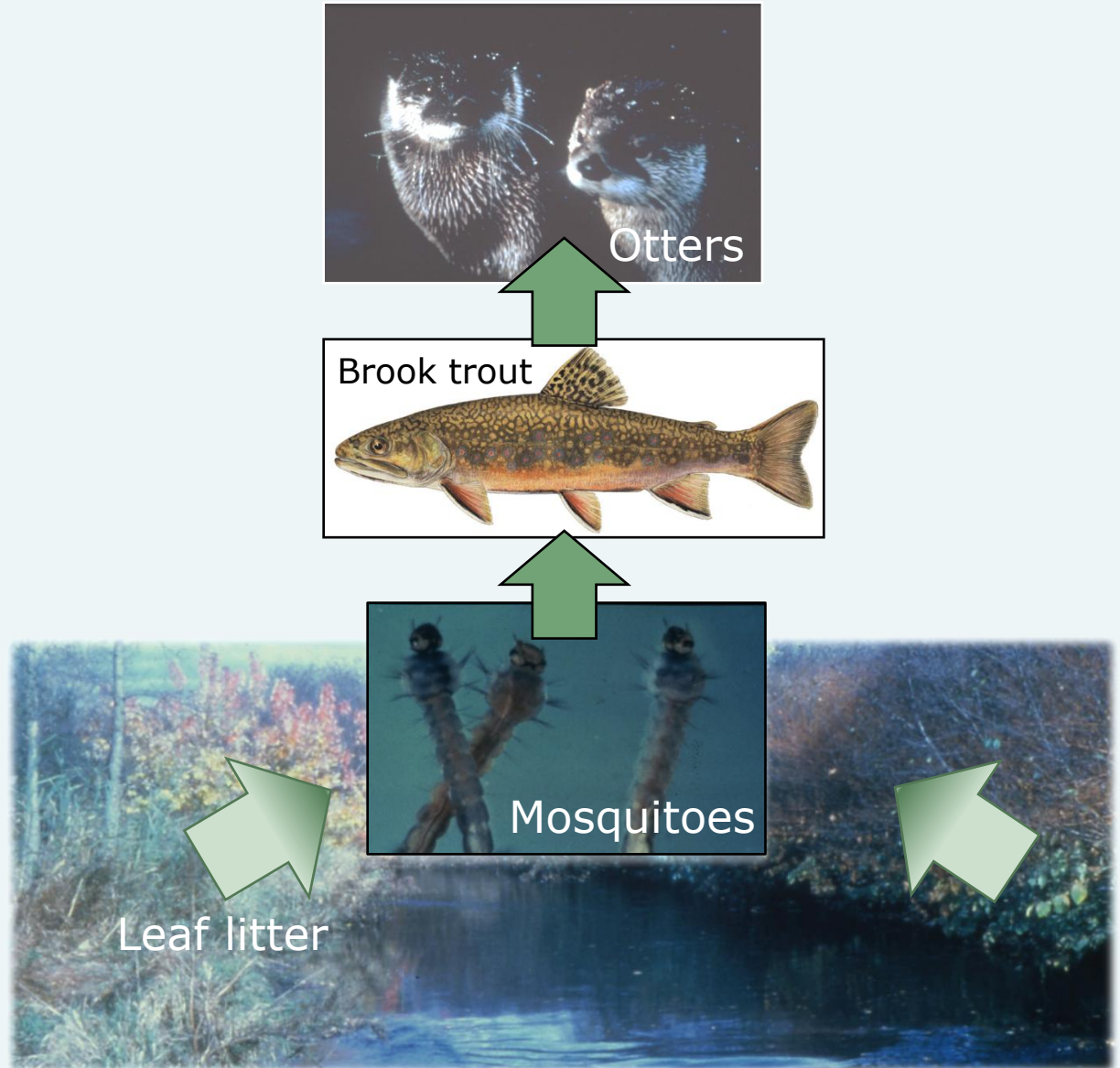




Fish image found at http://fish.dnr.cornell.edu/nyfish/Salmonidae/brook_trout.jpg

Stream Ecology

The ecology of many freshwater streams in Connecticut depends on leaf litter and detritus from the riparian zone as a source of food. Small insects such as mosquitoes and mayflies feed on this material which in turn become food for fish such as Brook trout. Fish provide food for keystone predators such as otters, kingfishers and the Great blue heron.



Other Wildlife Wetland Issues





Impact of Beavers

Beavers typically build dams where natural constrictions occur in wetlands and watercourses. Though they eat a variety of aquatic plants, their primary source of food is the bark of young trees and shrubs. These activities can radically change the hydrology and vegetation of wetland and watercourse areas. The habitat created can become very diverse.



Veg. changes



Evolution of Beaver Habitat

Once they exhaust their food supply they will abandon their impoundments. Their dams will collapse and water will drain out allowing pioneer plants to become established. Vegetative succession may occur in this area and allow a transition into an emergent wetland type known as a "beaver meadow" and later into a forested wetland type.



Beaver meadow



Loafing and Basking Sites

Turtles and waterfowl use fallen trees, beaver lodges, and islands for resting and basking sites. These areas reduce predation and energy expenditures for the animals.




Conclusion



There are three primary USF&W wetlands types: Palustrine, Lacustrine, and Riverine. Wetlands are productive ecological areas and the type and size of a wetland, along with the associated vegetation, influences the distribution and diversity of wildlife. Animals, such as beaver, can in turn change the structure of the wetlands. Riparian zones connect fragmented habitats, provide cover, and protect stream banks.

Contact Information

A photograph of a calm lake with a forested shoreline in the background. The water is dark blue, and the trees are mostly bare, suggesting a late autumn or winter setting. The image is framed by a white border.

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