WHAT GOOD ARE STREAMSIDE WOODS?

Quinnipiac River Watershed Association, River Resources Education Series

Why do natural resource experts tell us that a band of natural vegetation should be left undisturbed, next to streams and rivers? Why pay attention to streamside woods in the first place? All its parts are useful in different ways: vine tangles and shrub thickets; living foliage and dead leaf litter; massive tree trunks; nuts, berries, and flowers; and the mysterious underground complex of soil, roots, microorganisms, and fungi. To describe the ways that streamside vegetation benefits the Quinnipiac ecosystem, Long Island Sound, and society in general, one can name various "functions" - the official jargon used by environmental regulators as they evaluate development proposals.

Bank anchors: Streamside root networks bind the soil, and foliage shields the bank from the eroding force of pelting raindrops, rushing runoff, and from scouring floodwaters. Protective vegetation includes overhanging shrubs and trees as well as dense patches of goldenrods, grasses, or touch-me-not; clumps of fibrous-rooted ferns; and carpets of delicate mosses and liverworts. Dead leaves and thatch (fallen grass stalks and leaves) also protect the soil on gradual banks and banktops.

Flood reduction and water supply: As leaves and branches filter and slow down rainfall, more water soaks into the ground (infiltration) and less runoff reaches the river. Also, water is trapped in the hollows of a hummocky forest floor. Groundwater - not floodwater - supplies our wells and keeps springs and brooks flowing, so the river is higher - for canoeists, fish and fisherman - in dry spells.

Sediment Traps: Stormwater often flows over land towards a watercourse, carrying sand and dirt. In a forest this sediment is filtered by leaf litter and vegetation. Sediment degrades streams in all sorts of ways. These include filling stream bottom crevices which are home to aquatic insects, covering gravelly spawning areas, clogging fish gills, blocking light needed by underwater plants, and carrying toxic pollutants attached to the particles. Unfortunately, streamside vegetation can not filter sediment from storm drains which empty directly into streams or sparsely vegetated channels.

Uptake of pollutants: Just like a scummy neighborhood pond ringed by well-kept lawns, the river and the Sound suffer from too much algal growth, fed by excess nutrients - soluble nitrate fertilizers in shallow groundwater, nutrient-laden dirt and pet wastes in residential storm water, farm runoff, and untreated sewage from leaks and overflows. Streamside vegetation and soils are an amazing antidote to these pollution problems. Soil particles trap pollutants like magnets. Plants transform excess nutrients into lush growth that supports the food chain. Plants also take up toxic heavy metals which are then recycled back to the soil. Soil organisms can break down many pollutants - eventually even motor oil (in small quantities).

Aquatic habitat: Streamside trees like red maples and green ash shade stream water, keeping it cooler and able to hold more oxygen for fish and aquatic insects to breathe. Overhanging shrubs such as silky dogwood protect fish from predators. Trees and shrubs support adult life stages of many aquatic insects, and they produce leaf litter and decaying wood for creatures like aquatic sowbugs and shrimplike scuds at the base of the food chain. Fish and smaller creatures lurk, feed, and reproduce among submerged branches. Because woody debris and


Scud

underwater roots create well-aerated riffles in a moving current (the way rocks do), these areas support insects like stoneflies, mayflies, and caddisflies, which have high oxygen needs. Such insects are important food for trout and other fish such as chubs and long-nosed dace, known as "cold-water" fish.

Wildlife habitat: Plants along a watercourse offer food and shelter to wildlife. Tree cavities, thickets, and evergreen branches protect birds and mammals from harsh weather and predators. Garter snakes, red-backed salamanders, and bess beetles are a few of the many creatures which hide under dead branches lying on the ground. Loose tree bark is an important shelter for overwintering insects - like cocoons of tussock moths. Branches are used as perches for birds like kingfishers, waiting to snatch a fish from a stream. Plants also provide the base for a complex forest food chain. Myriad insects, white footed mice and birds like catbirds and tufted titmice eat obvious plant foods like seeds and nuts, berries and grapes, nectar, and foliage. Twigs, bark, and small branches are browsed by deer and cottontail rabbits. Roots and wildflower bulbs are eaten by chipmunks and many insects such as borers in the clear-winged moth family. Feeding on decaying plant matter under the leaf litter are organisms such as earthworms, sowbugs, and fungi. These, in turn, are food for many creatures like shrews, skunks, garter snakes and fungus beetles. Thickets of brambles, field wildflowers, and unmown grasses supply food and hiding places for wildlife, such as common yellowthroats, yellow warblers, and rabbits. Wildlife also use forested or brushy stream corridors to travel through developed areas.

Human Uses: Humans enjoy streams in many ways. A wooded stream or river corridor is actively enjoyed by hikers, canoeists, fishermen, hunters, and (if it is clean enough) swimmers. It also provides scenery to passing drivers and nearby residents. Streamside woods are good for birdwatching and wildlife tracking, because wildlife gravitates towards streams to drink and feed. They serve as outdoor classrooms and biology research sites. Archaeologists and local history enthusiasts look for traces of the Native Americans who traveled, hunted and fished along waterways, the colonists who farmed and harvested trees in the fertile bottomlands, and the early New Englanders who set up mills and factories next to sources of water power. Some riparian forests are still productive wood lots and contain sources of wild foods, such as fox grapes and common elderberry.

WHY DO FUNCTIONS DIFFER FROM PLACE TO PLACE ?

The functions of streamside woods involve the interactions of plants, animals, soil, air, water, and people. Different plant species are stronger in some functions than others. For example, sycamore trees are especially good for wildlife shelter because they tend to be hollow; willows anchor banks well with networks of shallow roots, and red oaks make better lumber than cottonwoods. The more species of plants in streamside woods, the more interest and variety for human uses, and the more kinds of wildlife food and shelter. Overall forest characteristics and surrounding land uses also affect function. For example, flood prevention is affected by the steepness of the slope, the sandiness and depth of the soil, and the overall width of the wooded strip along a stream. Ironically, the less efficiently a particular streamside area filters sediment and pollutants, the more of it is needed to protect water quality. The more development there is nearby and upriver, the more crucial these water quality functions become, to protect the stream from non-point source pollutants. Likewise, a small patch of streamside woods near a development may lack certain kinds of wildlife - like bobcats and forest warblers; but provides habitat for the more adaptable wildlife - like rabbits and song sparrows.

Tess Gadwa

From town to town, regulations to protect streamside woods vary widely. "Buffer" distances from a stream may range in width from 25 feet to over 100 feet, or are "adjustable". Level of protection ranges from a mere review requirement to strong restrictions on development. Buffers are better protected by existing law in wetlands and floodplains than in uplands. Regulations can often be strengthened, if the economic value of buffer vegetation can be explained. Clean water, scenic streams with valuable wildlife and fisheries resources, and water-based recreation improve the quality of life and are community assets which increase property values and help towns to attract desirable industry.

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