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THE HABITAT

A newsletter of the Connecticut Association of Conservation and Inland Wetlands Commissions, Inc.

The Potential Economic Benefits of Riparian Buffers

by Niev Duffy, Ph.D., Eastern Economic Research, Inc.

This article, which is a summary of existing research on riparian buffers, has been modified from its original format for The Habitat. ***The full set of citations for the supporting research can be found at caciwc.org.***

INTRODUCTION

Opponents of environmental protections on private residential and commercial property, such as the requirement of riparian buffer zones, are often concerned that restrictions will lower property values. In fact, there is growing evidence to suggest that modest and evenly enforced environmental protections within an entire wetlands area can substantially enhance property values. Studies also suggest that environmental protections can boost state revenues by enhancing the desirability of communities and recreational areas, while limiting the unforeseen growth in state expenses that often accompanies expanded residential and commercial development in watershed areas.

The economic benefits of the ecological services provided by Connecticut's rivers and wetlands run in the tens of billions of dollars annually. Maintaining a minimum level of protection for these assets can help to ensure that the rapid expansion of residential and commercial development does not negate the benefits of economic growth.

POTENTIAL ECONOMIC BENEFITS

Studies have demonstrated that riparian buffers are a relatively low cost, easily enforceable and effective means of delivering valuable ecological services - such as the prevention of diffuse source pollution, protection of water supplies, flood mitigation, and aesthetic enhancement of communities and recreation areas. The spread of residential and commercial land development is frequently accompanied by an increase in water pollution when fertilizers, sediment, chemicals and other contaminants are carried from lawns and pavement into neighboring wetlands by storm water runoff. Numerous studies document the important role that riparian buffers can play in reducing diffuse source pollution that may otherwise result in eutrophication, increased toxicity, and loss of water clarity. Studies have also demonstrated that protection is far more efficient than clean-up.

The ecological services provided by Connecticut's rivers and wetlands are worth many billions of dollars annually. The natural protection that riparian buffers offer to the quality of these assets can safeguard and enhance the desirability of communities and recreational areas, protecting property values and promoting tourism.

Recreational

Clean water, abundant and diverse wildlife, healthy fish stocks, and scenic views are a few of the assets that riparian buffers protect. This natural capital leads to a steady stream of returns in the form of tourism and recreational income and related tax revenue. Both the volume and range of outdoor recreational activities has increased dramatically in the United States over the last few decades. For example, expenditures associated with wildlife-watching increased by over 20% in the U.S. between 1995 and 2006, from $37.7 billion to $45.7 billion (in 2006 dollars). In 2006, fishing, hunting and wildlife watching activities by Connecticut residents alone generated $755 million in

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Reminder

Dues for fiscal year July 1, 2009 - June 30, 2010 are due. Check page 11 to see if your commission has submitted its payment.

Working Together to Preserve Connecticut's Farmland

by the Connecticut Farmland Trust

Mitchell Farm overlook, Salem, CT

Connecticut's farmland is disappearing at the alarming rate of 8,000 acres a year. Fertile, highly productive land is being converted to residential and commercial uses at one of the fastest rates in the country -- in less than 20 years, we have lost 21% of our state's farmland. If this rate of conversion continues, all of our remaining farmland will be gone in less than two generations. This is why it is so important for organizations to work together to protect our state's working lands.

"Towns and local land trusts are becoming more and more active in farmland preservation within their communities. As a result, stronger partnerships are being formed with the combined resources of local, state and federal programs," says Henry Talmage, Executive Director of Connecticut Farmland Trust. "CFT has always been about collaboration and we take great pride in our ability to complete projects through teamwork and leveraging of funds."

The Connecticut Farmland Trust (CFT) is the only private, statewide nonprofit conservation organization dedicated exclusively to protecting Connecticut's farmland. CFT holds agricultural conservation easements that protect 1,766 acres of farmland around the state, has assisted partners in the preservation of 157 additional acres, and serves as a leading resource on conserving Connecticut's working farmland. By working with like-minded groups and pooling our resources, CFT is able to preserve more land than we would be able to do alone. These collaborations benefit all of us.

Everyone in Connecticut reaps the benefits of farmland. From producing fresh, local food to providing pastoral vistas, farms are a vital part of our history, culture, and economy. Connecticut farms contribute $2 billion annually to our local economy, provide a myriad of environmental benefits, and help balance town budgets. Studies have documented that farms require less than 50 cents in town services for every

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recreation related revenues in Connecticut. Another $9 billion was spent by tourists visiting the state, generating over 1 billion in state and local tax revenue, and employing 1 in 15 workers in the state.

But Connecticut's recreational and tourism dollars are heavily reliant upon the maintenance of healthy ecosystems. For example, numerous studies emphasize the importance of preserving the natural habitat of fish - including shade trees, submerged grasses and other food sources - to maintaining healthy fish populations in spots popular among anglers. Numerous studies have found that individuals express willingness to pay substantial sums to protect the regional environment. One study in the 1990s found particularly high dollar values placed on improving water quality to a "swimmable" level.

Loss of natural riparian buffers can lead to pollution of streams by sediment, nutrients, and other contaminants, destroying fish habitat and closing swimming areas. The 1994 EPA National Water Quality Inventory Report to Congress identified 374 sites in 22 states where recreation was restricted due to poor water quality." In a 2009 survey of recreational boaters on Candlewood Lake in Connecticut, over half of respondents stated that poor water quality due to invasive species was "a major problem". And almost three quarters of boaters who owned lakefront property found it to be a major problem, indicating that they were the group most likely to benefit from riparian buffer zones designed to prevent such eutrophication.

Over the last two decades, an 18.2% increase in the land area covered by construction in Connecticut has been accompanied by a 14.5% decline in farmland, 6.5% decline in deciduous forest, 6.9% decline in area covered by water, and a 5.5% decline in forested wetland; trends that highlight the importance of safeguarding the remaining wetlands from environmental degradation. In Connecticut, an extensive study of coastal areas suggests that landuse restrictions within a 100 ft wetland buffer zone has helped to reduce the loss of natural vegetation during residential and commercial land development.

Aesthetic Value

Historically, Connecticut's great natural beauty and well-preserved historical villages have ensured it some of the most prized real estate in the world. Its very desirable communities have attracted a relatively high-skilled, high-income population that, in turn, has attracted a dynamic commercial sector. The desirability of communities is strongly influenced by the surrounding environment, and the health of neighboring wetland ecosystems plays a particularly important role. Reduced water clarity, algae blooms, and eutrophication have been shown to greatly diminish adjacent property values. And in regions where water quality has been allowed to deteriorate substantially as a result of over-development, studies have documented dramatic declines in regional property values.

Environmental restrictions on privately held land are often fought by those with short-term interests in the sale of local residential and commercial development, who fear that new restrictions will diminish market profitability. Though there is little evidence of diminished individual property values when all properties are similarly restricted, or regional economic loss, studies do show that land use restrictions that improve water quality often lead to substantial increases in property values both on and near wetland areas.

By maintaining a minimum level of protection for rivers and wetlands, riparian buffers can also help to mitigate a number of unintended consequences of rapid residential and commercial development that can drain state budgets, such as increased flooding, declining water tables and increasing strain on public water systems, as well as the spread of invasive plant species. Failure to address these issues can negate many of the benefits of economic growth.

Drinking Water

Safe, dependable supplies of groundwater - for residential, agricultural, commercial and public uses - are crucial to a healthy economy. Among the many ecological services offered by riparian buffers is their ability to help protect and restore groundwater reserves. Public agencies spend large sums each year to obtain, treat and maintain water supplies. The loss of ecological services provided by riparian buffers can increase these costs. Increased sedimentation leads to the need for dredging and more frequent repair and replacement of equipment. Increased runoff of nutrients and other contaminants from lawns, fields, and pavement into wetlands increases the need to treat drinking water with chemical coagulants and disinfectants. And contaminants can also cause costly depreciation of commercial equipment. Expanding riparian buffers has the potential to limit these costs.

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JOURNEY TO THE LEGAL HORIZON *by Attorney Janet P. Brooks*

What to Do While Applications are Hibernating

Tom ODell asked me to write a column on what wetlands agencies could be doing while awaiting the return of "business as usual." In this column I share two thoughts: one task for the present and planning for the future.

Part I

If your wetlands agency has not amended its regulations for a while or if you're just not sure if your agency has kept its regulations current with state law, start with this task. There are a few tools that will really streamline this job. Depending on the size of your agency, you could consider setting up a smaller group to meet on these issues. Of course, the meetings would need to be noticed according to the Freedom of Information Act, be held in a public place (i.e., not in someone's home), be open to the public, have minutes created, etc. The major tool to rely on is the 2006 version of the DEP Model Regulations. The model regulations are available on the DEP website at: http://www.ct.gov/dep/lib/dep/water_inland/wetlands/modelregsfinalof4thedition.pdf. The regulations begin with a list of revisions on pages 2 through 6. The list also includes the reason for the change in very succinct language. This will come in handy when you need to state on the record during the public hearng the reason for the proposed changes. The revisions clarify prior regulations, or are mandated by an amendment to the state law. Within the 2006 model regulations themselves it is very easy to distinguish the changes, as new or revised language is underlined. I have been before too many agencies in the past six months with outdated regulations. Here are some of the procedural and substantive problems in some towns' existing regulations.

Date of receipt: The law no longer allows you to require submission three business days prior to the next regularly scheduled meeting. The date of receipt is now the day of the next regularly scheduled meeting *immediately following the day of submission*.

Regulated activity: The Appellate Court in 2003 ruled that in order to have authority regulate activities that take place outside of wetlands or watercourses for their effect on those resources the agency must first have adopted a regulation establishing the authority to regulate conduct in the upland. The DEP has proposed language to establish that authority. Check the definition section of the model regulations, § 2.1. If you're fuzzy on the legal reasoning of that case, you can read my blog entry of December 28, 2009 addressing the case, at www.ctwetlandslaw.com.

Aquatic, plant or animal life and habitats in wetlands or watercourses: Maybe some agencies have had a lot of turnover since 2003 and don't remember the outcry when the Supreme Court held that wildlife did not fall within the protection of the wetlands act. Then the legislature amended the statute in 2004, upholding the Supreme Court decision in part and reversing it in part. You will not be able to properly figure out what to do with wildlife considerations without the statutory language in your regulations. It is not intuitive; it was a political compromise. You will need to have the language as you review applications and decide how to consider wildlife impacts. Want to brush up on the wildlife controversy? You can read my blog entries of December 30, 2009 and December 31, 2009 at www.ctwetlandslaw.com.

Right of agency to enter onto private property: In prior versions of the DEP model regulations, there seems to have been language that suggested that agencies or their agent had the authority to enter onto private property without the consent of the property owner. The 2006 version clears up that misnomer.

To complete the tasks, the DEP has made available online all of the legislative advisories. From the DEP Inland Wetlands and Watercourses main page, click on "Legislation, Regulation and Case Law." You would only need to review the advisories from 2006 to the present, as the earlier advisories are already incorporated into the 2006 model regulations.

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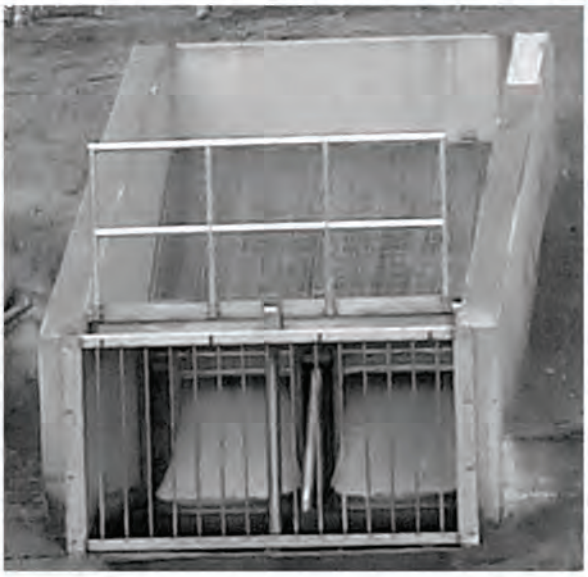

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I note that DEP has not posted an advisory for the legislative change in the 2009 session. Last year the legislature amended the act to state that wetlands permits issued from July 1, 2006 to July 1, 2009 "shall expire not less than six years after the date of such approval" and that the total period of time such permit may be in existence, including renewal time, cannot exceed 11 years. To read more about the change, go to the January 26, 2010 entry on my blog at www.ctwetlandslaw.com.

One more task derived from your regulations: Almost all agencies have a section equivalent to § 4.4 in the model regulations which requires any person wishing to engage in an exempt activity to notify the agency "on a form provided by it." It is the rare agency that has developed that form. Some agencies invite letters with supporting documentation. Some use the application for regulated activities -- which makes me shriek, because it prompts the agency to begin an inappropriate inquiry. The application form for regulated activities delves into areas that are irrelevant to an agency's consideration of *whether* it has jurisdiction. Once an agency has established its jurisdiction, it is appropriate to look into alternatives and other factors for consideration. Why not craft a form which asks for facts that establish whether or not the person's activities fall within the exemption?

Part II

Training of individual agency members, on the one hand, is a personal matter. A member is asked to give up time from other personal or family responsibilities or pleasures to become and to stay an informed member. But it is also an agency concern, as well as a public one. The wetlands act requires at least one member of the agency or staff to have completed the DEP comprehensive training program. DEP is required to allow one person from each town to attend the entire training program at no cost. Of course, the notion that only one person be trained is an inadequate benchmark. It is merely a point of departure.

Training should not be a matter that occurs only when - and if - agency members happen to sign up and attend.

Priority #1: <u>The training of members within a calendar year should be a matter of business to be discussed early in the year.</u>

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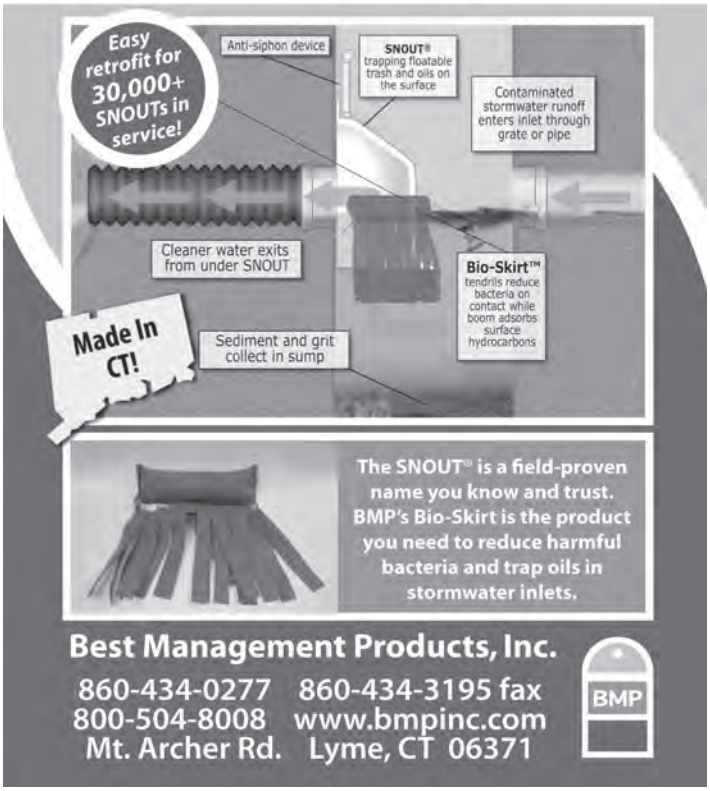

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I believe it should be placed on the agenda once a year to discuss the year's goals for training agency members. The discussion can establish who has completed what aspects of existing training. Are members feeling overcommitted time-wise between training and agency duties? An idea that was discussed at the January, 2010 Council on Environmental Quality meeting was to excuse members from attending an agency meeting, as long as the agency would still have a quorum to proceed with pending business, so that the member could spend the equivalent time in training.

Priority #2: *Any* member who has not attended Segment I and the basic legal training should strive to do so. When I routinely offered Segment I legal training while at the Attorney General's Office, I often had agency staff people with many years of experience state that they learned something new at Segment I.

Priority #3: A *majority* of agency members should strive to attend the DEP Segment II Legal Update or the CACIWC annual meeting workshop on Legal Update. In fact, your agency should try to be in attendance at both. (Different members could go.) The DEP's Segment II is generally in May and June, while the CACIWC meeting is in November. This year almost all of the Appellate and Supreme Court cases covered in the CACIWC annual meeting workshop had been issued in the late summer and fall, too late to be covered in the DEP Segment II training.

And, yes, I agree that folks should go get the technical training as well. I just want to stress the need for the agency to stay up to date on the changes in the law. That will not happen merely by serving on a commission for twenty years. It is not a matter of experience; it is a matter of knowledge.

Priority #4: The statute requires the follow-up step that the newly trained member summarize the content of the training program at an agency meeting. At a minimum that should include distribution of any written materials provided at training.

Up to date regulations and forms, and current knowledge of the law, are the best bases for being prepared for the return to "business as usual."

Attorney Janet P. Brooks is in solo practice in East Berlin and has started a blog on wetlands law, which you can read at www.ctwetlandslaw.com.

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Editor's Note: *Conservation Commissions take note - stewardship of municipal and private protected open space is a challenging responsibility. The following article discusses the consequences of ignoring that responsibility and encourages action to protect against unintended consequences.*

Biological Integrity Issues in Connecticut's Upland Forest Ecosystems

by Emery Gluck, Forester, CT-DEP

In Connecticut we are fortunate to have a significant forested landscape which forms an aesthetically pleasing backdrop to our daily lives and provides important ecological functions which contribute to our quality of life. Unfortunately, numerous issues have developed that threaten the forest's ability to sustain these valuable environmental services. This article summarizes the main impediments to sustainable upland forest ecosystems.

Forest Fragmentation

As development starts to devour a continuous forest, it fragments the remainder. Edge habitat occurring at the forest /development interface is inhospitable to many species of wildlife. The edge habitat is well suited for skunks, raccoons, dogs, cats and other animals that prey upon the eggs of ground nesting birds. Also, brown-headed cow birds, a brood parasite that lay their eggs in other birds' nests, are more prevalent the closer to the edge. The host bird raises aggressive cowbird fledglings which crowds out its own fledglings. Brood parasitism and nest predation lead to the inability of smaller fragmented forests to sustain many interior bird species. Additionally, non-native invasive plants are usually more abundant in fragmented forests. Generally, habitat quality declines with the size of the forest. More information about forest fragmentation can be found on the University of Connecticut's Center for Land Use Education and Research (CLEAR) web site, (http://clear.uconn.edu/projects/landscape/forest_frag.htm).

The aggregation of a large continuous protected forest is often a more valuable conservation strategy than preserving smaller isolated forests. Planning tools such as cluster housing and transferable development rights have the potential to retain a modest to significant amount of continuous forest while allowing for limited residential and commercial growth.

Invasive Plants

"Non-native invasive species pose a serious risk to North American forest ecosystems, threatening to change existing ecological trajectories, suppress rare and endangered native species, reduce productivity and biodiversity and damage wildlife habitat."[1]

Numerous non-native (exotic) invasive plants have gained a well established foothold and threaten to become pervasive in Connecticut forests. Many are characterized by "hypercompetitive behavior" that includes earlier leaf out than native competitors, the ability to re-sprout vigorously and produce large amount of seeds that are spread by birds and deer.

Non-native invasive plants that can be ecologically disruptive in Connecticut's forest include Tree-of-Heaven, Japanese barberry, and Oriental bittersweet. The former has been documented to cause heart attack-like symptoms if a person's skin is exposed to an excessive amount of the plant's sap. The incidence of black-legged ticks, a major vector for Lyme disease, is greater in dense thickets of Japanese barberry. The thickets provide an ideal refuge for the tick carrying white footed mouse. Bittersweet vines aggressively climb trees and monopolize forest understories. The vines aid in bringing down supple trees while extensive mats in the understory smother tree seedlings and other native understory vegetation.

The foothold these invasive plants have gained may turn into a stranglehold without considerable intervention. The next hurricane may greatly speed up the hostile takeover as significant disturbance in the upper forest canopy will provide sunny new ground for the germination of invasive plant seeds. Forest harvesting is thought to promote the invasion of non-native invasive plants where there is a nearby seed source. But one study found no increase in abundance of barberry after low- to moderate intensity selective harvesting.

Complete control of exotic invasive plants is unlikely. Herbicides provide the most definitive control but often meet public opposition. Uprooting smaller invasive plants is possible but unlikely to cover extensive areas; repeated cutting or burning immediately after leaf out kills a significant proportion if done in the same growing season.

For more information on invasive plants go to the Connecticut Invasive Plant Working Group (CIPWG) web site, http://www.hort.uconn.edu/CIPWG/.

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Deer

In addition to aiding the spread of invasive plants by depositing their seeds throughout forest, an abundance of deer may aid in changing the composition of the forest. Deer often browse heavily on oak seedlings but avoid species such as black birch, which contains the same chemical component as the muscle rub Ben Gay. Nearly 100 threatened or endangered species are browsed by white tailed deer. They have been known to browse the native understory plants so much that it allows an opening for invasive plants to germinate. Conversely, where deer had been fenced out, the understory was lush with native plants.

Deer populations were almost extirpated with the loss of mature forests and unrestricted hunting in the late 1800s. Citizens reported only 12 deer in Connecticut in 1893. With increased suburbanization, maturing oak forests, and a decline in hunting, the deer population has grown exponentially. Their population is currently estimated at 65,000.

Significantly expanding responsible hunting, reducing forest fragmentation by minimizing conversion of forests to conventional subdivisions could help stabilize an excessive deer population and revitalize the plants favored by deer.

Nehantic State Forest, Salem – This oak forest received a regeneration harvest and controlled burn. Grasses become established after such repeated disturbances. Their seeds provide an important food source for the fall bird migration. Forests near Native American villages were probably burned frequently creating an open park-like forest. The fires killed thinned barked trees and shrubs. The older oak and chestnut trees were protected from low intensity fires by their thick bark. Younger oaks re-sprouted more vigorously than other hardwoods killed by the fires.

Lack of Appropriate Disturbance

Some upland forest ecosystems have evolved to sustain themselves after disturbances such as fire, hurricanes and tornadoes. These disturbances create a temporary open environment where sun-loving plants could perpetuate themselves and their offspring could outgrow competing shade tolerant species. Native Americans used to frequently burn extensive areas of the forest to create an environment that attracted their game animals, increased berry production, and provided numerous other benefits necessary for their survival. Pre-settlement forests experienced fires exponentially more frequently than today's forests. Fire that sustained oak ecosystems for thousands of years has been extinguished as fire preventive systems evolved to protect people and houses that now fill the increasing fragmented forest.

Today's maturing oak forest originated after extensive clearcuts, fires, chestnut blight and farm abandonment from about a century ago. The prolonged absence of similar events and excessive deer browse has started to facilitate the slow transformation of much of Connecticut's oak forest into shade tolerant birch, beech and maple forests. Oak seedlings are found in the understory of an intact forest after an acorn crop but most die out within a few years because of lack of adequate sunlight. Survivors are severely hindered by overtopping competitors. Oak seedling survival on ridge-tops and droughty soils where competition is limited is an exception. The ability of a new generation of oak to graduate to the forest canopy is severely limited under current conditions.

The potential future displacement of oaks has enormous ecological consequences as around 50 animal species depend upon acorns for their primary source of protein. Oak forests host more species and a higher abundance of birds than maple forests. Oaks cumulatively host over 500 species of butterflies and moths (Lepidoptera). Larvae, the immature form of Lepidoptera, are an important food source for birds.

Severe fire and other disturbances historically sustained a small part of the landscape in young forest habitat. The majority of the forest landscape should be made up of sawtimber-dominated forests in order to provide habitat for the bulk of the wildlife species. (Sawtimber are trees greater than 11" in diameter measured 4.5' above ground level). At the same time, very young forests provide requisite dense shrubby habitat for 22 bird species and four mammal species in New England, including numerous declining species such as blue-winged warbler, chestnut-sided warbler, New England cottontail and bobcat. The unique assemblage of dense cover, herbaceous vegetation, and associated insects is short-lived as the habitat structure changes as the forest ages. Forests as young as eight years old have already lost their habitat value for some species. A frequent infusion of relatively small but severe disturbances is necessary to sustain populations of those animals that depend upon this habitat.

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CC+IW = Combined Commission
Z+IW = Zoning/Inland Wetlands Commission

Ansonia	IW	(SUS)	Enfield	CC		Old Lyme	IW	
Ansonia	CC	(SUS)	Essex	IW		Old Lyme	CC	
Avon	IW		Fairfield	CC		Old Saybrook	IW	(SUS)
Avon	CC		Farmington	Z+IW		Old Saybrook	CC	(SUS)
Barkhamsted	IW		Farmington	CC		Oxford	CC+IW	(SUS)
Barkhamsted	CC		Franklin	IW		Plainfield	IW	
Beacon Falls	IW		Glastonbury	CC+IW	(SUS)	Plainfield	CC	
Beacon Falls	CC		Goshen	IW		Plainville	IW	
Berlin	CC		Goshen	CC		Plainville	CC	
Bethany	IW	(SUS)	Granby	IW		Pomfret	IW	
Bethany	CC	(SUS)	Granby	CC		Portland	IW	(SUS)
Bethel	IW		Greenwich	IW	(SUS)	Portland	CC	(SUS)
Bethlehem	IW		Greenwich	CC	(SUS)	Prospect	IW	(SUS)
Bethlehem	CC		Griswold	CC+IW		Putnam	CC+IW	
Bolton	IW		Groton	IW		Redding	CC+IW	(SUS)
Bolton	CC		Groton	CC		Ridgefield	Z+IW	
Bozrah	CC+IW		Guilford	IW		Ridgefield	CC	
Branford	CC+IW		Guilford	CC		Salem	CC+IW	(SUS)
Branford	CC		Haddam	IW		Salisbury	CC+IW	
Bristol	CC+IW		Haddam	CC		Seymour	IW	
Brookfield	CC		Hamden	IW		Sharon	IW	
Brooklyn	IW		Hamden	CC		Shelton	CC	
Brooklyn	CC		Hampton	CC		Sherman	IW	
Burlington	IW		Harwinton	IW		Sherman	CC	
Canaan	CC+IW		Hebron	CC		Simsbury	CC+IW	
Canterbury	IW		Kent	IW		Southbury	IW	
Canton	IW		Killingworth	IW		Southington	IW	(SUS)
Canton	CC		Killingworth	CC		Sprague	CC+IW	(SUS)
Chaplin	IW		Lebanon	IW		Sterling	IW	
Chaplin	CC		Lebanon	CC		Suffield	CC	
Cheshire	IW		Lisbon	CC		Thomaston	IW	
Cheshire	CC		Litchfield	IW		Thompson	IW	
Chester	IW		Lyme	CC+IW		Thompson	CC	
Chester	CC		Madison	IW		Tolland	IW	
Clinton	CC+IW		Manchester	Z+IW		Tolland	CC	
Colebrook	CC+IW		Manchester	CC		Torrington	IW	(SUS)
Columbia	IW		Mansfield	Z+IW		Torrington	CC	(SUS)
Columbia	CC		Mansfield	CC		Trumbull	IW	(SUS)
Coventry	IW		Meriden	IW		Trumbull	CC	
Coventry	CC		Meriden	CC		Vernon	IW	
Cromwell	IW		Middlebury	CC		Vernon	CC	
Cromwell	CC		Middlefield	IW	(SUS)	Warren	CC+IW	(SUS)
Danbury	CC+IW		Milford	IW		Washington	IW	(SUS)
Darien	CC+IW	(SUS)	Milford	CC		Waterford	CC	(SUS)
Deep River	CC+IW		Naugatuck	IW		Westbrook	IW	
Durham	IW		New Canaan	Z+IW		Weston	CC	(SUS)
Durham	CC		New Canaan	CC		Westport	CC+IW	(SUS)
East Haddam	IW		New Fairfield	CC+IW	(SUS)	Wethersfield	IW	
East Haddam	CC		New Hartford	IW		Willington	IW	
East Hampton	IW		New Hartford	CC		Willington	CC	
East Hampton	CC		New London	CC+IW		Wilton	IW	
East Hartford	CC+IW		New Milford	IW		Wilton	CC	
East Windsor	CC+IW		New Milford	CC		Windsor	IW	
Eastford	CC		Norfolk	IW		Woodbridge	IW	
Easton	CC+IW		Norfolk	CC		Woodbridge	CC	
Ellington	IW		North Branford	CC+IW		Woodbury	IW	(SUS)
Ellington	CC		North Stonington	IW		Woodbury	CC	(SUS)
Enfield	IW		Norwalk	IW	(SUS)	Woodstock	CC	

Buffers, continued from page 3

Flood Control

By impeding and absorbing flood waters, riparian forest buffers reduce the damage caused by floods. And by reducing the sedimentation of rivers and streams, which fills streambeds and makes them more prone to overflowing, riparian buffers also reduce the frequency of flooding. According to one study, reducing runoff by 10% within a watershed could reduce flood peaks with a 2 to 5 year return period by 25% to 50%.

According to the National Flood Insurance Program (NFIP), the value of flood losses in the U.S. between 1996 and 2005 totaled over $2.4 billion. Rapid land development and the loss of riparian buffers have the potential to increase these costs. Ironically, where new land development leads to increased flooding, it has the potential to drive down the value of existing housing stocks in flood prone areas.

POLITICAL FEASIBILITY AND "WILLINGNESS TO PAY"

Numerous studies find that Americans express a willingness to pay substantial sums for programs that will improve water quality. While such studies might overstate the true willingness to pay for ecological services, the notable consistency of such results indicate a very real concern over the availability and security of safe drinking water. One study that explored the difference between the hypothetical willingness to pay among survey participants and taxpayers' actual willingness to pay for a riverfront improvement project, found that there was no statistically significant difference between the two. Since the benefit/cost ratio to households of wetland restoration projects is often very high, it is perfectly rational for residents to be willing, if not eager, to pay for such projects.

Editors Note: *The preceeding article is the first extensive literature review published in* The Habitat. *The article was requested by the Editor to provide supporting evidence of the economic value of riparian buffers. We would appreciate comments on its value to commissioners and whether or not other literature reviews should be considered for* The Habitat.

Advertisement

Chemical Remediation in Wetlands: **Not Your Average Cleanup**

By Wayne H. Bugden, LEP
Director of Environmental Services, CME

When remediating contaminants in sediment, how "clean" is clean enough? Wetlands are very sensitive to pollution, but Connecticut remains without a standardized regulatory approach to this problem. There are many reasons for this, including:

Unique Physical and Chemical Properties: Sediments range from dense sands and silts, to loose organic peats. Some bind tightly to heavy metals while others contain natural organic compounds that laboratories may mistake for petroleum. Such variability makes it impossible to develop "one-size-fits-all" cleanup standards.

Uncertain Source(s): Finding the "responsible party" can be tricky if a wetland receives runoff from multiple properties. Investigators can use forensic techniques to "fingerprint" contamination, but success depends on careful planning and experience.

Need to Balance Risks: Sometimes, removing contamination may cause more damage than leaving it in place. Knowing how, and when, to remediate wetlands cannot be determined using a State-wide policy. Instead, ecological risk assessments must weigh the pros and cons of all alternatives.

Connecticut DEP is working to develop sediment cleanup criteria, but it is unknown when, or if, these standards will go into effect. Meanwhile, wetland contamination problems must be carefully evaluated to determine if remediation is needed. When it is, the cleanup professionals must consider the wetland's many unique properties to avoid damaging its essential functions and values.

WEBarchive
For more information related to this article, visit www.cmeengineering.com/services_env.html

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Farmland, continued from page 2
dollar they generate in local taxes -- while residential development costs towns more than one dollar for every dollar of revenue generated.

Connecticut Farmland Trust assists towns and land trusts by offering technical assistance and guidance in the specific area of agricultural conservation easements. These easements give landowners the flexibility to change their operation and practices to meet future agricultural needs. CFT's criteria for easements focus on viable, active farms with prime and important agricultural soils. There is no restriction on property size. CFT may also contribute funds toward the acquisition of an easement and may sometimes hold the easement.

"There is a big difference between open space and agricultural easements, and we are happy to provide towns and land trusts with guidance on conservation language that includes specific terms to help protect farmland," says Elisabeth Moore, CFT's Conservation Director. "Who gets the credit for preservation or holds the easement on the property isn't important. The most important thing is protecting Connecticut's remaining farmland."

Organizations contact CFT for assistance and partnerships, but CFT also seeks out groups to collaborate with when their preservation projects fit with our mission of protecting farmland. We are currently working with the Town of Branford to preserve a farm and are collaborating with the Town of Lebanon to preserve three farms. Below is a listing of farms Connecticut Farmland Trust has preserved with help from towns and land trusts:

Photos courtesy of Connecticut Farmland Trust

Vanishing Geese Farm, Durham

Vanishing Geese Farm, Durham
Preserved in 2009
43 acres of hay & pasture, Scottish Highland cattle, chicken, and honey bees
Collaboration with Durham Conservation Commission

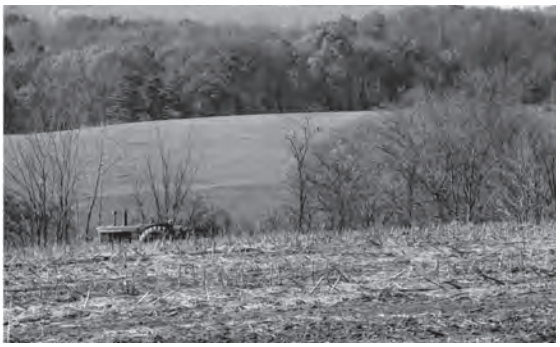
Phillips Farm, Southbury
Preserved in 2004
20 acres of support land for local dairy
Collaboration with Southbury Land Trust

Lovdal Farm, Southbury
Preserved in 2005
36 acres of support land for local dairy
Collaboration with Southbury Land Trust

On the Hill Farm, Salem
Preserved in 2005 & 2006
76-acre beef and hay farm
Small seasonal farm stand – open to the public
Collaboration with Salem Land Trust and the USDA-Natural Resources Conservation Service's Farm and Ranch Lands Protection Program.

Hunt Hill Farm, New Milford
Preserved in 2008
40-acre Christmas tree farm
Seasonal farm stand - open to the public
Collaboration with Weantinoge Heritage Land Trust and the Town of New Milford

Marvel & Mitchell Farms, Salem
Preserved in 2009
206 acres of hay & pasture
Collaboration with The Nature Conservancy



Osuch Farm, Watertown and Bethlehem

Osuch Farm, Watertown and Bethlehem
Preserved in 2007
40 acres of support land for local dairy
Collaboration with Watertown land trust

Little Pond Farm, Stonington
Preserved in 2010
96 acres of corn & hay
Collaboration with Town of Stonington

For more information about Connecticut Farmland Trust and our protected farms, please visit www.CTFarmland.org.

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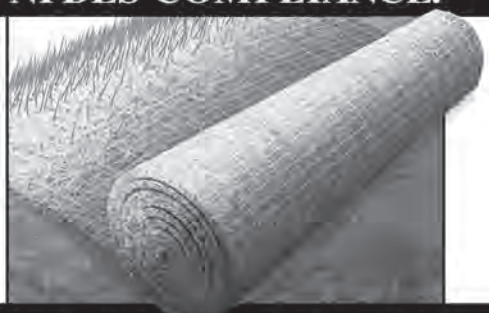

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Forest, continued from page 9
The maintenance of disturbance-dependent ecosystems is a difficult task in a mostly suburban state. Controlled burns can be an effective tool, but there is very limited opportunity to implement and they pose an element of risk. Mechanical grinders or masticators can create young forest habitat by grinding up a forest whose trees that are approaching 7" in diameter. Though mechanical treatments can mimic historic disturbances such as fire to a certain extent, they are unlikely to capture the full ecological value of a natural disturbance. These treatments are usually expensive. The Wildlife Habitat Incentive Program (WHIP) may provide federal cost sharing for controlled burns and creating young forest habitat. More information about creating young forest habitat can be found through the "Coverts Program" from the UConn Cooperative Extension's web site, http://www.canr.uconn.edu/ces/forest/coverts.htm.

The most cost efficient method for maintaining a disturbance dependent ecosystem often involves forest management. Forest management also often entails cutting trees too small to market but necessary for freeing up overtopped oak seedlings and saplings. It should be noted that some harvests can be ecologically regressive. Harvests in oak forests can accelerate succession towards other species if only the valuable trees are harvested and most of the small non-oak trees are left. Appropriate forest management can sustain an ecologically viable forest and, in addition, yield wood products to offset management costs.

Forest Management Assistance
DEP Division of Forestry conducts a detailed assessment and extensive planning before implementing forestry operations on state forests. Likewise, it is recommended that landowners and land trusts have a stewardship plan prepared by a certified forester to provide a detailed evaluation of the forest resources and management options before any harvest. The Connecticut Division of Forestry offers a service where their foresters can provide a limited initial assessment at no charge to the landowners.

The complex social and biological issues confronting Connecticut's forest are in the process of being collaboratively addressed by stakeholders in the 5-year revision of the Connecticut Statewide Forest Resource Plan. More information on forest management can be found at the DEP Division of Forestry Website: http://www.ct.gov/dep/cwp/view.asp?a=2697&q=322792&depNav_GID=1631&depNav=|

For the most part, the forest is not sustaining viable populations of the full array of fauna and flora native to the area. The forest is being compromised because the cumulative effect of our collective actions and inactions brought unintended and often unnoticed consequences. It will take a mindful concerted effort to substantially change this course.

End Notes

[1]Chornesky et al 2005. Science priorities for reducing the threat of invasive species to sustainable forestry. Bio Science 55(4): 335-348.

This article and the full set of supporting citations can be found at caciwc.org.

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Open Space Grant Round Announced

Governor Rell announced that funds are available to assist cities and towns and land conservation organizations with the purchase and preservation of open space lands through the state's Open Space and Watershed Land Acquisition program. **The deadline for applications is Monday, May 3, 2010.** Be sure to use the application dated January, 2010. The pdf for the application can be found on the DEP website at http://www.ct.gov/dep/lib/dep/open_space/open_space_grant_round_application.pdf, or call Dave Stygar (860)424-3081 or Allyson Clarke (860)424-3774 at DEP. Awards are expected to be announced in the fall of 2010.

DEP's 2010 Municipal Inland Wetlands Commissioners Training Program

The DEP's 2010 Municipal Inland Wetland Commissioners Training Program will begin in mid-March with Segment 1. Brochures regarding the training program, along with a program voucher allowing one person to attend for free, were mailed to each municipal inland wetlands agency by February 19th. Further, online registration and information is available at: http://continuingstudies.uconn.edu/professional/dep/wetlands.html. If you have additional questions regarding the 2010 Municipal Inland Wetland Commissioners Training Program please contact Darcy Winther of the DEP's Wetlands Management Section at (860)424-3063.