



Habitat-Based Management Planning for Land Stewards

by Juliana Barrett and John Rozum, University of Connecticut NEMO and CT Sea Grant Programs

Towns and land trusts throughout Connecticut have protected thousands of acres of land through acquisition of the land and through conservation easements. These lands include a variety of habitats across the state from upland forests to tidal marshes. Even though the lands may be legally protected from development, they will not necessarily remain as they are in perpetuity. Most lands need some form of management to remain healthy, or to maintain a particular habitat type.

The University of Connecticut's NEMO and Sea Grant programs have created a new educational program targeted at Connecticut's private and public land managers. Habitat-based Management Planning for Land Stewards provides a tool to help local land managers address the complex, but necessary, job of taking care of our open lands. And since taking care of these lands is a multi-generational task, a management plan also gives a way to

communicate to future land stewards, allowing them to understand and contribute to the long-term goals of a property.

After the ink has dried on the open space purchase agreement, there are many challenges that face land managers. How do we deal with threats to the

property arising from climate change, invasive plants, fragmentation of land, surrounding land use, or even simply changes in plant form and dominance over time (sometimes called succession)? How will the public interact with the property? How can we ensure both public safety and viable natural resources?

Taking a Planning Approach

With habitat-based management, land stewards have the opportunity to think about how a

particular parcel might look in the future and how best to get there. We focus on habitats since they are so basic to biological diversity of a site and

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THE MANAGEMENT PLAN OUTLINE

- I. Introduction
- II. General Goals of the Site
- III. Characteristics of the Site
- IV. Existing Activities in the Site
(recreational, educational and research)
- V. Management Issues, Current Management Activities and Opportunities
- VI. Management Recommendations and Planned Activities (to achieve a desired future condition)
- VII. Implementation Schedule
- VIII. Management Questions

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CACIWC's 2009 LEGISLATIVE AGENDA

CACIWC's efforts in 2009 will focus on legislative initiatives that best support Conservation Commission and Inland Wetlands and Watercourse Commission responsibilities and the conservation and protection of our natural resources.

The following legislative initiatives were discussed and ranked by the CACIWC Board of Directors on December 9, 2008. At that time language for proposed bills had not been drafted. All but one initiative (Conservation Commission strengthening) had been part of CACIWC's 2008 legislative agenda.

For more information and to track proposed environmental legislation go to the Environment Committee section of the CT General Assembly's web site <http://cga.ct.gov/env> and click on "Bills Reported Out of Committee".

Priority: active lobbying efforts with verbal & written testimony,

- Amendments to strengthen and/or prevent weakening of the Inland Wetlands & Watercourses Act (IWWA)
- Face of Connecticut legislation and funding for open space preservation
- Separation of land-use commissions; fight efforts to combine commissions

Support: written testimony and some lobbying, as needed,

- ATV universal registration & ATV damage control
- Conservation Commission strengthening by expanding enabling legislation: New Initiative
- DEP funding; stop loss
- Invasive plants prevention programs

Tracking: closely watch for important changes.

- Bottle bill expansion
- Clean water fund
- Green fund conveyance tax initiatives
- Riverfront Protection: conserves natural vegetation along rivers and streams
- Sprawl control
- Water supply land protection initiatives



provide a good indicator of what a property can (or could) support. For example, a former agricultural field may begin with grasses and a few broad leaved perennials. Without mowing or some other form of management, shrubs begin to overtake the field, replacing the grasses and other herbaceous plants. Very often, invasive plants become established and may completely overtake the area. If a grassland or meadow is the desired state for this land, management must be used to maintain it.

The development of a habitat management plan is very similar to the planning approach used by NEMO to help towns in the development of their local plan. This approach is characterized by four basic steps: Inventory, Analysis, Plan, and Implementation. By going through each phase of the planning process, one can better set priorities and determine management actions.

In order to assist land stewards with the often difficult and time consuming task of habitat management, we have developed a habitat-based management planning outline (See box, page 1). We will briefly go through certain parts of the outline and relate sections of the outline back to the appropriate step in the planning process (Inventory, Analysis, Plan, and Implementation). The outline and detailed descriptions of each step will be available on a NEMO website by Spring 2009 (<http://nemo.uconn.edu/tools/habitat>).

The plan process starts with a brief informational section about the property, such as date acquired, total acreage, etc, and a statement of why this property was acquired (Sections I and II). Section III - Characteristics of the Site - is the inventory section of the plan and is where the fun starts, for this requires you to inventory the property. To do this, you need to identify what habitats exist on the property. This can be a daunting process for those not schooled in the biological sciences, or not familiar with plant identification. Our process, however, allows most anyone to identify key habitats with little or no knowledge of plants or animals.

What is a Habitat and Where are They? -- Inventory

A habitat is simply the place where an organism lives including both the biotic (living) and abiotic (nonliving) components. The ways to describe

habitats are endless. We recommend a simple, yet effective, method to characterize your site's habitats. Assess your site according to the following general categories: Forests and Woodlands, Shrublands, and Grasslands/Meadows (see box below for definitions). These habitats can be upland or wetland and, although they seem ridiculously simplistic, these categories are used within a national vegetation classification.

HABITAT CLASSIFICATION SYSTEM

Forests & Woodlands

Forests - Trees with their crowns overlapping, generally forming 60-100% cover
Woodlands - Open stands of trees with crowns, not usually touching, generally forming 25-60% cover.

Shrublands - Shrubs generally greater than 0.5 meter tall with individuals or clumps overlapping to not touching, generally forming more than 25% canopy coverage; tree cover generally less than 25%.

Grasslands /Meadows - Herbs, graminoids, forbs, and ferns dominant, generally forming at least 25% cover. Trees, shrubs, and dwarf-shrubs generally less than 25% cover.

“Special Habitats.” This category includes vernal pools, bedrock ledges, and other special areas that do not fit into the above habitat types, but which may have habitat based management needs.

Mapping where these different habitats are on your property is a key component of your inventory, but not all of us are cartographers. Fortunately, the NEMO program with some help from CT DEP has developed the Community Resource Inventory Online, which is an excellent place to start. By combining 1) the maps that can be generated from the CRI, 2) knowledge that people familiar with the site have, and 3) field visits, one can generate a site map with the different habitats and cultural resources identified and outlined. A site may be entirely forest, or may be composed of forest, fields, a vernal pool, and bedrock ledges.

Planning, continued on page 4

Writing it Down and Making it Real – Analysis and Plan

Once the Inventory phase is completed, the next step is the Analysis. The Analysis step encompasses Sections IV, V, and VI of the outline. In this step you will set down current uses (recreational, educational and scientific) of the sites as well as management issues - both natural and human. Another site visit needs to be made to walk through each habitat type and identify management issues specific to each habitat type. Such issues may range from the need to control invasive plants in a field, to the need to manage an area where a rare plant is being outcompeted by other plants. The most effective recommendations specify not only what needs to be done, but who will do it, and how it will get done. By specifically looking at each habitat type (or plant/animal), management recommendations can be more easily prioritized and implemented. With this list of prioritized management recommendations, implementation can then begin (Section VII). Habitat management can be an expensive undertaking, and having a management plan in place makes a group much more competitive in applying for grant funding.

The final section of the outline (VIII. Management Questions), is a place to list questions that may come up during the creation of the plan or as implementation proceeds. As we continue to add new information to the web site, we hope to provide a site where management questions can be posted for replies by knowledgeable individuals.

Now, Get Started - Implementation

Planning takes time and can seem overwhelming, but the effort is worthwhile and pays dividends in the form of healthy and diverse properties that your community can enjoy for generations. The key is to get started and to get as far as you can. Work with a management group to help you move forward and use the expertise you have in your town. The NEMO and Connecticut Sea Grant Program are developing new tools and resources all the time, so feel free to contact us to find out where our next workshop will be held: juliana.barrett@uconn.edu and john.rozum@uconn.edu.

Resources

Habitat-base Management Website: <http://nemo.uconn.edu/tools/habitat>.

Community Resource Inventory Online: <http://nemo.uconn.edu/tools/cri/>.



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Will Your Wetlands Permit Conditions be Upheld on Appeal?

In October 2008 the Connecticut Supreme Court issued another case in a recent line of cases reversing wetlands agency action – this time for the granting of a permit. Depending on your current practices, your permit conditions may fail on appeal, as did the conditions of the Orange inland wetlands agency. Stew Leonard’s Orange, LLC filed an application for a dairy store, outdoor garden center, restaurant, conference center and related parking, utilities and landscaping on 41 acres in Orange to conduct regulated activities in the wetlands and/or upland review area. The Orange wetlands agency granted the permit with twenty conditions. Individuals, who became environmental intervenors¹ at the wetlands agency, brought an appeal of the permit approval to the Superior Court. The court dismissed their appeal, affirming the agency’s granting of permit, but sent the permit back to the agency to allow the environmental intervenors to respond to further information that would be supplied as required by five permit conditions. In Finley v. Inland Wetlands Commission, 289 Conn. 12 (2008) the Supreme Court reversed the trial court decision. The five-judge panel was unanimous in overturning the permit approval, but divided in its reasoning.²

In Finley the environmental intervenors objected to the conditions requiring Stew Leonard’s to submit: (a) a revised and updated erosion control plan that implements all state regulations; (b) additional detailed information for the silt fence and hay bales; (c) a phasing plan to minimize large disturbed areas subject to erosion; (d) additional info on paving stones, winter sanding and the drainage plan. The applicant’s attorney welcomed the conditions because the statutory time for action was running out and there was evidently insufficient time to submit revised plans. He acknowledged that the installation of the erosion controls would be to the satisfaction of the wetlands enforcement officer. The intervenors argued that the application as submitted didn’t satisfy all requirements for erosion control, otherwise there would have been no need for the condition. Many of us would have thought (and did, prior to this

decision) that the condition cured the defect in the application. The Supreme Court said no. “It is implicit in the condition of approval requiring Stew Leonard’s to submit a ‘[r]evised and updated erosion control plan that implements all [s]tate [r]egulations’ that the commission had not determined that the existing erosion control plan met state regulations when it rendered its decision.”³ The Supreme Court acknowledged that proper erosion control is critical to the protection of wetlands. It also acknowledged that permit conditions are permissible. The Court concluded there wasn’t substantial evidence to support a determination that the application as filed complied with applicable statutes and regulations regarding erosion control.

While three judges on the panel held that the condition meant “implicitly” the application wasn’t consistent with the wetlands law, a concurring opinion by two judges reached the same conclusion by examining the record. Justice Norcott, the author of the concurring decision, evidently spent time searching through the 350-page guidelines on erosion control trying to understand what the agency imposed. He found the conditions too “broad” and defective because they didn’t identify specifically what was being remedied. “Reading the record, I am convinced that the commission effectively ‘punted’ review of the erosion control plan in light of the looming statutory deadline.”⁴ There was “no way” he could conclude that the agency decision rested on substantial evidence.

Both the majority and concurring opinions acknowledge there are lawful conditions that can be imposed, particularly relying on the Gardiner v. Conservation Commission decision.⁵ So what is the bright line test? What conditions are clearly insufficient and what are permissible? Looking at the Gardiner decision, that’s not so easy to discern. None of the permit conditions in the Gardiner case were overturned. The applicant proposed to construct an industrial park by constructing roads across wetlands

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and watercourses, establishing sediment basins adjacent to wetlands, installing sewer and water lines under watercourses, and discharging storm water in wetlands. The agency granted the permit with 29 conditions. An abutter appealed certain specific conditions claiming the further information which the conditions require should be available prior to the granting of the permit.

These conditions were:

- a. A full subsurface investigation of the area where a detention basin would be located to determine whether the placement of the basin near an existing landfill would create pollution; *Comment: doesn't that sound like the agency couldn't have known at the time of its vote that the placement wouldn't cause pollution?*
- b. Special design of the basin to prevent seepage between the basin and the landfill;
- c. A water monitoring program of the leachate from the nearby landfill; and
- d. Submission of engineering calculations for two of the basins (including the one near the landfill) "in order for the town engineer to review the structural integrity of these and other similar basins".⁶

Comment: doesn't that sound like the agency couldn't have known at the time of its vote that the detention basins were sound and wouldn't allow pollution to the wetlands and watercourses?

Without any regulation that so established, the Gardiner court believed it was possible the agency would provide the abutter a chance to comment on the information submitted as required by the permit. Why would the agency do that if it already issued the permit? How would it do that? Hold a public hearing after permit issuance? "To adopt [the abutter's] view would inhibit an inland wetlands agency in imposing such conditions as it deemed necessary to safeguard against the risk of pollution in the light of concerns raised during its deliberations. We conclude that [the abutter's] rights were not violated merely by the attachment to a permit of conditions that required the submission of further information after the agency's decision had been rendered."⁷ The Finley decision would be easier to understand if the Supreme Court abandoned its reliance on the Gardiner decision.

The Finley court holds that the environmental intervenor can prevail by proving that the proposed conduct likely would cause unreasonable pollution,

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impairment or destruction of the wetland or watercourse OR by establishing that the agency's decision (here, a permit with conditions) "was not based on a determination, supported by substantial evidence, that the development complied with governing statutes and regulations and would not cause such harm."⁸

The effect of the Finley decision could have a number of different outcomes. One, there may be more permit denials because of the fear that permit conditions will be appealed and not upheld. Two, applicants may get revisions in sooner, eliminating the need for open-ended conditions. Three, your commission may be concerned that a permit denial will not be upheld (as has happened so often since 2000) and your case will be the next generation to go up to the Supreme Court for further refinement of what kinds of conditions are acceptable. Since there is no bright line test, it would be valuable for your commission to reexamine conditions you would ordinarily impose and consider eliminating or minimizing open-ended conditions requiring further submittals to the town.

Attorney Janet P. Brooks practices law in Middletown at D'Aquila & Brooks, LLC.

(Endnotes)

1 Hazy on environmental intervenors before wetlands agencies? Check out this column in the *The Habitat*, Spring 2008, Volume 20, No. 2, pp. 4-5. (Issues of *The Habitat* can be read on-line at caciwc.org)

2 The official citation indicates where to find the decision in the official bound volumes. The decision is also available online. The majority decision can be found online at the Connecticut Judicial Department website at: <http://www.jud.ct.gov/external/supapp/Cases/AROCr/CR289/289CR149.pdf>. The concurring decision is found at: <http://www.jud.ct.gov/external/supapp/Cases/AROCr/CR289/289CR149A.pdf>.

3 Finley v. Inland Wetlands Commission, 289 Conn. 12, 41 (2008).

4 Finley v. Inland Wetlands Commission, 289 Conn. 12, 55 (2008).

5 Gardiner v. Conservation Commission, 22 Conn. 98 (1992).

6 Gardiner v. Conservation Commission, 22 Conn. 98, 102 (1992).

7 Gardiner v. Conservation Commission, 22 Conn. 98, 106 (1992).

8 Finley v. Inland Wetlands Commission, 289 Conn. 12, 54 (2008).



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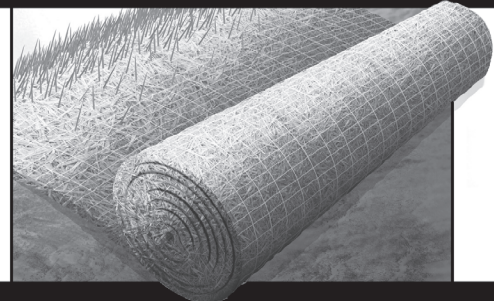
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Substantial Evidence: A Judicial Test to Examine

an Agency's Decision *by Matthew Willis, Esq., Branse & Willis, LLC*

Editor's Note: Attention Conservation Commissions: In your role as a research and advisory agency for other municipal land use agencies, you can assist in providing natural resource/watershed related information that applies to specific land use applications that can be used in meeting the "Substantial Evidence" test in making land use decisions.

When an applicant comes before an inland wetlands and watercourses agency (hereafter agency) for a permit to conduct a regulated activity, that applicant must submit materials necessary for the agency to make a decision as provided for in the agency's regulations. The agency may reasonably request additional information, either factual or expert opinion, from the applicant or from the agency's own staff or hired consultant in order to make its determination. Depending on the application, members of the public or intervenors may also submit evidence to help the agency reach a decision. After a decision is made and a legal notice is published, the decision may be appealed to Superior Court by an applicant, intervenor or other aggrieved party. On appeal, the Court will determine whether enough evidence exists to uphold the agency's decision. The test used by the Court to make that determination is known as the substantial evidence rule. Although land use appeals are quite often challenged on a procedural basis, the substantial evidence rule is used to review the substance of the agency's decision.

The substantial evidence rule was borrowed early on from general administrative law decisions in order to provide courts with an evidence standard to review wetlands, zoning and other land use cases. An agency's decision must be premised on a determination, supported by substantial evidence, that the proposed development complied with applicable statutes and regulations and would not cause unreasonable harm to the wetlands or watercourse. Although a Court cannot replace its judgment for the agency's judgment, the substantial evidence test allows the Court to determine whether there is enough factual evidence and expert opinion to uphold an agency decision.

The Connecticut Supreme Court gave a lengthy description of the substantial evidence rule in Huck

v. Inland Wetlands & Watercourses Agency, 203 Conn. 525, 540-542 (1987): "The evidence, however, to support any reason must be substantial; [t]he credibility of witnesses and the determination of factual issues are matters within the province of the administrative agency.... This so-called substantial evidence rule is similar to the sufficiency of evidence standard applied in judicial review of jury verdicts, and evidence is sufficient to sustain an agency finding if it affords a substantial basis of fact from which the fact in issue can be reasonably inferred, [i]t imposes an important limitation on the power of the courts to overturn a decision of an administrative agency, and to provide a more restrictive standard of review than standards embodying review of weight of the evidence or clearly erroneous action". The United States Supreme Court, in defining substantial evidence in the directed verdict formulation, has said that it is something less than the weight of the evidence, and the possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence. The reviewing court must take into account [that there is] contradictory evidence in the record; but the possibility of drawing two inconsistent conclusions from the evidence does not prevent an administrative agency's finding from being supported by substantial evidence. Also see Samperi v. Inland Wetlands Agency, 226 Conn 579, 588 (1993).

Substantial evidence does not mean that the person who shows up with the most experts before an agency wins; it means that there must be some evidence upon which the agency can base its decision. The court cannot substitute its judgment for the agency's as to the weight of the evidence before it. Hescock v. Zoning Board of Appeals, 112 Conn. App. 239 (2009). This standard is not high, but agencies need something of substance in the record before them to justify their decision. If an agency ignores the only expert who provides his or her expert opinion, then the agency will be reversed if it doesn't have its own expertise or knowledge on the disputed subject. Feinson v. Conservation Commission, 180 Conn. 421 (1980). If an agency member has an expertise then make sure that is disclosed during the public hearing and if you have trouble believing an expert, tell them

why during the hearing before the agency so they have an opportunity to address the credibility issue. Don't lay in wait for the deliberations to sand bag anyone. Remember, an agency can rely on its own hired expert. Tarullo v. Inland Wetlands & Watercourses Commission, 263 Conn. 572 (2003).

The case of River Bend Associates v. Conservation & Inland Wetlands and Watercourses Commission, 269 Conn. 57 (2004) holds that there must be substantial evidence of an adverse impact to a wetland or watercourse and it must be more than a mere possibility. Evidence of general environmental impacts, speculation or general concerns does not add up to substantial evidence. A wetlands agency must focus its attention on the impacts to wetlands and watercourses and not attempt to cure every perceived environmental malady. Impacts to a wetlands and watercourse must be likely and specific. Vague comments about impacts are not enough. Experts often present reports that use phrases like, "there is the potential for" or "there is a risk of" or "there is the possibility of". Such phrases are not substantial evidence that the stated result is, in the expert's opinion, reasonably likely to occur. Be sure to ask for clarification when you read or hear these kinds of ambiguous statements.

In 2004, statutory changes were made to include as part of the definition of wetlands or watercourses "aquatic, plant or animal life and habitats in wetlands or watercourses" [emphasis added] and define the scope of the agency's jurisdiction relative to wildlife: "A municipal inland wetlands agency shall not deny or condition an application for a regulated activity in an area outside wetlands or watercourses on the basis of an impact or effect on aquatic, plant, or animal life unless such activity will likely impact or affect the physical characteristics of such wetlands or watercourse". *Conn. Gen. Stat. Section 22a-41(c) and (d)*. Activities affecting vegetation within a wetlands (such as clear cutting and clearing) can be regulated. Ventres v. Goodspeed Airport, LLC, 275 Conn. 105 (2005).

"The substantial evidence rule should be neither feared nor ignored by an agency. Every agency should base its decision upon the evidence before it, state its reasons on the record, and follow the procedures and criteria of its regulations."

Usually courts use the substantial evidence rule to reverse the denial of a permit. However, in the recent case of Finley v. Inland Wetlands Commission of the Town of Orange, 289 Conn. 12 (2008), the Connecticut Supreme Court reversed a wetlands agency's decision to grant a permit for a new Stew Leonard's store in Orange. The application involved 41.15 acres, 18.6 acres covered by development and 13.43 acres of which were regulated wetlands and upland review area. The application was approved by the agency with 20 conditions, one of which required Stew Leonard's to submit a "revised and updated erosion control plan that implements all state regulations". This seemingly innocuous condition

was at the root of the court's reasoning that substantial evidence did not exist. The agency had been provided two alternative stormwater management schemes: one which had a pond to handle on site the runoff discharge and one which did not. The agency approved the plan that did not have the pond. However, the applicant had never provided an erosion control plan for this particular option. The court basically

said that the agency could not approve this application without at least seeing the erosion control plan because it was essential to the approval of the permit. This case stands for the proposition that an agency cannot condition an approval on something it hasn't seen. Another important aspect of this decision is that the court claims that the agency did not state its reasons for approving the permit on the record. For every decision, particularly controversial decisions, state your reasons for your decision on the record, preferably in writing.

Although applicants and intervenors may start to cite Finley in making some sort of substantial evidence argument, it is important to remember that Finley is limited to its unusual facts where no erosion control plan had been submitted for an approved option. Conditions are specifically allowed by statute for wetland permits. *Conn. Gen. Stat. Section 22a-42a* states that "in granting, denying or limiting any permit for a regulated activity the inland wetlands agency...

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... may grant the application as filed or grant it upon such conditions, limitations or modifications of the regulated activity, designed to carry out the policy of sections 22a-36 to 22a-45, inclusive". The courts have upheld this power, even where the conditions imposed required the submission of additional information. Gardiner v. Conservation Commission, 222 Conn. 98, 102 (1992). The distinction between the Finley and Gardiner decisions seems to be that the court considered the erosion control plan that was missing in Finley to have been essential to a finding of compliance, and not merely supplemental information.

The substantial evidence test has increasingly come to the forefront of inland wetlands and watercourses court decisions. The substantial evidence rule is the method by which a court examines the substance of an agency's decision and has been used to overturn both approvals and denials of applications. The substantial evidence rule should be neither feared nor ignored by an agency. Every agency should base its decision upon the evidence before it, state its reasons on the record, and follow the procedures and criteria of its regulations.



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— MILE-A-MINUTE VINE SPREADING RAPIDLY — IN CONNECTICUT

*by Kathleen Nelson, Coordinator Mad Gardeners, Inc.,
Litchfield County Mile-A-Minute Vine Control Project*

Editor's Note: *Inland Wetland and Watercourse Commissions take note; Mile-a-Minute invasive plants thrive in wetland soils. While they do not like wet feet, their presence just above the water line adds to dispersal when seeds drop into the water.*

The invasive Asian Mile-a-Minute Vine, *Persicaria perfoliata*, AKA *Polygonum perfoliatum*, (MAM) is rapidly spreading into Connecticut from the south and west. MAM is a fast-growing annual that thrives almost anywhere except lawn, very deep shade, or with roots in water. Plants can grow as fast as 6 inches per day and climb 20 feet high. A single plant can blanket an area 30 feet in diameter during the growing season and produce over 2000 seeds. Within a very few seasons MAM forms monoculture stands, destroying wildlife habitat by shading and ultimately killing almost all vegetation except tall trees.

MAM is a serious threat to agriculture, the economy, and the environment. It is devastating to ecosystems. Early detection and rapid response may prevent spread of MAM to new areas. Reduction or elimination of MAM where it is currently found is essential for the survival of the native plants that form the backbone of healthy ecosystems.

MAM accidentally introduced into Pennsylvania reached Connecticut by 1997, when it was reported in Greenwich. The first Litchfield County population was reported in Bridgewater in 2004. By the end of the 2008 season MAM had been confirmed in Greenwich, Westport, Bridgewater, New Milford, Roxbury, Newtown, Lyme, Torrington, Weston, Monroe, Fairfield, Danbury and North Haven. That is just the known populations. There are many more, either not recognized, or lurking in places we don't go, places we avoid, such as fields of multiflora rose and woodlands full of barberry.

MAM seeds are spread by birds, other animals, soil and water. Landscaping materials - contaminated topsoil, mulch, and plant materials - may be the primary way that MAM is introduced to new areas.

Once there, seed-drop quickly results in dense stands. Seeds are spread to some extent by birds and other animals, but the scariest method of spread is by water: seeds carried by water expand populations with terrifying speed.

The large Newtown populations, not recognized until 2007, probably originated from seeds in topsoil used in landscaping. A Newtown official who walked the Pootatuck River corridor in 2004 saw no MAM plants, yet by 2007, MAM was found extending a mile or more along the river corridor covering several acres of floodplain. By the end of 2008, plants had been sighted 3 or 4 miles downstream. In another part of town plants were found covering a 50 acre hillside. A 30 acre downstream meadow with only a few plants in 2007 was heavily infested in 2008 and plants were found on many properties further downstream.

So far very little has been done in Connecticut to control MAM. Volunteer groups have attacked some of the populations. In New Milford, an ad hoc group pulled plants in 2005 and 2006, but made little headway. In 2007, the group became a Committee of Mad Gardeners, Inc., a 501 (c)(3), and raised money to hire workers, mostly college students. Paid workers and volunteers searched properties, pulled plants, and distributed information from mid-May to mid-October in 2007 and 2008. In addition, Weantinog Heritage Land Trust attacked a large dense stand of MAM on one of their properties and several adjacent privately-owned properties.

Each year the diameter of the search has expanded. Tiny patches of plants were found and attacked before they spread. Workers checked about 150 properties in 2008. The New Milford/Bridgewater population is now known to consist of large and small patches in an area about a mile in diameter. A separate population in southeastern New Milford is spread over a half-mile diameter area.

MAM seeds remain viable for several years. It is not known how long it will take to deplete a seed bank. There was no noticeable reduction in plant numbers

between 2007 and 2008 in large well-established areas, but some places that had a handful of plants in 2007 had none in 2008. Volume of seeding plants is one measure of success. Volunteers stuffed 150 contractors' bags with huge plants from a single half-acre hillside in 2006. In the next two years, almost all plants in known New Milford/Bridgewater MAM areas were pulled prior to seed set and left to wilt. In 2008 fewer than 40 half-full bags of plants in seed were collected from the entire 600 acre work area.

Identification: Mile-a-Minute Vine is very easy to recognize. Triangular leaves and vining stems with tiny barbs are about all you need for identification. The leaves, as small as half an inch on an edge or as large as three or more inches on an edge, are distinctly equilateral triangles, a shape easily noticed when scanning the landscape. Stems have tiny barbs. The only possible confusion is with two native wetland tearthumbs that have somewhat triangular (not equilateral) leaves. The petiole is attached to the edge of the leaf in native tearthumbs, distinguishing them from MAM, with petioles attached just under the edge of the leaf.

Other characteristics: Stems are weak and clamber over trees and shrubs, not twining, but growing upward, sticking to things with the tiny velcro-like barbs. The roots are puny and easy to pull except in very large plants. A cup-like leafy ocrea is present, more noticeable on smaller plants. Foliage is generally pale, easy to spot from a distance. The clusters of tiny flowers aren't showy. Small bright blue berries begin to ripen in late June or early July. Large plants can produce over 2000 seeds/plant. Plants stunted by shade or drought, with scrawny two-foot stems and half a dozen tiny leaves, produce seed as well, though only a few.

Control: Plants are easy to pull, preferably before they set seed. We pull right up to the time of killing frost on the assumption that removing these plants reduces the number of seeds available for birds



to spread. Special precautions are necessary for transporting and disposing of plants in seed. MAM is easily killed by herbicides, including some pre-emergent herbicides. Mowing at lawn height provides excellent control. Rough mowing is often necessary to provide access for pullers, but does not kill the plants. Since MAM hides beneath shrubby invasives such as multiflora rose, control of these plants is critical. A tiny weevil, one of a hundred insects that eat MAM


in Asia, is being studied by researchers at the University of Delaware. It has been tested in several states, but not yet in New York or Connecticut. Keep your fingers crossed - so far this is our best hope.

Education: The Mad Gardeners, Litchfield County Mile-a-Minute Control Project distributed 18,000 ID cards throughout the state in both 2007 and 2008. Posters were distributed to wetlands agencies, public works departments, libraries, nurseries, and other businesses in northern Fairfield and Litchfield Counties. They arranged for articles in newspapers and other publications, had exhibits at many events, and talked at many meetings. The college interns addressed an assembly of all the New Milford fourth-grade classes in 2007.

Funding: The Nature Conservancy, the Town of New Milford, and Weantinoge Heritage Land Trust will be partnering with Mad Gardeners, Inc. for MAM work in Litchfield County this year. The project costs about \$30,000 per year. Any suggestions for obtaining funding are appreciated.

More information, including a map and photographs, is available at www.madgardeners.com or from knelson151@sbcglobal.net.

What you can do: REPORT ALL SIGHTINGS to donna.ellis@uconn.edu or knelson151@sbcglobal.net.

Kathleen Nelson coordinates Mad Gardeners, Inc., Litchfield County Mile-A-Minute Vine Control Project. She is a long-time member of New Milford's Inland Wetlands Commission. 

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conservation issues. A more informed member of the commission will be more effective in public discussion and making important decisions about natural resources and development.

Come join us to find out about this great opportunity to become a citizen scientist and an active conservationist. The requirements are motivation, discretion, and a basic knowledge of native flora. It's a great way to learn more about plants, meet others with similar interests, and make an impact in conservation.

Training sessions will be held in March in all New England states. For more information visit our website at <http://www.newenglandWILD.org> or contact: John Burns, PCV Administrative Coordinator New England Wild Flower Society, (508)877-7630 ext. 3204; jburns@newenglandWILD.org.

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