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Habitat-Based Management Planning for Land Stewards

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Abstract: We offer a habitat-based management planning tool as the critical next step, after acquisition, in sustaining the ecological value of conservation lands, including a methodology for the identification of common habitats. Many land trusts and municipalities have acquired large portfolios of properties that are now permanently protected. Even though the land is protected from future development, surrounding land use pressures, invasive species, and other factors may cause drastic changes to these properties. Management of these areas is often necessary to sustain or improve particular habitats or to manage for specific species.

Introduction

Towns and land trusts throughout Connecticut have protected thousands of acres of land through both acquisition and 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 natural systems need some form of management to remain sustainable. Scientists have long recognized the importance of management to ensure sustainable and healthy ecosystems (Christensen et al., 1996), as does the Natural Resources and Environmental Management Program (Extension Service â United States Department of Agriculture, 1994) as described by Frigden (1996).

The University of Connecticut's Sea Grant and NEMO (Nonpoint Education for Municipal Officials) programs have created a new educational tool 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 managing open space in the face of challenges such as climate change, invasive species, fragmentation of land, surrounding land use, or changes in plant form and dominance over time. Because taking care of these lands is a multi-generational task, a management plan also provides a way

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

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 manage it. We focus on habitats because they are so basic to the biological diversity of a site and provide a good indicator of what a property can (or could) support.

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 plans of conservation and development. This approach is characterized by four basic steps: Inventory, Analysis, Plan, and Implementation. By going through each phase of the planning process, one can set priorities, establish measurable goals, 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 (Table 1). We 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 descriptions of each step are available online at <http://clear.uconn.edu/tools/open_space/index.htm>.

Table 1.
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

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 requires land stewards to identify what habitats exist on the property. Because most stewards are not schooled in the biological sciences or are not familiar with plant identification, this can be a daunting task. Our process, however, allows most anyone to identify key habitats with little or no knowledge of plants or animals.

What Are Habitats, and Where Are They?â 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 a site's habitats. Assess sites according to the following general categories: Forests and Woodlands, Shrublands, and Grasslands/Meadows (see Table 2 for definitions of the habitat types; definition of the first four types from Grossman et al., 1998). These habitats can be upland or wetland, and, although they seem simplistic, these vegetated categories are those used widely by ecologists to classify habitats on regional or national scales (Grossman et al., 1998).

Table 2.
Habitat Classification System

Habitat Type	Description
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 vegetated types, but which may have habitat based management needs

Mapping where these different habitats are on the property is a key component of the inventory. The NEMO program, with funding from Connecticut Department of Environmental Protection, has developed the Community Resource Inventory (CRI) Online <<http://clear.uconn.edu/projects/cri/index.htm>>, which allows the public to create maps without any specialized training (Rozum, Wilson, & Arnold, 2005). Combining maps generated from the CRI, local knowledge, and field visits can generate a site map with the different habitats and cultural resources identified and outlined.

Writing It Down and Making It Realâ 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. That is where one sets down current uses (recreational, educational, and scientific) of the sites as well as management issuesâ 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 also who will do it, and how it will get done. By specifically looking at each habitat type, 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. Several Connecticut land trusts are working with the Natural Resources Conservation Service and U.S. Fish and Wildlife Service, and have obtained funding to implement management plans.

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 Extension educators and other knowledgeable individuals.

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