



Olive Natural Heritage Society Newsletter

Vol. 1, No. 1

Spring 1998

Dedication

Remembering Deborah

The success of every organization depends upon the participation and enthusiasm of its members. Deborah Jewell, with her inquisitive nature and general interest, was the most steadfast and enthusiastic of us all. She led by eagerly attending every meeting and field trip. Often she and Ken had just arrived from New York City, tired from their busy life there. We miss Deborah. To honor her memory and recognize her contributions we have established the Deborah Jewell Annual Lecture. This lecture will be of interest to the general public. You may contribute to the fund we have set up to support the lecture series.

The ONHS Newsletter is published by the Olive Natural Heritage Society, Inc.

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Catskill Ecosystem Initiatives

The Olive Natural Heritage Society (ONHS) is positioned to develop opportunities and partnerships for innovative environmental research in the Catskills. The Catskill Ecosystem Initiatives presented in this issue of the ONHS Newsletter include:

1. Catskill Flora Project
2. Endangered Species Recovery Work
3. BioIndicators of Forest Health
4. Food Web of Hemlock Ravine Forest

The ONHS has been awarded two research grants to support the Catskill Flora Project, and we have enjoyed continued generous support from our members and friends. Within the last month we were awarded a contract to perform Endangered Species Recovery Work on Northern Monk's-hood, as outlined in the Recovery Plan for plant species listed as endangered or threatened under the Federal Endangered Species Act. We celebrate this support as recognition of the importance of high level environmental research in the Catskills.

The collaborative project with USGS to map water wells and project well yields in the town of Olive is nearing completion. We anticipate valuable insight into subsurface water resources.

The partnership theme runs through each of these projects. We especially thank the U.S. Geological Survey, the U.S. Forest Service, the N.Y.S. Department of Environmental Conservation, Watershed Forestry Program, and the Institute for Ecosystem Studies.

The ONHS is proud to sponsor the founding of the Catskill Institute for the Environment (Catskill Institute), a consortium of all regional post-secondary schools. The Catskill Institute will facilitate:

- Building partnerships in environmental education at the post-secondary level between the local community and students at regional colleges;
- Empowering citizens for informed individual environmental decision-making;
- Creating regionally accessible environmental archives, including digital databases and geographic information systems;
- Revitalizing the regional economy through environmental research and management.

We are a volunteer organization. We collect no membership fees, however our members have traditionally been generous with donations for special projects and the day-to-day expenditures of the organization. The commitment of our member scientists is truly exemplary. We are appreciative of this ongoing support. The bulk of the financial support for ONHS research has come from foundations and government grants and contracts. Additional financial support and volunteer effort is specifically needed for the Catskill Flora Project.

Bringing new talent into the organization is critical to our vitality. New members we would like to hereby officially welcome are Steve Parisio, Dexter Jeannotte, Will Nixon, Betty and Eugene Straus, Francis Groeters, and Chris Olney. We encourage other individuals and organizations to join us.

Food Web Hemlock Ravine Forest

The Hemlock Forest is a 'keystone community' in the Catskill watershed. The forested riparian zone in the deep cool ravines where the rocky headwaters of Catskill streams arise is dominated by Hemlock in single species stands or by Mixed Hemlock-Northern Hardwoods. Vigorous healthy Hemlock forests are essential to support the complex aquatic biotic assemblage characteristic of these richly oxygenated running waters.



Lambdina fiscellaria

Hemlock supports a large assemblage of native species whose population density seldom, if ever, reaches outbreak proportions. Knowledge of the pattern and process that describes and explains the ecology of these populations is fragmentary.

The Eastern Hemlock Looper (*Lambdina fiscellaria*) is a native moth that occasionally reaches outbreak density and may defoliate and eventually kill affected trees. In the eastern U.S. the species is largely limited to Eastern Hemlocks, and outbreaks have most often occurred in Old Growth stands.

We postulate that survivorship in various life stages of *L. fiscellaria* populations feeding on Hemlock in Old Growth stands differs significantly from populations feeding on the same host growing in Mixed stands. Parasitoids [wasps and flies] in particular may play a central role in controlling population size.

Parasitoid species also vary in the degree of host specificity they exhibit. We reason that single species stands of Hemlock may not support as diverse a suite of parasitoids as might occur in a mixed stand. We might expect a higher proportion of specialist parasitoids in single species stands, whereas in the mixed stands both specialist and generalist species may be present.

To test this hypothesis we propose to compare survivorship and parasitoid diversity and abundance in these two habitats as they occur in headwater riparian situations in the cool moist ravines characteristic of the eastern Catskills.

Endangered Species Recovery Monkshood Project

We will implement several of the tasks listed in the Federal Recovery Plan for Northern Monk's-hood, specifically:

Population Monitoring

A. Population Size: We will complete an annual census to ascertain present status and trends.

B. Critical Habitat Features: Soil moisture and temperature are important habitat features for successful germination of *Aconitum noveboracense*. We will monitor soil temperature continuously and soil moisture weekly during the growing season.

C. Deer Browse: High levels of damage to plants due to topping, possibly deer browse, has been noted. We will erect deer exclosures to study this threat.

D. Herbivory: A lepidopteran larva has been observed feeding on Monk's-hood seed follicles. *Aconitum* is a highly poisonous plant and we suspect the species feeding on Monk's-hood must possess a detoxification adaptation. We will collect larvae observed on Monk's-hood plants and transplant them to cultures of garden species of *Aconitum* to rear them for identification.



Propagation Research

A. Germination: Low germination has been postulated as the major barrier to successful population maintenance and extension. We will use a germination protocol that closely approximates conditions observed in nature and anticipate improved germination.

B. Greenhouse and Garden Culture: We will attempt greenhouse and garden culture of northern Monk's-hood to provide stock for potential transplantation to establish viable populations in new habitats. This will obviate the threat of loss of genetic

diversity should local extinction occur due to natural catastrophe or the impact of human activity.

Field Survey

A. The ONHS Catskill Flora Project: During CFP surveys we will identify potential sites for establishment of new Monk's-hood populations based on the critical habitat features identified with regard to soil moisture and temperature.

BioIndicators of Forest Health



The 'health' of Catskill forests is a complex, hard-to-define concept. There is no doubt, however, that the vitality of the forested ecosystem that supports the communities we live in and the vast watershed supplying high quality water to New York City is important to us all.

We have rapid, accurate, and sensitive methods for measuring the impact of pollution on communities of aquatic organisms. These methods are superior to direct chemical testing because they reflect both acute and cumulative effects of noxious agents.

Unfortunately, no such standardized bioindicators exist for terrestrial systems. Preliminary reports suggest that ectomycorrhizal fungi and ground dwelling beetles may be impacted by various forest management practices and enrichment by nitrogen-containing chemicals.

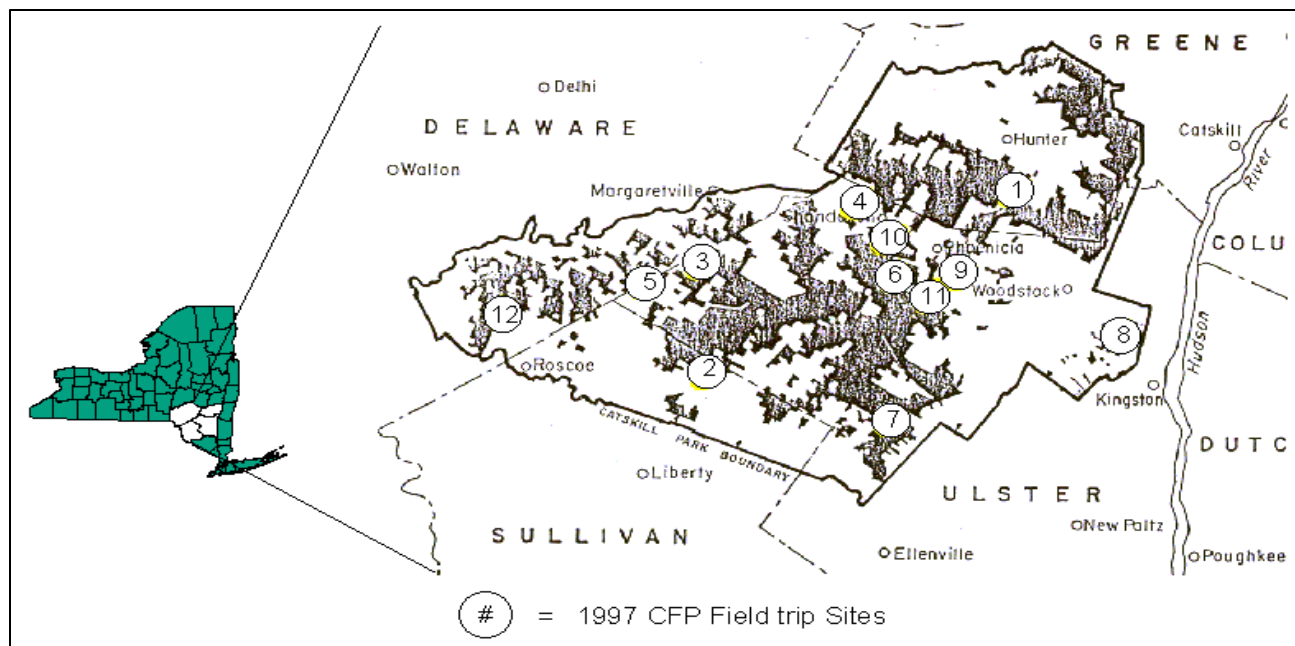
A large research program to study the biogeochemical effects of forest harvesting on nitrogen-cycling is being carried out by the USGS at Frost Valley in the Neversink Watershed. Three tributary watersheds of the W. Branch Neversink R. will be studied. One watershed will remain undisturbed, the second will have 40% of its trees removed [timber stand improvement], and the third will have all of its trees removed.

The USGS has encouraged the ONHS to develop a sampling scheme to collect baseline and long-term data on the diversity and abundance of ectomycorrhizal fungi and carabid ground beetles. The Institute of Ecosystem Studies has also invited us to apply our rapid assessment methodology to their study plots of single-species stands of beech, oak, hemlock, and birch which have been fertilized with nitrogen. The U.S. Forest Service will be providing technical assistance with this project.

The Catskill Flora Project

Historical Records of Distribution

This project had its origin in the work of Mr. Karl Brooks, amateur botanist, who studied Catskill plants for over two decades. The New York State Museum published several volumes of his *A Catskill Flora and Economic Botany*, however the project was halted by Brooks' death and has been inactive for over twenty years. Brooks' unpublished manuscripts, maps, and records of occurrence have passed to the ONHS and will establish the foundation for our inventory.



Modern Flora Survey

The Catskill Flora Project has designed an innovative survey methodology that makes possible a comprehensive inventory of the entire Catskill flora over the course of three to four field seasons by a two-person team working one day per week. Considerable interest in our methods has already arisen due to their potential application toward the growing need for ecosystem-wide information on plant distribution and biodiversity inventories of special use areas e.g. projected trails on Forest Preserve Land [DEC], and in demonstration forests [Watershed Forestry Program].

We have established a grid of 25km square census tracts. We complete a 'timed meander' to census all vascular plants encountered in six to eight hours of intensive field work. Our course is guided by study of soil, topography, and wetland maps to insure that we visit all significant habitats within the tract.

Relational Databases And Geographic Information Systems

The approximately 40,000 historical and the anticipated 10,000 modern records of plant occurrence, when entered into a relational database and geographically referenced, have the potential for unprecedented analysis of not only plant status, but also spatial and temporal trends. Data entry is ongoing.

The Environmental Systems Research Institute has granted us powerful Geographic Information System (GIS) software. The NYS-DEC has provided us with base data layers, and we are adding more information daily.

Donors Needed

We need to hire a data entry specialist to input the vast trove of Brooks' historical records of plant distribution. If you can help us by making a financial contribution, please contact our treasurer. Thank you.

When the digital database and GIS are complete, we will be able to superimpose our plant occurrence data on maps reflecting a wide range of environmental data including: topography, soils, wetlands, weather, surficial and bedrock geology, and land uses.

Herbarium

Voucher specimens [excluding threatened or endangered species] are prepared for all taxa, and additional specimens are collected for taxa requiring microscopic study for determination of species. The voucher specimens will be deposited in regional, state, and reference herbaria. The Norcross Foundation has provided generous funding for herbarium cabinets, materials, and microscope.

Volunteer Opportunity

Volunteers are needed to help prepare herbarium sheets of valuable voucher specimens. Hours are flexible, and work at home is possible after training.



212 High Point Mountain Rd.
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Ecosystem Initiatives - 1998

Calendar

1997 Annual Report

March: Delia Adams and Sherret Chase presented their work on the Catskill Forest Preserve Access Plan.

April: ONHS sponsored a town meeting with Rep. Maurice Hinchey to review federal programs for protection and stewardship of the Catskills.

May - Aug: ONHS sponsored field trips:
* Devil's Tombstone/ Diamond Notch – leader Vance Crawford;
* North & South Lakes;
* Platte Clove – leader Sherret Chase;
* Balsam Lake Fire Tower

Sept: Steve Parisio and Sam Adams spoke to NY Mycological Society about the association between Mycorrhizal fungi and forest health.

Oct: ONHS Symposium on Catskill Deer Management: speakers Dick Henry (DEC) and Helen Forgiione (DEP).

Nov: Catskill Porcupines: presentation by Prof. Uldis Roze, Queens College.

Dec: ONHS Symposium: Mapping the Catskills for the 21st century – speakers Karin Verschoor (DEC) and Barbara Dibelar (DEP).

Catskill Flora Project – tentative 1998 field schedule

<u>MONTH</u>	<u>WEEK</u>	<u>SCHEDULE</u>
April	IV V	Basily Rd. Delancy
May	I II III IV V	Colgate Lake Beaverkill State Camp. N. Balsam Lake Vly Pond/ Tunis Pond Mink Hollow
June	I II III IV	Indian Head Mt. Burnt Knob Samuel's Point Pacama Vly
July	I II III IV	Cathedral Gorge Frost Valley North Lake Bog Platte Clove
August	I II III IV V	Wildcat Mt. Fir Mt. Denman Mt. Campbell Mt. Wolf Hollow WMA
Sept.	I II III IV	Burroughs' Site Cave Mt. Mt. Tobias Dry Brook Ridge
Oct.	I II	Peekamoose Shokan High Point

This list is tentative; substitutions, deletions, and/or additions may be made depending on weather, other commitments, or opportunities. Please contact Sam Adams or Steve Parisio for confirmation, details, and directions.

1998 Regular Meetings

First Friday of each month; 7:30-9:00pm at Adams' Barn, 212 High Point Mt. Rd, West Shokan, NY 12494

Annual Meeting: 6/98

Membership

Join the Olive Natural Heritage Society if you support scientific studies of the Catskills environment and enjoy working with others to collect and disseminate information concerning our natural heritage. There are no membership fees; new members are elected by the Board of Directors.

To Contact ONHS

* For meeting, field trip, or volunteer opportunity information contact:

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Note: New internet address for Catskill Institute for Environment:
www.cobleskill.edu/CIE