



FALL 1988

NEWSLETTER

THE EDMUND NILES HUYCK PRESERVE, INC.
& BIOLOGICAL RESEARCH STATION
P.O. BOX 188, RENSSELAERVILLE, NY 12147
(518) 797-3440

Research Activities on the Huyck Preserve

Richard L. Wyman

This year we received 15 proposals for financial support and the waiver of fees associated with Research Station use and housing from researchers throughout the United States. I am pleased that we were able to offer funds to all but one of those requesting assistance. We had a total of 25 scientists conducting projects on the Preserve during 1988. Below I briefly outline some of the projects that are occurring now.

First, we have put together a team of five researchers (including myself) who are examining factors influencing the activity of the detritus-based food web. The other researchers are Drs. Nancy and William Elliott (Siena and Hartwick Colleges, respectively), Dr. Malcolm Frisbie (Eastern Kentucky University), and Dr. Susan Beatty (UCLA). The detritus-based food web is responsible for the breakdown of litter on the forest floor, for recycling of minerals and nutrients for reuse by trees, and for the formation of soil. One factor that appears to be influencing the activity of this food web is soil acidity. We have begun to gather data and have planned a series of experiments to determine how soil acidity alters the structure and function of the decomposer community. I described some of my work on salamanders and acid soils in our last Newsletter (Winter 1987-1988).

Dr. William Elliott (Huyck Grant recipient) is gathering data on rates of decomposition of forest floor litter in red pine plantations and hemlock and hardwood forests. He catches litter in meter square frames with mesh bottoms. He has found that the forests on the Preserve produce about two metric tons of litter per hectare (= 2.47 acres) per year. He also measures the rate of breakdown of litter by placing known amount of litter in small, fine-mesh bags, putting these bags back in the forest, and retrieving them after various amounts of time. Breakdown of litter in hardwood forests is complete after one-year while in the acidic red pine plantation breakdown requires several years. Breakdown in the acidic hemlock stands is so slow that after one year no perceptible loss of litter has occurred (Figure 1). He has also been able to estimate the biomass of bacteria and fungi.

The litter and associated bacteria and fungi provide food for the invertebrates of the decomposer community. Dr. Nancy Elliott (Huyck Grant recipient) is comparing the quantities of invertebrates (including insects) among the same forest types using Malaise traps. These are tent-like contraptions that flying insects blunder into and are caught. She is also examining the numbers and kinds of invertebrates found within the litter and humus (partially broken down litter). We weigh the invertebrates collected from the litter of the three forest types. The biomass (weight of living material) of invertebrates was greatest in the hardwoods, second in the red pine and least in the hemlocks.

Amphibians, such as the red-backed salamander (the most abundant back boned animal on land in Northeastern United States) are upper level consumers of the invertebrates of the decomposer community. Their biomass was correlated with the biomass of invertebrates. It is interesting that the most acidic habitat (hemlock) has

(continued on page 2)

Who are the People on the Board of Directors

Laura S. Carter

(continued from last issue)

Carol Ash Friedman, Vice President

Carol is the Regional Director of the New York City regional office, New York State Environmental Conservation Department. It is her job to make sure "the environmental laws of this State are followed in the City." Carol, who has had a home in Rensselaerville for the past ten years, became involved with the Preserve as a Board member three years ago, and was recently re-elected to another three year term. She "believes that if you live in a community that has made an effort to initiate a special quality (of life), the entire community should participate in that effort."

Laura Carter, Treasurer

Laura, who has served on the Board since 1981, and as Treasurer for the past five years, has been visiting Rensselaerville and the Preserve since she was a child, and was a year-round resident at one time. She is part of the Huyck family, members of which have lived in the town since the late 1800's. "The Preserve is protected so we can enjoy nature, Rensselaerville can have water, and so scientists have a place to do their research. Research conducted at a biological field station like the Huyck Preserve can provide us with information that is critical to our understanding of environmental problems--acid rain, global warming, disappearance of species, and so on." Laura is also assistant chairman of a state-wide advocacy group in New Jersey, a docent at an Arboretum, and chairman of the public relations committee for the Organization of Biological Field Stations.

Martin Brand, Secretary

Martin is a senior engineering geologist at the New York State Department of Environmental Conservation in Albany where he manages hydrogeological investigations of inactive hazardous waste sites. He became a year round resident of Rensselaerville in 1985, but has been visiting the town since 1960. Members of his family have lived in the area since the 1920's. Martin who has "enjoyed the resources of the Preserve since I was a small child (swimming in Lake Myosotis and hiking around the Falls)" has been on the Board since 1986, and secretary since 1987. He is also chairman of the Rensselaerville Historic District Association, a member of the town planning board, and a commissioner for the Rensselaerville Water District.

Michael Huxley

Michael Huxley, who has served on the Board for three years has been elected to another three year term. He was at the Smithsonian for ten years as the Deputy Assistant Secretary for Science, and an environmental consultant for two years after that. He is now a rare book dealer specializing in natural history books. "My experience as a science administrator led me to the abiding conviction that biological research stations become national treasures in the short term and achieve international status over the long term. I have seen several field stations fail and the loss of long-term data has been severe to the biological sciences. The Huyck Preserve is one of the oldest

(continued on page 4)

President's Report

Marty Sullivan

This has been a most successful year for the Preserve. Perhaps our greatest milestone was the \$20,000 grant from the National Science Foundation to strengthen our research facilities and help us move toward being a year-round research center: The money will make a real difference, but even more significant is the recognition by NSF that this Preserve is a regionally and nationally valuable asset for conducting environmental research. Our executive director, Dr. Rick Wyman, deserves great credit for the successful grant proposal.

Another project completed by Dr. Wyman during the past year is the comprehensive history of research activities on the Preserve over the last five decades, published as our Occasional Paper Number One. It's an impressive reminder of the great quantity of productive and widely important research that has taken place here, and I know that the report was an important factor in the National Science Foundation's decision to extend financial support to us.

Research is a primary purpose of the Preserve, but it is not carried out in isolation from our community. I've been delighted at the expansion of educational programs that the Preserve now offers. The activities range from our annual Science Symposium to weekly Huyck Hikes during the summer, special lectures by distinguished scientists throughout the year, "Minds On" workshops for school children sponsored jointly with the Rensselaerville Institute, nature study classes, and many other special events.

We live in a time when far too many people lack knowledge of the natural world and natural processes. Even among professional biologists there is less interest in ecological studies and whole - organism research - the kind of learning that takes place out in the field - than in cellular or molecular studies under a microscope in a laboratory. We need both, and the Preserve is an important bridge between professional scientists, school children, and the public at large. The team of researchers that Rick Wyman has assembled to study the effects of acid deposition on forest health is a perfect example of the kind of effort that is important to other researchers but also of direct interest to all of us who care about our environment.

As you know, the Edmund Niles Huyck Preserve is one of a very few privately-sponsored preserves in the Northeast. We are fortunate to have funding from the National Science Foundation as well as regular annual support from the Huyck Foundation. However, these funds cover only a portion of the Preserve's operating expenses; gifts and membership contributions remain absolutely vital if we are to continue to grow and to improve the quality of our programs. If you see things improving around the Preserve, as I do, please bear in mind that it is a community resource as well as a research enclave. It needs our support, financially and as volunteers, in order to remain lively and productive.

As we look forward to next year, I want to conclude with special thanks to both Rick and Marilyn Wyman. Rick has been our steady and multi-talented leader. He has brought coherence, direction and new visibility to the Preserve, and needless to say he is on the job seven days a week. Marilyn is equally an asset to the Preserve and to Rensselaerville, not only because she helps Rick maintain his own focus and perspective, but because she is the sparkplug for so many activities - such as the nature study program and the new nature study for elementary classrooms - that serve this community very tangibly. On behalf of the entire board, I extend our admiration, respect and thanks to them.

Research Activities(continued)

the slowest rate of litter breakdown, the smallest biomass of invertebrates and of amphibians. The very slow rate of litter breakdown in the hemlock results in a high biomass of litter and humus. The second most acidic habitat (red pine) has intermediate values for decomposition, invertebrate and amphibian biomass. The least acidic habitat (hardwoods) had the highest value for the rate of litter breakdown and invertebrate and amphibian biomass. These results suggest that acidity may be altering the rate of activity in the detritus-based food web and that amphibian numbers may be controlled by the availability of food organisms that are in turn controlled by the rate of litter breakdown. However, other factors such as the chemistry and structure of the litter may also be important and we will be looking at these characteristics in the future studies.

I have previously shown that the numbers of amphibians are greatly reduced on acid soils and that about one-third of forested habitat on the Helderberg and Catskill Plateaus is now too acidic to support them. One possible cause of the loss of salamanders on acid soils is

that they may not be able to maintain the appropriate concentrations of minerals inside their bodies. Previous work has shown that fish in acid water lose sodium and cannot take it up from the water. When they have lost about 50% of their body sodium, they die. Dr. Malcolm Frisbie (Huyck Grant recipient) is investigating sodium balance in red-backed salamanders living on acidified substrates. One experiment has shown that salamanders collected from acid soils and placed on acid substrates lose sodium much faster than those placed on more neutral substrates. Another experiment revealed that those collected on acid soils die very quickly when placed on acid substrate. These data suggest that salamanders living on acid soils have already lost much of their body sodium and can stand little additional stress.

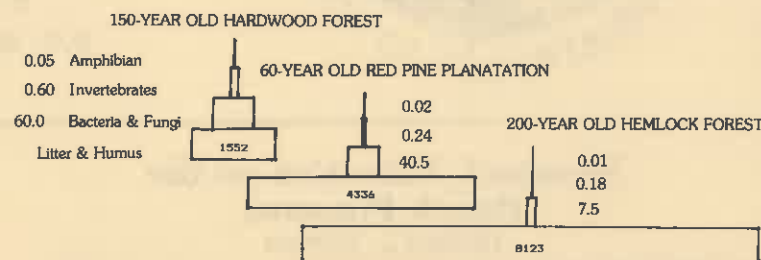


Figure 1. Biomass (g/m²) pyramids for the detritus-based food webs of three forest types on the Huyck Preserve in south-central New York during 1987.

Since New York State currently receives the most acidic precipitation in the United States, and acid precipitation may accelerate soil acidification, we should be concerned because the loss of the detritus-based food webs will have direct consequences on forest health and human activities.

Dr. Susan Beatty (Univ. of California at Los Angeles) has returned to the Huyck Preserve and this time armed with a National Science Foundation Research Grant and two field assistants. She is engaged in a multi-year experiment to determine what regulates the hardwood forest understory vegetation. She has placed hundreds of small mesh enclosures throughout the woods to eliminate large herbivore (e.g. deer) grazing and is manipulating various factors (e.g. litter depth, distance from forest edge) to determine whether these factors affect the species composition of forest understory vegetation. She also allows seeds to settle into her plots and then raises them in the laboratory to determine what the seed-bank looks like and to see which of the potential species are eliminated.

Dr. Beatty is also part of our team and plans to determine the spatial and temporal pattern of soil chemistry in our three forest types and along gradient of acidity in hardwood forests. These data will show if other chemicals are important in detritus-based food web activity.

Dr. Scott Collins (Huyck Grant recipient, Univ. of Oklahoma) returned this year to examine the factors which determine seedling survival in hemlock forests. With the help of Ms. Susan Glenn, he found that because of the spring and early summer drought, no hemlock seedlings survived this year. Loss of red maple and yellow birch seedlings was rapid during very dry weeks and slowed somewhat following small rains. He returned in September to complete this year's picture of seedling survival.

Ms. Vickie Backus (Huyck Grant recipient, Ph.D. student, Univ. of Vermont) is studying the behavioral ecology of woodland ants. She is just beginning her dissertation research and is concerned with how resources available to the ants affect their reproductive behavior. For instance, in environments where food is scarce, do ants reduce reproduction and wait for better times? Current theory suggests that if ants operate in an optimum manner they should reduce reproductive output in bad times and conserve their resources for better times, however, no field work has been done to test this theory.

Mr. Brent Ybarrondo (Huyck Grant recipient, Ph.D. student, Univ. of Vermont) has begun to study the physiological ecology of diving beetles. These are aquatic beetles that prey on amphibian larvae, small fish, and other aquatic invertebrates. They can hunt underwater by carrying a bubble of air. Brent is determining whether or not the oxygen concentration of the water in which the beetle is hunting affects its success at capturing prey and whether beetles alter their behavior in waters with low oxygen concentrations. Theory suggests that if beetles operate optimally, they should adjust their hunting strategy in waters with low oxygen concentrations.

Ice Fishing Contest

Marilyn F. Wyman

You hear them before 10 a.m., the designated opening time. The early birds who pass up the breakfast at Jim Perkinson's tavern, which for most starts the annual ice fishing contest held on Lake Myosotis.

They pull up into the Ordway House's driveway where inside I'm slumbering, enjoying Sunday morning. No lunch to pack, no child to bustle off to school. There had been concern about it not happening at all because of the early January thaw. But the ice already had many bitterly cold days to harden it safely solid. It would take much warmth to melt the 100 acre lake tucked back up on the Preserve.

Soon you hear the hum of those who pierce the ice with motorized help, a power auger. Clean 7 to 9 inch diameter, 8 to 12 inch thick holes appear where their makers will hunch and watch a tip-up, a flag that bobs up when a fish hits the bait. They are hunched too against the cold winds which sweep across the lake from the south-eastern spillway curving up to the northwestern inlet. The wind always blows on the lake.

Those who put in the sweat to saw their holes stay warm longer. Some visit the bonfire the Preserve provides as no fires are allowed otherwise. A supervised compromise which keeps fisherman warm on a zero degree, wintery gray day. Looking out my window, I see islands of dark figures against the snowy whiteness. An occasional muffled shout, maybe the lucky one catching the winner - the biggest fish. Others looking up anxiously wanting to believe that they will be the winner, but really just glad to be outside on a frozen lake. Rick and his five year-old assistant, Jerrine, are out there too, collecting data on the fish caught. Another important piece of information in learning about the Preserve. Also being there to take care of the lake. Everyone drawn together, sharing words, laughs, conquering the cold by being out and enjoying it. These are also the men and women who fish its quiet peaceful shores in summer. The kind of peace that gets into your bones and walks away with you. The peace and pastime that Edmund Niles Huyck valued.

The winning fishes this year were a three pound pickerel and a one and three quarter pound yellow perch.

Research Activities(continued)

Ms. Diane Angell (Huyck Grant Recipient, Ph.D. student, Brown Univ.) has begun a study of the food hiding behavior of the red squirrel. Red squirrels have evolved to specialize on the seeds of conifers such as spruce and red pine. In some areas red squirrels hide all their cones in one place (larder hoarding) and in other areas they hide cones all over the place (scatter hoarding). Diane is trying to find whether competition, cone production, or environmental factors (e.g. length of winter) determine the types of hoarding behavior used by red squirrels.

Mr Peter Sherman (Huyck Grant recipient, MA Student, SUNY-Binghamton) wants to find out if spiders can hear their main predator, the wasp, approaching the web. Many wasps stock their nests with spiders as food for developing wasp larvae. Theory predicts that some spiders should have evolved the ability to recognize the vibrations of the web produced by an approaching wasp and escape. Some spiders escape by dropping to the ground when a wasp approaches. Most researchers believe it is because the spiders can smell the wasp. Peter has so far found that many spiders do not hear or smell the wasp. Unfortunately most spiders Peter has examined are nocturnal. He is now looking at the common yellow, garden spider that sits in the middle of the nest during the day and is preyed on by wasps. Peter is using some amazing equipment to listen to wasps the way a spider might. He attaches a very small stylus (as in a record player) to one strand of the web and can amplify the vibrations of the web and produce a picture of the patterns produced on the web by approaching wasps. He can then play back these sounds to other spiders. It is still too early to say what the results will be.

Other scientists who have worked on the Preserve this year include Dr. Stimson Wilcox (SUNY-Binghamton), Mr. Wolf Blanckenhorn (SUNY-Albany), Dr. Peter Tobiessen (Union College), Dr. Larry Wolf (SUNY-Syracuse), and Dr. David Steadman (NYS Museum). Several people who have assisted with research this year are Mr. Mike Renda, Ms. Patti Martino, Mr. Phillip Hilferty, and Ms. Stefanie Komorowski.

Global Climatic Changes and Biological Diversity

A Theme for the 1988-1989 Huyck Lecture Series

Richard L. Wyman

On October 4, 5, and 6, I attended the first conference on the "Consequences of the Greenhouse Effect for Biological Diversity" sponsored by the World Wildlife Fund. Located in the nation's capital, the conference brought together experts in ecology, climatology and meteorology to discuss research on the potential effects of global climatic changes on plants and animals (including humans). The conference was attended by over 400 people from major universities in the country. Speakers were from the Universities of Alaska, California (Davis and Berkeley), Cambridge (UK), Colorado, Florida, Minnesota, New Mexico, Rochester, South Carolina, Stanford, Virginia, Brown University, the Conservation Foundation, Illinois State Museum, National Audubon Society, National Center for Atmospheric Research, and the World Wildlife Fund.

The "Greenhouse Effect" is the warming of the earth's atmosphere due to an increase in atmospheric carbon dioxide. In fact the picture is more complicated. Some areas will become warmer, others cooler, some drier, others wetter. These shifts will occur rapidly compared with changes over the past several hundred million years. The median prediction is for a 2 to 5 degree Celsius rise in the earth's average annual temperature in the next 20 to 50 years. It appears to have begun already. Even considering cyclic changes in temperature that normally occur, the average temperature on the earth has increased by 0.5 to 1 C since 1900, and the rate of rise in carbon dioxide concentration is now extremely rapid. The problem is made worse by the clearing of tropical forests and the increasing reliance on fossil fuels by developed and developing countries.

A 2 to 5° C rise in temperature seems small, but during the last ice-age temperature decreases were of similar magnitude. In addition it is not just the change in temperature that causes concern but also resulting shifts in precipitation and snow fall. The changes in temperature and moisture are predicted to have dramatic effects on life on earth.

Communities of plants and animals occur where they do because of temperature and moisture regimes. The Greenhouse effect will cause the climate to which animals and plants have adapted to move. When similar climatic changes occurred during past ice-ages, they occurred over thousands of years and plant and animal communities had time to keep up. The changes that will be occurring will happen too quickly, and plant and animal communities will be left behind. The result may be widespread loss of local populations, extinctions and shifts in community structure. Agricultural regions will also shift and deserts will expand.

This scenario is only one of many discussed at the conference. One researcher summarized his talk by saying, "If we don't do something within the next ten years, it will be too late." He was referring to the loss of species due to climatic changes and habitats destruction. When I returned to Rensselaerville, I was overwhelmed. I have taught about how human activities affect natural systems for years, but I was unprepared for the rate and magnitude of changes predicted to occur by most of the scientists at the conference.

Because I believe that education is the key to a decent future, and that we need to think globally and act locally, the Huyck Preserve Lecture Series this year will focus on global climatic changes and biological diversity. Beginning in January, there will be monthly speakers who will focus on a particular aspect of the problem (see enclosed schedule). I have not finalized arrangements for the entire series and you will be receiving updates in the future.

We also plan to host a two-day conference on the topic in Albany sometime in late April. We plan to invite regional and state politicians, and using newspaper coverage hope to reach a large capital district audience. In order to accomplish this, your help is needed. Accordingly, I have scheduled two events for the fall of 1988 to start things off and these are listed on the schedule on the next page.

1988-1989 Huyck Preserve Lecture Series

Global Climatic Change, Biological Diversity and the Future

Preliminary Sessions - To encourage community participation in organizing, advertising, and managing the series.

November 20 - What we'd like to do. A brief overview of the series and planning for community participation and organization.

December 17 - "Say Goodbye" A movie narrated by Rod McKuen about species extinction.

Lectures

January 22 - Richard L. Wyman, Huyck Preserve. An introduction to global climatic change and biological diversity.

February 21 - David Steadman, NYS Museum. Species extinctions and human activity.

March 19 - Margaret Stewart, SUNY Albany. The race to save habitats.

April - Conference at NYS Museum

May 21 - Dennis Logan, Marine Ecological Consultants. Marine ecosystems and global warming.

June 18 - Richard L. Wyman. Huyck Preserve. Forests, wildlife and climatic change.

July 16 - Martin E. Sullivan, NYS Museum. Politics and global climatic change.

All presentations are held on Sunday at 4:00 P.M. in the Eldridge Research Center of the Huyck Preserve (797-3440) on Pond Hill Road in Rensselaerville, N.Y. Refreshments provided.

Who are the Board of Directors (continued)

established stations in the nation and I view my role as a Board member as one of reminding all of its great ecological past and of its greater potential in the future." Michael is also involved with the Nature Conservancy as Chairman of Eastern New York Chapter, and as Vice Chairman, of the New York State Board.

William Keller

Bill Keller, now retired, was the Superintendent of Schools in Williamsville, New York, for twenty years, and lectured for seven years at the State University at Albany. A resident of Rensselaerville for fourteen years, Bill served until recently as chairman of the Rensselaerville Historic District Association, an organization which he helped to establish. Bill has been a member of the Preserve Board since 1985, and served as Vice President for two years. "The role of the Board is to define aims, goals, and priorities of the Preserve

and to evaluate how prudentially the Preserve's resources are being invested to achieve its goals."

Joseph Carey

Joe is a trial attorney with Bouck, Holloway, Kieman, and Casey, in Albany, and has served on the Preserve Board since 1987. He first visited the Preserve in the early seventies when a friend brought him out to see the Falls and hike around Lake Myosotis. He moved permanently to Rensselaerville more than three years ago. "The Preserve is an important asset to the community. I do not know how you can live in Rensselaerville and not be interested in the Preserve."

Daniel McNamee

Dan, a member of the Preserve Board since 1986, is President of the McNamee Consulting Company, which serves the communications media. His family has spent summers in Rensselaerville since the Depression and it was through his grandfather, George Cooley, a generous supporter of the Preserve, that Dan became interested in the Preserve. "It's a unique opportunity to protect an unusual, valuable, natural setting so that it enhances the community and promotes living species and scientific research. Preservation should be everyone's first choice. The Huyck Preserve deserves special consideration from us all."

Bliss Eldridge

Bliss Eldridge, the newest member of the Board, elected this past August, grew up in Albany and spent summers in Rensselaerville as a child. He "appreciates the Preserve and how it's protected the village." He bought a house in town about a year and a half ago and plans to be there regularly year-round. Bliss is a vice president with Merrill, Lynch, Pierce, Fenner and Smith in New York. He has been a stock broker for nearly twenty years, and prior to that spent four years in the Foreign Service. The Eldridge family, long-time supporters of the Preserve, is also descended from the Huycks.

THE EDMUND NILES HUYCK PRESERVE, INC.

P.O. Box 188

Rensselaerville, New York 12147

Membership Dues

Junior (17 yrs. or younger)	\$5.00	\$
Active	\$10.00	\$
Supporting	\$25.00	\$
Contributing	\$50.00	\$
Sustaining	\$100.00	\$
Patron	\$1000.00	\$
Name:		
Address:		

Please make all checks payable to The E.N. Huyck Preserve, Inc., and mail to the above address. Tax deductible: Annual report is on file and available through the N.Y.S. Department of State, Charities Registration section, or the Preserve. **Thank you.**

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