WINTER 1987 - 1988

NEWSLETTER

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

Who are the People on the Board of Directors?

Laura S. Carter

Katharine Huyck Elmore, Chairman

Mrs. Elmore, a niece of Edmund Niles Huyck, is one of the original Board members and the only person still living who signed the Preserve's charter in 1931. She has lived in Rensselaerville, both summers and year-round, since 1904.

"The Preserve is important because there is so little land left to enjoy that is protected," Mrs. Elmore says, "and because it provides the opportunity for research."

In addition to active involvement with the Preserve, Mrs. Elmore served on the Rensselaerville Library Board for twenty years, and was President of the Board of Trustees of the Rensselaerville Presbyterian Church.

Martin Sullivan, President

Marty Sullivan is the Director of the New York State Museum in Albany and is also the Assistant Commissioner of Education. He has served on the Preserve's Board of Directors since 1981, and as President since 1984.

He feels it is important for "the Preserve to achieve a good balance of the research, preservation, and community service goals," and has worked hard toward that end.

Dr. Sullivan also serves on the Board of the Eastern New York Chapter of the Nature Conservancy, as a trustee of the State Council on Waterways, as a member of the National Council of the American Association of Museums, and on the Board of the Historic Albany Foundation.

Peter McChesney

Peter, who has lived part-time in Rensselaerville for 35 years, has served on the Board since 1983. He feels it is important for the Board to "provide direction and assistance to the Preserve in carrying out its several roles – research, education, habitat preservation, and community service."

Peter lives in Pennsylvania where he works for Scott Natural Resources. He is responsible for the planning and forecasting activities related to the management of Scott's 3.2 million acres of timberlands.

Barbara Heath

Barbara, elected to the Board in 1982, has lived in Rensselaerville (summers initially and now year-round) since 1932, and has long been devoted to the Preserve.

She feels the Preserve, in fulfilling the purposes originally set forth in the Charter, is playing an important role in "preserving the natural beauty of the area, increasing the knowledge and love of nature, and protecting the environment."

Barbara has also been involved with the Rensselaerville Library, the volunteer ambulance corps, and the church.

Jerome G. Rozen, Jr.

Dr. Rozen, who became a member of the Board in 1985, has been carrying out field research on bees on the Preserve since the early 1970's. He served fourteen years as Deputy Director of Research for the American Museum of Natural History in New York City. Today, he is Curator for the Museum, a position he has held (concurrent with other positions) since 1965.

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Salamanders, Soil Acidification and Forest Ecology

Richard L. Wyman

The survival of the red-backed salamander (Plethodon cinereus) may be important for the continued proper functioning and health of forested ecosystems and changes in those ecosystems would have longterm consequences for humans as well. Although we commonly see amphibians in ponds and streams, most frogs, toads and salamanders spend their adult lives on the forest floor within the "litter", humus and underground. They are upper level consumers of the decomposer food web. The decomposer food web consists of fungi and bacteria, invertebrates such as insects and earthworms, and vertebrates like salamanders. If it were not for the activity of decomposers, the forest would smother in its own waste within a few years. Bacteria and fungi are also important because they release nutrients which become re-available for use by plants. Without these nutrients, forest trees would perish because of poor health and reduced resistance to disease causing organisms.

There are two food webs in all natural communities, the grazing food web and the decomposer food web. The grazing food web includes animals with which we are all familiar, such as deer and wolves or zebra and lions. But in North America's forests, the grazing food web handles only about 10-20% of the energy flow through the forest during a year. The remaining 80-90% is handled by the decomposers. In terms of energy flow and nutrient cycling, the small and inconspicuous forest organisms play a more important ecological role than do the large and obvious forest animals.

The red-backed salamander

The term 'food web' is used to describe the predator-prey interactions occurring within a community such as which species of animals are eaten by which other species, how much energy and nutrient material is moved from one feeding or trophic level to the next. These kinds of information allow us to assess the relative importance of different habitat types in terms of their productivity and potential for human use. Changes in energy flow and nutrient cycling are related to stresses on the forest. Stresses include such things as air pollutants (acid deposition, ozone, heavy metals), insect outbreaks, severe storms, and long-term climatic changes. Predators of the decomposer food web, such as salamanders, reflect changes in forest activity and energy transfer because they are at the top of the food

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Board of Directors *(continued)*

As Dr. Rozen's responsibilities as Deputy Director of Research included overseeing the Museum's Southwestern Research Station in Arizona, he is very familiar with the operations of field stations.

"I bring to the Board my knowledge of research stations, their funding sources and funding problems and their research opportunities," Dr. Rozen says. "The Huyck Preserve is important because of the research opportunity it offers to scientists who are interested in animals and plants in the environment of Northeastern United States."

Vernon Husek

Vernon has been a Rensselaerville resident since 1972 and was elected to the Preserve's Board of Directors in 1987. He works for the New York State Department of Environmental Conservation as Chief of the New York Rivers Program (a river protection program).

He believes the goals and objectives of the Preserve are compatible with the community's interest in finding ways to manage and protect our natural resources for our posterity.

Diana Hinchcliff

Diana, who was elected to the Board in 1987, has been a year round resident of Rensselaerville since 1984.

As "open spaces and parklands are rapidly being developed, leaving less space for public enjoyment," Diana feels it is imperative to protect the Preserve as an "educational and natural resource."

Diana also serves as trustee and Vice President for the Rensselaerville Library, as Vice Chair of the Rensselaerville Historic District Association, and as President of the Capital District Chapter, American Society for Public Administration.

James H. Foster

Jim Foster, who has served on the Board since 1982 and has been a frequent visitor to Rensselaerville and the Preserve since 1968, considers "the Preserve a unique resource which will become more valuable over the years, not only for Rensselaerville, but also for the nation's scientists and conservationists."

Mr. Foster is President of Brouillard Communications, the division of J. Walter Thompson specializing in corporate and financial advertising and public relations. He is a trustee and member of the Executive Committee of the Rensselaerville Institute, and is Chairman of the Advertising Committee of the United Way of Tri-State.

Vincent Schaefer, Honorary Director

Dr. Schaefer, a long time friend of the Preserve, was a member of the Scientific Advisory Committee before being elected to and serving six years on the Board of Directors.

Dr. Schaefer, one of the inventors of cloud seeding in 1946, has received many honors for his lifelong work in atmospheric study. He is Director Emeritus of the Atmospheric Sciences Research Center at the State University of New York, and an industrial research consultant in Schenectady, New York.

Dr. Schaefer first became interested in the Preserve through his friendship with Mrs. E. N. Huyck. While Executive Director of the Natural Sciences Institute (1959-1968), he initiated a program for gifted high-school students to spend summers on the Preserve, conducting individual research projects and attending lectures at the Rensselaerville Institute.

He is an honorary trustee for the Rensselaerville Institute, a trustee for the Dutch Barn Preservation Society, a trustee of the Mohonk Preserve, and a trustee for the Daniel Smiley Trust.

IN THE NEXT NEWSLETTER, OTHER MEMBERS OF THE BOARD WILL BE PROFILED.

Salamanders *(continued)*

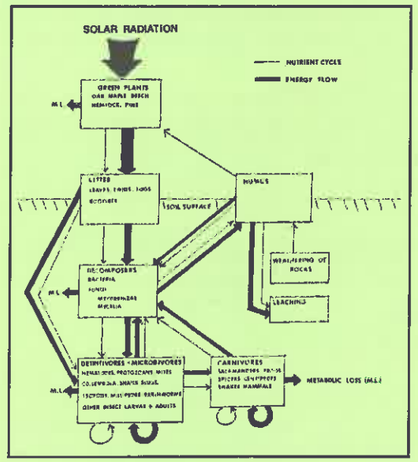
web. Amphibians can also serve as useful indicators or sentinels of environmental change.

On the Huyck Preserve, there are about 15 species of amphibians including wood frogs, American toads, red efts, spring peepers, yellow spotted and red-backed salamanders. The red-backed salamander is the most abundant terrestrial vertebrate in northeastern United States. This is because their range extends from Southern Canada to South Carolina and west to Illinois. In south-central New York, a red-backed salamander may be found in every two square meters of forest litter. Within New York State about 20% of the land area contains forests with appropriate habitat for this species. Assuming that salamanders occur at the above density then there are 18 billion red-backed salamanders in New York. Similar calculations for other states within the species range reveal that there are over one hundred billion salamanders. There are more salamanders than birds and mammals combined in our forests. A species with such standing surely deserves to be well understood.

All salamanders in the family Plethodontidae are lungless. They breath through their skin and mucous lining of their mouth and pharynx. This adaptation has freed some throat structures from their normal function of supporting the trachea and epiglotis. The freed structure became an anchor for the back of the tongue and allowed for the evolution of a tongue that may be projected from the mouth (like frogs). This allows plethodontids to catch mobile prey better than other salamanders that have lungs and is one adaptation that has contributed to the success of the red-backed salamander.

In New York forests, P. cincereus takes three to four years to mature depending upon rainfall, amount of litter and abundance of decomposer organisms. Courtship occurs during the late fall and spring. The female lays an average of nine eggs in June and July in a small chamber she creates under a log, rock or within the humus. Red-backed salamanders are thus fully terrestrial because the young spend their larval period within the egg and hatch out as miniature salamanders. Other amphibian eggs would dehydrate under such condition, but P. cincereus eggs survive because the female coils around them using her body moisture to keep the eggs moist. This adaptation has also contributed to the success of red-backed salamander because it allows them to exist at great distances from permanent bodies of water.

How salamanders affect the decomposer community can be assessed by examining the kinds and numbers of prey they consume. Red-backed salamander stomachs frequently contain between 50 and 100 springtails, mites and dozens of ants. In my laboratory, red-backed salamanders grow on a diet of ten fruitflies or ants per week. If salamanders in nature eat ten fruitfly size prey per week (equal to 10 black flies or many dozen springtails) and if there are



Diagrammatic representation of the energy flow and nutrient cycling within the decomposer food web of forests in the Catskill Plateau Region of south-central New York.

5000 salamanders per hectare, and if they are active for 30 weeks per year, then salamanders consume about 1.5 million prey per hectare per year. The diversity of prey, numbers consumed, and the density of the predator suggest that red-backed salamanders influence the composition of the decomposer community.

Amphibians also unite the decomposer and grazing communities. Female salamanders breed every other year in New York. In a hectare with about 5000 red-backed salamanders, about 750 will breed each year producing about 6750 young salamanders. I find that over many years the population size does not change. Thus around 6750 salamanders are consumed by predators per hectare each year. Salamanders are preyed on by snakes, birds (e.g. thrashers, jays, crows) and mammals (shrews, voles, chipmunks, racoon, and fox). These larger predators are involved in both food webs of the forest. Because salamanders are high in protein, widely distributed and abundant, they are a critical link moving material and energy from the decomposer to the grazing food web.

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And The Sky Came Tumbling Down

Richard L. Wyman

Friday the 2nd of October was a beautiful day with the leaves full of fall color. On Saturday it rained hard and that made collecting samples in the forest most unpleasant. When I woke on Sunday, I peeked out the kitchen door and discovered about 10 inches of snow sitting on top of the picnic table. I thought, "What's happened?" I had known something was wrong because the power had gone off during the night, but this was ridiculous.

The wind was blowing between 25 and 40 mph and at times it looked as though we were in a full winter blizzard. By noon there were 15 inches of snow and at about four o'clock when it had almost stopped we had about 17 inches of snow. That is the earliest date for snow ever recorded in this area.

On Saturday Bill and Nancy Elliott (two Huyck Grant recipients) had arrived to collect some samples from the forests. They are working on a large project with me on the decomposer food web. I was with the Elliotts in the woods during the heavy rain of Saturday. They had spent the night in the Ordway apartment (one of our researcher quarters). At 9:00 A. M. there was a knock on our kitchen door and there stood Bill and Nancy dressed in fall sweaters and sneakers with snow up to their knees. They looked a little bewildered. Their daughter, Beth, was still in bed and refused to get up. The Ordway apartment has only a furnace which of course wasn't working since the power failed. We have a wood burning stove which proved to be a life saver.

It took us an hour to get the stove hot enough to heat water and make coffee. Then I made some scrambled eggs and toast on the stove. By 11:00 we had finished breakfast but were wondering what to do with the dirty dishes. We realized too late that we could have conserved water pressure by not flushing the toilets, and now the water just dribbled out of the faucet.

At about 10:00 A. M., Joe Bopp, another researcher working at the New York State Museum, called me. He was living in Lincoln Pond Cottage and wondered if I could if I could bring him some heat. He had been up most of the night shivering in all his clothing and blankets. The wind can really blow across Lincoln Pond. I told him that without electricity there wasn't much I could do. I had a woodburning stove stored in the barn and was planning to move it to Lincoln during the week. Right then it was impossible to move it. I invited him to walk over and have some breakfast and warmth. About 45 minutes later he arrived.

After an hour and a half of melting snow, we had enought water to do the dishes. By 12:00 we had talked to most of our friends around town and had found out that "it looked like a bomb had gone off" downtown. Trees and limbs were down everywhere. The snow had accumulated on the leaves and the weight was more than many could bear. But no one was hurt and we knew that as with most snowstorms, the electricity would be restored in a day at the most.

The plow had not come by the house yet (and wouldn't for another 24 hours) so I thought I'd get the tractor running and plow us out and perhaps go down to town and see what I could do to help. The battery on the tractor was dead and of course the snow plow wasn't hooked up any way. It was buried somewhere up by the barn. I had caught a cold in the rain on Saturday and so back to the house I went.

It seemed like we would not be able to get into the woods to finish collecting our samples and the drying oven in the lab would not have worked without electricity anyway, so we gathered around the kitchen table and played cards.

The Elliotts ventured out through the now melting snow at about 4:00 leaving us with our wood burning stove and approaching dark. I finally managed to get the tractor started and got us plowed out by dark. I also retrieved a five gallon container of drinking water I had put in the Lakeside Lab for researcher use. I had been downtown to my lab in the Mill House, to check on things and discovered that of course all my research fish were in sad shape. Some of my research concerns the behavior and ecology of fish that belong to the family known as cichlid fish. These fish are of interest because they all show parental care and they have rather advanced forms of communication. They all are tropical and require water at 80 degrees F. By Tuesday they were all dead, over a $1000.00 loss.

I had many of these fish for several years rearing them to sexual maturity so that I could study their young. Most of my research on fish deals with the development of behavior. Unfortunately two species came from Sri Lanka and I have been unable to acquire any others because of the civil struggles there. Also the population I studied in Sri Lanka, I have been told by a colleague there, has almost disappeared because of the clearing of inland forests and

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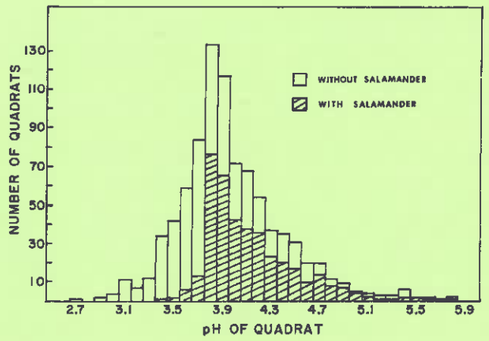
Salamanders *(continued)*

Recently I have become concerned for the welfare of red-backed salamander. From 1975 to 1987, I have examined factors controlling the density and distribution of P. cinereus by searching square meters of forest litter in five study sites in Albany, Delaware, Otego and Rockland Counties of New York. Through 1986, I searched (with the help of over 300 volunteers) 1831 meter square quadrats of forest litter and found 1011 amphibians. I record soil pH, moisture and other important variables. I found that out of 760 quadrats with soil pH greater than 3.8, 386 (50.8%) contained a red-backed salamander. Out of 284 quadrats with more acidic soil, only 25 (8.8%) contained a salamander. I have never found a salamander less than one year old in soils of pH less than 3.8. Salamanders become very scarce when forest soil pH falls below 3.8. The soil in south-central New York is acidic with a pH of about 4. About 27% of the forested area has soil that is now too acidic to support red-backed salamanders.

The absence of salamanders on acidic soils may be the result of the direct effects of acids on the animals or it may reflect other changes



Frequency of one meter square quadrats with a particular soil pH value for quadrats with or without Plethodon cinereus present for two study sites in southcentral New York combined from spring 1982 through spring 1985.

that indirectly affect salamanders. For instance, laboratory experiments have shown that salamanders grow more slowly on acid soils and small salamanders are more vulnerable to predators. Also salamanders can sense pH and choose to occupy substrates near neutral. In nature this may mean that salamanders avoid low pH areas. Acidic soils may also influence the abundance of the salamander's food. For example most soil fungi do poorly in acidic soil. Salamanders depend on the organisms that eat fungi and hence the abundance of salamanders may reflect the abundance of their prey and the activity of the entire decomposer community.

The presence of acidic soils may also be correlated with the presence of other pollutants such as heavy metals and high ozone concentrations. Most scientists agree that "acid rain" is really a combination of pollutants. It may not be the acid alone in acid rain that is causing problems with fish in the Adirondacks and trees of the Appalachian Mountain system but rather high concentrations of these other pollutants.

Because forest soils naturally acidify with age, soil acidification can be the result of the type of forest and its age as well as the input of anthropogenically generated air pollutants (e.g. acid rain, acid snow and acids deposited as dry material). The acidity of precipitation has increased by about 100 times in the last 50 years. About one-half of the acid in acid precipitation comes from industrial sources and one-half from motor vehicles. A forest receiving increased quantities of acid for 50 years may show an increased rate of acidification and high final soil acidity.

Soils can act as buffers but buffering capacity is influenced by bedrock type and soil thickness. At higher elevations of the Catskill and Helderberg Plateaus, bedrocks were formed during the Devonian about 350 million years ago. A freshwater or terrestrial environment existed so rocks formed then contain little calcium carbonate. Since calcium carbonate is the principle buffering chemical found in soils, high elevation soils throughout this region are poor buffer systems. Also higher elevation soils are thin and contain less buffering capacity than thicker soils in valleys.

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Salamanders *(continued)*

Salamanders, like P. cinereus, are distributed throughout the Adirondacks, Catskills, and Appalachian Mountains. Because of the coincidence in distribution of soil systems that may be affected by acidic deposition and the distribution of a species that is both sensitive to acid soils and extremely abundant, I believe P. cinereus may be an indicator of soil acidification and overall forest health.

I am continuing my studies of the factors that influence the density and distribution of forest amphibians and in particular the red-backed salamander. I hope to be able to determine how P. cinereus affects the species composition of the decomposer community. I also need to determine the current status of red-backed salamander in the northeastern United States and to relate this to longterm changes in soil acidity. The moral is clear to me. If something is affecting the most abundant terrestrial vertebrate in the northeastern United States, we had better find out what it is and how it is working. Because the survival of the red-backed salamander appears to be important for the continued proper functioning and health of forested ecosystems and changes in those systems would have longterm consequences for humans as well.

Sky Tumbling *(continued)*

resulting situation. These fish are very visually oriented and cannot reproduce in turbid waters. I am still trying to replace them.

Monday and Tuesday were something like camping out. We managed to stay warm and the stove allowed us to cook. However life without running water can become tiresome and even dangerous. Everyone had colds by Wednesday. By Wednesday I had bought a Colemen lantern and stove, had borrowed drinking water from a neighbor who had electricity and had acquired dry ice from Central Hudson Electric and Gas. On Thursday we felt like we could handle anything. Of course that night the power was restored.

By Thursday, people were starting to use the trails on the Preserve and reports began to pour into the office about the numerous trees that were broken or down. The trail leading to the falls was completely blocked with many, large old trees. Along most of the other trails many trees had been pushed over by the weight of the snow and still remain there today. It will be awhile before they all can be cleaned up. Of course we will leave those that fell over in the forests alone. There are thousands of trees with their tops completely broken off and several large limbs dangling by a few strands of wood. The effect of this snow storm on the woods, while relatively minor, will be felt for a very long time indeed. Remarkably no buildings in the village were damaged by falling trees or limbs.

One of the many joys of living in Rensselaerville is to know that when there's an emergency, everyone chips in and does what he or she can to make life more liveable. Among the most notable was Dick Bryan who throughout the day and night could be seen with his portable generator giving electricity to people in the village so that they could heat their house for a few hours before going to bed. Firewood seemed to materialize from nowhere, dry ice arrived by the truck loads, and thanks to Dave Bryan, the Palmer House remained open and acted as a community gathering place.

I hope I don't see another week like that one, but it taught me a few valuable lessons and again made me appreciate the conveniences of modern life. How on earth did the early settlers survive the entire winter in uninsulated houses without running water?

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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