SUMMER/FALL 1989

NEWSLETTER

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

NEW DIRECTORS ELECTED TO HUYCK BOARD

The E. N. Huyck Preserve's Board of Directors is composed of fifteen members each elected to a three year term. Five directors are elected by the membership each year. This year at the Annual Meeting two new directors joined the Board.

Mr. Philip H. Gitlen

Mr. Gitlen was graduated from Lehigh University with an A.B. magna cum laude in 1969 and from New York School of Law with a J.D. in 1972. From 1974 to 1976, he served as Assistant Counsel with the New York State Department of Environmental conservation, as Inforcement Counsel from 1976 to 1978, and as General Counsel from 1977 to 1978. He came to the law firm of Whiteman, Osterman and Hanna (Albany, NY) in 1981. Mr. Gitlen is a member of the New York State Bar Association, Environmental Law Section, was a director of the Environmental Planning Lobby from 1980 to 1986, and is a member of the Eastern New York Chapter of the Nature Conservancy. He also is currently an editor of the Journal of International Law and Politics.

Dr. David W. Steadman

Dr. Steadman holds a B.S. in Biology from Edinboro State College and a Ph.D. in Geosciences from the University of Arizona. He is currently curator of Birds and Mammals at the New York State Museum. He has conducted research on the evolution, biogeography, extinction, and conservation of birds and mammals in New York, Mexico, Guatemala, Ecuador, Peru, the Caribbean, the Galapagos, and Polynesia. Dr. Steadman was recently featured in "On the Shoulders' of Giants," a PBS's nationally broadcast Smithsonian World. He has published almost 50 scientific papers and chapters in several books. He is coauthor of the book Galapagos: Discovery in Darwin's Islands. Between 1983 and 1986, Dr. Steadman lived on the preserve and he has been an active member of the preserve's Scientific Advisory Committee since 1983. Dr. Steadman has been actively studying vertebrate populations on the preserve for five years.

A TEAM TO INVESTIGATE FOREST PROCESSES

Richard L. Wyman

This year the Huyck Preserve and Biological Research Station awarded nine research grants: four to scientists holding Ph.D.s; five to students working toward advanced degrees. In this newsletter, I will describe the work of the four scientists who have joined with me to examine the detritus-based food web of Huyck Preserve forests.

We are examining how natural and anthropogenic (caused by humans) environmental changes influence the detritus-based food web of forests on the Preserve. The detritus-based food web is that group of organisms responsible for the decomposition of the leaves, twigs, and logs that fall to the forest floor each year. Natural forces such as temperature, chemistry, moisture as well as predation, competition, and productivity may affect decomposition. Anthropogenic factors that may influence the detritus-based food include air pollution (acid deposition, Greenhouse Effect), habitat fragmentation, and forestry practices.

This work may help us understand not only how the forest community is organized and regulated, but how humankind's activities may influence forests and other ecosystems. For example, some of the chemicals found in acid precipitation are the oxides of nitrogen. Oxides of nitrogen can cause soils to acidify at a faster rate. Once the soils are saturated, the excess nitrogen passes through the system and enters surface and ground water. High concentrations of nitrogen in lake water can cause algal blooms, and may be, at least partially responsible for the late summer blooms of phytoplankton in Lake Myosotis (the drinking water for the hamlet of Rensselaerville). These blooms make the water turn green and taste bad. Other researchers' observations seem to support this theory, but we don't know for certain. Thus our understanding of the working of the detritus-based systems and forest soils may lead to an understanding of the control of water quality in Lake Myosotis.

William Elliott (Hartwick College) has begun his third year of work describing decompostion processes. I reported in the last Newsletter (Fall 1988) that Bill had found that litter decomposed very slowly in hemlock and beech forests, at a moderate rate in red pine, and fastest in the mixed deciduous forests.

He designed an experiment to determine whether the

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A Team *(continued)*

rate of breakdown was due to environmental conditions in a forest type, including the kinds of organisms present, or was due to the type and quality of litter. He took litter from each of the four forest types, dried it, placed known amounts in mesh bags and placed the litter bags back in all possible forest types. Thus in the hemlock forest there are bags of hemlock, red pine, mixed deciduous, and beech litter. Similarly all types of litter were placed in the other forests. If hemlock and beech continue to decompose slowly, no matter where they were placed, then it could be concluded that it was the type of litter that determined the rate of breakdown and not the kinds of decomposer organisms.

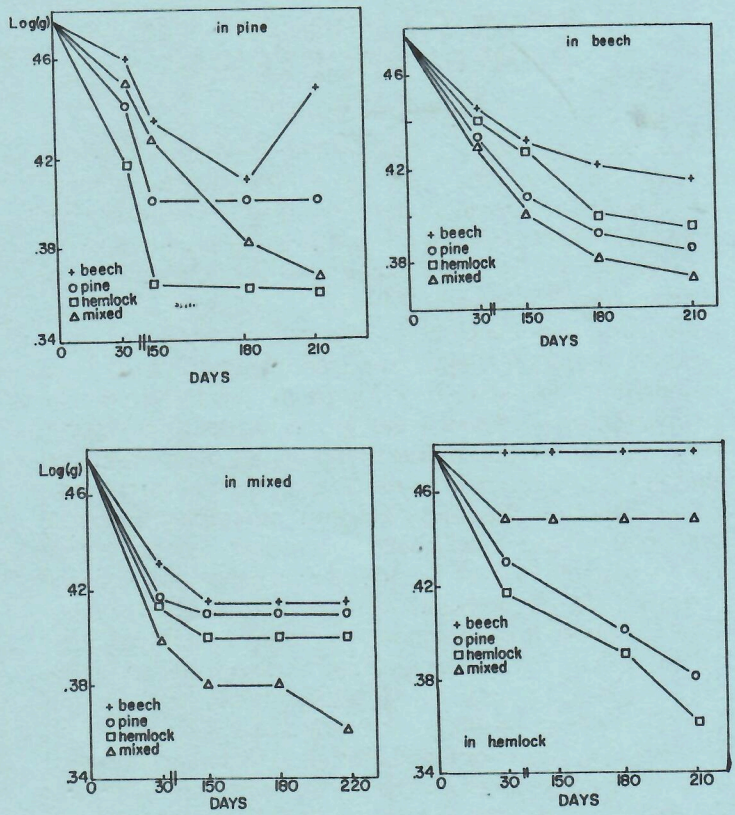

Figure 1 - Rates of loss of litter (log of grams) from mesh bags containing known amounts of litter placed in four forest types.

Results thus far have been mixed (Figure 1). One unexpected result was that during the very dry summer of 1988, decomposition of all litter types was very slow. Later, after some rain had fallen, beech leaves decomposed slowly regardless of forest type suggesting that beech litter is difficult to digest. Except in hemlock forest, mixed deciduous litter decomposed rapidly, suggesting that it is an easily digested litter type. In the hemlock stand, it appeared that there was some kind of organism (e.g. earthworms) missing that normally would aid the decomposition of the mixed deciduous litter. Hemlock was not easily broken down except in its own forest type where the appropriate organisms existed. Red pine litter showed a variety of patterns.

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MASTER PLAN FOR THE PRESERVE

Dan McNamee

The Board of Directors and the Executive Director are in the process of creating a master plan that will guide the activities of the Preserve over the final decade of the twentieth century. Over the years a number of long range planning efforts - the latest being Dr. Michael Mackey's plan devoted primarily to the development of research activities - have been undertaken. But more than ten years have elapsed since the last comprehensive effort.

The Timetable

At the April and June Board meetings, the following time table was developed:

Timing	Activity
June Meeting	Framework and formation of committees to draft parts of the plan.
Summer & Fall 1989	Committee research and draft plans
Late Fall 1989	Committee report to Board
March 1990	First Draft of Master Plan
Annual meeting 1990	Final plan presented to membership

An Opportunity for Members

The committees will create specific plans in critical areas, which will then become integral elements of the overall master plan. The committees include the following.

— Land Stewardship
— Research
— Facilities
— Education
— Financial stability
— Community relations

Any Preserve member who would like to offer thoughts, join one of the committees, or otherwise help create the plan should contact Rick Wyman at the Preserve Office.

TO SLOW DOWN GLOBAL WARMING CONSIDER THE ELECTRIC CAR

Theodore Knebel

In 1978, the General Electric Company developed a four-passenger, electrically powered car, called the Centennial in recognition of the 100th anniversary of that company. According to G.E. press releases, the car could cruise at 55, pass at 60, and climb a 30% grade carrying four passengers. It had a range of 75 miles before recharging. The same literature stated that the car was designed to sell for $6400 in 1979. However the vehicle was never sold to the public.

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Electric Car *(continued)*

During the November, 1988 broadcast from the Commonwealth Club over National Public Radio, a prominent physicist, speaking about the rapid increase in the concentration of Greenhouse gases in the Earth's atmosphere, stressed the need to reduce emissions from internal combustion engines. He pointed out that in France, Renault is marketing a vehicle that can travel 140 miles on one gallon of gas. In Sweden there is a Volvo now available with mileage of 90 miles per gallon. Such efficient vehicles produce lower emissions than standard ones.

How much more mileage per gallon of fossil fuel could a vehicle attain whose primary means of propulsion is a bank of batteries with an electric motor? Batteries could be recharged by onboard solar panels. If assisted by a more traditional internal combustion engine, using cleaner fuels, the vehicle could travel much longer distances without charging. It seems there are certain factors pointing the way toward the development of electric vehicles, as well as a couple of economic interests which appear ready to block their development. It is commonly believed that large oil companies may be those with the most to lose. But what is to be gained if the earth's oil reserves continue to be used at an accelerating rate?

I urge firms dealing with electrical energy and insitutions of higher learning to move forward in real research on electric power vehicles. The cover story of the March 1989 issue of Scientific American magazine is titled "Lessons of Sunraycer." Sunraycer, developed by a team working for a subsidiary of General Motors, is a vehicle which "averaged 40 miles per hour to win a 1,867 mile race across Australia on the solar equivalent of five gallons of gas." The technology used in Sunraycer can be used in the production of electric vehicles, such as the use of photovoltaic cells in generating power directly from sunlight, and light weight but strong aluminum body and frame. Apparently a consortium of governmental and corporate groups is planning to market electric vehicles in 1990.

The rapid increase in the concentration of carbon dioxide and other Greenhouse gasses in the atmosphere due to the combustion of fossil fuels and the destruction of forests worldwide is moving the planet into an unprecedented, uncontrolled experiment over which we will have no control. "The possible consequences are so scarey that it is only prudent for governments to slow the buildup of carbon dioxide through preservation measures, from encouraging energy conservation to developing alternatives to fossil fuels" (Time, January 2, 1989).

The advanced all-electric, or a hybrid electric-combustion vehicle are two viable means of cutting down the rate of emissions per mile and per ton transported. It is time that inventive means and methods be sought. From such pioneering research may come the answers which may help moderate global warming and stretch the finite resource of fossil fuel for future generations.

(Theodore Knebel is a friend and supporter of the Huyck Preserve who has maintained an interest in alternative sources of energy.)

AN OPEN LETTER TO PRESERVE MEMBERS

Dear Members,

In celebration of the beautiful summer season and of the honor in continuing our support of the E. N. Huyck Preserve, as a fellow member, I wish to present a few thoughts we can all consider for the future.

We are very fortunate to have a place like the Preserve in our community and also in our hearts. Here are some facts and ideas to help reinforce the value of the Preserve in our daily routines.

Trees are more important to our community than most people realize. Did you know that trees store ground water and enrich the water table, produce the oxygen we breathe, and help prevent erosion? Did you realize that six acres of trees are needed to replenish the oxygen consumed by one automobile traveling 20,000 miles per year? Did you know that at least five acres of forest, selectively cut, are needed to heat one home on a long term basis? It also takes five acres of trees to use the carbon dioxide produced.

Did you know that the world loses through erosion 25.4 billion tons more topsoil than it produces per year? And millions of acres of topsoil producing forest are retired from productivity each year by deforestation and "development."

Here are a few things you can do to help out. Replenish the trees you use. Plant native trees whenever possible in your town. Join a local organization to prevent or restrict the cutting of trees without a permit in urban and suburban areas. Join a local and worldwide forest conservation organization to support at least as many acres as you consume in heating your home and driving your automobiles. Learn to notice the variety of trees in your neighborhood and recognize if they are healthy.

This year begin a compost heap of organic food scraps in your back yard. Start a small graden and produce a little food. These efforts will help to enrich and build up thin soils. Also, do not burn leaves and debris. Carefully compost or stack twigs and wood. Consider not raking your leaves at all. It is a myth that leaves kill your grass and in fact, they will provide rich organic fertilizer for your greenery the first time you mow your lawn and turn the leaf bits back into the soil. If you must rake, compost your leaves and use them around bushes and shrubs and in a garden.

Eliminate chemical pesticides around your home and garden. In the long run they do more harm than good. Many genetic strains of insects have become resistant to pesticides and chemical residues are just as often destructive to wildlife that is desirable to protect. Pesticides contaminate both air and ground water supplies.

Eliminate toxic cleansers in your home. Substitute non-toxic cleansers for toilet bowl cleaners and drain cleaners. The League of Women Voters, Albany Chapter, has just published a book called "HOUSEHOLD HAZARDS, A guide to detoxifying your home" by Kathy Betzhold. Get a copy of it in your home and use it.

Did you know that the price of rock salt is about 25$ per ton? And yet the real price averages about $1600 per ton after measuring its environmental impact. The U.S. spends about $300 million annually on rock salt and $15 billion on repair of ground water contamination, road and bridge deterioration, and removal and restoration of roadside trees

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A Team *(continued)*

John Blair (Ohio State University) joined our team for the first time this year, and he has been looking at the density and kinds of microinvertibrates (mites, springtails, centipedes, spiders and small insects) in the four forest types. He takes soil cores and then extracts the animals in the lab and identifies and counts them. Results are available for only one sampling date, but they are remarkable. Total microinvertebrates range from 75,000 per square meter in the mixed deciduous forest to 529,000 per meter square in the hemlock forest. The hemlock numbers are near the upper limit of density reported for anywhere in the world. Generally the relationship seems to be that the more humus there is the greater the density of microinvertebrates, other things being equal.

Nancy Elliott (Siena College) has been documenting the kinds of macroinvertebrates (such as bigger insects) found in each forest type. Most flying adults collected in all forests are flies and wasps. The flies represent adults of an important group of detritivores, the maggots. The wasps are generally parasites of the maggots. She has also been extracting microarthropods from some of Bill's mesh bags and her data agree well with Blair's.

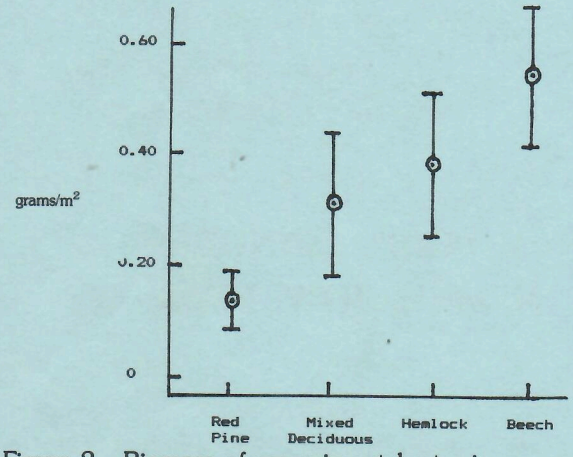

Figure 2 - Biomass of macroinvertebrates in grams per meter square from litter collected in four forest types during 1988. Error bars are standard error.

I have been extracting and weighing macroinvertebrates from samples of litter and humus from each forest type (Figure 2) to determine if upper level trophic levels were being affected by soil acidity. Soils are most acidic in the conifer plantations. In terms of biomass of macroinvertebrates per meter square of forest floor, there is a seasonal fluctuation with low biomass during the summer, a peak in biomass during the fall and very low biomass in winter. The exception is in the red pine plantation where moderate biomass was obtained even during the winter. Among forest types, biomass was consistently highest in the beech, second highest in the hemlock, third in the mixed deciduous and least in the red pine forest.

Amphibian biomass has not been determined in the mixed deciduous site, but in the other three sites it is greatest in the beech, intermediate in red pine, and least in hemlock. In the last Newsletter, I hypothesized that the differing rates of decomposition among the forest types resulted in different quantities of invertebrates, and that available invertebrate biomass regulated the quantity of upper level consumers, among which is the red-backed salamander. With these

A Team *(continued)*

new data, things are not so simple. High numbers and biomass of micro- and macroinvertebrates in the beech forest supports the hypothesis, while high numbers and biomass in the hemlock forests does not.

One other major factor that differs among these two forests is soil pH. The beech forest has an average pH of 4.2 with many areas of higher pH available, and the hemlock forest has a uniformly low pH of 3.7. Thus these data suggest that soil pH may be a factor limiting the occurrence of the red-backed salamander in hemlock forests.

Malcom Frisbie (Eastern Kentucky University) is determining whether or not osmotic regulation is altered in salamanders living on acidic substrates, a mechanism that could explain why salamanders are not found on low pH soils. All organisms need to control the concentration of minerals in their body tissues and cells. Last year Malcolm determined that red-backed salamanders did lose sodium more quickly on acidic substrates than on more basic ones. This year he is continuing these studies using a variety of species of salamanders.

Forest decline and dieback, as is occurring in Europe and much of the eastern U.S. appears to be caused in part, by soil acidification. Our work is helping to determine whether soil acidification is also affecting the billions and billions of organisms that are responsible for recycling of nutrients in forests, and whether this may be a contributing factor in forest decline. We are also establishing a baseline of information on how the organisms of the forest are currently structured, so that should projected Greenhouse like changes occur, we will be able to determine their effects

1989 E.N. HUYCK PRESERVE AND BIOLOGICAL RESEARCH STATION

Research Grant Summary

Researcher	Institution	Topic
Diane Angell	Brown Univ.	Red squirrel behavior
Vickie Backus	Univ. of Vermont	Ant behavioral ecology
John Blair	Ohio State Univ.	Microinvertebrates and soil chemistry in three forest types
Helen Cyr	Institute of Ecosystem Studies	Zooplankton community structure
Nancy Elliott	Siena College	Invertebrates of three forest types
William Elliott	Hartwick College	Decomposition in three forest types
Malcom Frisbie	E. Kentucky Univ.	Ion balance in amphibians
Peter Sherman	SUNY-Binghamton	Spider feeding behavior
Brent Ybarrondo	Univ. of Vermont	Diving beetle behavioral physiology

TORNADO HITS PRESERVE

Richard L. Wyman

It was 3:15 p. m. on Monday, July 10, 1989, when the sky began to darken. Lightning and thunder could be seen and heard off to the northwest. There was no wind and the air was stifling. Darwin Cornell (Trails supervisor) had just come down to my office on Main Street to say that there looked like a big storm heading our way and the Weather Service had issued a severe storm warning.

The wind picked up, suddenly blowing in every direction at once. Bushes and trees were pushed in one direction and then another in rapid sequence. The telephone poles on Main Street were dancing and writhing — like giant elastic bands being plucked by invisible fingers. The lightning and thunder became almost nonstop. I decided I'd better get home to the Ordway House just north of Lake Myosotis.

A young maintenance assistant and I drove up Pond Hill Road. It was now raining so hard that we had difficulty seeing more than ten feet. I have never seen rain and wind so intense. Suddenly a dark object loomed up in front of us and I slid to a halt inches from a newly fallen tree. I decided that I could get around it by going through the Rensselaerville Institute. We rapidly swung around the driveway and back on Pond Hill Road another tree was down. We had to drive back down town, up Route 353, up Bryan Road and then down Pond Hill. We dodged several more trees. Approaching the house the wind was howling, lightning was dancing around us continuously, thunder boomed. the clouds were black.

By now the violence was subsiding. My family was a little frightened but unharmed. I found Darwin and Jeannette Jancola (Research Assistant) in the barn behind the Ordway House. They had hidden in the cellar during the worst of it. The lightning had been hitting all around them and all the wiring and circuit boxes in the barn had been glowing blue. Darwin had prevented Jeannette from going into the woods just minutes before the tornado passed.

The damage through Schoharie and Albany Counties marked the path of the twister. It passed about 700 feet behind the Ordway House (my home). The red pine plantation behind my house looks like an airplane tried to fly through it about 25 feet off the ground. The tops of a 75 foot wide swath of the trees were simply blown off. The lightning had hit our house and we lost our television and video recorder. Our new computerized weather station was also hit and is currently being repaired. Many large hemlocks around Lincoln Pond were toppled. A large tree took off the top of a telephone pole on Main Street.

Like the snow storm of October 4, 1987, the tornado represents another disturbance to the forest system. It is estimated that about 25% of the trees in a forest will end their life by falling over. This continuous disturbance plays an important part in maintaining diversity in the woods by making a patch work of environmental conditions. Fortunately no one in Town was hurt and again it seems that everyone was helping to clean up the mess.

Letter *(continued)*

killed by the salt.

Write your state and local legislators and ask them to ban the use of rock salt. Insist on the future use of sand or soil replenishing grit. If cost is argued as a deterent, point out the budgetary figures for the current use of rock salt.

Finally, consider a few of these changes in your home lifestyle. Use a water efficient shower nozzle. Buy one at your hardware store or local plumbing outfit. One brand is called "The Incredible Head" and saves up to 70% on water consumption and heating. They are commonly used in hotels and very easy to install. Turn down your thermostat when you go away overnight. Buy and install a hotwater heater insulation blanket. It can save up to 40% of the cost of heating your water. Avoid buying pre-packaged and plastic covered foods. Take your own bags to shop and use recyclable trash bags. Join a food co-op. Support producers of organically grown food. You will be reducing soil and water contamination by pesticides and fertilizers. Grow vegetables or a windowbox herb garden, get involved in providing and replenishing even on a micro scale.

These are just a few of the efforts we can make to express our spirit of the Huyck Preserve by beginning to PRESERVE a variety of our natural resources. Choose a few for this year, then share some with a friend!

Best wishes throughout the year!
Virginia Steadman

BOARD CHANGES MEMBERSHIP YEAR

Since the incorporation of the Preserve in 1931, the membership year has run from August through July. This arrangement has caused confusion because of the coincidence of timing between lake permit contributions and membership contributions. It has also created problems with bookkeeping. The Board of Directors has voted to change the membership year. Beginning January 1, 1990, our membership year will coincide with the calender year.

This means that there will be a five month period, from August 1 through December 31, 1989, that is not covered by your current membership contribution. The Huyck Preserve depends on your support for about one-third of its annual operating budget. The Board therefore asks the members of the Huyck Preserve to make a contribution now to cover this five month period, and to be aware that we will send out new membership renewal notices in January.

STAFF

Dr. Richard L. Wyman, Executive Director
Ms. Marilyn Wyman, Educational Coordinator
Mr. Darwin Cornell, Trails Supervisor & Maintenance
Ms. Diane Morin, Office Assistant
Ms. Jeannette Jancola, Research Assistant
Mr. Brooks Wright, Research and Maintenance Assistant
Mr. Philip Hilferty, Lifeguard & Swimming Instructor
Mr. Steven White, Lifeguard
Mr. Ted Lawrence, Lifeguard

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Mr. James Foster
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Mr. Peter McChesney
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Dr. David Steadman

Dr. Vincent J. Schaefer, Honorary Director

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.

SCIENTIFIC ADVISORY COMMITTEE

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Dr. Edward Horn
Department of Environmental Conservation

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