Summer 1996

FORGET-ME-NOT
Myosotis Messenger

Edmund Niles Huyck Preserve
& Biological Research Station
P.O. Box 189, Rensselaerville, NY 12147

Is There A Single Most Important Species?

By Richard L. Wyman

Today we are losing species due to extinction at a rate somewhere between 10 and 100 a day. We hear mostly about the losses due to tropical deforestation, but they are also occurring around us as we continue to develop natural areas into housing developments, shopping centers, super highways and the like. This extinction spasm is as large as any event in the history of the Earth and probably is occurring much faster than previous events.

These facts make us wonder both how many species there are and which species we should concentrate on saving. Of course I think we should save them all, but with the current rate of the expansion of the human undertaking, saving them all is simply not possible. How can we evaluate which species we ought to save? Lets see what goes on in the leaf litter and soil of our forests, perhaps we can gain some perspective.

In a single gram of soil there may be 10^6 species of bacteria and about 10^8 individuals. These bacteria can mutate and become new species in as little as twelve weeks. Because the world is not completely made up of bacteria, they must be going extinct at some rate as well. Fungi occupy as much of the forest floor as bacteria but we have not been able to count them. An individual fungal organism was recently discovered that was 30 acres in size, weighed as much as a blue whale, and may have been 10,000 years old. This may have been the size of fungal organisms before the clearing of the forest in the 1800s. The fungi and bacteria are responsible for the breakdown of detritus, that is dead things (leaves, twigs, tree trunks, dead animals, fruit, etc.). They do so by excreting enzymes outside of their bodies, the enzymes then breakdown the organic material and the fungi and bacteria take up the nutrients through their cell membrane or wall. Fungi also may grow into the rootlets of trees. This is a symbiotic relationship where both tree and fungi benefit. The tree benefits because the fungal hyphae (fungal root or tiny hairs) increase the absorption power of the roots so the tree can suck up more water and dissolved nutrients. The fungi gain because the rootlets provide them with sugar that they can not manufacture for themselves. Trees with associated fungi grow up to 40% better than trees without.

The next group of organism of larger size are the protozoans that may number in the 100,000s per gram of soil. We do not know how many species of these there are on the Huyck Preserve but probably in the thousands. These multicellular organisms feed on bacteria and fungi, on one another, and may be parasites of larger organisms. Amongst the larger metazoans there may be 900,000 nematodes in a meter square of soil. These are very small round worms that feed on bacteria, fungi, protozoans, each other, and may be plant pests as well. Again we do not know how many species of these occur on the Preserve but probably there are a lot. Still larger are the springtails and mites. Springtails are very small insects that have an abdominal attachment that they can rapidly open propelling themselves through the air. There may be 250,000 per meter square and there are at least 100 species in 6 families in New York State. Mites are small relatives of spiders with eight legs and there can be up to 500,000 mites per square meter. Both mites and

springtails may feed on bacteria , fungi, protozoans, and nematodes directly or accidentally through the

ingestion of detritus. Earthworms are another group of metazoans composed of at least two distinct types. The first are enchytraeids, small white worms that are just barely visible to the eye and there can be 90,000 in a square meter of soil and leaves. They feed on the smaller organism and detritus as well and again we do not know how many species there are. There are also the larger more obvious earthworm that you have seen. In some of our forests there are 320 worms in eight species per square meter.

Also among the larger organisms are the millipedes and centipedes. Millipedes, also known as thousand leggers usually prey on fungi and detritus and there may be 80 or more per square meter. Centipedes are predators of the detritus food web and can prey on a variety of the other organisms. There are up to 300 per square meter. Spiders are another group of predators and there can be 120 per square meter. Another interesting group are the slugs and snails with 50 or so species and several hundred per meter square.

Insects represent a very diverse group with 9 orders, dozens of families, and 100s of species (larval and adult bees, ants, wasps, flies, beetles, moths and butterflies, crickets, grasshoppers, ambush bugs, lacewings, assassin bugs, thrips, leaf hoppers, and others). There can be up to 3000 larger insects (excluding the springtails) per square meter of forest floor. Finally one of the top predators is the salamander and around here the most abundant one is the red-backed salamander. With the exception of the three main groups of predators, the other multicellular organisms all may fragment leaf litter, that is they break the leaf litter into smaller pieces. The earthworm is a good example of an organism that fragments leaf litter, they can consume a leaf and pass it out in the form of soil. When animals fragment leaf litter it allows for the more rapid colonization of the leaf litter particles by bacteria and fungi. This then allows for the more rapid breakdown of the organic material in the leaf fragments. One by-product of this breakdown process is carbon dioxide. Salamanders and perhaps other predators that eat the leaf litter fragmenters appear to slow the release of carbon dioxide. In New York State this process may be responsible for holding within the forest floor about 0.4 gigatons of carbon per year, that is a little less than one-half a billion tons of carbon.

In previous Newsletters, I have told you about how the increase in carbon dioxide in the atmosphere is increasing the greenhouse effect and apparently is warming the Earth. Too much warming of our Earth will not be good for hosts of plant and animal species nor for humans either, so anything we can do to help slow the warming is important. I think the above description of the detritus based food web illustrates the complexity of the factors that help control carbon dioxide production by our forests. Clearly it would not be possible to pick out the species we think we should save. The complexity of interactions amongst these organisms is too complex for us to ever fully understand. We can not know which are the most important species. It is not possible. So the only alternative we have is to save the forests that we have left.

The Picking Table Blues

By The Salamander Crew

Jean Palange. Kelly MacWatters. Beth Elliott, Ted Watt, and Laurie Wyman

Outside the birds are chirping, the black flies biting, and the salamanders are foraging on the forest floor. It's finally spring on the Huyck Preserve. The plants around us are celebrating the warmer temperatures and longer days with a beautiful display of flowers. The Salamander Crew is getting restless sitting upstairs in Eldridge Lab for three weeks while baby geese feed on the Lincoln Pond lawn. Why don't we go outside to cure our severe cases of cabin fever?

The Picking Table. The table calls us and demands that we pick for many hours. The table has a life of its own. It takes hold of the Salamander Crew and transforms them into silly beings with their own coded language.

"Hold on," says Kelly, "I've got lots of stuff stuck to my gastropod." She is leaning over a bucket full of leaves, eyes wide, tweezers in hand.

"I've got a hopper!" Laurie cries excitedly. She is also leaning over a leaf bucket, chasing down the mighty Homoptera with her own tweezers, like keystone cops in miniature.

"There's squat in my fluff," Beth says boredly, then jumps with fright, grabbing at something on her leg. She holds up an enormous millipede. "I was about to have a Diplopoda in my pants, "she says primly.

"Anybody want to smell the darkling beetles?" asks Rick from the head of the table, holding up a jar of stinking Coleoptera.

This isn't fiction. This is life at the picking table. What is the picking table? That seemingly simple question opens up a whole can of Lumbricidae. You may have read in past newsletters about the USDA grant to study salamanders. This project breaks down into hundreds of small tasks.

One of these is "leaf picking" -- looking carefully through Hefty bag after Hefty bag full of leaves in order to catalog any invertebrates that might be lurking in them. If think you might want to try it at home, be aware that your sanity is at risk. There is an up side to picking, though. It's the "quote of the day" list -- a running record of all the ridiculous, strange, and seemingly meaningless things that came out of three long weeks of looking at leaves for eight to ten hours a day. The scene above offers a taste, and here are more highlights of the picking table. Our top seven quotes of the day!

7)Sometimes my mouse gets stiff, so if it's hard just wiggle it.
6)I'm crackin' a gall!
5)Somebody stop her -- she's licking the mesh bags!
4)Isn't "black fly" an aphrodisiac?
3)Only females stink -- that is my theory.
2)Stop throwing ant heads at me!

And our number one picking table quote is:

1) You're supposed to be picking your bucket, not my head.

I think you get the picture. So if you've been wondering about just what it is we do in the lab all day, wonder no more. There's another round of lead picking scheduled for late July. If you're not busy then, stop by. If you ask politely, we may let you help us pick!

1996 Huyck Research Grants

This year our Scientific Advisory Committee awarded 6 grants to scientists seeking support to study some aspect of the flora and fauna of the Preserve. These studies illustrate the diversity of work that continues to occur here.

Julien Glos & Stefan Kaminsky (SUNY-Albany) will be looking at the hibernating habits of the green frog. Many frogs of the northern hemisphere hibernate by submerging underwater but amphibians can also overwinter terrestrially. Not much is known about the green frog population's hibernating habits around Lincoln Pond. Observations suggest that at least part of the population does not overwinter by submerging in the pond, but migrates into the inlet and outlet of the pond in the late fall. This study will focus on locating hibernation places other than the pond.

Chad Hershock (University of Michigan) returns to the Preserve to study traits in plant communities that may determine relative position in competitive hierarchies. Variation in relative competitive abilities among environments may help explain spatial variation in plant communities along environmental gradients. He will also evaluate whether there is a predictive relationship between competitive hierarchies and plant community structure.

George Robinson (SUNY-Albany) won support to study how tree diseases, particularly beech bark disease and the possible impact of colonization by the hemlock woolly adelgid, impact forest succession. Information on virulence and spread of diseases can help establish whether future forests will resemble their presumed forebears as determined from remnant old-growth stands and historical records. The aim of this study is to better characterize the recent and predicted future development of forest cover throughout the Preserve.

Mary Rosenthal (University of Missouri - St. Louis) will be looking at spiders in four forest types on the Preserve and whether community composition of spiders is habitat specific. Spiders have been shown to have a great impact on the energy flow within an ecosystem. Understanding the association between species and the components of their environment may serve as a barometer of compositional change of forests as they undergo natural and human disturbances.

Binbin Shao (SUNY-Albany) received support to continue her studies of the significance of golden shiners spawning in the nests of pumpkinseed sunfish. This year she will be trying to determine if all golden shiners prefer to spawn in pumpkinseed nests and if there is an advantage for shiners in pumpkinseed nests.

Isabella Scheiber (SUNY-Albany) will test the heterozygosity theory for mate choice in House wrens. She will utilize microsatellite DNA analysis to compute the overall heterozygosity of individuals.

Huyck Grant recipients will present their projects at our annual Science Symposium on Saturday, July 20th beginning at 10:00 am at Conkling Hall on Methodist Hill Road.. All are welcome to attend.

Free.

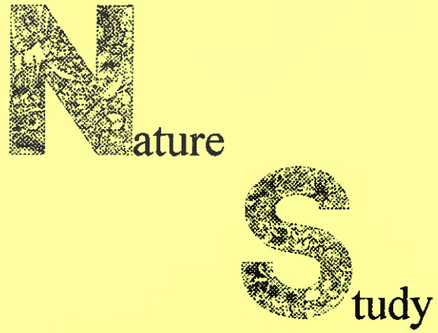
1996 Summer Activities and Huyck Hike Schedule

How do tree diseases effect forest development? What do salamanders have to do with the carbon cycle and the greenhouse effect? House wrens carry sticks back to their nest site for nest building. By when do they complete this task? And, just who is carrying those sticks anyway? Huyck hikes are opportunities for you to accompany researchers to their study sites and learn how scientists go about untangling the mysteries of the natural world around us. These stimulating and entertaining hikes are free to the public and a wonderful way to spend a Sunday afternoon. Hikes begin 2:00 pm at the Eldridge Research Center on Lincoln Pond, Pond Hill Road. Won't you join us?

June		
2	Tom Alworth	Nesting behavior of House wrens
8	Founder's Day	
9	Binbin Shao	Nest association of golden shiners and pumpkinseed
16	Isabella Scheiber	House wren mate choice
22	Annual Meeting Myosotis Beach opens	Conkling Hall, Methodist Hill Rd., 11:30-1:00
23	Mary Rosenthal	Spiders of the Huyck Preserve
27	Donna Mariano	COMENART presentation
30	Stefan Kaminsky	Hibernation habits of the green frog
July		
2	Donna Mariano	COMENART Children's Workshop
5	Caberet Fundraiser	6:30-8:00 pm, Conkling Hall
9	Nature Study K-2	Classes begin, Tuesdays through August 13
10	Swimming Lessons	Classes begin, MWF, 1:00-3:00 pm thru Aug. 16
11	Nature Study 3-6+	Classes begin, Thursdays thru August 15
14	Jean Palange	Salamander project
20	Science Symposium	Conkling Hall, 10:00 am to 2:00 pm
21	Chad Hershock	Plant community structure
30	Andrea Sulzer	COMENART Field Sketching Workshop (Adults)
August		
4	Richard Wyman	Salamanders and the carbon cycle
8	Manabu Saito	COMENART, event and time to be determined
11	George Robinson	Tree diseases and forest stand development
24	Beach Party	Lake Myosotis Membership beach party fundraiser
September		
2	Myosotis beach closes	
17	Paula Bensadoun	COMENART, event and time to be determined

Swim Lessons

The 1996 swimming lesson program at Lake Myosotis Beach will begin Wednesday, July 10th at 1:00 pm. Barbara Bolster-Barrett is again organizing the program this year with six weeks of lessons scheduled on Mondays, Wednesdays and Fridays from 1:00 pm to 3:00 pm. 1996 Family Members ($40 level) can enroll their children in the swimming program for free. Please stop by the Preserve office or call 797-3440 to register.



Nature study classes will commence on Tuesday, July 9th and run every Tuesday and Thursday through August 15th at the Jessie Huyck Nature Center on Lake Myosotis. Classes will again begin at 10:00 am and end at noon. Children who will enter kindergarten in the Fall as well as those who have completed kindergarten, first and second grades will be meeting on Tuesdays with Barbara Bolster-Barrett. Thursday sessions will be for children who have completed third through sixth grades and will be taught by Ted Watt. (We encourage older children to also join this class.) There is no fee for Family Members ($40 level). The fee for non-members is $25.

This year we have developed a new program for the older group using **The Far Side of the Mountain** by distinguished author Jean Craighead George as our central theme. The story follows the adventures of two young naturalists whose journeys bring them throughout this region including the Huyck Preserve. We think this will be an interesting and exciting way to introduce nature to young people. Please contact the Preserve office by phone (797-3440) or in person to register.

COMENART
Artist-in-Residency Program
Underway at the Preserve

The Artist-in-Residency program at the Preserve is up and running. Nature Illustrator Linda Witt Fries of Illinois came to the Preserve in mid-May. On the 16th of May she conducted a well attended workshop for local young people on **Keeping a Nature Journal.** Children from 8-14 were shown how to keep a record from basic information such as date, time, and location to more personal observations. The majority of the workshop dealt with drawing techniques utilizing contour and gesture drawings as well as more detailed renderings which the participants made from natural objects.

During the course of the summer and early autumn there will be five additional artists taking part in the program. Each artist will be in residence for two weeks and will be either giving a presentation or conducting a workshop. Participating artists and their time of residence are as follows: Donna Mariano, June 24-July 8; Andrea Sulzer, July 23-August 6; Manabu Saito, July 29-August 11; Paula Bensadoun, September 14-20 and September 28-October 4; and Sandra Orris, throughout the summer and fall.

Ordinary Miracles: A Cabaret

The Preserve will be presenting **Ordinary Miracles,** an evening of Cabaret with the very lovely and talented singer/actress Sandra Bargman and featuring the Preserve Pickers and the Dog Bone Chew - Bang and Blow Funky Junkyard Band. This is being planned as a fundraising event to benefit all of the activities on the Preserve. The show will be at Conkling Hall on Methodist Hill Road in Rensselaerville from 6:30 to 8:00 on Friday July 5th and promises to be a sensational start to the holiday weekend. Please call the Preserve Office at 797-3440 for more information. Tickets can be purchased ahead or will be available at the door. Refreshments will be served for a small donation.

George Bryce

The Preserve was saddened to hear of the passing of friend and longtime member George Bryce. George often accompanied his wife Dr. Susan Beatty, Associate Researcher at the Preserve and was expert at photographing the flora and fauna here. His enthusiasm, sense of humor, and friendship will be sincerely missed by all of us here at the Huyck Preserve

1996 Membership Form

Name_____

Address_____

_____

_____ New Membership

_____ Renewal

Membership Level (Circle One)

Student $10 Individual $30 Family $40

Senior Individual $20 Senior Family $40

Contributing $100 Sustaining $250 Patron $500 Benefactor $1000

Please make your tax deductible contribution payable to the EN Huyck Preserve and mail to PO Box 189, Rensselaerville, NY 12147. Thank You.

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