



Founded in 1997.
Logo art of Tall Goldenrod,
Solidago altissima,
by Nat Cleavitt, 2006.

Solidago

Newsletter of the
Finger Lakes Native Plant Society

Volume 26, No. 2



June 2025

LOCAL FLORA



CANADA VIOLETS (*Viola canadensis*) at Shindagin Hollow, with purple petals (bottom), and the usual white ones (on top), 14 May 2024. Photo by Robert Dirig.

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Please Contribute to *Solidago*

WE WELCOME CONTRIBUTIONS THAT FEATURE WILD PLANTS OF THE FINGER LAKES REGION OF NEW YORK AND NEARBY. We include cryptogams (bryophytes, lichens, fungi, and algae) as “flora,” and recognize that green plants provide habitats and substrates for these and many animals, especially insects. We are interested in zoological associations as long as plants are an integral part of the story.

We can use a wide spectrum of material in a variety of writing styles. Our regular columns include **LOCAL FLORA** (plant lists or details of species from specific sites), **OUTINGS** (reports of FLNPS-sponsored excursions), and **PLANT PROFILES** (on specific local plants). We also occasionally publish **APPRECIATIONS** (memorials to local botanists and naturalists), **REVIEWS** (of books, talks, meetings, workshops, and nurseries), **LETTERS** (commentaries and letters to the editor), **ESSAYS** (on botanical themes), **VERSE** (haiku, limericks, and poems of less formal structure), **ART** (botanical illustrations, plant designs, pencil sketches, decorations), and **PHOTOGRAPHS** (stand-alone images, photo essays, and full-page composite plates, or originals that can be scanned and returned). We also can always use **FILLERS** (very short notes, small images, cartoons) for the last few inches of a column.

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Finger Lakes Native Plant Society

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Published quarterly at Ithaca, New York, USA.

FLNPS (founded in 1997) is dedicated to the promotion of our native flora. We sponsor talks, walks, and other activities related to conservation of native plants and their habitats. *Solidago* is published as a colorful online version, and a B&W paper version that is mailed. The online format is posted 3 months after publication. Please see www.flnps.org for details of membership, past *Solidago* issues, and updates about our programs.



A Meadow Fritillary landed on a violet, its larval foodplant,
7 June 1997. Photo by Robert Dirig.

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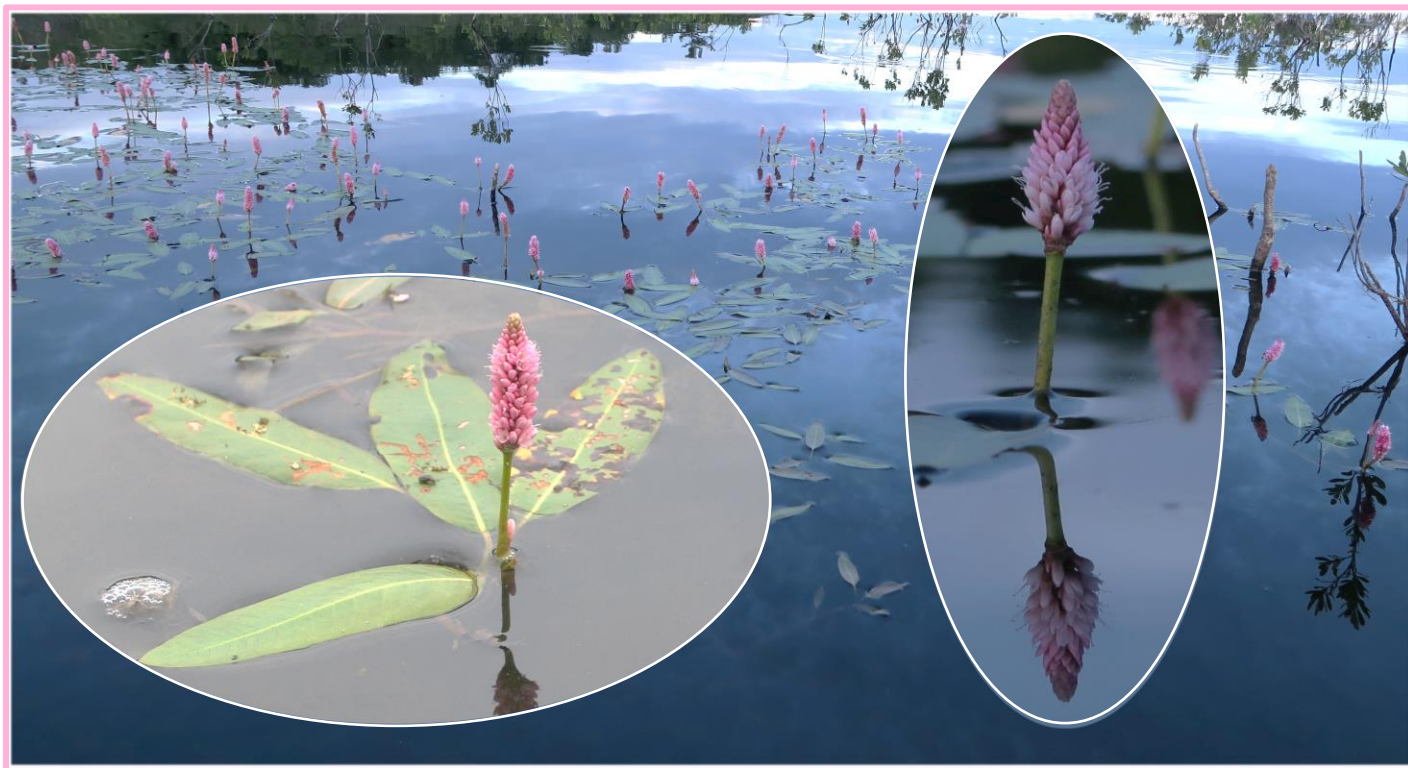
* Please send *Solidago*
contributions & correspondence
to Robert Dirig, Editor, at
editorofsolidago@gmail.com

**Deadline for the September 2025
issue is August 15th!**

NAME THAT PLANT CONTEST

The photo from last issue's NAME THAT PLANT CONTEST [*Solidago* 26(1), p. 4] was of **Golden Club** (*Orontium aquaticum*). A fascinating, and to some an elegant golden spire, which reaches out of its wetland habitat into the growing warmth of a May day. In New York it grows in bogs along nutrient-poor streams, and oddly enough in the intertidal estuary of the Hudson River. Fancy that. Thanks to all who entered the contest, and congratulations to the winners: **BARBARA CHASE**, **BOB DIRIG**, **ED FUCHS**, **BRUCE GILMAN**, **ROSEMARIE PARKER**, and **CAROLYN SUMMERS**.

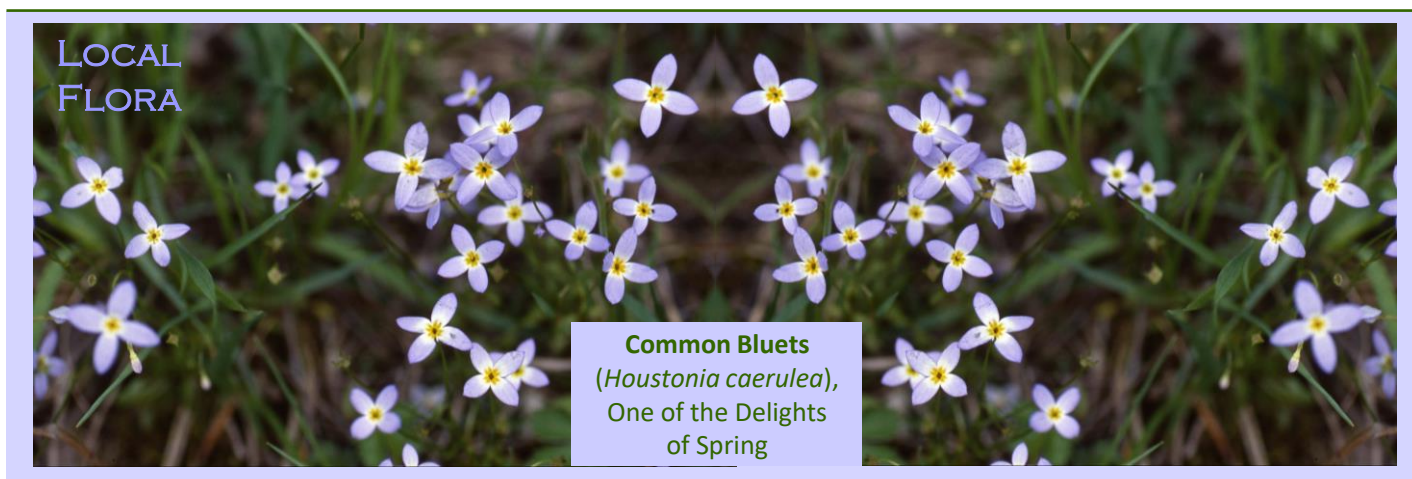
This issue's mystery plant is shown below.



Common and/or scientific names are acceptable, and more than one guess is allowed. Hints and suggestions are often provided to contest participants who try. Please submit your answer to

David Werier (Nakita@lightlink.com).

The photographs were taken in New York on July 17, 2016 in Cayuga County (*background, inflorescence on right*), and July 27, 2008 in Tioga County (*leaves and inflorescence on left*), by David Werier.



REVIEW

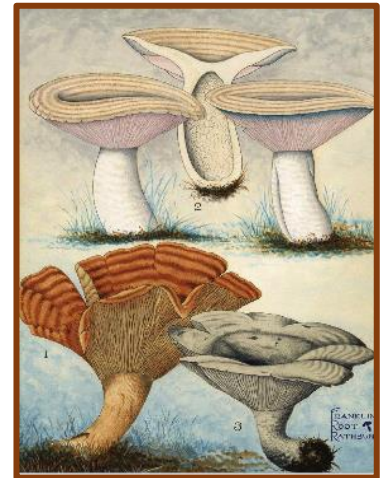


LETTER

Bob,

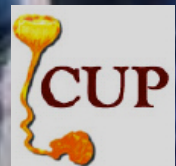
Thank you so much for yesterday's tour of the herbarium! I've always wanted to see it, and Peter and I enjoyed the adventure very much. I took a few people photos at the end, attached.

Mary Gilliland
Ithaca, New York
27 April 2025



During the FLNPS tour of Cornell's Plant Pathology Herbarium (CUP) on April 26th 2025, **Bob Dirig**, Emeritus Curator of Lichens, showed rare lichen specimens from the 1840s to 1860s (*front*), after Curator **Teresa Iturriaga** (*far left*) had shown the group many diverse fungal treasures in the collection, including Franklin Root Rathbun's gorgeous painting of mushrooms (*right*). About 30 attendees enjoyed seeing this huge collection (400,000 specimens) of worldwide fungi. *Photos shared by Mary Gilliland.*

Looking at
Lichen Displays



MANAGING
PRAIRIES

BEYOND BIODIVERSITY

by Rosemarie Parker

If you have had training in Ecology, you can skip to the links at the bottom for interesting reading. If your Ecological knowledge has come in bits and pieces from here and there, like mine has, you might find this thought provoking. I am a member of the **Prairie Enthusiasts**, not because I ever lived near a prairie, but because I do love them, and the group is an amazing example of land protection and restoration.

Dan Carter, Staff Ecologist for the Prairie Enthusiasts, wrote a couple of articles last year in the Organization's newsletter, *The Prairie Promoter*, on methods to maintain the ecology of protected prairies. The first was on **fire** and the second on **grazing** buffalo or cattle. He makes the point that measures used to judge success can be misleading. **For fires**, people often measure "increased herbaceous plant richness and primary productivity. These may be go-to response variables for research ecologists and agronomists, but they tell us little about ecological integrity and can indicate ecosystem degradation." **For grazing**, he mentions increased biodiversity — a count of species numbers. But what if the increased biomass or species are largely aggressive, short lived, non-native, or even invasives? And if those species come in at the expense of iconic long-lived species in that ecosystem? There are many metrics that have been developed for ecological health. I mentioned one from Larry Weaner's talk in the last issue [*Solidago* 26(1)] — the Coefficient of Conservation for a given species in a given ecoregion. Dan uses that and more.

I found Dan's analysis very thoughtful, and I keep mentally rehashing the ideas. Maybe you will also take the generic portions and think about how they apply in our region. I strongly recommend these articles:

1. Stability Part One: Why I Recommend Frequent Dormant Season Burning, Story and Photos by Dan Carter, https://theprairieenthusiasts.org/wp-content/uploads/2024/03/2024_03_Spring_ThePrairiePromoter_WEB_v2.pdf
2. Stability Part Two: Why I Seldom Recommend Grazing, Story and Photos by Dan Carter, https://theprairieenthusiasts.org/wp-content/uploads/2024/09/2024_07_Summer_ThePrairiePromoter_FINAL_WEB_2.pdf



The Shaw Nature Preserve, owned by Missouri Botanic Gardens, to preserve prairie landscapes.
Shaw Prairie Meadow. Photos by R. Parker

Poet's Corner

OLD GROWTH

Look where it's steep. Or swampy.
 Look in every gorge
 that feeds a great lake.
 An old tree trunk might have
 sinuosity
 or a twisted gnarled crown.
 You might look for
 cavities or
 swellings, old scars
 on bark deeply furrowed
 or worn
 to a startling smoothness.
 Through the crises
 and risks:
 resilience, tight relationships.
 You'll find ginseng,
 grape fern, moonwort
 on the understory floor.

— by Mary Gilliland

for Gary Snyder and family

First published in *Slant: A Journal
 of Poetry* [University of Central
 Arkansas] 2024

SWARMING

Long stitches — the wild bees seam
 their rumped pouch
 in the tree trunk's hollow
 Five-petaled berry flowers
 then peach nubs
 pump the days
 What happens hereafter
 could be perpetual learning
 Compost draws flies, snakes slither
 Let's ask for lemon with tea
 before honey
 Before it's hemmed

— by Mary Gilliland

posted Jan 15, 2025,

[https://natureofourtimes.poetsforscience
 .org/swarming/](https://natureofourtimes.poetsforscience.org/swarming/)

Plant Trivia ♦ by Norm Trigoboff

1. What do Red Osier, Japanese Knotweed, Phragmites and Norway Spruce have in common? Hint: this has to do with cars, sort of.

2.a. One low-water winter day, while leaping from rock to rock along the Cayuga Lake shore, I mistook a submerged, silt-covered clump of gaping zebra mussels for the fruit of a local tree. Was it most likely a Black Locust, magnolia, Tulip Tree, Shagbark Hickory, Butternut, Pistachio, or oak?

2.b. Name a local plant that has seeds said to taste like pistachio nuts.

3. Kava, the plant product served at kava bars, gets its name from: **A.** kava, the Tongan and Marquesan word for bitter. **B.** kavalactones, chem-speak for compounds with pleasant, calming effects. **C.** cava, Latin for cave. **D.** kaveh, Turkish for coffee. **E.** kavanah, Hebrew for direction of the heart. **F.** kvetch, Yiddish for whine

4. Which of these is the largest terrestrial invertebrate? Hint: its name comes from a fruit it sometimes eats.

A. saguaro scorpion. **B.** coconut crab. **C.** Osage orange octopus. **D.** watermelon webworm. **E.** lemon leech. **F.** jack fruit jackrabbit.

5. Name the odd man out: Cornelian Cherry, Red Maple, Forsythia, Tall Goldenrod, American Witch Hazel, Smooth Yellow Violet. Hint: think of the flowers.

6.a. Which would have a greater effect on nature: smashing a million acorns, or paving land that could host one oak?

6.b. Suppose that the population of an oak species is stable and that in its life (a few hundred years), an average tree drops half a million acorns. (These figures are mostly plucked from the air.) On average, how many of those acorns will grow to adult trees that then drop a like number of acorns?

6.c. If you want to help sustain human life on earth, which would be better: teaching kids to protect living things, or teaching them to protect habitat?

7.a. Environmental DNA (eDNA) is: (two are true)

A. a record of every living thing in the environment; **B.** released from living things into the environment; **C.** thought to have been here before the first living things evolved; **D.** protected by the Environmental Protection Agency (formerly EPA, now ePA); **E.** pollution from genetic labs.

7.b. So far, the oldest eDNA in good enough shape for species IDs is how old?

2 hours; 2 days; 2 years; 200 years; 2 million years; 200 million years. Hint: the answer has a 2 in it.

7.c. True or false, eDNA may help us get data about:

A. the first appearance of an invasive species; **B.** the ePA; **C.** secretive or otherwise hard to find species; **D.** rare species; **E.** small species.

8. What do English Daisy (*Bellis perennis*), Daphne (*Daphne mezereum*), Snowdrops, Lenten Rose, Winter Aconite and American Witch Hazel have in common?

9. Name the odd one out: Audry II, kite-eating tree, sapient pearwood, trifids, whumping willow, winged-pigweed.

10. Dogwood most likely gets its name from: **A.** people eating hot dogs under them (and kvetching about summer heat). **B.** wood used as skewers (dogs) to cook meat. **C.** thickets of the plant used to fence in dogs. **D.** berries fit only for dogs. **E.** flowers that look like paws.



(answers on p. 7)

Plant Trivia Answers ♦ by Norm Trigoboff

(from page 6)

1. Masses of them may be recognized as you drive past, even at high speed.

2.a. A muddy old magnolia seedpod that has dropped its seeds looks – to geriatric parlour athletes – oddly like a clump of zebra mussels. If you said pistachio, take full credit, but only if you tell me where the local pistachios grow and you can find the zebra mussel in this photo.



How to tell the pistachios from the zebras

2.b. Bladder nut.

3. A. Kava comes from somewhere in the South Pacific.

4. B. The coconut crab, a kind of hermit crab, may weigh nine pounds and grow to one meter wide, if you count the legs. Also known as *Birgus latro*, robber crab, or palm thief, it may eat coconuts, climb trees and creep sideways into nightmares. **Trivia:** the classic 1926 documentary, *Moana*, shows a coconut crab hunt and kava making (<https://www.youtube.com/watch?v=lejJBICAaI0>). **More trivia:** a coconut crab can lift 66 pounds. **Still more trivia:** Its pincers can squeeze harder than a bear can bite. **Friendly advice:** if you see one, skinny dip elsewhere.

5. Red Maple has red flowers; the rest are yellow.

6.a. Habitat degradation affects nature far more.

6.b. One. The population size would change if it were more or less than one.

6.c. Habitat is key. (Some say that respect for life leads to habitat protection. And of course we should be kind to animals for other reasons.)

7.a. B & C. Today's eDNA is shed from plants and animals. It may be cellular or extracellular. See: <https://www.usgs.gov/special-topics/waterscienceschool/science/environmental-dna-edna#overview>

7.b. 2 million years. See: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9729109/> or <https://www.nytimes.com/2022/12/07/science/oldest-dna-greenland-species.html>

7.c. All true, except B.

8. They bloom in winter.

9. Winged-pigweed is a real plant, a pigweed with winged seeds. The others are from works of fiction. See: en.wikipedia.org/wiki/List_of_fictional_plants

10. Some say D, but B is the most accepted. Dog and dagger likely have the same root.



Are you good with technology?

*Looking for a way to contribute
to the Finger Lakes Native
Plant Society?*

*FLNPS is looking for a Zoom
Coordinator for monthly talks!*

The Zoom Coordinator position will support making hybrid option available to those who cannot attend regular FLNPS talks in person.

This position involves coordinating with scheduled speakers, setting up and monitoring Zoom meetings, fielding questions and technical difficulties, and editing recordings for posting on YouTube. FLNPS meetings occur on the third Tuesday of every month from September – May. Familiarity with the Zoom application is required. Access to a laptop and Zoom account is strongly preferred.

Please contact Audrey Bowe
(aeb286@cornell.edu)
with questions or interest.

Thank You!

WE ARE GRATEFUL for the continuing support of our columnists and other contributors, including **writers** Audrey Bowe, Krissy Boys, Robert Dirig, Mary Gilliland, Teresa Iturriaga, Rosemarie Parker, Norm Trigoboff, & David Werier; **photographers** R. Dirig (pp. 1-3, 9-10, & 12), Mary Gilliland (p. 4), Rosemarie Parker (p. 5), Norm Trigoboff (p. 7), & David Werier (p. 3); and **artist** R. D. (pp. 8-12). The photograph of Richard B. Fischer (p. 14) was loaned by the Editor.

Layout & design by the Editor, **proofreading** by Rosemarie Parker, and **printing** by Gnomon Copy. Anna Stalter emailed the newsletter, Pat Curran mailed paper copies, & Rosemarie posted to the web.

Please check our website (www.flnps.org) regularly throughout the coming months for announcements and details of walks, talks, workshops, and other events. Many thanks to our **Steering Committee** (p. 2) and all of our members for supporting FLNPS and its activities. We wish everyone in our reading audience a delightful summer, filled with many excursions to commune with native plants!

— Robert Dirig

A Guest in the Blueberry Patch

The Blueberry Is One of Our Most Popular Wild Fruits,
Yet Few People Know Much about Its Habitat and Ecology

by Robert Dirig

Images on pp. 8- 12
Copyright © 2025 by
Robert Dirig

*Dedicated to all blueberry lovers,
human or otherwise*



Who Lives Here?

Major Residents: Main residents of the blueberry community are the blueberries themselves, which belong to the genus *Vaccinium*. These are a large and ancient group of shrubs and vines comprising 31 northeastern North American species, which became established here several thousand years ago, after the last great ice sheet receded northward. Eight species of wild blueberries grow in New York, including both *lowbush* and *highbush* types.*

The dividing line between lowbush and highbush blueberries is somewhat arbitrary, but generally, the lowbush types do not exceed 3 feet in height, while highbush plants may grow to be 10 or 12 feet tall. There is more than one species of blueberry in each of these categories in New York.

Blueberries will grow only in a certain type of place. You won't find them naturally anywhere except on damp, acid soil, as it is in this part of Hector. The soil is very shallow here (not over 3 feet deep), resting on bedrock. Most of the chemicals and nutrients have been leached out, making the soil sour (acid) and poor for agriculture. This whole area was once farmland, which was deserted after a generation or two, due to the poor quality of the soil.

Blueberries like this wet, acid soil, but comparatively few other plants can share their harsh environment. Those that do are also specialized, and will only grow where conditions are right. Thus we may expect to find a discreet community of acid- and moisture-loving plants growing together in such places.

*Familiar Blueberry (*Vaccinium*) Species in Central New York

Highbush Blueberry (*Vaccinium corymbosum*)
is dominant at the Hector Blueberry Patch.

Common Lowbush Blueberry (*Vaccinium angustifolium*) may also occur there.

Hillside Blueberry (*Vaccinium pallidum*) is another common lowbush species.

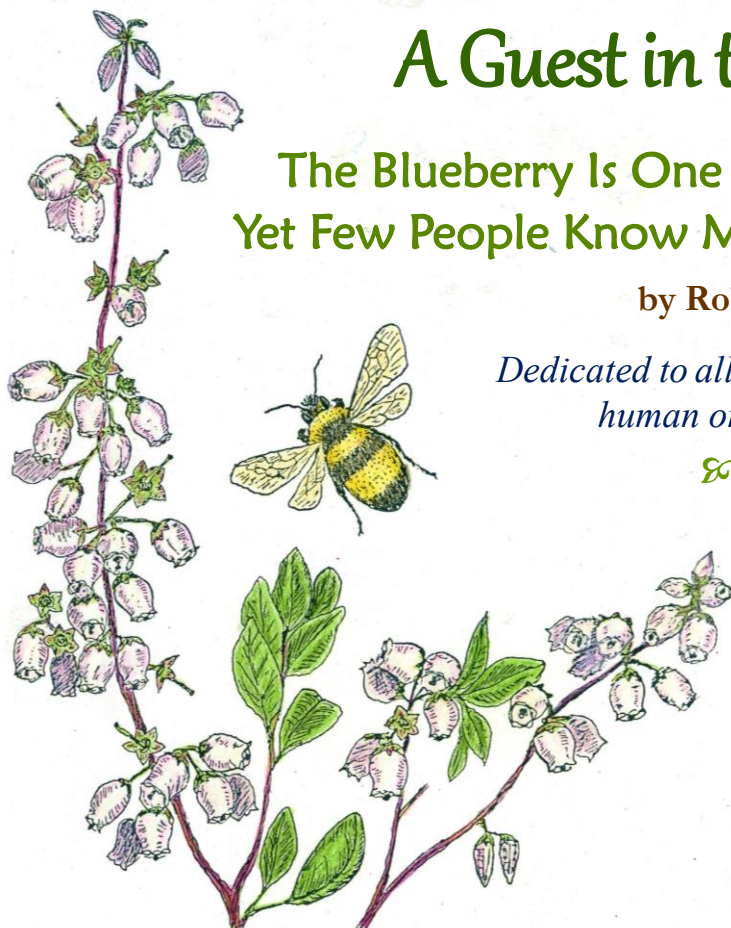
Welcome to the Blueberry Patch!

There is a community in the overgrown field you are about to enter, one with boundaries as clearly marked as a human city's limits are on a map. It has its own water supply and waste disposal system, food manufacturers and consumers, dwelling places, and rushing traffic. It is a discreet entity, a full-fledged community. But this city belches no smoke from chimneys, nor does it foul its water. It is not filled with haze, bright lights, or noise, towering buildings, or malodorous garbage. It is a "blueberry city"!

Blueberry communities occur all over New York. Although usually similar in layout, as if made on the same general plan, they are never identical. Thus the one here, in the Hector Land Use Area, is in some ways unique. However, the same floral and faunal residents occur here as in many other blueberry communities, so in many ways, the Hector example is also typical.

A blueberry city is a very interesting place to visit, if you come with open eyes and avid curiosity. While your hands are occupied picking the berries, keep your eyes moving. There is much going on "behind the scenes" here that a casual visitor might miss.

Look for some of the things mentioned and illustrated herein. Enjoy your blueberries, but more important, enjoy yourself while you're outdoors, picking them!



Relatives: Some of the blueberry's close relatives grow with it. **Early Azalea** (*Rhododendron prinophyllum*), perhaps New York's most spectacular flowering shrub, makes its home here, interspersed among the blueberry bushes. The Azalea's genus name, *Rhododendron*, when interpreted literally, means "rose tree," and hints that the flowers must be lovely; but it fails to do full justice to the large, fragrant, brilliant pink trumpets with large curving throats and gracefully uplifted stamens that adorn this plant in late May and early June. If you have never seen this shrub in bloom, it is worth a visit to the Blueberry Patch before the fruits ripen, to see a sight you won't soon forget!



In autumn, after leaf-fall, and at other seasons, the Azalea's conspicuous chestnut-brown seed pods (*left corner*) separate it from the otherwise quite similar blueberry bushes.

Lower down, on the ground beneath the berry and Azalea bushes, the beautiful short vines of fragrant, pink-flowered **Trailing Arbutus** (*Epigaea repens*) are sometimes found, spreading over the leaf litter. Some of their waxy, yellow-green leaves persist all year. In New York, we have paid it the compliment of specific legal protection, making it unlawful to pick the plant anywhere in the State except on your own property (or someone else's with their permission). It is best enjoyed — and left — where it is, and is one of our loveliest and earliest-blooming wildflowers.



Another herbaceous blueberry relative often growing beneath the bushes is **Wintergreen** (*Gaultheria procumbens*), also waxy-leaved, evergreen (as its name suggests),

and with a delightful fragrance in all parts of the plant. The red berries are tasty, and an equally appealing tea may be made by boiling a few of the leaves in water and sweetening to taste. But please take only one leaf from each plant, don't uproot the whole thing, since they grow slowly.



All of these plants — the Blueberries themselves, Early Azalea, Trailing Arbutus, and Wintergreen — are **heaths**, members of the large plant family **Ericaceae**, whose more familiar relatives include wild and ornamental evergreen Rhododendrons, Mountain Laurel, the cherished British Heather, and the Cranberry we eat in Thanksgiving sauces.

Other Residents: Non-heath plants also live here. **Fringed Polygala** (*Polygaloides paucifolia*) displays its dainty, butterfly-like, magenta flowers in May. At other seasons, this Polygala closely resembles Wintergreen (it is sometimes called "Flowering Wintergreen"), but has no sweet odor, and its leaves have a purplish cast beneath.



Partridgeberry (*Mitchella repens*) vines creep among the Arbutus and Wintergreen, while **Staghorn Clubmoss** (*Lycopodium clavatum*) graces the area with its attractive runners. Mosses and lichens also thrive on acid soils, covering otherwise bare places (*see images on page 10*).

A few **White Pine** seedlings may also grow here and there in the blueberry community, with **Red Maples** and **Trembling Aspens** occasional residents. Aside from **grasses** and **sedges**, perhaps some **Pearly Everlasting**, and in some communities, bog dwellers like **Pitcher Plants** and **sphagnum moss**, little else will grow in a blueberry patch. Where the acid soil, moisture, and sunny conditions end, so does the blueberry community.



◀ **Partridge-berry**
in fruit

▼ **Staghorn Clubmoss & Reindeer Lichen**
(upper left)



Look Beyond the Stem

A Delectable Fruit: The fruits of the blueberry are a familiar part of our lives. We eat them fresh and frozen, in pies, tarts, cakes, and muffins. Shortcakes, pancakes, sauces, jams, and marmalades are made from this delectable wild fruit. We eat ice cream, yogurt, and other foods flavored with the blueberry. In one way or another, blueberry *fruits* are commonplace, yet many people know little of the plants on which they grow. Few could recognize a blueberry bush without its telltale berries.

Before you pop the next fresh or unfrozen blueberry into your mouth, look at it closely for a minute. You'll see the little dimple on one end, where the stem joined, and on the other side a rough circle that looks like a five-pointed crown on a fat king's head.



Like all fruits, the blueberry is the product of a fertilized flower. Remnants of the flower's *sepals* (green, triangular, leaf-like structures that surrounded the petals) form the "crown" of a blueberry. In the flower, the sepals were positioned above the ovary, so that when the berry grew and expanded, the sepals assumed their present place.

How many seeds does one blueberry contain? Quite a few. If you were to count all the small seeds in several berries and keep a record, you would find they average

about 65 per berry. **Huckleberries**, on the other hand, have less than a dozen large, stony seeds in each fruit. Although the word "huckleberry" is sometimes used synonymously with "blueberry," they are not the same. The two are closely related — both are heaths — and similar, but huckleberries belong to a different genus, *Gaylussacia*.

On the surface of a ripe blueberry, if it has not been rubbed off, is a whitish waxy covering or "bloom," which probably prevents water loss and shriveling. It adds to the beauty of the blueberry fruits.



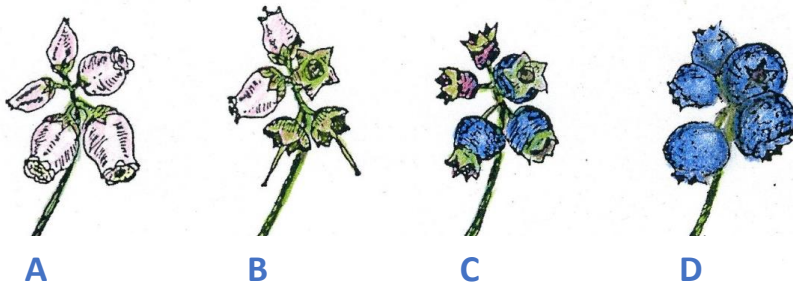
If you have enjoyed picking ripe blueberries, you know that they are clustered, each berry on its own short green stem in an arrangement called a *raceme*. This is similar to the way the clustered fruits of grape and blackberry are borne.



And while picking, you have likely put a few unripe berries in your basket. Next time, before you throw them out, pause a second to admire their beryl-green or wine-red color.

Flowers Make Fruit: Looking at a ripe blueberry, we are again reminded that the fruit results from a pollinated flower. What is the blueberry flower like? If you were in the blueberry patch in late May and early June, you might see the bushes covered with elegant, fragrant, white or faint pinkish bells in racemous clusters, where the berries grow now. These small nodding flowers are especially visited by **bumble bees**, **honey bees**, and a few early **butterflies** (see page 12), which in their quest for nectar, dust themselves with pollen from one flower, and may aid cross-pollination when they visit another blossom, and some of the pollen brushes off onto a waiting pistil.





From Flower To Fruit: How the Blueberry Develops

A. Flowers and flower buds, late May. B. Petals fallen from older flowers.
C. Young berries, four weeks later. D. Mature berries in August.

In Maine and other parts of New England, hives of Honey Bees are rented by commercial blueberry growers for pollination purposes at the time of flowering. Nine thousand hives from New York alone are shared by “migratory beekeepers” in this way each year [1972 figures].

The Blueberry Bush in Winter: Still earlier in the season, before blossoming or leafing out, the blueberry bush was naked and dormant, waiting for spring. It has been thus since autumn, when its crimson foliage gradually dropped off and the last berries were eaten by birds and other animals.

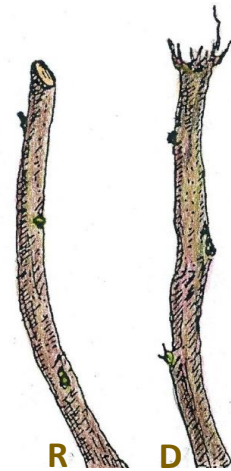
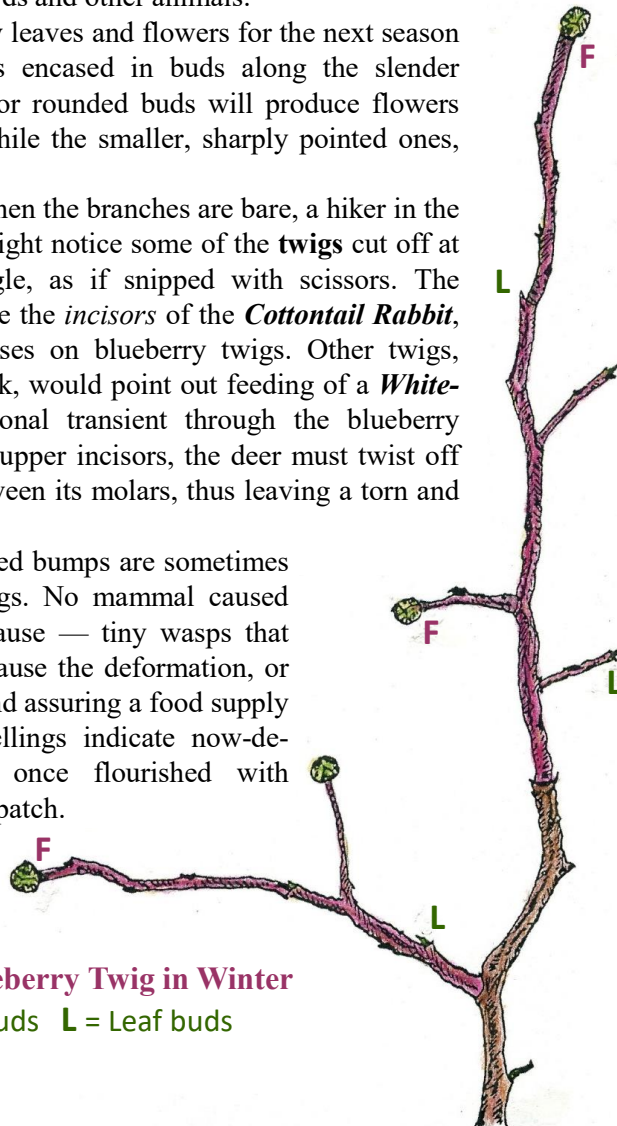
At this time, the new leaves and flowers for the next season were embryonic tissues encased in buds along the slender twigs. The larger oval or rounded buds will produce flowers and ultimately fruits, while the smaller, sharply pointed ones, produce the leaves.

During the winter, when the branches are bare, a hiker in the blueberry community might notice some of the **twigs** cut off at a sharp, 45-degree angle, as if snipped with scissors. The scissors in this case were the *incisors* of the **Cottontail Rabbit**, which sometimes browses on blueberry twigs. Other twigs, with a ragged, torn break, would point out feeding of a **White-tailed Deer**, an occasional transient through the blueberry community. Having no upper incisors, the deer must twist off the twig, holding it between its molars, thus leaving a torn and ragged edge.

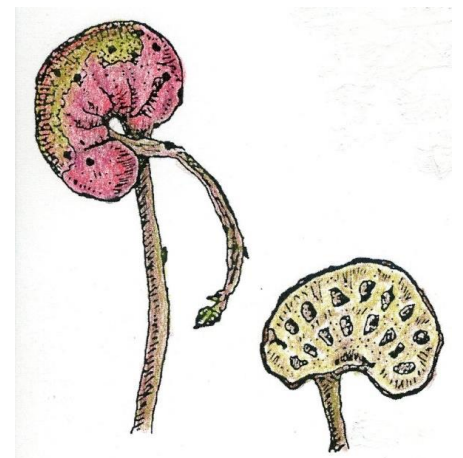
Curious, kidney-shaped bumps are sometimes found on blueberry twigs. No mammal caused these. Insects are the cause — tiny wasps that injected a chemical to cause the deformation, or **gall**, forming a shelter and assuring a food supply for its larvae. The swellings indicate now-deserted tenements that once flourished with activity in the blueberry patch.

A Highbush Blueberry Twig in Winter

F = Flower buds L = Leaf buds



Rabbit- (R) and Deer-bitten (D) Blueberry twigs



Kidney-shaped Blueberry Stem Galls

showing adult exit holes (left) and inner chambers of the larvae & pupae (right)

Blueberries host half a dozen other gall-makers (a **mite** and several tiny flies called **midges**), which injure the growing tips, twigs, fruits, or leaves in various ways to form themselves secure shelters at different levels on the bushes.

The simple alternate leaves of blueberries, besides bearing galls, nourish a great many insects and other animals. The leaves of the blueberry — and all green plants — have the capability of combining carbon dioxide from the air with water from the soil to manufacture sugars (food), using the energy in sunlight, in a complex process called *photosynthesis*. The energy stored in the sugars produced by the leaves is released and used by the animals, or consumers, that feed upon them.

Larvae of five New York **butterflies** — the **Brown Elfin**, **Henry's Elfin**, **Striped Hairstreak**, **Northern Spring Azure**, and **Pink-edged Sulphur** — feed on blueberry leaves. In all, nearly 300 kinds of insects interact with the various blueberry species in one way or another, including 31 beetles, 16 flies, 172 butterflies and moths, and 4 wasps, to mention the main groups! Only a few of these are pests. The rest serve as natural pruners, or fit into other special niches in the blueberry community.



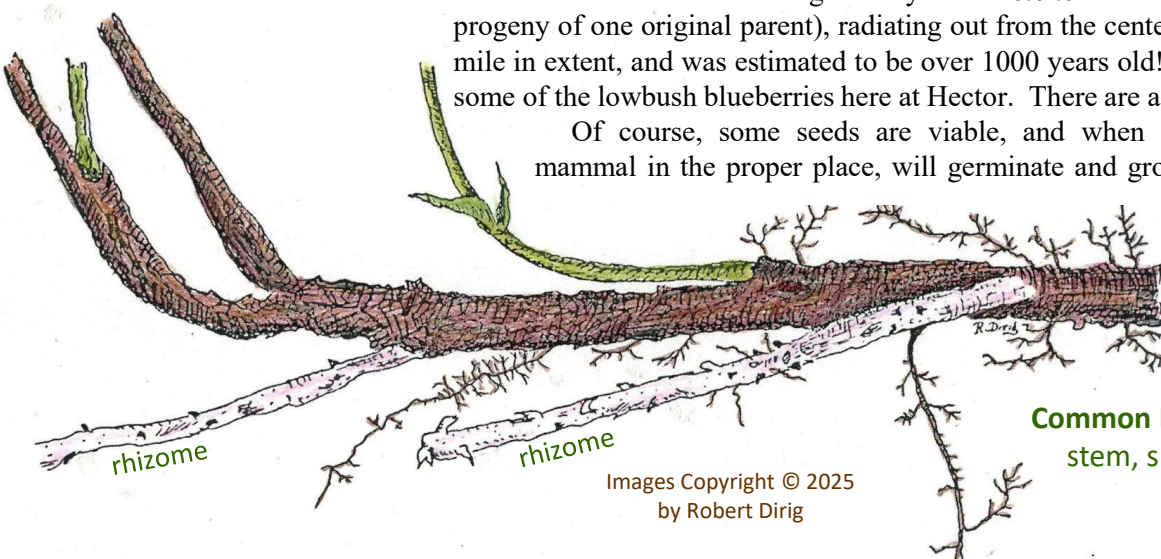
Butterfly Associates of Blueberries
The caterpillars of **Brown Elfin** (1), **Henry's Elfin** (2), **Striped Hairstreak** (3), **Northern Spring Azure** (4), and **Pink-edged Sulphur** (5) feed on blueberry leaves or flowers.
You might also notice **Juvenal's Dusky Wing** (6), **Hobomok Skipper** (7), **Tiger Swallowtail** (8), **Brown Elfin** (1), **Azures** (4), **Mourning Cloak** (9), and **Red Admiral** (10) sipping nectar at blueberry flowers in early spring.



Anchoring: Blueberry bushes are very shallow-rooted, and lack the tiny absorptive root hairs that most higher plants possess. A fungus is also associated with the blueberry's roots, and may convert atmospheric nitrogen into a form useable by the plant, in much the same way as the tiny organisms living in nodules on legume roots do. As little nitrogen is available for their nutrition in the acid soils where blueberries grow, the implications of this relationship are interesting.

The seeds of blueberries do not germinate well, but creeping **rhizomes** (underground runners, *see illustration*) send up new shoots which eventually result in new bushes. A species of blueberry in the southeastern United States produced new rhizomes about one foot long each year. A **clone** of this plant (new plants, all progeny of one original parent), radiating out from the center, covered an area half a mile in extent, and was estimated to be over 1000 years old! You may find clones of some of the lowbush blueberries here at Hector. There are a few.

Of course, some seeds are viable, and when "planted" by a bird or mammal in the proper place, will germinate and grow into a new bush, and may eventually produce a new clone. Commercially, blueberry plants are propagated vegetatively from cuttings.



Common Lowbush Blueberry
stem, showing rhizomes
(life size)

Images Copyright © 2025
by Robert Dirig

The waste disposal system of the blueberry community is interesting and efficient. Many nutrients taken up from the soil are deposited in the leaves. When autumn comes and the foliage drops, the nutrients are returned to the soil as the leaves decompose, for reuse later. They may also produce an effective mulch beneath the bushes, helping to keep the soil moist around the blueberry's roots.

Blueberries and People

The blueberry plants at Hector are native; they have likely been here for a few thousand years. Historical records tell of European settlers picking and using the fruits, while still earlier writings indicate that the Seneca and Cayuga Nations of the Haudenosaunee federation were the first humans to enjoy the blueberry fruits in this area. They ate the fresh berries and also dried them for winter use.

But here, as in most areas where blueberries will grow, the soil was too poor for agriculture to survive. European settlers tried to live here, but eventually gave up and abandoned the land. Today, lilacs and flowers may still bloom in gardens that are no longer tended, around crumbling house foundations built of native fieldstone — lingering evidence of former habitation.

At present, humans may be transients or tourists in a place like this, picking blueberries, hunting, snowmobiling, hiking, picnicking, camping, or for other recreational purposes, but seldom make a blueberry patch their home.

Blueberries are now produced commercially in large quantities, especially in the New Jersey Pine Barrens, where the industry first developed. Maine, Michigan, New York, and other New England states, where acid-soil conditions prevail, are also centers of blueberry culture. In 1966, blueberry growing was a \$20 million industry in the United States, the ripe fruits selling for 25¢ to 75¢ a pint!

An Invitation

When next you go blueberrying, pause a minute before you pluck the berries off into your basket, to admire their beauty, to notice the way they grow and the white “bloom” on their surface. Examine the leaves and twigs, and see if you can find new plants coming up around the mother bush. Imagine coming upon this blueberry patch for the first time, and admiring it in all its pristine beauty. Or picture yourself a First Nation native gathering the fruits into

a bark or rush basket to dry and store for a winter treat. Look for mosses and ground pines, Wintergreen and Polygala, Partridgeberry and lichens, growing at your feet. See if you can find any galls on the blueberry's stems and leaves, and search for silent, hidden insect tenants in their shelters among its leaves and branches. Maybe you will find an Azalea bush across the path, or catch a glimpse of the forty or more birds and mammals that enjoy blueberries as much as people do! Perhaps a tiny Ladybug will be crawling up a blade of grass, or a gorgeous butterfly might alight on a sunlit leaf or flower before you. Pause a moment to appreciate the beauty and complexity of the blueberry patch in which you are a guest. You'll be glad you took a minute to look beyond the stem on which the berries grow, to see one of Nature's most interesting communities.



Suggestions for Teachers and Group Leaders

The background material presented above could be used in elementary, middle school, high school, and even college classrooms. Its main emphasis is, of course, on botany, biology, and ecology of the blueberry plant and its community. But it makes passing reference to several other disciplines, including entomology and zoology, local history (Haudenosaunee natives, European colonists, and failure of farming), geology, and use of wild foods.

Specific Suggestions for Field Trip Leaders at the Hector Blueberry Patch

The teacher or leader should provide student access to the above information a week or two in advance of the trip. *You should visit the area to scout and explore the blueberry community yourself, before bringing students or other groups there.*

Within the limits of the academic year, the best times to visit are late summer, or late May or early June. An ideal visit would happen in July, when the blueberries are ripe, but this timing usually is not feasible for schools. However, Scouts, 4-H clubs, garden clubs, and natural history-oriented hiking groups might find a trip to the Blueberry Patch an interesting outing in the summer.

[The full list of suggestions is available from the author.]

Historical Notes

This booklet was written as part of a *Special Studies in Education* course at Cornell University in 1972 [now 53 years ago]. Six students in Environmental Education (JIM STIMSON, KEVIN HARRIS, JOHN SERRAO, CAROLYN CHUDYK, NANCY DALY CHRETIEN, and I), all seniors or graduate students with PROFESSOR RICHARD B. FISCHER (right) of the Division of Science and Environmental Education as our advisor, formed a group to study regional nature centers, natural science museums, and land reserves of various sorts. We also wanted to develop environmental education materials for use in such places, since the experience would be helpful when we were seeking employment in the near future.

At this time, Dr. Fischer was approached by PAUL SHAW, Forester in Charge of the **Hector Land Use Area** [now known as the **Finger Lakes National Forest**], a 13,000-acre, federally owned and administered tract, about 20 miles west of Ithaca, and 8 miles north of Watkins Glen. This area was already involved in outdoor education and recreation (nature trails, snowmobile and hiking trails, camping and picnicking facilities, and a large Blueberry Patch), but Mr. Shaw and his colleagues were interested in expanding its use to include tours for school groups and college classes, and more environmental education for the general public.

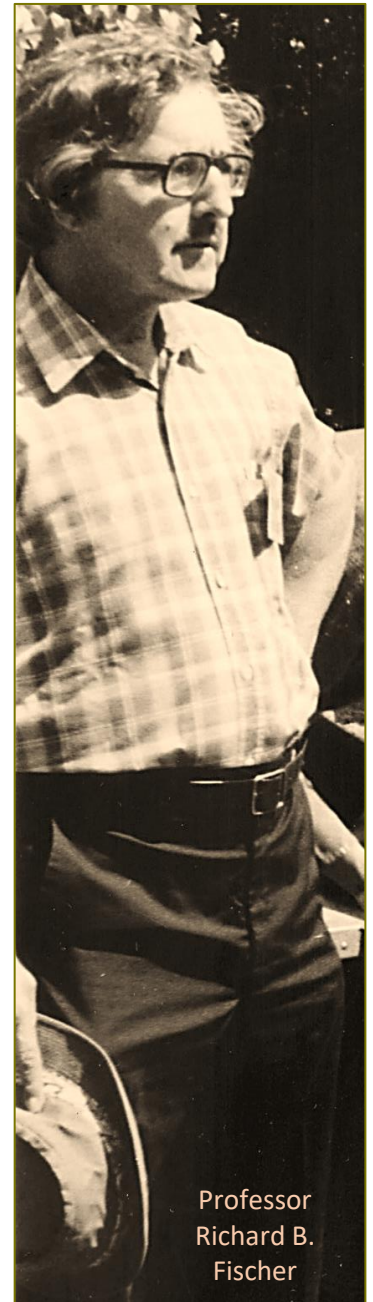
Mr. Shaw's and our aims being compatible, we soon began work. Each person chose a specific area of appeal, and designed environmental education materials in that field specifically for use at the Hector Land Use Area. JIM tackled the problem of management and mismanagement in such an area; KEVIN developed geology- and science-oriented materials; and JOHN wrote his Master's thesis on how to teach various aspects of forest ecology there in winter; CAROLYN investigated the sociological and cultural history of this area, which is now deserted farmland (also a Master of Science thesis); and NANCY prepared a summary of each of our topics as an overview of what would be available for school groups at Hector. My topic was blueberries, since over 20,000 people visit Hector annually to enjoy picking the berries in the large natural patch that occurs there. I was curious about the blueberry bush and its community. What was its ecological story? What was there to know about the bush itself that was interesting? This booklet is the result of my quest for the answers to these and other questions, both in the literature and through personal observations. I have found it an absorbing study: I hope you will enjoy reading this booklet as much as I have enjoyed creating it.

Each of us compiled a basic fund of background information, and a separate page or two of activities, lesson ideas, and suggestions for teachers or group leaders as to how this material might be used on field trips to Hector [the full list of suggestions is available from the author]. We expected that this information would soon be available from Mr. Shaw at the Hector Land Use Area office, 208 Broadway, in Montour Falls, New York — but this apparently never happened.

My drawings are life-size, and were rendered in Indian ink with a crowquill pen [in 1972. I have colored a few of them in 2025 for this article, and added recent color photos to supplement the text.]

Acknowledgements: Each of us served as a "resource person" in our respective area for all the others in the group. I am grateful to Jim, Kevin, John, Carolyn, and Nancy for the information they shared. I also thank Dr. Fischer and Mr. Shaw for suggestions. A two-foot-high stack of theses, pamphlets, and books on the blueberry from the Cornell University library provided much useful information. *Blueberry Culture*, a 378-page book edited by Paul Eck of Rutgers University, was the most useful available reference. Thanks also to another Cornell graduate student, ALMUTH TSCHUNKO, for the loan of blueberry literature and notes from a pomology course she had taken. And I thank the blueberry bushes themselves for showing me their mysterious buds, graceful twigs, beautiful flowers and foliage, and abundant fruits, as well as introducing me to their community. It has opened my eyes to a fascinating microcosm. I hope this booklet will do the same for you.

— Robert Dirig, 6 September 1972



Professor
Richard B.
Fischer

The Blueberry Patch Campground in the Finger Lakes National Forest is still open to blueberry pickers. Take NY Rt. 414 N from Watkins Glen to Co. Rt. 2 (Picnic Area Rd.). GPS: N42.29.044 W76.47.935

This story portrays a cooperative effort to produce teaching material around a regional outdoor theme. Cornell's **Environmental Education** program of 1972 was the final incarnation of the venerable, historical **Nature Study** model that was developed at Cornell by **Anna Botsford Comstock**, **Liberty Hyde Bailey**, and their colleagues, beginning in the 1890s. Anna's original *Handbook of Nature-Study*, published in 1911 (and in many later printings) by the Comstock Publishing Company, Inc., at Ithaca, N.Y.; and her *The Comstocks of Cornell, The Definitive Autobiography*, edited by Karen Penders St. Clair, published in 2020 by the Cornell University Press; also Bailey's *The Nature-Study Idea*, 1903, edited by John Linstrom in a new edition, Cornell University Press, 2023, provide detailed reviews of the origin of the Nature Study program at Cornell. **Professors Richard B. Fischer** (a 2-semester course) and **Verne N. Rockcastle** (a summer course) were the last faculty members to teach **FIELD NATURAL HISTORY** at Cornell. 

APPRECIATION

A Tribute to Lois Levitan

Lois Levitan loved plants, people, and the natural world. All living things brought her joy. Even in retirement, while continuing to teach science writing seminars at Cornell University, Lois generously gave her time and expertise to the Finger Lakes Native Plant Society (FLNPS), the Cornell Botanic Gardens, and Greensprings Natural Burial Cemetery.

As a Cornell Botanic Gardens docent, Lois led tours through the gardens and arboretum, introducing hundreds of people to the beauty and diversity of plants. Her interest in native plants deepened when she joined me on a FLNPS Fall Seed Walk in one of the Botanic Gardens' natural areas. I believe that day sparked a desire in Lois to learn everything she could about growing the common plants of Central New York, something I wish I could ask her about now.

Some of us are naturally drawn to seeds and propagation. Lois was one of those people. Shortly after that walk, Lois joined us at the Cornell Botanic Gardens' Plant Production Facility, to grow plants. While continuing to lead tours, she immersed herself in the life cycles of many native plants, including ferns. She helped produce thousands of plants for the FLNPS plant sale and for the Mundy Wildflower Garden, always generous with her time and energy. Lois brought so much warmth, intelligence, and an unwavering sense of purpose to every conversation we shared. Seriously into plant identification, checking seed viability, or carefully potting and labeling seedlings, she approached each task with thoughtfulness and care, and most likely a way to improve the process. Lois was all in. I loved working alongside Lois.

Susan Suarez invited Lois to work with her in the Mundy Wildflower Garden (MWFG), and together they co-led the recording of flowering periods in the MWFG for the past three years. Each week, Lois and Susan walked through the garden, searching for plants in and out of flower. Both beginning-flowering and end-flowering dates were carefully recorded and logged into a database in the MWFG office. Photos were added weekly to the Bloom Board — two wide panels centrally located in the garden — until it overflowed with images of plants in bloom. The lists generated by Lois and Susan through the database display each plant's scientific and common names and nativity, helping visitors understand the life cycles of the plants in the garden.

At the same time, Lois's native plant expertise was in action at Greensprings Natural Burial Cemetery. She was deeply involved in the restoration of native plants on the grounds, and often spoke with me about the idea of using local seeds on the burial mounds. I loved this idea, and provided Lois with seeds to begin a pilot project — a beautiful example of her vision and dedication to ecological restoration. Another native plant project championed by Lois!

Even while giving so much to our shared projects, Lois tended a stunning home garden. Her yard is a haven for native shrubs and native perennial herbaceous plants, all carefully chosen and cultivated. A beautiful water feature greets visitors at her front door, brimming with Cardinal Flower, Great Blue Lobelia, several *Carex* species — and of course, frogs. We enjoyed the sights and sounds of this delightful water garden together, gazing placidly into the pool looking for life to examine and ponder. Lois loved the water and the life it provides. Together we paddled the Cayutaville Inlet, looking for and finding interesting seeds to collect from our kayaks.

When Lois joined the Steering Committee of the Finger Lakes Native Plant Society, I was so glad to have her with us. Her thoughtful insights, and steady presence were invaluable. I will never be able to thank Lois enough for all that she accomplished. The dedication, time, and passion she shared continue to inspire us to keep protecting, preserving, and educating others about the importance of native plants in the landscape. And we will undoubtedly, gladly oblige.

Thank you, Lois Levitan, from the bottom of my broken heart. You are immensely missed. Lois Levitan left us all on May 14th 2025.

— Krissy Boys
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