

THE PLANT PRESS



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Plant-Animal Interactions on the Domain

Both the beauty and the complexity of nature have long fascinated me, but only over the past few years have I realized that nature's beauty and complexity are often interchangeable perceptions, inextricably bound together. This perspective was nurtured by my education, formal and informal, in the life sciences. I am a senior biology major at the University of the South, and although I had known for several years that behavioral ecology is my primary intellectual interest, I had conducted only very short-term field studies (typically three to nine days) through Sewanee's Island Ecology Program as well as through a semester abroad in Costa Rica. This changed when I received a Jesse Ball duPont Student Research Grant to work with Dr. Ann Fraser of Sewanee's Biology Department.

I had begun researching ants in Costa Rica, and during the spring semester of 2002 I worked with Ann through an independent study course. We began a biodiversity survey of the ants on the Domain. While this taught me a great deal about ant collection, identification, and diversity, I wanted to investigate ant *behavior*. With the duPont grant, I could spend my summer doing just that! During the summer, Ann and I continued collecting ant samples for the survey, and I conducted a behavioral study of the amazing interactions between ants, tuliptree scale insects, and the scale insects' host plant, tulip-poplars.

Tuliptree scale insects (*Toumeyella liriodendri*), considered by agriculturalists

to be pests, feed on the sugar-rich phloem of tulip-poplars (*Liriodendron tulipifera*) by inserting a specialized mouthpart through the tree's bark and into the phloem. These particular scale insects are immobile once they insert their mouthpart. Consequently, they are especially susceptible to predators and parasitoids. Fortunately for the scales, ants, usually *Formica rubicunda*, actively forage on the scales'

sugary honeydew excretions. In return for this excreted

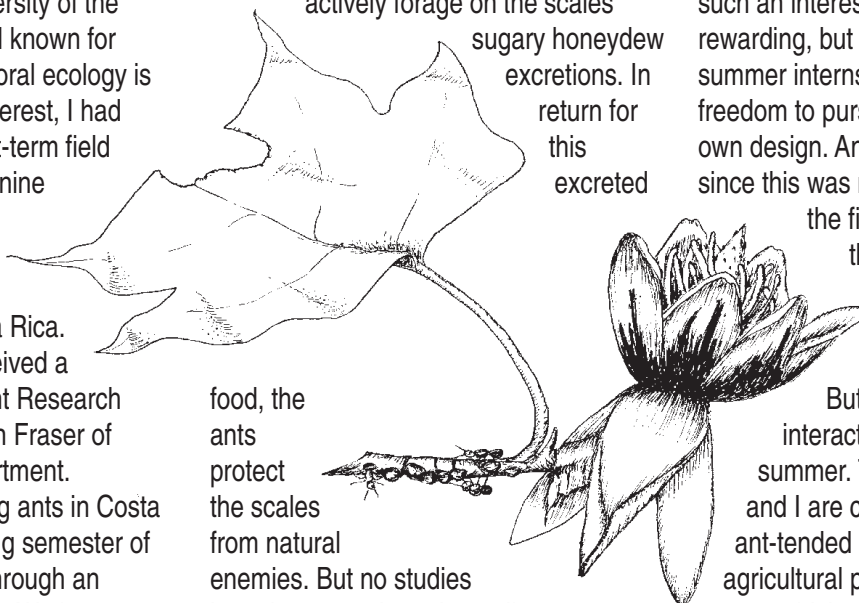
food, the ants protect the scales from natural enemies. But no studies have been conducted on tuliptree scales regarding how their excretion rates may be affected by the presence versus absence of ants or by attack by a predator or parasitoid. Thus, I designed two complementary experiments through which I found that the scales alter their rate of honeydew excretion depending on ant presence or absence. The data I collected on the scales' response to a simulated parasitoid attack was inconclusive, indicating that further investigation is needed.

Over the summer I spent many hours at

Lake Cheston watching ants and scales on the branches of tulip-poplars. (Indeed, if any reader is interested in seeing exactly what I am writing about, then this spring or summer, take a stroll around Lake Cheston and look at the branches of the tulip-poplars—you will find many with red and black ants tending grayish-purple scales.) Being outside and learning about such an interesting interaction was rewarding, but the most fulfilling part of my summer internship was that I had the freedom to pursue research of (mostly) my own design. Ann assisted me greatly, but since this was my senior thesis, I made all the final decisions. I completed the internship with a newfound self-confidence that I will carry with me when I graduate this May.

But my study of plant-animal interactions did not end with the summer. This spring semester Ann and I are comparing excretion rates of ant-tended and untended aphids on agricultural plants, such as beans and peas, which we are growing in a greenhouse. My experience working with Ann on deciphering and appreciating some of the complexity—and beauty—of nature is one of the highlights of my years at Sewanee, and I hope that more students will realize that they need not seek far-away states and lands to learn about nature. They need only to seek the nearest trail on the Domain.

—Mercedes Ward



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Plants are toadshade trillium,
tulip-poplar, chickweed, henbit,
great white trillium, and larskpur.



Early Spring Weeds

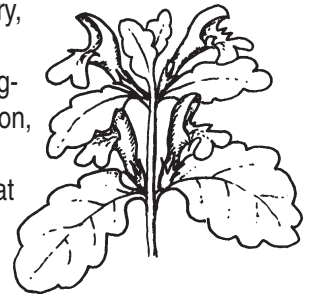
Students of plant systematics, eager to test their new skills in identification, go abroad in search of plants in flower in early spring, but what do they find? The natives in the woodlands—hepatica, bloodroot, toothwort, great chickweed—are still waiting for the proper signals and are not yet out. But elsewhere, the old regulars are appearing. There are the garden flowers, like the snowdrops and the crocuses, but those aren't listed in the keys. They are not native plants, obviously, nor are they naturalized (growing outside gardens among the natural plant communities). The naturalized plants are listed in the keys, and so the students begin to practice on chickweed and dandelions and ground ivy.

These naturalized plants originally came to this part of the world from somewhere else, and many of them came with the early colonists from England, brought as valuable food and medicinal plants from home. How ironic that these very plants are now considered bothersome lawn weeds! "A weed is a plant whose virtue is forgotten" (Haughton, 1978, p. 229). This article intends to bring to light some of the virtues of these weeds of early spring.

The common chickweed, perhaps the earliest and most ubiquitous, is an excellent example. *Stellaria media* (L.) Cyrillo is a winter annual, with its stems and other parts protected by tiny hairs. It stays close to the ground through the cold weather and may bloom as early as January. Since ancient times in India and early Greece and Rome it was valued

as an edible green in winter. By the Middle Ages, it had spread to Europe where it was used as a pot herb and salad green, and as a medicine for rashes. The Elizabethans fed it to domestic fowl, as the name implies, and even to falcons. The Puritans probably brought it with them as a matter of course for their dooryard gardens. "Since the days of the Druids, the beneficent chickweed has fed and healed mankind. Today it thrives on millions of American lawns, its history, beauty, and service unrecognized" (Haughton, 1978, p.63). Beauty? Look at the tiny flowers this year with a hand lens or magnifying glass, and you will agree.

Rivaling the chickweed in ubiquity and antiquity, and in being held in low esteem, is the common dandelion, *Taraxacum officinale* G.H. Weber ex Wiggers. The dandelion probably originated in Asia Minor, but had spread so widely that on their arrival in Britain the Romans were glad to find this familiar plant already valued by the Celts. The Anglo-Saxons used the plant medicinally and so it became part of the monastery physic gardens. Its name is a gift of the Normans, "dent-de-lion," or lion's tooth, which was corrupted to dandelion by the Saxon serfs. Its name and its story reflect practically the



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Sewanee Spring Wildflowers

The herbarium staff has teamed up to produce a booklet to help people enjoy Sewanee's spring flora. The combination of two separate guides—a trail guide to Shakerag Hollow and a key to identification of the wildflowers—*Sewanee Spring Wildflowers* is actually the beginning of two separate works-in-

progress. As long as supplies last, it will be given, free of charge, to participants in the herbarium's outings this spring. Publication was made possible by a generous gift from Sewanee alum Dr. Stephen Smith. Happy botanizing!

—Mary Priestley

Spring Calendar of Events

"Now That April's Here" — Robert Browning

Bluebell Island—Sat., Mar. 29, 11 a.m.
All are invited to join the South Cumberland Regional Land Trust for their annual Bluebell Island Ramble. The bluebells are a must-see! Also trout lilies and, possibly, the elusive dwarf trillium. Meet at Tyson Food Co. on Highway 50 in Decherd. Join the TN Native Plant Society for the day: after the Ramble and lunch in Sewanee, we plan to walk through Shakerag Hollow.

Shakerag Hollow—Meet at Green's View parking lot. This is Sewanee's "Mecca" for wildflower lovers, and the display changes almost daily. 2 miles, moderate, culminating in a steep climb up the rocks to Green's View.

Sat., Apr. 5, 1:30 p.m.—Mary Priestley
Sat., Apr. 12, 1:30 p.m.—Yolande Gottfried
Sat., Apr. 19, 1:30 p.m.—George Ramseur
Sat., Apr. 26, 10 a.m.—Harry and Jean Yeatman

Collins Gulf—Co-sponsored with the Chattanooga Spring Wildflower Celebration and South Cumberland State Recreation Area. Meet at the Collins West

trailhead, just beyond the Swiss-Memorial School in Gruetli-Laager. Bring lunch and extra water. 5 miles, strenuous.

Sat., Apr. 5, 9 a.m.—George Ramseur
Sun., Apr. 6, 12:00 noon—Mary Priestley



Abbo's Alley and Charlotte Gailor's Garden—Sun., Apr. 13, 1:30 p.m.

Yolande Gottfried and Mary Priestley.
Meet at the South Carolina Ave. entrance to the Abbott Cotten Martin Ravine Garden in Sewanee.

Birdwatching at Morgan's Steep—Sat.'s Apr. 19 and May 3, 8 a.m. David Haskell
This is a good time to spot spring migrants on their way through and Sewanee's summer birds newly-arrived. Canceled in the event of rain.

Join the Herbarium staff for the **53rd annual Wildflower Pilgrimage in the Smokies**, April 22-27. See <http://www.springwildflowerpilgrimage.org/> for more information.

Wear appropriate shoes on all of these walks. Risks involved in hiking include physical exertion, rough terrain, forces of nature, and other hazards not present in everyday life. Picking flowers and digging plants are prohibited in all of the above-mentioned natural areas.

For specific directions to these locations, contact Mary Priestley at 931-598-1997 or, for Collins Gulf, the South Cumberland State Park Visitors' Center at 931-924-2980.



Membership Application/Renewal

The Friends of the Sewanee Herbarium support the work of the Herbarium: education, research, and conservation. A \$10.00 annual contribution would be very much appreciated. The date of your most recent contribution is printed on your address label.

Name and Address (if different from that on the mailing label on the back):

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Please make check payable to The University of the South. Gifts are fully tax deductible. Send to:

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Others who might like to receive *The Plant Press*: _____

Spring Weeds *continued from page 2*

whole history of England! It is not listed in the plant or seed lists of the early Puritan colonies, but that is probably because it was so widely and commonly grown and used.

Two others are not only naturalized, they are classified as significant threats by the Tennessee Exotic Pest Plant Council—lesser periwinkle, *Vinca minor* L., and gill-over-the-ground, *Glechoma hederacea* L. Periwinkle was known in Britain at least by Anglo-Saxon times. It had medicinal uses but could also be poisonous, as is so often the case with medicinal plants. It was a symbol of immortality, perhaps because it is evergreen, and was sometimes worn by those about to be executed, giving it another common name, flower of death. Gill-over-the-ground, another native of Britain, was also known to the ancient Greeks and Romans. Another common

name is alehoof, because it was used in the making and clarifying of ale. Even the name gill comes from the French for “to ferment ale.” Its specific epithet, *hederacea*, refers to the similarity of the leaves to ivy and it is also called ground ivy. Ivy is associated with Bacchus, the god of wine—could that have anything to do with the ale connection?

There are several others—bittercress, henbit, dead nettle—but the final example is one that exemplifies well the doctrine of signatures, the idea that the shape of a plant is a clue to its medicinal value. A close look at the flowers of selfheal, *Prunella vulgaris* L., will reveal that the upper part is shaped like a sickle, and so it was used in the healing of wounds such as a field worker might encounter. Indeed, it flourished in open areas in Britain and was known to the Anglo-Saxons. Others saw a similarity to the throat in the shape of the flower and so used it for diseases of

the throat—*Prunella* is probably from a German word for quinsy.

These interesting tidbits may help us see lawn weeds and roadside vegetation with new eyes—as valuable plants in the Old World and in olden times—and remind us why they are still very much with us today. And thereby they enhance our enjoyment of the progress of spring!

—Yolande Gottfried



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The Moon Tree Webpage

Many people know about Sewanee's Moon Tree, a sycamore grown from a seed that was carried on the Apollo 14 trip to the moon in 1971. A recent bit of housekeeping in the herbarium turned up documentation about the tree. This enabled Forestry Prof. Karen Kuers to send the information for posting on the Moon Trees webpage at

http://nssdc.gsfc.nasa.gov/planetary/lunar/moon_tree.html. The story of the moon trees, a list of the trees, and photos of some of them, including ours, are there.

Sewanee's tree—then a seedling—was presented by Tennessee State Forester and Sewanee grad Max Young to the president of the Forestry Club, student Sandy

Sanderlin, on April 7, 1976. Located in the grassy area south of Woods Laboratories, it is one of four moon trees that were planted in Tennessee. Sandy Sanderlin, now Sandy Baird, lives in Sewanee and coordinates the herbarium's Search for the Big Trees.

—Mary Priestley

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