



Mountain Top Arboretum

RT. 23C and Maude Adams Road, P.O.Box 379 Tannersville, NY 12485
www.mtarbor.org 518-589-3903 Joan Kutcher, Executive Director

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FALL NEWSLETTER

Mushrooms, The Fifth Kingdom



Witch's Hat

Now that it is autumn, those mycelium marvels, the mushrooms are emerging in all corners of the Arboretum. Venturing up from their dark kingdom, these close allies of the forest trees are members of the Fifth Kingdom, which also includes molds, yeasts, smuts and mildews.

There is much that is not known about the Fungi Kingdom. However, there is considerable research being done about the relationship between trees and fungi. Beyond the culinary and photogenic possibilities of mushrooms, they are an important indication that the trees have the kind of healthy soil they need.

Mature trees need active fungal soils to obtain maximum moisture and nutrition. According to Eef Arnolds, a fungal ecologist at the Agricultural University of the Netherlands, woodland fungus species are in a "catastrophic decline" throughout Europe. Arnolds asserts that changing forest management practices are not to blame because fungal quantities and varieties have declined in all types of mature forest, no matter how the trees have been managed. This is more than bad news just for European devotees of wild edibles, because the decline of the fungi can create problems for the trees. The vanishing fungi are generally those living symbiotically with certain tree species. Their fine subterranean filaments extend the trees' root systems, providing water and nourishing minerals in exchange for the trees' provision of carbohydrates. Trees that lose their fungal associates become more susceptible to many stresses, from germs and drought to pollutants. The good news in our region is that there hasn't been any noticeable fungi decline. Local mycological expert, John Boyle says that the past few years have been very good for mushrooms because of the rain, and there is no indication of decline in quantity or variety.

This Fall, look for Shaggy Manes (*Coprinus comatus*), Honey Mushrooms (*Armillaria mellea*), and more near the conifers, beeches and oaks in the West Meadow and along Maude Adams Road. You might even find some Halloween horrors, like Death Cap (*Amanita bisporigera*), Witch's Butter (*Tremella mesenterica*), Witch's Hat, (*Hygrocybe conica*) and Jack O' Lanterns (*Omphalotus olearius*). Be sure to take an identification guide along, and of course **never** eat anything until an expert mycologist has approved.



Jack O' lanterns

More about mushrooms....

Common Edible and Poisonous Mushrooms of the Northeast, by C. Leonard Fergus and Charles Fergus.

Familiar Mushrooms of North America, by Peter Katsaros.

Mushrooms of Northeastern North America, by Alan E. Bessette, Arleen R. Bessette, and David W. Fischer.

www.Mushroomthejournal.com

www.mykoweb.com

What Did Really Well This Year?



Dwarf Conifer Berm

Nearly all the trees benefited from the rain and moderate weather this year, and put on good new

growth. The younger oaks were particularly strong — perhaps a reminder that the Arboretum's hybrid oaks appreciate a proper English summer.

The conifers and heathers in the Dwarf Conifer Berm, all planted in 2004, made it through a second winter with little damage, and showed excellent growth rates this season.



European Hornbeam seed

The European Hornbeam, *Carpinus betula*, planted in 1982 in the West Meadow, is slow to mature, but this

year it finally set seed. This attractive medium sized tree is tolerant of a wide range of growing conditions and is considered a good candidate for urban tree planting.

The Cucumber Magnolia, *Magnolia acuminata*, planted in 1986, had a good crop of pinkish-red fruits this summer. These really do look like small cucumbers before they ripen.



Beetles Battle Purple Loosestrife



Purple Loosestrife

Purple loosestrife, *Lythrum salicaria*, is an aggressive invasive perennial that adapts readily to natural and disturbed wetlands. As it est-

ablishes and expands, it out competes and replaces native grasses, sedges, and other flowering plants that provide a higher quality source of nutrition for wildlife. The highly invasive nature of purple loosestrife allows it to form dense, homogeneous stands that restrict native wetland plant species, and reduce habitat for waterfowl.

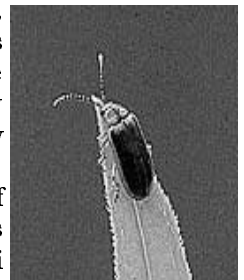
Purple loosestrife became established in the estuaries of north-

eastern North America by the early 1800's. By the late 1800's it had spread throughout the northeastern United States but caused few problems until the 1930's when it became aggressive in the floodplain pastures of the St. Lawrence River. Since then, it has steadily expanded its local distribution and now poses a serious threat to native vegetation in wetlands throughout the northeastern and north central regions. Chemical controls are difficult because of its proximity to water.

But a biological control may have been found. Bernd Blossey of Cornell University began using European *Galerucella* beetles in 1992 as part of a loosestrife control program. Colonization of these introduced populations appears to

have been successful. However, colonies of these beetles establish slowly over several years, and need certain conditions to survive. They need to be near standing water most of the year. Early indications are that the *Galerucella* beetles are very susceptible to pesticides; exposure should be strictly avoided.

At present, these beetles are available commercially from The New Jersey Department of Agriculture's Phillip Alampi Beneficial Insect Rearing Laboratory.



Galerucella sp.

Fall Book Review

Teaming with Microbes: A Gardeners' Guide to the Soil Food Web. By Jeff Lowenfels and Wayne Lewis. Timber Press, 2006.

Read this book and you will never look at your garden the same way again. Healthy soil is teeming with life — not just earthworms and insects, but an incredible amount of



bacteria, fungi, and other microorganisms. The use of chemical fertilizers injure the microbial life that sustains healthy plants, and the gardener becomes increasingly dependent on an arsenal of artificial substances, many of them toxic to humans as well as other forms of life. By understanding the soil food web it is possible to create the right nutritional conditions for trees and plants.

This book is in two parts: basic soil science and practical applications. With a good balance of science,

amazing images taken through an electron microscope, and practical advice, the authors make understanding the soil food web possible for a wide audience of non-scientists.

There is an appendix with "The Soil Food Web Gardening Rules", a short bibliography, and a list of resources. There is also the memorable quote: "In general we advise against putting anything under an electron microscope. At that level, all life has teeth!"

he white pine is a tree of many virtues, but to the Europeans arriving on the east coast of North America during colonial times, it was a wondrous tree. It was twice as tall as the tallest trees back in England and continental Europe. Huge, straight, lightweight, durable, the least resinous of all pines, it provided the lumber for houses, furniture, coffins, and boats as well as masts for the tall ships.

Pinus strobus, the Eastern White Pine, is one of the tallest trees in eastern North America. In pre-colonial virgin stands it sometimes grew to as much as 230 ft. tall, but today it is rare to see pines above 80 feet, since woodland reforestation began less than a century ago. Few of the original trees seen in colonial times remained untouched by extensive logging operations in the eighteenth and nineteenth centuries to harvest the valuable timber.

The first English language account of *Pinus strobus* was in John Josselyn's *Two Voyages to New England*, 1674. He wrote, "The Pine Tree is a very large tree, very tall...". In fact, it was at least twice as tall as the Pines (*Pinus sylvestris*) in England, and this made it very noteworthy indeed. Beginning in the 1750's, the Crown, in the person of King George I, began restricting the cutting of pines in the colonies. At first only the very largest trees were marked with "The King's Broad Arrow", three hatchet slashes denoting them as King Pines. By 1761 the restrictions on cutting pines were expanded to include any pine with a diameter of 24 inches or more. However the colonists had other ideas. Their refusal to pay for the right to cut pines on their own land holdings led to rebellions like the Pine Tree Riot of 1772 in New Hampshire.

After the opening battles of the American Revolution, New Englanders sabotaged mast-tree cargoes awaiting shipment to Britain. One such disturbance erupted in Falmouth-Portland Harbor in June 1775, when two ships arrived with orders from British Admiral Graves to secure all possible masts. "On seeking to load in the Presumscot River, the British encountered an aroused citizenry who seized their boats, guns, and men. Admiral Graves warned...that if the masts were not given up he would 'beat the town down about their ears.' In October, 1775 this threat was made good. Captain Mowatt and his fleet bombarded the town of Falmouth [Portland] and reduced it to ashes" (William Rowe, *The Maritime History of Maine*). But the colonists survived to win their independence and ownership of their majestic white pines, whose image, first depicted on the first New England Flag in 1686, still appears on the state flags of Maine and Vermont.