

NATIVE



NOTES

T. virginicum

KATE'S MOUNTAIN CLOVER

BILL GRAFTON – Editor

WEST VIRGINIA NATIVE PLANT SOCIETY NEWSLETTER

Volume 15:3

DECEMBER, 2007

Dear WVNPS Members,

I hope everyone had an exciting spring, summer and fall and took many opportunities to botanize. I attended several Tri-State Chapter trips and the Fall State field trip. Getting together with friends and fellow botanical enthusiasts is always a treat. I encourage you if you haven't already, to take advantage of these trips next summer. It's a great chance to learn about the flora from excellent botanists such as Bill Grafton, Donna Ford-Werntz and Judy Dumke and wildflower gurus such as Romie Hughart, Helen Gibbons, Jeff Patton and many others who regularly attend these field trips and willingly share the knowledge with participants. Even though I work with, identify and read about plants for my job, I always learn new things on our field trips.

I'd like to thank our Chapter presidents, the WVNPS Board and Frank Porter (Fall meeting host and organizer) for organizing excellent field trips and working to educate and involve our WVNPS members.

Please remember that the WVNPS is a organization for all seasons, not just the growing season. This winter we will continue our annual lecture series at Marshall University (see schedule in this issue). At the first talk in December I will present on the topic of fire ecology. The use of prescribed fire by land managers is an important tool in conserving biodiversity and rare plants. I will explain why that is and discuss some of the controversy surrounding the use of prescribed fire. The next topic of our lecture series in January features a similar but more specific theme; How does fire and other forest management practices affect mosses? This will be presented by John Willey a graduate student at Ohio State University. Another graduate student and colleague of mine, Gerald Scott will present his research on the effects of the invasive species Tree-of-Heaven on plants and soils. Many of you are probably familiar with this species and its stench. Not only does this plants stink literally, but its also stinks for the plants and soils that have to live with it. Last but not least, Jim Boggess of Barboursville will prime us for spring wildflower season by giving us a virtual tour of the wildflowers of Barboursville park. Jim will discuss many virtues and uses of the plants he has photographed at the park.

Thanks for your continued support of the WVNPS and I look forward to seeing you this winter or next summer!

Cheers,

Chad Kirschbaum, WVNPS President

SILENT INVASION: ECOLOGICAL AND HEALTH THREATS OF INVASIVE SPECIES

A silent invasion is taking place in our precious forests, meadows, and wetlands. Little by little invasive plants are out-competing native plants as they vie for nutrients to survive. The list of invasive species is growing at an exponential rate. These invasives arrive in cargo containers from abroad either as seeds, roots, or plants. They also are brought into this country intentionally by nurseries who sell them to unsuspecting gardeners who are delighted by the flowers and foliage, but are completely unaware of the ecological havoc these plants can cause in our native ecosystems. Attempts to eradicate these invasives will always be hampered until the public is made aware of the damage caused by them. One solution is to begin using native plants as substitutes for these invasive species. Native plants are not only extremely ornamental, they are also well-adapted to the growing conditions in which they will be placed, requiring little or no irrigation, needing no fertilization, and requiring no insecticides. The use of native plants lessens the destruction of fragile ecosystems that are inundated with chemicals as the result of too much irrigation and use of pesticides and insecticides.

The intentional and accidental introduction of alien species of plants is one of the dire threats to the natural resources of the Ohio Valley. One need only drive along our major highways and look at the rapid spread of Kudzu vines, Paulownia trees, and the ornamental grass *Miscanthus sinensis* to see how devastating these species can be. Invasive species are even more prevalent within the confines of our federal and state forests and parks. *Microstegia vimineum* (Stiltgrass) is literally choking out hundreds of species of wildflowers and grasses. It is an annual grass that produces thousands of seeds per plant that attach themselves to any object that passes through them. ATVs are one of the main culprits. As they ride along trails covered with Stiltgrass, their tires spread the seeds wherever the ATVs venture. And all too often, the riders stray off the trails and traverse the sides of the mountains or along gullies and cuts dissecting the slopes. Within a matter of weeks, there are green strips present where the tires have dispersed the seeds.

Invasive species also present health risks to humans. Tree of Heaven (*Ailanthus altissima*) is not only invasive but also poisonous. There have been instances where individuals who were sawing these trees became seriously ill from the sap. Another pernicious invasive plant that is a public health hazard is *Heracleum mantegazzianum* (Giant Hogweed). Originally from Asia and introduced as an ornamental plant, Giant Hogweed's clear, watery sap has toxins that cause photodermatitis. Skin contact followed by exposure to sunlight produces painful, burning blisters that can develop into purplish or blackened scars.

There are far too many other species that have invaded the forests, meadows, and waterways of the Ohio Valley. A regional effort must be implemented to prevent and control the continued spread and introduction of these non-native species. Efforts are already underway by both federal and state agencies to eradicate specific invasive species. But it will prove to be a fruitless effort if these same non-native species are allowed to grow in adjacent private lands and continue to be a source of seeds that will ultimately spread back onto public lands. Private landowners, as well as federal and state agencies, must be made aware of the health hazards and ecological catastrophe that is taking place because of non-native invasive plants.

KEYNOTE SPEAKER: Mark Rose

Mark Rose, of Greensboro, North Carolina, has been interested in native plants since 1954. At an early age, he began cultivating native orchids, trilliums, lilies and hexastylis. His primary interest is in shade gardening and spring ephemerals. He owned and operated a commercial tropical orchid nursery from 1964 to 2007. He is a Life Member of the American Orchid Society Inc.; a fellow in the Royal Horticultural Society of London, England; a co-founder and Board Member of the Native Orchid Conference Inc.; and a member of the North Carolina Native Plant Society and serves on its board. In March of 2006, Mark was appointed by Governor Easley to the North Carolina Plant Conservation Board.

Date: March 27, 2008

Location: Meigs County Extension Office, Pomeroy, Ohio

For further information contact Frank W. Porter at sr2642@dragonbbs.com

Wvnps.org -----You can pay your 2008 dues now. Check our website.-----wvnps.org

Our winter lecture series has been finalized for this season. See the schedule below and feel free to forward it to anyone you think would enjoy these lectures. Hope to see you all this season.
Winter Lecture Series

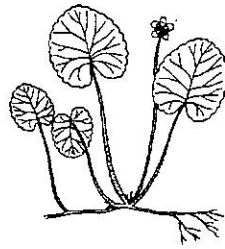
Fire Ecology of the Appalachian Foothills
Chad Kirschbaum, Wayne National Forest
Wednesday, December 12th

Silvicultural Effects on Forest Mosses in Vinton County: Ohio Records and Species Trends
John Wiley, Ohio University
Wednesday, January 16th

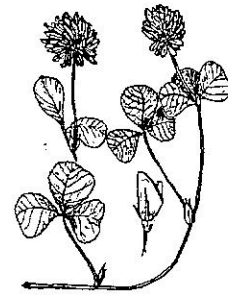
Tree-of-heaven its history, biology, and invasion into the deciduous forests of southern Ohio

Gerald Scott, Ohio University
Wednesday, February 13th

The Wildflowers of Barboursville Park
Jim Boggess
Wednesday, March 12th
All Lectures will be held at
Marshall University
Science Building Room 376
Marshall University.
Science Hall, Room 376
6:30 – 7:30 P.M. Free
Public welcome! Please join us for a series of talks about wildflowers, mosses, ecology and invasive species.



Star-violet



Running Buffalo Clover

~~wvnps-----wvnps-----~~**2008 dues are now due**~~-----wvnps-----wvnps-----~~

WVNPS BOARD MEETING : Will be held in Charleston (Saturday, January 19, 2008
Back-up date will be February 19th. Time and place on website and by email. We hope
to have a guest speaker talking about invasive species.

Summary of the Annual Joint Meeting of the Torrey Botanical Society, the Philadelphia
Botanical Club, and the Botanical Society of America, Northeastern Section (June 17-21,
2007).

**By Elizabeth Byers, with thanks to Larry Klotz and Ed Miller for their notes on the
event**

**The meeting took place at Davis and Elkins College in Elkins, West Virginia, and
featured a program of three all-day field trips plus four evening lectures. This was
the 60th BOTSOC foray. The 42 full-time and five part-time participants
represented 11 northeastern states plus the District of Columbia and Florida.**

**The field trip leaders were Jim Vanderhorst, Elizabeth Byers, and Brian Streets,
from West Virginia Natural Heritage Program; Dr. Katherine Gregg of West
Virginia Wesleyan College; and Leah Ceperley from Canaan Valley National
Wildlife Refuge. Evening lectures were given by Elizabeth Byers, Katherine Gregg,
Bill Roody (West Virginia DNR), and Rodney Bartgis (The Nature Conservancy).
Larry Klotz was the Chair for this meeting, Marcia Minichiello was the Assistant
Chair, and Karl Anderson again served as Treasurer. The next meeting for June
2008 will be in southern New Jersey and organized by Ted Gordon and Walt Bien.**

**The program opened on Sunday evening with a slide presentation by Elizabeth
Byers on "High elevation wetlands of the Allegheny Mountain region." We
distributed field trip materials, including maps and a checklist of 733 species which
have been documented at the field trip sites. On Monday morning, we departed for
Cheat Mountain in the area of Gaudineer Knob. We began with an upland limestone
forest on west flank of Cheat Mountain. This was the lowest elevation stop of the
day, and was situated along a band of Greenbrier limestone that forms a ring
around the entire Tygarts Valley River. The forest here is successional, with black
cherry and slippery elm over a rich herbaceous layer. There was an abundance of
land snails. This area also had lots of black cohosh (*Actaea racemosa*) in bloom and**

blue cohosh (*Caulophyllum thalictroides*) in fruit, Goldie's shield fern (*Dryopteris goldiana*), and other calciphiles. In the dense shade of June, the spring ephemerals had disappeared, except for wild leek flowers (*Allium tricoccum*), which are known (and relished) as "ramps" to the locals.

The group then ventured into the balsam fir (*Abies balsamea*) swamp at Blister Run. This is perhaps the finest stand of balsam fir in WV near the southernmost extent of the species range. This large swamp hosts numerous wetland plants including several rare species. We saw several pad orchids (*Platanthera orbiculata*). One was in perfect bloom which greatly pleased the photographers.

Lunch was at the Gaudineer Picnic Area. Gaudineer Knob is over 4400 feet elevation and is clearly in the "spruce zone." The picnic area is surrounded by a young spruce forest with a ground carpet of the liverwort *Bazzania trilobata*. At the lunch stop, we enjoyed a southern beauty, the southern mountain cranberry, (*Vaccinium erythrocarpum*). Its fruit dangles like deerberry but is red when ripe. Mountain wood fern (*Dryopteris campyloptera*) and a budding woodland orchid (*Platanthera clavellata*) were additional highlights. We then ventured into the old growth spruce forest at Gaudineer Scenic Area. This is a rare old growth remnant of upland spruce forest in WV, said to have survived the loggers by a surveyors' error, so that ownership was in question. Ed Miller observed that in the Adirondacks of New York, ALL of the adjacent landowners would have logged and asked questions later. A loop trail meanders through the stand which is near the ecotone of the red spruce and northern hardwoods ecosystems.

The final (or first, if you were in the second group) stop of the day was the high elevation river scour prairie on the Upper Shavers Fork River. Our northern guests enthusiastically waded the river to what they attractively called an "ice meadow". Ed Miller said it reminded him strongly of the ice meadows on the upper Hudson River, which also have sticky tofieldia (*Triantha glutinosa*) and a green orchid (*Platanthera flava*). Two rare Central Appalachian endemics, Barbara buttons (*Marshallia grandiflora*) and long-stalked holly (*Ilex collina*) provided a geographic/botanical thrill to the group. Other highlights were smooth azalea (*Rhododendron arborescens*), Carolina tasselrue (*Trautvetteria caroliniensis*), glade St. Johnswort (*Hypericum densiflorum*) and a pretty phlox (*Phlox maculata*).

Monday evening, Kathy Gregg gave a fascinating slide presentation entitled "Do orchids hedge their bets?" Tuesday morning we set out in windy, threatening weather for Dolly Sods. Luckily, the rain and lightning held off until the afternoon, and we were able to enjoy the spectacular views and breathtaking expanse of mountain laurel in bloom. We began with a brief stop in the upland forest at Laneville Cabin. Dolly Sods is drained by the high-gradient Red Creek, which crosses the Greenbrier limestone at this point. We looked at the transition from the rich deciduous forest to the high elevation spruce zone. There is a small colony of exotic but uncommon strawberry-raspberry (*Rubus illecebrosus*) at this site, with a large white flower and pleasant odor. We then drove up to the top of the ridge and visited the beautiful shrub and bog communities along the Northland

Loop Trail. Lunch was at the Red Creek Campground, followed by a brief visit to the tall shrub community and views of the Ridge and Valley ecological province on eastern side of Allegheny Front.

The last stop of the day was at Bear Rocks. Here the landscape was covered with blooming mountain laurel, whites, pinks and red. The laurel is complimented with groves of red spruce, Pleistocene rock rivers, and open bogs. Minniebush (*Menziesia pilosa*) was a new species for many of our northern visitors. They also enjoyed the many blueberries and cranberries (*Vaccinium* spp.), trailing arbutus (*Epigaea repens*), swamp dewberry (*Rubus hispidus*), black huckleberry (*Gaylussacia baccata*), catberry (*Nemopanthus mucronata*), chokeberries (*Photinia melanocarpa*, *P. pyrifolia*), wild raisin (*Viburnum nudum* var. *cassinoides*), pinkster azalea (*Rhododendron prinophyllum*), and smooth gooseberry (*Ribes rotundifolium*). They recognized bunchberry (*Cornus canadensis*) and three-toothed cinquefoil (*Sibbaldiopsis tridentata*), common northern species that are rare in West Virginia. Along the road we found a very photogenic display of wild red bleeding heart (*Dicentra eximia*) and native bush honeysuckle (*Diervilla lonicera*). About this time, the lightning began to flash and we drove back to Elkins in a driving rain, grateful for the beautiful day.

Tuesday evening, Bill Roody treated us to an engaging slide presentation on “Mushrooms: a world of wonder.” Wednesday dawned clear, cool and dry. A perfect botanizing day. We headed out to Canaan Valley, a high, cool valley at about 3000 ft. above sea level. Canaan Valley is home to a 7,000 acre expanse of wetlands, the largest anywhere in the unglaciated Appalachians. Geologically, the valley lies along the axis of the breached Blackwater River anticline, with a ring of limestone around the edge, and a sandstone ridge in the middle. The Blackwater River, called the “River Styx” by surveyor Thomas Lewis in 1746, drains the valley with slow-moving meanders and boggy tributaries, providing exceptional habitat for wildlife, birds, and rare plants. Cold air drains from the surrounding uplands to pool in the flat valley at an elevation of 3200 feet above sea level. Rainfall is plentiful, averaging about 1300 mm/year, and the valley functions as a giant frost pocket. Natural wetland communities in this system generally have substrates of shallow to deep peat or muck. Canaan Valley is especially known for its rich limestone swamps, which are among the most biologically significant of all Appalachian wetlands.

The day began with a walk to a limestone meadow and beaver pond complex in a restricted part of the national wildlife refuge, with many interesting seep and wetland species, ferns and mosses. Several purple fringed orchids (*Platanthera psycoides* or *P. grandiflora*), one of which was an albino were a highlight. We then visited an oxbow fen impounded by natural stream levees along the Blackwater River. Steeplebush (*Spiraea tomentosa*) and meadowsweet (*Spiraea alba*) were common. We also saw roundleaf sundew (*Drosera rotundifolia*) and green woodland orchid (*Platanthera clavellata*). Lunch was at the Canaan Valley State Park Pavilion.

In the afternoon, we walked the Abe Run Swamp Boardwalk, with its rich limestone flora. This swamp contains “frost pocket” balsam fir wetlands with one of the

highest concentrations of rare plants in the state. We saw good populations of glade spurge (*Euphorbia purpurea*), a globally rare plant that is fortunately not palatable to deer. A few plants of pretty Jacobs ladder (*Polemonium van-bruntiae*) pleased the photographers, and we saw a few common northern species (rare in WV) including creeping snowberry (*Gaultheria hispidula*), star violet (*Dalibarda repens*, known as dew drop up north), and alder-leaved buckthorn (*Rhamnus alnifolia*).

Our final stop was at the deer enclosure on Timberline Road within the national wildlife refuge. Here we put our botany skills to work, surveying a 1600 sq m deer enclosure at the edge of a shrub swamp and enclosing a balsam fir stand. Canaan Valley National Wildlife Refuge and volunteers built the enclosure in 2002 to protect balsam fir regeneration. Our many eyes and specialties helped to inventory the plant species that are present after 4 years of deer-free growth.

The meeting came to a close with a delightful lecture on Wednesday evening by Rodney Bartgis, entitled "Dry limestone communities of the upper South Branch." On Thursday, some participants toured Cathedral State Park and/or Cranesville Swamp on their way home. It was a great privilege to spend four days with this remarkable group of talented botanists from the northeast, and to have the opportunity to showcase some of our West Virginia treasures!

Federally Listed Threatened and Endangered Plant species in WV
An Update Regarding Their Status – Part 1
Paul J. Harmon
Botanist - West Virginia Natural Heritage Program
Wildlife Resources - Division of Natural Resources

Four federally listed endangered (LE), and two federally listed threatened (LT) plant species occur in West Virginia. They include running buffalo clover (*Trifolium stoloniferum*) (LE), shale barren Rockcress (*Arabis serotina*) (LE), harperella (*Ptilimnium nodosum*) (LE), northeastern bulrush (*Scirpus ancistrochaetus*) (LE), Virginia spiraea (*Spiraea virginiana*) (LT), and small whorled pogonia (*Isotria medeoloides*) (LT). Botanists of the West Virginia Natural Heritage Program have been monitoring the status of these species for more than two decades, using standard methods generally used across the range of the species by other Heritage botanists in other states. The large volume of qualitative and simple quantitative data has accumulated to the point that we can begin to see whether they are stable in numbers, increasing in numbers or decreasing in numbers.

T & E plant species in West Virginia are some of the most interesting species found in our state, often growing in unique habitats or in specific disturbance regimes that help to keep competitor species from overcoming them. They often have special adaptations or qualities that enable them to survive in their respective habitats.

Let's revisit the T&E plant species found in the Mountain State and learn how they're doing.

Running buffalo clover (*Trifolium stoloniferum*)

Running buffalo clover (RBC) (*Trifolium stoloniferum*) is a member of the legume family (FABACEAE). It was once commonly reported from West Virginia to eastern Kansas (Brooks, 1983). Brooks (1983) had concluded that this species was extinct in North America, but Rodney Bartgis, now Director of the West Virginia Chapter of The Nature Conservancy, found two small Element Occurrences (EOs) in West Virginia in 1983 and 1984. The United States Fish and Wildlife Service (USFWS) listed RBC as an endangered species in 1987. Since then, sufficient EOs of RBC have been discovered across its range to warrant the RBC recovery team to recommend to the USFWS to down-list it to federally Listed Threatened (LT) status, but this has not been officially acted upon to date.

RBC looks much like the European white clover common to lawns in our state, but it differs in having large white flower heads atop a stalk that arises from a pair of trifoliolate leaves. Its leaves are glabrous (having no hairs) and there are no chevrons (v-shaped) markings on its leaves. RBC produces stolons (runners along the ground), with two large, thin stipules at each leaf node. As of 2007, West Virginia has 36 extant (existing, living) and three extirpated (eliminated from the landscape) occurrences.

Running Buffalo Clover is disturbance dependant, most commonly growing in mesic woodlands in partial to filtered sunlight, where there is a pattern of moderate periodic disturbance, such as mowing, trampling, vehicle traffic, or grazing. In at least some instances, disturbance can be as extreme as the hauling of logs along a road, or as mild as periodic trampling by large mammals. In West Virginia, the species prefers old logging roads, jeep trails, hawthorn thickets, grazed woodlands, game trails, and old fields succeeding to mesic woodlands. In Ohio, Kentucky, Indiana, and Missouri, the species tends to be found in old cemeteries, lawns of historical homes, and on river terraces where cattle have been grazing. The larger occurrences exist within a matrix of mesophytic deciduous forests. Plants in West Virginia often occur in regions underlain by limestone, but are also found in rich soils derived from other geological units, such as the Mauch Chunk group. To date extant occurrences are located in or near the Allegheny Mountains and at the eastern edge of the Appalachian Plateau of central to eastern West Virginia, in Barbour, Fayette, Pendleton, Pocahontas, Preston, Randolph, and Tucker counties, with one occurrence in the Central Low Plateau of Brooke County, in the Northern Panhandle. Historically, occurrences were found in Monongalia and Webster counties as well.

An estimated 11,200 plants were noted in West Virginia in 2007, and that does not include an additional 37,700 plants estimated on Crouch Knob in 2004. The largest known EO of RBC to date is found on a foothill of Cheat Mountain in Randolph County, West Virginia. More than 65,000 rooted crowns were estimated to be

growing there in 1996, but by 2004, the estimation seemed more likely to be around 35,700 rooted crowns.

In 2005, the RBC Recovery Team revised the Running Buffalo Clover Recovery Plan, and recommended that the species be down-listed to federally threatened status. Part of their reasoning for doing so is because when they analyzed more than ten years of data taken in West Virginia, Ohio, Kentucky, and Missouri, using Population Viability Analysis (PVA), it was concluded that the probability that RBC will go extinct within the next 100 years is essentially 0%. To do so, the recovery team has defined certain criteria for the species to be down-listed and de-listed. A certain number of large, medium and small populations of RBC must be under legal protection, and for West Virginia, which has no state endangered species law, that requires the maintenance of healthy occurrences on federal land. Of the thirteen occurrences on federal property, critical to the protection and recovery of the species, five have declined significantly, three increased significantly, and five have fluctuated over time. One new, large occurrence was discovered in 2007 on the Monongahela National Forest with over 2,300 rooted crowns estimated to be present. In summary, RBC is no longer truly endangered, but we must continue to document its status and manage protected sites to ensure it can eventually be de-listed.

Shale barren rockcress (*Arabis serotina*) (LE)

Arabis serotina is a federally listed endangered plant species. Because it grows sympatrically with another member of the same genus, both in flower during much of early August, a plan calls for monitoring this species at several sites across its range between 15 August and 5 September each year, and all other sites every five years. This protocol has been followed since 1993. However, in 2001 it was decided that to limit the impact of repeatedly crossing the barrens, monitoring would be conducted biennially at the Little Fork and Brandywine shale barrens in Pendleton County, as opposed to every year.

Shale barrens are steep, generally south-facing slopes in the rain shadow of the Allegheny mountains that are home to numerous endemic or near endemic plant species, including Kate's Mtn. Clover (*Trifolium virginicum*), yellow buckwheat, bent milkvetch, and shale bindweed. Shale Barrens occur on Devonian shale, often where the substrate is composed of tiny chips of shale called "channers". Barrens also occur on massive outcrops of shale.

Traditionally, researchers cited around 18 vascular plant species considered endemic or nearly endemic to shale barrens. In recent years we've learned that some are less endemic, also occurring in woodlands on shale slopes of the same substrate.

Shale barren Rockcress was once thought to be a biennial plant, but most observers consider it to be a facultative perennial. After its seeds germinate, tiny rosettes develop in the channery shale of for 3-5 years until they presumably gain enough

energy, or environmental conditions develop such that plants produce a flowering bolt that may be 2-3 feet tall. Once the bolting plant produces flowers and fruits, the seeds fall away and the plant dies.

However, that's not the total story! A botanist in Virginia observed that a large "mother" rosette, under mild temperatures and adequate moisture may produce smaller "satellite" rosettes connected under the shale substrate by thread-thin rhizomes. It seems that under the extreme heat of summer, those satellite rosettes disappear, perhaps their nutrients re-absorbed into the mother rosettes. Under mild conditions, the satellite rosettes have been observed to develop into mature rosettes and bolting plants.

Shale barren rockcress is rare because of limited habitat. Shale barrens can be found from Pennsylvania, through Maryland, into Virginia and West Virginia, mostly on extremely steep Devonian shale slopes at the base of mountains in the ridge and valley province. On a hot August day, the temperature of the air six inches above the surface can be as warm as 110 degrees! That's not very favorable to tree seedling development, so the shale barrens are characterized by widely-spaced trees and plant species specialized to survive the hot, dry climate and constantly cascading channers.

Shale barrens are threatened by physical removal of the shale substrate, invasive plants such as knapweed, canopy encroachment, grazing by sheep and goats and road construction.

The number of bolts and rosettes counted on Brandywine Shale Barren (132/164) and the Little Fork Shale Barren (277/230) increased from that of 2005 (Brandywine: 62/380) (Little Fork: 38/949). These and one other barren were the only ones that WVHP staff were able to monitor in 2007 due to personnel losses.

Website : wvnps.org-----Website: wvnps.org-----Website: wvnps.org

The WVU Biology Dept. Native Plant Garden: Breaking Out of the Grid
By Sue Moyle Studlar (26 November 2007)

Very few people know this, but the WVU Biology Department has a small Native Plant Garden that dates back to 2004. It is a hidden treasure in a back corner, behind the monumental new (2002) Life Science Building.

The Native Garden replaced a dense monoculture of the Asian ground cover *Liriope* with an ever-changing display of native West Virginia wildflowers.

Sarah Wennerberg (then Donna Ford-Werntz' graduate student) designed the garden and set it up, using start-up funds from the Department of Biology and volunteer (and work-study) student labor (graduate and undergraduate).

The inaugural Native Garden work party was on October 6, 2004. First the *Liriope* was removed (hard manual labor by undergraduate Marc Smith). Then Sarah's grid design was implemented. The Garden's bed (measuring 23 X 9 feet) was completely covered with a mulch cloth that had been perforated with 48 holes (4 rows, 12 holes each). Each hole was actually an X that had to be forced open when a plant was introduced through the mulch cloth to the soil. The plan was to favor the wildflowers and keep out the weeds with cloth plus several inches of bark.

The students put in 40 plants, two each of twenty species purchased from Enchanter's Garden (Peter Hues). Sarah carefully noted the location of each plant on a paper grid (Excel printout) that corresponded to the Garden grid. A Carolina silverbell tree (*Halesia tetraptera*) that had graced the original *Liriope* planting was left in place, so the Garden had a shady end and a sunny end.

This grid-based garden was relatively weed-free and easy to monitor. We (Donna, me, and student assistants) noted (about three times per year) whether plants were vegetative, flowering, declining, or dead. There was only about a 50% survival rate of species over the first three years. To compensate for losses, we added ten more plants (5 species) from Porterbrooks (Frank Porter) in September of 2006.

With something in bloom throughout the growing season, our minimum-maintenance garden was a nice resource right outside the door for Plant Systematics and Flora of West Virginia field trips. Yet with only 50% survival and minimal recognition, we could surely do better.

In October 2007 a chance meeting led to marked improvements. Susie Hart, a returning (older) student in general biology, liked to study at the desk outside my office that just happened to overlook our Native Garden. Active in Garden Clubs in both Morgantown (West Virginia GC) and Clarksburg (Goff Plaza GC), Susie offered to seek Garden Club grants for improving the WVU Native Garden. She said both Garden Clubs would welcome affiliation with the Department of Biology, and would appreciate guided tours of the Garden to see the "fruits" of their sponsorship.

Inspired by the Garden Club connection, I looked more critically at our flower bed. It was clear that Frank Porter's earlier assessment was correct: the non-biodegradable mulch cloth was doing more harm than good. The plants – almost without exception – were growing on top of the mulch cloth rather than in the soil below. They were caught "between a rock and a hard place" – with compacted clay below the cloth and soilless bark upon the cloth.

So it became clear that what we needed to do was get rid of the mulch cloth, ameliorate the soil, and replant all species. Our goal became a more diverse garden with more natural groupings than a grid pattern provided. Fortunately, I had two excellent student assistants this fall: work-study student Michelle Prusa and

independent study student Anthony Barker. Together (in October 2007) we cut up and discarded the restrictive mulch cloth, and replanted all plants into a loamy mix of recycled greenhouse soil, coir (coconut fiber) and new peatmoss-based soil.

The replanting gave us a chance to liberate the whorled milkweed and dwarf crested iris from the rapidly spreading blue and gold (*Chrysogonum virginianum*). We could see that blue and gold made a fine native ground cover, but it had to be watched or it would take over.

We also introduced (2007) seven more species: five from Porterbrooks and two from the Groundskeeper (Morgantown) funded by a grant (\$250) from the WV Garden Club for plants and labels. I now have additional funding (\$136 from the Goff Plaza Garden Club) for tools, plants, and labels, so next spring will see further diversification of the Garden.

Making informative durable labels seemed like a good way to increase both the educational content and visibility of the Garden. Many students sit on the Garden walls during the frequent “fire alarms” for the Life Science Building (LSB) without any idea that their native plant heritage is at their elbows.

So we made informative durable labels that were nice but not fancy enough to invite theft. Each label gave basic information on the name (common, scientific, family), habitat, and geographic distribution, as well as one feature of special interest (such as the pollinator).

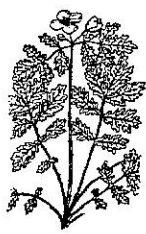
The label information was printed onto mailing labels, using a Word template. The labels were then self-glued to two-legged metal labels (sold as “rose markers”) and lastly water-proofed with contact paper (very carefully, using cut-out strips).

We put out the 20 labels for 20 species in the Native Garden in October 2007. The labels were similar to our LSB Conservatory labels, but would they withstand thunderstorms? Indeed they did, over a several week period, with only 1 of 20 showing any damage. Fortunately, there was also very little vandalism to the labels or to the plants. In mid-November, the labels were taken in for the winter and replaced with inconspicuous metal markers to facilitate later plantings and monitoring.

We anticipate that survival rate in the Native Garden will far exceed 50% in the future. Our native wildflowers should grow and bloom with vigor in response to ameliorated soil, freedom from the mulch-cloth grid, and enhanced care and attention. We expect our back corner Native Garden to become increasingly visible, colorful, educational, and enjoyable to the WVU community and the public.

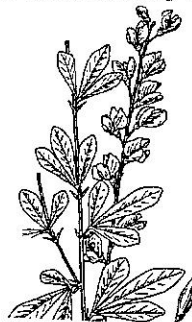


Turtlehead



Celandine Poppy

11



False Blue Indigo



Dwarf Crested Iris

Species list, WVU Biology Dept. Native Plant Garden, November 2007

<i>Asarum canadense</i>	Wild Ginger	Aristolochiaceae (Birthwort Family)
<i>Aruncus dioicus</i>	Goat's Beard	Rosaceae (Rose Family)
<i>Asclepias verticillata</i>	Whorled Milkweed	Apocyanaceae (Dogbane Family)
<i>Baptisia australis</i>	Blue False Indigo	Fabaceae (Legume Family)
<i>Baptisia tinctoria</i>	Wild Indigo	Fabaceae (Legume Family)
<i>Chrysogonum virginianum</i>	Green & Gold	Asteraceae (Aster Family)
<i>Chelone glabra</i>	White Turtlehead	Scrophulariaceae (Snapdragon Family)
<i>Dicentra eximia</i>	Bleeding Heart	Fumariaceae (Fumitory Family)
<i>Geranium maculatum</i>	Wild Geranium	Geraniaceae (Geranium Family)
<i>Halesia tetraptera</i>	Carolina Silverbell	Styracaceae (Storax Family)
<i>Heliopsis helianthoides</i>	False Sunflower, Oxeye Daisy	Asteraceae (Aster Family)
<i>Iris cristata</i>	Dwarf Crested Iris	Iridaceae (Iris Family)
<i>Liatris aspera</i>	Rough Blazing Star	Asteraceae (Aster Family)
<i>Porteranthus (Gillenia) trifoliatus</i>	Indian Physic	Rosaceae (Rose Family)
<i>Pycnanthemum tenuifolium</i>	Slender Mountain Mint	Lamiaceae (Mint Family)
<i>Silene caroliniana</i>	Wild Pink	Caryophyllaceae (Pink Family)
<i>Silene virginica</i>	Fire Pink	Caryophyllaceae (Pink Family)
<i>Silene stellata</i>	Starry Campion	Caryophyllaceae (Pink Family)
<i>Stylophorum diphyllum</i>	Celandine Poppy	Papaveraceae (Poppy Family)
<i>Symphyotrichum (Aster) oblongifolium</i>	Aromatic Aster /Shale Barren Aster	Asteraceae (Aster Family)
<i>Tradescantia virginiana</i>	Virginia Spiderwort	Commelinaceae (Spiderwort Family)
<i>Zizia aptera</i>	Heart-Leaved Alexander	Apiaceae (Parsley Family)

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LIVING OFF THE LAND

By: Bill Grafton

A few weeks ago I found a Summer Grape vine absolutely loaded with clusters of grapes. I ate my fill (about 8 mouthfuls). More than that will usually send a person in hot pursuit of a bathroom. Since then I have seen lots of Summer, Winter, and Riverbank vines full of grape clusters. In my experience only the Summer Grape is good to eat fresh. All can be made into tasty jellies, but the Winter and Riverbank will need additional sugar and spices to make them yummy.

Persimmons were also full of fruit in several areas of the state. These can be eaten fresh once they have gone through a couple of frosts or they turn purplish in color. Persimmon pudding or jam is another good use of these fruits, if you can get them before the opossums, foxes, raccoons, and other animals consume all of the fruits.

Many of the "nuts and acorns" can be excellent eating. Beechnuts are excellent fare simply by cutting away the 3-sided hull. Hickory nuts are excellent and have a very preferred flavor. Most people prefer the shagbark and shellbark nuts that have large kernels and thinner shells. Mockernut is tasty but the thick shell is better left for the squirrels. White oak acorns are the only acorn I will eat raw. It still has a

strong flavor but has the lowest amount of tannic acid. All other acorns (black, red, pin, etc.) are best after being boiled in several changes of water after the hulls are removed. Some people even pound them into small pieces prior to soaking (bleaching). After the acorn pieces are boiled several time to remove the tannic acid the acorn pieces should be ground or pounded into flour. The flour can then be used for porridge or fried into cakes.

West Virginia has both the Beaked and American Hazelnuts that can be eaten if you beat the animals to the nuts. And don't forget the Black and White Walnuts. These are highly prized and are often gathered and sold for money. By the way, White Walnut is also called Butternut. I love these in cakes or cookies.

There is no nut that comes close to matching the "king of the Appalachian forests": the American Chestnut. More on this in another section of Native Notes.

Need some sugar. Scrape out the yellowish sticky pulp inside the Honey Locust pods.

Other fruits that are good to eat are Teaberry, Partridge Berry, and Choke Cherry. Hawthorn fruits were not plentiful this year but do make excellent jellies and tea.

If you need a sip of tea. You should still be able to find leaves of peppermint, spearmint, Oswego Tea. Sweet (black) birch or sassafras twigs and bark makes a nice tea, as do white pine or hemlock needles. Tea can also be made from Spicebush twigs and berries, Northern white cedar (*Arborvitae*), and Sumac berries.

If you have a headache or feel generally bad try the inner bark of any willow which contains the salicylic acid used in aspirins. Try the inner bark of Slippery Elm for a sore throat.

If you need starches in your diet, try the roots of cattails. Wash clean, dry, and pound to get the starch loose from the fibers. The tubers of Jerusalem-artichoke are good when boiled, sliced raw in salads, or pickled. And don't forget the Wapato (*Sagittaria latifolia*) that grows in shallow water along many streams and around ponds. Most of these tubers and roots can be easily located in the dead of winter by recognizing the dead stalks.

Finally, many Americans are addicted to candy. Dig a few roots of Wild Ginger, Coltsfoot Ginger, or Sweet Flag and candy these by soaking them in syrup. Better yet, wait til February and make your own maple syrup to candy the roots.

Should you be one of those who like to brag, then try the tough first-year roots of Wild Carrot (Queen Anne's Lace). The plant is still easily recognized by the rosettes of leaves. Make your "coffee" the Luisianne way with the ground up roots of Chicory. Bulbs of Wild Garlic and even the infamous Ramp are edible all year. Finally, you can eat the large flabby (when wet) lichen called Rock Tripe that grows on many boulders and cliffs in out shady woods. You will need to boil the rock tripe

in 5 to 7 changes of water to get rid of the toxic chemicals and the gritty taste. The advantage of eating these last few plants are, there will be very little competition from wild animals or other humans.

It has truly been a bountiful year in nature!! Take advantage of it, and expand your horizons.

*****YOU CAN PAY YOUR 2008 DUES NOW*****

IN DEFENSE OF--NAY--IN PRAISE OF SCRUFFY SPECIES
By Doug Wood

You know them. You see them along the roadside every day--their numerous dead limbs and branches rotting in place--shedding shards of spongy wood all over the ground. Some of them have thorns or thorn-like branchlets, constantly littering the earth beneath with picnic-preventing, punji-like protuberances. Often their twisted, bent boles sport the equivalent of festering sores on animals--you know--gnarley fungal conks, oozing frost cracks, sloughing cankers. When you look in the *Checklist and Atlas of the Vascular Flora of West Virginia*, by Paul J. Harmon, Donna Ford-Werntz, and William Grafton, you see the distribution maps show them as widespread in the state. They are probably ubiquitous in all 55 counties. Adjectives like "common" and "abundant" seem to precede the species names in every treatise that condescends to mention them, mostly checklists and field guides. Rarely are they the stuff of lofty nature prose or poetic flourish. I don't recall ever hearing much praise for box elder, Virginia pine, or black locust. Oh yes, of course, black locust has its friends in the utilitarian wood product world. Its rot-resistance is legendary. Likewise, when the market for southern yellow pine is up, Virginia pine can sneak in as a hillbilly cousin and fetch a few dollars more. But price per board foot just isn't the kind of thing that inspires nature enthusiasts.

Perhaps we should view these species from a different angle. I can't frolic with my sweetie under a locust--so what? Is it such a big deal that you have to take your shoes off after tripping through the pitch under a Virginia pine before entering your carpeted home? Box elders and manicured lawns don't work well together, but maybe that's all right. What if we look through the eyes of animals that frequent the space these tree species occupy? Maybe we can gain some insight into the ecological importance of scruffy species. I am acquainted with a fellow wildlife biologist who is stricken with what I call "nut-bearing myopia." The result of this condition is that he can't see the value of any tree unless it bears nuts in autumn to provide food for critters in winter. Indeed, such species are important--but watch a mother squirrel wean her pups off milk by taking them to the nearest box elder stand, and you will understand why my friend's vision is myopic. He calls box elder the "white man's bane," meaning that he believes it was not so abundant in Pre-Columbian times in North America. I beg to differ. Producing seeds in abundance early in the warm season, box elders provide squirrels with plenty of easily-obtained carbohydrates and protein, much needed by active squirrelings who are learning acrobatics for the first time in their lives. In seedtime, box elder stands are visited

so regularly by such squirrel families, that often the pups also get their first experience at nest-building there. The easily broken twigs adorned with fresh green leaves make excellent practice materials for inexperienced young'ns. And while the pups are constructing, they always have a tasty seed snack nearby!

Like their cousins, sugar maples and red maples, box elders have sap flowing early in the year, and this provides food for sap-sucking insect larvae even as the last winter snows fall. Consequently, when the early-arriving, insect-eating neotropical migrant birds alight here hungry, they can count on box elder to provide them the sustenance they need to keep going north or to defend territorial boundaries nearby. Of the three scruffy species under consideration in this article, box elder seems to be the most susceptible to rot. Decay leads to insect infestation and vice versa in an ever-accelerating feedback loop that develops a vertical smorgasbord for woodpeckers and bark-searching birds with a hankering for wood-boring larvae. Weakened limbs, branches, and trunks usually litter the ground in a box elder stand, bringing the arthropod goodies to the world of ground-dwelling critters. Song sparrows and Carolina wrens often hunt insects in this world of punk wood and forest mould. Shrews and moles enjoy the bed and board here as well. The box elder stand would not be complete in summer without a slithering serpent or two searching around the cracks and crevices of piles of woody debris carried in on spring freshets from branch-shedding brethren further upstream.

Surely a species with its primary habitat alongside streams contributes something to the proper functioning of the aquatic environment. Let us consider for a moment. Box elder thrives in clayey bottoms prone to flooding. In such situations its extensive root system is one of the few great holders of streamside soil in our region. Other trees with similar erosion control functions include sycamore, silver maple, and black willow. Even when box elders decay rapidly above ground surface, their roots continue to hold soil in place, providing a matrix of strands of various diameters, between which soil peds cluster in relative stability for decades. As the roots slowly decay, their channels function as piping systems allowing groundwater to reach stream bank surfaces, thus preventing hydraulic pressure overload and subsequent bank sloughing. The root channels also provide transportation corridors and hunting grounds for fossorial species like mole salamanders and their mammalian namesakes. Many are the times I have seen water snakes disappear into root holes when threatened by my presence. Rare these days are extensive forests covering bottomlands in West Virginia's Western Allegheny Plateau--but where they are found, box elder is usually a significant component in the canopy, and aquatic communities usually have their greatest diversity in watersheds covered with such forests. Habitat-choking silt is at its minimum where upland forests cover the hillsides and where bottomland trees protect the near-stream environment. The constant rain of woody debris from decaying box elders, along with the annual leaf fall provide much needed allochthonous materials directly to the aquatic ecosystem. What aquatic biologists call *LWD* (Large Woody Debris) performs several important ecosystem functions, including provision of macro and micro habitats, slow-release nutrients, and

sediment traps. Similar to its other *Acer* cousins, *Acer negundo* sheds low-lignin leaves that are readily broken down by benthic macroinvertebrates known as *shredders*. Shredders (several species of aquatic insects) reduce leaves to smaller particles, consume these small particles, and then excrete nutrient-rich nano-nuggets for *filter-feeders*, such as certain caddisflies and black flies. Box elder leaves provide excellent substrate for fungal and bacterial colonies that feed *grazers*, such as numerous species of mayflies and midges. All three of these functional feeding groups (shredders, filterers, and grazers) are prey for predators of the macroinvertebrate world (many species of large stoneflies, fishflies, and dragonflies) as well as those of the vertebrate world, especially fish in aquatic environments, but also insectivorous birds in the aerial environment. How much joy have you received from watching swallows hunt mosquitoes over a favorite birding pond or a lazy stream; or cedar waxwings intercepting emergent mayflies ascending to the treetops in courtship displays; or a hiccuping Acadian flycatcher snagging midges along a barely-wet headwater stream in early summer beside one of your favorite hiking trails? Backtracking on the food chain, you might find some box elder stands responsible for some these birding memories.

Another scruffy species with few ardent appreciators is black locust. Sometimes found in well-drained bottoms, and sometimes found on rounded ridgetops, black locust seems to favor organically rich soils that are not too moist and not too dry. Consequently, stands of black locust are often found on hillside benches. An early succession species, the thorny tree may form nearly impenetrable thickets in old fields for a few years after such fields are left to fallow. After a forest has replaced the thicket, as long as one black locust is part of the canopy, you don't want to pass through barefooted. Thorn-covered branches cover the ground for years before the thorns decay. The rot-resistant wood remains hard for decades after it has succumbed to one form or another of fungal infection, insect infestation, or canopy competition. Actually, *rot-resistant* is not really a good adjective for black locust, since many large black locusts actually have a noticeable fungal infection, known as crack-topped fungus. The fruiting bodies of the fungus are excellent tinder for starting fires. However, even when infected, the wood remains sturdy and resistant to other, faster-acting rotting agents.

Are there ecological virtues of this tree commensurate with its famous utility as fencepost and rail material? Yes indeed. Have you ever seen a black locust in bloom? Or better yet, have you ever been in a grove of blooming black locusts and whiffed the fragrance of bee-attracting sweetness? The apiarists know that when black locust is having a good bloom year, honey is going to be extra fragrant. Since black locust blooms later than many species in our area, it rarely loses fruit production to late frost, or heavy spring rains. Bean-like pods of this legume are almost always abundant in summer for seed-eating species of birds and mammals, even if other food species have not produced well.

Black locust (*Robinia pseudoacacia*) is the tree that keeps on giving. As with most legumes, nitrogen-fixing bacteria associated with the species' roots convert

atmospheric nitrogen into a water-soluble form that is readily taken up by the roots of any plants growing in the vicinity. The tree also provides a growing substrate for several lianas. In fact, the association between black locust and its viney companions is so common that it would be easy to confuse the relationship as symbiotic. However, there appears to be no readily discernible advantage to the tree for its support of grapes, Virginia creeper, climbing bittersweet, and poison ivy. These species often share their youth in fencerows. If a fence is abandoned, they grow together, the black locust providing physical support to the lianas in a way that allows them to reach greater heights than they could on their own. The sparsely-leaved crown of black locust does not shade-out the dangling hitchhikers the way that yellow poplar and other broadleaved, fast-growing species do. This may be one reason why ancient black locusts seem to sport vines more often than do other fencerow species of similar age. Berry-eating birds are particularly blessed by the support role played by black locust, for each of the vine species associated with locust bear small berries. The fruits of poison ivy and bittersweet often cling on through the winter months, providing much needed nutrition during the most difficult season.

The cushiony bark of this thorny tree is often host to a yellow-green lichen, so small, it appears to the naked eye as merely a color variation of the bark. Clothe your eye with a magnifying lens, and the lichen is revealed. This same lichen grows on certain sandstones as well. If there were an oscar for best supporting tree, I would vote for black locust.

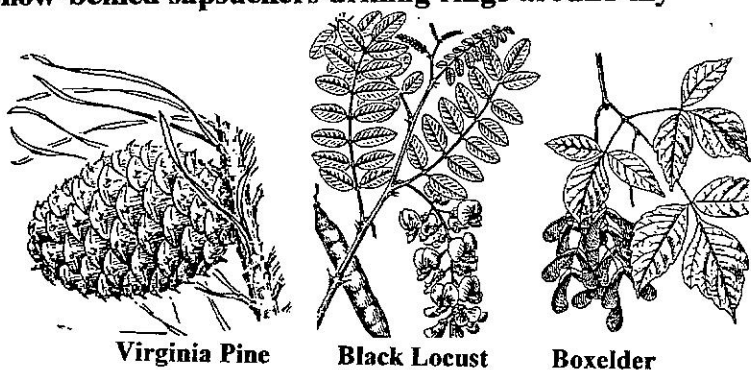
On the driest ridges, you will often find Virginia pine (*Pinus virginiana*). The scruffiness of this species is reflected in its most common vernacular name, *scrub pine*. It has a scrubby form and it grows well in scrubby, brushy thickets that form after a treeless clearing is allowed to grow along the track of natural succession. Consequently, in some cultures it is called *old field pine*. Thickets of young scrub pine provide excellent shelter from bitter cold winter winds. Numerous animal species take advantage of such retreats in foul weather. Follow a deer trail through snow into a sapling pine thicket, and you will soon find many other tracks therein. Cones are produced in great abundance, and the tiny seeds borne inside are sought out by several over-wintering bird species. In older stands of scrub pine, fall migrant red-breasted nuthatches are often seen, replenishing themselves from the insects hanging out under the small flakes of bark that characterize this pine. In spring, migrant pine warblers often trill high in the tree-tops of our scrubby pines, as do a few conifer-loving species that breed further north or in the Allegheny Highlands. To migrating species like blackburnian warbler, yellow-rumped warbler, and magnolia warbler, western West Virginia's scrub pine stands offer familiar habitat characteristics they will seek out on their breeding grounds further north or east.

One of my favorite piney hangouts is the Nature Conservancy's Slaty Mountain Preserve in Monroe County. There, you can see four pine species in close proximity to one another. The preserve is a good place for students to learn to

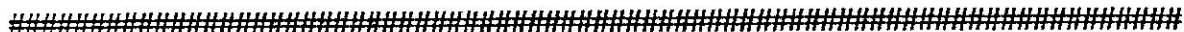
differentiate between table mountain, white, pitch, and scrub pines. The southern aspect, steep, shaly slope is not conducive to soil building. Pine needles are so waxy and dry there that they almost act like light-weight shards of shale. They pile up behind large rocks, until finally the lower layers of needles remain moist enough to decay and contribute to the formation of tiny pockets of soil. These pockets then provide enough nutrition and moisture for pine sprouts to gain a toehold, and begin the slow process of growing under nearly constant drought-like conditions. Most species of trees growing in such conditions show signs of scruffiness, but the scrub pines out-scruff all others.

There are a couple of large Virginia pines growing in the yard of our camp on Greenbrier River. I remember when they were small saplings. They grew much of their lives with little competition for sunlight from any quarter. Consequently they have the rounded crown of open-grown specimens of that species. However, competition from yellow poplar in the last 15 years or so has altered their form somewhat. They now have many, many dead branches, and their constant shedding of prickly cones causes barefoot wanderers to avoid passing directly underneath them. Some relatives have encouraged me to cut them down. I've made up all sorts of excuses for not heeding their advice. "I don't want to gum up my saw." "The squirrels and birds use them a lot." "Their needles nurture a good variety of mushrooms." "They protect the house from flood debris and from raging currents." "They keep the grass beneath them shaded, so I don't have to mow as often." "They provide me with good fatwood for starting campfires." All of these reasons are valid, but what I really think is, "Why don't you toughen up your feet or put on flip-flops? Those trees and I grew up together, so I'm not about to cut them down!" We really have grown up together, and we have grown scruffy together, and--God willing--we will grow old together. I might even outlive my old friends--after all, I don't have yellow-bellied sapsuckers drilling rings around my torso.

And so I throw a kiss
to all the scruffy trees.
Without them I would miss
Maw Nature's birds and bees.



Virginia Pine Black Locust Boxelder



KING OF TREES IN APPALACHIA

By: Bill Grafton

There can be no doubt that the American chestnut was "the tree" of the Appalachian Mountains from New York to Alabama. However, in 1904 chestnut blight was introduced on chestnut trees from Asia into the New York City area. Despite monumental efforts to control the disease, it swept through West Virginia in the late 1920s and 1930s.

A. B. Brooks estimated that 1 of every 10 trees in WV was a chestnut. Chestnut trees frequently grew to heights of more than 100 feet and diameters of 3 – 6 feet. The loss has caused major historical changes over the past 80 years. The wood was rot resistant and easily worked. It was therefore the best wood for building materials, rail fences, telephone and electrical poles. The nuts were the reason for much higher populations of mammals and birds prior to the 1930s. People collected bushels of the nuts for eating and depended on the nuts to fatten hogs and cattle for winter. Despite millions of dollars that failed to control the spread of the disease and failed to find any cures or truly resistant trees, there were always visionaries who searched for ways to bring the chestnut back to its former status as “king” of our forests. Some scoured mountains and valleys to find chestnuts that were immune to the blight. Others worked with hypovirulent strains of the deadly fungal blight. Hypovirulent strain can kill the deadly blight but will not kill the tree itself. Hypovirulent fungi had been found in chestnut orchards in Europe and were later identified in Michigan and Wisconsin. A third group began working on backcross breeding of the Chinese and American chestnuts.

The American Chestnut Foundation (TACF) was formed and in the 1980s began supporting these efforts. The hypovirulent strain of chestnut blight still shows promise. The genetic back crossing is getting lots of publicity recently. TACF purchased a farm at Meadowview, Virginia in the late 1980s and began backcrossing American and Chinese chestnut. The first generation was 50% American and 50% Chinese. After many back crosses and selecting the best seedlings for immune genes of Chinese chestnut and tall straight growth of American Chestnut, the scientists now have seedlings that exhibit 94 % desirable characters of American and 6 % immunity characters of Chinese.

In the next 2-3 years, these selected seedlings will be planted on US Forest Service lands at 6 sites from Tennessee to West Virginia. These seedlings are not guaranteed to be immune from new insect and disease problem, nor from a root rot that is known to be a problem on American Chestnut.

The Meadowview Research Farms have expanded and now have about 34,000 seedling/saplings on 150 acres. If you want to know more, check out the TACF website. You could also start a West Virginia chapter. We are in the very heart of the American Chestnut range but there is **NO WV Chapter of TACF**. All 5 bordering states do have TACF chapters.

Lastly, dream of the return of the “king” to our forests and help it become a reality!!!!!!

2008 DUES SHOULD BE PAID VERY SOON*****



Round-leaved Orchid



American Chestnut

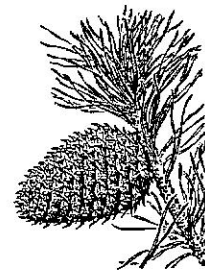


Table Mountain Pine