The Forest Friend

The Newsletter of the Kanawha State Forest Foundation

April 2014 Issue www.ksff.org Summer Quarter

"No winter lasts forever; no spring skips its turn" – Hal Borland

Brief Note from the Assistant Superintendent

by Kevin Dials

I would like to thank the Kanawha State Forest Foundation for the purchase of the projector screen. It was used for a presentation about Golden Eagles during our Bird of the Month program in February. All 40 participants enjoyed a professional quality visual aid during the presentation.

I would also like to add that the tributes to Shirley Schweizer, Osbra Eye, and Margaret Denison are now displayed on the walls in the nature center (pool building). If you can, please stop by and check them out during the Osbra Eye Memorial Wildflower Walks on April 26.

Answer to Last Quarter's Nature Quiz

Q: This is an early blooming plant which may appear as soon as February in our state. It grows from an edible bulb, or tuber, which can be consumed either cooked or raw. It is under 10 inches high and has leafy bracts beneath tiny white rayed flowers with red-brown anthers. There are 1-2 stem leaves divided into narrow oval or lobed segments.

A: **Harbinger-of-Spring (*Erigenia bulbosa*).** Flower colors suggest the name Pepper-and-Salt which is sometimes used for this plant. It is found in moist woods but is inconspicuous and easily overlooked. Most likely to be found in No. 2 Store and Shrewsbury Hollows into April.

2014 Events

June 15 - Sunday - 3 PM

WV Birthday Celebration and Band Concert - Featuring Kanawha Valley Community Band. Birthday cake and cold drinks provided. Free Admission. Donations appreciated. Near swimming pool area. Ample parking. Bring lawn chair. Contact: Forest Office, 304-558-3500

September 13 - Saturday - 9 AM

Margaret Denison Fall Nature Walks. Register at 8:30 AM at swimming pool area. Adults $5; Students under 16, $2. Hot dogs, drinks and cookies for sale. Door prizes, raffle. Contact: Forest Office, 304-558-3500

Many Thanks

The Foundation wishes to extend deepest gratitude to the following for donations received during the first quarter of this year: Linda & Michael Frame, Constance Miller, Chris Nagorka, Heidi Talmage, Cynthia Ellis, Barb Koster, Jim Triplett, Diana Green, Tom & Kelly Pearcy, Sharon Stark, Karen Sylvester, Patty Stiltner, Joseph Neenan, Denise Ferris, Mary Carter, Harriet Beury, and Michael Mullins.

New Members

A warm welcome is extended to the following new KSFF members:
Mary Beth Abbot, Charleston
Margaret Ellen Green, Charleston
Michael Mullins Family, Charleston

Board Meeting

Monday, May 5, 2014, 6:30 PM
Kanawha State Forest, Shelter #9

Everyone is Welcome to Attend!

Arboretum Project Update

by Christopher M. Gatens

It has been one year since the rejuvenation of the Kanawha State Forest Arboretum. The transplanting project that took place on March 30, 2013, was coordinated with numerous dedicated participants and was declared a huge success! Following that day, several volunteers provided assistance with watering, mulching, and selective pruning throughout the summer, fall, and winter months. These efforts combined with ample rainfall, resulted in a survival rate of nearly 80 percent for the 30 or so specimens that were relocated to the area. At this writing, the arboretum represents our West Virginia native flora with 28 plant families, 46 genera, and 68 species.

The fatalities that were observed from the transplanting effort included pitch pine, Virginia pine, smooth sumac, and fragrant sumac. These four species most generally prefer a dryer, upland habitat which may have contributed to their demise in the transplanted location. Plans are being made to place additional species at these locations in the arboretum. Deer browsing was observed on transplanted bladdernut and mountain laurel specimens and will require the placement of a barrier to prevent future wildlife foraging.

One of the most interesting success stories has been with the transplanted Buffalo Oilnut Pyrularia pubera. Here is a bit of trivia: The buffalo oilnut is considered a southern Appalachian endemic and belongs to a genus that has only one other species in the world, which occurs in Asia. It belongs to the Santalaceae - Sandlewood Family and is parasitic to nearly 60 tree species as reported in a study by Leopold and Muller (June 1983). It is dioecious with separate male and female flowers borne on the same plant, but it must be cross-pollinated from separate flowering shrubs before it bears an inedible fruit in the form of a drupe. Two separate clumps were relocated to the arboretum near the base of two large resident yellow poplar trees, and five new oilnut shoots were observed there last Fall!

The work detail for the 2014 season commenced on Saturday, April 5. Plans for this season will be to establish Leatherbark, Silky Cornel, Black Willow, Hercules Club, Wild Crabapple, and additional Bladdernut, Cucumber Tree, Pinkster Azalea, Flame Azalea, Mountain Laurel and American Holly.

References: Leopold, Donald J. and Muller, Robert N. (June, 1983). Hosts of Pyrularia pubera in the Field and in Culture. Castanea Vol. 48 (2): 138 145.

Shirley Schweizer Winter Walk Highlights

by Doug Wood

Despite the bitter cold, snowy weather, a hardy group of Kanawha State Forest Foundation supporters ventured beyond their "cabin doors" on January 25, 2014, to appreciate the Forest in winter. The snow was beautiful. Ice falls on the rocks lining the Snipe Trail were breathtaking. After Asst. Supt. Kevin Dials called to our attention the significant role that Shirley, during her life's course, had played in the betterment of Kanawha State Forest, around 25 walkers attended me to the group camping area above the Nature Interpretation Facility. Our task was to investigate the ecology of Kanawha State Forest and contrast it to the ecology of a reclaimed surface mine. This would help us understand the changes that have been occurring to the Forest's flora and fauna over the past couple of decades as surface mines have circled a third of the Forest's border. If the Keystone Mine is permitted by the WVDEP, the Forest will have nearly half of its perimeter surrounded by different ecological conditions.

First we had a brief lesson in ecology and an explanation of a few ecological terms. I'll use these terms in the remainder of this article so that you can have some homework looking them up, if you are not already familiar with them. Through a physical demonstration we investigated the connections between plants, animals, and physical environments. One volunteer portrayed a Gray Squirrel, another a Spotted Salamander. The Squirrel was connected to a Black Walnut tree with some twine. The twine also ran from the Squirrel to a rotting log, and then to a streamside stone, to the Spotted Salamander, and finally to the root of a Yellow Poplar exposed on the stream bank. While the Squirrel was squawking merrily, I explained that the twine represented the

West Virginia Birthday Celebration

Sunday, June 15, 2014, at 3 p.m.
Swimming Pool Area Close to Parking Lot

With the Kanawha Valley Community Band

Bring Your Own Lawn Chair and a Picnic!!

No Charge – Donations Appreciated

West Virginia Birthday Cake Provided

Sponsored by Kanawha State Forest Foundation

Concert Dedicated to
Charles E. "Chuck" Ellison, Lee C. McMillan, and Bob Leighty

For More Information Call 304-558-3500

interconnections between partakers of the nutrient cycle, the energy cycle, and other cycles that ecosystem functions depend upon. For example, the Squirrel eats and caches the nuts borne by the Walnut tree. Thus energy from the sun and nutrients from soil and air get passed from plant to animal. The Squirrel may cache nuts under rotting logs, where other animals that use the log for a protective runway may then dig the nuts out of the cache and benefit from the Squirrel's hoarding behavior. Some of the nuts, stimulated by a cold cycle and then later triggered by the solar warmth of lengthening days, may sprout and start a new generation of Black Walnuts. Squirrels are important to the distribution of heavy nuts to uphill environments and to the mixing of tree genetic stock. In the oak and hickory dominated portions of eastern deciduous forests, Squirrels are keystone species because of the far reaching effects of their actions on other species of flora and fauna.

The twine continued from rotting log to streamside rock, illustrating the connection between organic matter (OM) in general and large woody debris (LWD) in particular to stream health. Had we stretched a cord between the Walnut tree and the stream, we could have illustrated the importance of Autumn leaf fall's contribution of coarse particulate organic matter (CPOM) to the stream's own energy and nutrient cycling. I mentioned functional feeding groups of invertebrates and vertebrates living in the stream and described how some of those groups turn CPOM into FPOM by cutting, chewing, digesting, and spewing finer particles of OM. The Salamander was connected to the water and to the tree roots. Rotted roots often become tunnels for underground travel by the mole salamanders, who spend time above ground in only three months or so during spring breeding season. Hiding under rotting logs, like the one in our demonstration, near vernal pools, Spotted Salamanders take advantage of fish-less wetland environments to better their offspring's chances for survival. I also indicated that the twine represented the flow of energy, nutrients, and ecological services in the reverse direction as well. The mole salamanders often munch on root-eating grubs and may carry spores of mycorhizzal fungi to the rootlets that need them to better their nutrient uptake from the soil. These represent ecological services provided by mole salamanders to trees. The streamside rock breaks down into component parts and winter/spring floods may deposit the sand and silt on higher ground. Sand/silt then gets mixed with the OM breaking down from the LWD, CPOM, and FPOM, through the actions of such burrowing/digging critters as moles, ants, and earthworms, and these ecosystem components combine together to form soil. Well, that happens to be another ecological service of all of these things, the production of soil. I tried to help our walkers understand that if we were to represent with twine every interconnected action between each of the components of the Forest ecosystem (biotic and abiotic, i.e., every plant, every critter, every rock, every water body, every air pocket, and every other inanimate thing), then we would not be able to see the Forest for the strings.

The next demo spot was a small copse of trees on an intermittent stream bank, where my helpers took the twine and laid out a "pen" around the tree trunks to represent the border of Kanawha State Forest (KSF). Outside the border we imagined the residential developments of Loundendale, South Hills, etc., the extensive shop lands and concrete ribbon of Corridor G, the old strip mines of Brier Creek, and the large mountain top removals on Bull Creek, Fourmile Fork, and Rush Creek. I explained how ecosystem functions are measured through a variety of physical, chemical, and biological tests, but that measures of biodiversity, like species richness are good surrogate measurements. The

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walkers were assigned roles as either Birds, Bees-n-Bugs, Big Beasts, or Little Beasties. A few of each resided within the string perimeter of the Forest. All the others resided outside the border. However, the previously mentioned developments were relatively devoid of such fauna, so we concentrated the critters on the Forest's eastern side, where the Keystone Mine is proposed. The Birds were in a group to the south outside of our demonstration zone, for it was wintertime, and I wanted them to see what would happen come spring migration of neotropical birds. Keep in mind that KSF was already at winter carrying capacity. We represented the first logging and bulldozing of the mine site by sending all of the Little Beasties outside of KSF to the graveyard. Most voles, mice, moles, salamanders, box turtles, ground insects, and ilka small life-forms will be crushed and buried in the first mining actions. A few Bees-n-Bugs will escape, but most of our B-n-B volunteers grudgingly moved over to the graveyard.

The Big Beasts scurried over to KSF, which swelled the Forest to above its carrying capacity. And then the migrating birds arrived, some returned to KSF where they bred the previous year, but for those who previously sang from the trees and shrubs of the Keystone property, a rude awakening occurred—their breeding habitat was totally gone. Those displaced birds had to migrate into KSF. Whoa, now the Forest's summer carrying capacity was far exceeded. Breeding birds were super stressed as they fought over the same piece of ground. Food became scarce. Coyotes and foxes had a field day eating an abundance of refugees, but eventually the gravy train stopped for the predators as well. This is the reality of what has been going on at the Forest in the decades since the first large surface mines near the Forest were begun. And even though mining regulations require agencies to determine cumulative impacts of increased mining footprints on surrounding environments, this has only been pursued recently in the aquatic ecosystems impacted by mining, and not at all in the terrestrial ecosystems like KSF near large scale mined landscapes.

As we walked and demonstrated, one of the Master Naturalist students wrote down the names of each tree species we identified. In the short time that we had been walking, we had tallied 19 tree species. Had we climbed up one of the hillsides, we could have easily tallied 30+ species. Once when I was eating lunch beside Fork Creek of Coal River, where a dry hillside met a moist stream bottom, I counted 27 species from my lunch spot. That spot is now under a mountain top removal valley fill. Keystone has decided to reclaim its mined acreage in forest land. The targeted type of final land reclamation determines the steps the company is required to take to ensure that revegetation occurs in a timely manner. However, huge holes in the permitting process bring results far short of the goals that the original federal surface mine law intended. For example, from the WVDNR's list of Species in Greatest Need of Conservation (SGNC) there are possibly 14 mammals, 27 birds, four amphibians, three reptiles, nine butterflies, 23 dragonflies/damselflies (odonates), four tiger beetles, one crayfish, and two fishes that will be negatively impacted by the Keystone mine. Most of the amphibians and larval odonates, and certainly some of the mammals and birds, will not likely return to their former haunts before two, three, or more human generations pass by. Their preferred habitats will not develop for perhaps 100 years or more, depending upon the species. The WV Conservation Action Plan (published in 2005) calls for inventories of all SGNC species, yet the WVDEP does not require the mining company to perform surveys for such creatures. The only animals that are routinely surveyed for are federally listed endangered or threatened species expected to be in the surrounding region. Consequently, Keystone was required to hire a consultant to survey for bats, just in case the endangered Indiana bat might be utilizing the property for a maternity colony.

Three specialized habitats identified by the Wildlife Conservation Action Plan will be mostly obliterated and not restored. These include hundreds of seeps and springs that are likely

home to six salamander species (two SGNC) and numerous odonate species (several SGNC), and favored haunts of several birds, including one SGNC, the Acadian Flycatcher. Hundreds of linear feet of rock outcrops/cliffs, home to several SGNC species (e.g., Green Salamander, Allegheny Woodrat, Timber Rattlesnake, Black Vulture, and several bats and rodents), will be blown up and buried to return the slope back to its approximate original contour. Dry ridgetop forests will also be gone for a very long time, and with them the SGNC bird species Cerulean Warbler, Worm-eating Warbler, and Wood Peewee.

You may wonder, "Surely a goodly number of forest trees must be replanted or reseeded on the site to give it a jumpstart towards its original rich diversity?" Well, remember the list of 19 species we found in less than an hour of walking and demonstrating? Remember the reasonable expectation of 30+ species from bottom to top of a hill in KSF? You'll be disappointed to know that coal companies are typically required to replant only three species from a high quality hardwood list, only two from a lower quality hardwood list, and only three from a shrub/other woody species list. Three of six on the latter list are alien species. Thank goodness those three are not considered invasive. So five tree species are chosen to replace 30+ species and three shrub species (which may be alien) are chosen to replace 25+ native species. That doesn't sound like much of a jumpstart to me. And while the loss of ecological services to wildlife species is nothing to sneeze at, of even greater concern is the loss of such services to human populations. Like wildlife, we humans need clean air, food produced from nutrient-rich soil, and unpolluted water (duh, remember January's water contamination?). We humans also need uncontaminated green spaces for healthy outdoor exercise, nature-oriented recreational pursuits, soul renewal, and spiritual contemplation, all of which can help us restore and affirm our un-severable ties with Nature. This is why authorities need to uphold the requirements of the law to perform cumulative impact studies on the ecological services damaged by large scale human activities such as coal mining. We humans need to know if the addition of another series of valley fills will push our water source's Selenium concentration to the point that it damages fish populations on its way to concentrations high enough to cause human harm. We need to know how much less oxygen is being produced from all the active mine site that were once oxygen-rich forests or how much less carbon is being stored in the first decade of revegetation at all the reclaimed sites. What are the impacts of such fluctuations on local air quality? What are the cumulative impacts on local hydrology, water well supply, flooding, and flood damage to private property?

After contemplating the ecological differences between KSF and surface mined sites, and the cumulative impacts to ecological services of so much mining in close proximity to KSF, we conversed our way back to the "warming hut" where a handful of volunteers had prepared several hot soups to tantalize our taste buds. Just as species diversity is often positively correlated with a healthy functioning ecosystem, soup diversity is often positively correlated with a healthy appetite. Judging from the way the soups disappeared from their pots, I would say there were some healthy appetites being satisfied at our Soupfest.

Thanks to all the Forest staff and volunteers who planned the Winter Walk, prepared food, and cleaned up the hut afterwards. I extend a special thanks to my lovely assistants Dianne, Barb, Jaime, Rachel, Helen, and Chrissy–and to the organizations which helped make the Winter Walk a success, i.e., Kanawha State Forest Foundation, Valley Master Naturalists, and Mary Ingles Trail Blazers. Thanks for supporting the Forest!

Shirley was never tiring from her efforts at conserving KSF for future generations. When her body could no longer hike the trails she spent decades maintaining as a member of the Kanawha Trail Club, she turned to administrative and organizing functions. The Winter Walks were Shirley's brainchild, and now they have become her signature legacy event. Thanks, Shirley.