WILD NEWS

Prince William Wildflower Society

A Chapter of the Virginia Native Plant Society

Number 2016-05 September-October 2016

Prince William Wildflower Society Annual Meeting, Monday, September 19, 2016, 7:30 p.m., Bethel Lutheran Church, 8712 Plantation Lane, Manassas, Virginia 20110

"Helping Nature Help Itself: Restoring the Land Using Natural Processes," with Charles Smith

Come discuss how to restore landscapes from your backyard up to large natural areas using principles of Restoration Ecology. The program will focus on applying knowledge of how ecosystems work to restore health to the land. Particular attention will be paid to establishing restoration goals, inventorying the area around the restoration site, building on remaining natural areas, and developing a palette of locally native plant species that will support wildlife and provide ecosystem and aesthetic benefits. We will also discuss how to address challenges to include poor soils, deer browse, invasive species and water flow issues.

Charles Smith is an ecologist with 24 years of experience in natural resource management. He is a native of Northern Virginia, a U.S. Army veteran, and is currently a Branch Chief for the Fairfax County Department of Public Works, Stormwater Planning Division. Charles has served as president of PWWS and is currently the PWWS board chair for conservation and education and for registry. You won't want to miss this sure-to-be-excellent program, so plan to bring a friend or two. All are welcome; refreshments will be served and doorprizes awarded!

President's Corner

Meteorologically, fall is here, and we welcome some cooler temperatures. I hope that everyone had the opportunity to enjoy a summer trip. Since our last meeting in July, I had the pleasure of traveling out West to Wyoming, with a little time spent in Colorado, Montana, and Idaho. The wedding of the son of my best friend from college drew me out there. I took the opportunity to invite my 21-year-old niece to join me on this western adventure. The outdoor wedding was held in beautiful Snowy Range, some high elevation mountains in the Medicine Bow National Forest east of Laramie. The rehearsal dinner the night before was a picnic at picturesque Mirror Lake where wildflowers were still in peak bloom in mid August. The Wyoming state flower, Indian paintbrush, sunflowers, larkspurs, asters, and more brought color to the moist streambeds. We stayed till dark and witnessed a spectacular meteor from the Perseids streak in front of the moon before we headed back to our motel because we were too cold.

After the wedding, we headed toward the Tetons. We stopped at the restored ghost town of South Pass City, which was accessible by a dusty gravel road, and also visited a lovely small state park, Sinks Canyon, near the charming small town of Lander. Sunflowers lined much of the highway and sagebrush carpeted the dry prairies. The Tetons are awesome as they rise from Jackson Hole, but it was the height of tourist season when we arrived, and the town and national park were very busy and crowded. I was disappointed in the flora because even the fireweeds seemed to be winding down for the season, but the mountain views were spectacular and inspiring. We drove on to Yellowstone and saw many buffalo, elk, antelope, a yellow-bellied marmot, mountain goats, but no bear or wolves. My favorite

flowers there were gentians blooming near a hill overlooking Old Faithful. Perhaps I will return to western Wyoming sometime in the early summer when crowds are fewer and flowers are more abundant.

Some of you joined us for the August 28 showing of the film *Hometown Habitat,* and I hope that you were inspired by what you saw. Doug Tallamy narrates some of the film and makes the case for planting natives in our landscapes. While the film is a full 90 minutes, it can be shown in chapters. If you would like to arrange a showing for your homeowners association or faith group, we may be able to work with you on the cost of a licensed screening. See *www.themeadowproject.com* for more information.

This month, as we hold our official annual meeting for our chapter, we are fortunate to have our own Charles Smith, a respected local ecologist, present our program. We also have our election for officers and I am pleased to be on the ballot for reelection as your president. I thank you for your support and encouragement. We thank VP Tamie Boone for her diligent service in arranging our speakers and serving as a faithful volunteer during her term. We welcome newcomer William Carromero and thank him for offering his services as VP for the upcoming term. We are also grateful for the continued service of Karen Waltman and Diane Flaherty, our secretary and treasurer, respectively.
--Your president, Nancy

Prince William Wildflower Meeting Minutes
July 18, 2016, 7:30 p.m., Bethel Lutheran Church

President Nancy Vehrs welcomed guests Norman Laythe, Vickie Davis, and Anna Ritter and her two brothers.

Announcements

-- Nancy asked for volunteers to sign up for weeding at the I-95 rest stop. Native wildflowers were planted there a year ago.

--She thanked Dee Brown, Karen Waltman, and Brenda Hallam for bringing refreshments.

--Marion Lobstein will lead a wildflower walk at Manassas National Battlefield Park's Deep Cut area on Wednesday, Aug. 10

--PWWS will be hosting a viewing of the film, *Home Town Habitat* in August. Nancy will notify members of the date and venue through emails. PWWS donated $500 to the project, which included filming organizations and individuals across the U.S. in planning and planting gardens and parks with natives.

--Helen Rawls, a PWWS charter member, has sold her house and moved in with her daughter. Marion Lobstein will let us know of her address.

VNPS News

-- The summer newsletter of *Sempervirens* has information about the VNPS September 9-11 annual meeting in Blacksburg, as well as the registration form.

--Marion Lobstein reported that PWWS donated $2,000 to the Flora of Virginia Project's work on the Flora of Virginia mobile phone app. Marion said $40,00 has been raised, which has been matched by a grant. Donations are still needed.

Program

"Mushrooms and other Fungi." Speaker Meredith Keppel was introduced, and the 15-year-old explained that she became interested in mushrooms as a seventh grader at Nature Camp. She began her talk with the anatomy of mushrooms and followed with views of the different kinds of caps, the types of mushrooms, and research on mushrooms being done by her mentor, Paul Stamets. This articulate, knowledgeable, and personable young lady presented a very interesting program, and we thank her for her time and expertise.

Doorprizes

Elaine Haug, Common milkweed; William Carromero, Flour-sack dish towel with a lady's slipper on it; Libby Pemberton, *Heat-Zone Gardening*; Dee Brown, *Native Shrubs and Woody Vines of Virginia*; Vickie Davis, Notecards.

In Attendance

Joyce Andrew, Tom Andrew,Nancy Arrington, Tom Attanaro, Tamie Boone, Dee Brown, William Carromero, Vickie Davis, Chris Diaz, Jeanne Fowler, Harry Glasgow, Brenda Hallam, Elaine Haug, Norman Laythe, Marion Lobstein, Glen Macdonald, Brian McDougal, Suzanne Parker, Libby Pemberton, Anna Ritter and her two brothers, Janis Stone, Marlies Smith, Nancy Vehrs, Helen Walter, Karen Waltman, and Janet Wheatcraft. ***--Karen Waltman, Secretary***

No (Shrinking) Violets Need Apply!

President Nancy Vehrs reports that Prince William Conservation Alliance is seeking **wild violets (common, white, Canada,** etc.) for the garden at Merrimac Farm. We're hoping that they might spread and out-compete some weeds as the later blooming perennials come up. Members can bring them to the September 19 meeting or bring them to Merrimac for planting on Saturday, September 24.

EVENTS

SEPTEMBER

Saturday, September 17, 10:00 a.m., "Grasses, Look Alikes, and More," Suzanne Conway, Merrifield plant specialist. Grasses with their graceful plumes take center stage this time of the year. See how to incorporate this versatile group of plants into sun or shade gardens, large or small. Merrifield Garden Center, 6895 Wellington Road, Gainesville. Free.

Saturday, September 17, 9:00 a.m., Help Needed for Invasive Plant Pulls, Minnieville Road, Prince William Conservation Alliance. Thanks to the many volunteers who worked to grow high quality wildlife habitats at Merrimac Farm and our restored buffer adjacent to K9 Gunner Dog Park on Minnieville Road. Both areas are attracting butterflies, birds, and a resident green frog at Merrimac Farm. Please join us to help remove nonnative invasive plants that are trying to creep their way in and overtake important habitats! Bring a water bottle and wear long pants and sturdy shoes. For Minnieville Road, use the intersection of Minnieville Road and Colby Drive. For questions and more info, contact us at *alliance@pwconserve.org*, (703) 490-5200. RSVP appreciated.

Wednesday, September 21, 5:00 to 7:30 p.m. Open House at **the Prince William Conservation Alliance,** 2241F Tackett's Mill Drive, Woodbridge. Please join us for a drink, appetizers, and lively, ongoing conversations about parkland and green open space in Prince William County. Share your ideas, and learn more about current issues and opportunities. The Open House is free of charge, everyone is welcome. For more information, contact PWCA at *alliance@pwconserve.org* or (703) 499-4954.

Saturday, September 24, 9:00 a.m., Help Needed for Invasive Plant Pulls, Merrimac Farm, Nokesville, Va. Please join us to help remove nonnative invasive plants that are trying to creep their way in and overtake important habitats! Bring a water bottle, wear long pants and sturdy shoes. For Merrimac Farm, use the address 15020 Deepwood Lane for online directions. For questions and more info, contact us at *alliance@pwconserve.org*, (703) 490-5200. RSVP appreciated.

Thursday, September 29, 9:00 a.m., Weeding Parties at the Dale City I-95 Northbound Car Rest Area. Back in July and August we held two weeding parties at the pollinator meadows planted in September of last year. On a hot July day, we had four volunteers, and on a warm August day, we had seven women. The Swamp milkweeds hosted Monarch caterpillars in August, and numerous butterflies enjoyed the nectar of Sneezeweed (*Helenium sp.*), Blue mist flowers (*Conoclinium coelestinum*), Turtlehead (*Chelone glabra*), Mountain mint (*Pycnanthemum muticum*), Asters, and more. VDOT's Diane Beyers has some more natives for us to plant this fall, and the area needs more blooms for the spring and early summer. Please join us for the next weeding party; refreshments will be served. Contact Nancy Vehrs for more information*: nvehrs1@yahoo.com*, (703) 368-2898.

OCTOBER

Saturday, October 8, 10:00 a.m., "Basics of Gardening," with David Yost, Merrifield plant specialist. Understand how to evaluate site conditions, select appropriate plants, apply correct planting and watering techniques, and learn other horticultural practices to avoid common mistakes. Merrifield Garden Center, 6895 Wellington Road, Gainesville. Free.

Friday, October 14, 8:00 a.m., Fa**ll Forestry and Wildlife Field Tour 40th Anniversary, Prince William County.** Sponsored by the Virginia Forest Landowner Education Program at Virginia Tech. Join fellow forest lovers and natural resource professionals for a fun and exciting day to learn about forest and wildlife management. Tour stops include:

- Wildlife and Water—Manassas National Battlefield Park
- The Family Tree Farm–Lerch family farm
- Lunch—Merrimac Farm Wildlife Management Area
- Development and Land Use–the Villages of the Piedmont
- School of Hardwoods and Hard-knocks–Conway Robinson State Forest

Meet at Manassas National Battlefield Park, Brownsville picnic area. Cost is $35; to register and for more information on the program, see *http://forestupdate.frec.vt.edu/landownerprograms*

Saturday, October 15 from 10 a.m. to 2 p.m. at the PW County Landfill, Prince William Recycles Day 2016. This event features landfill tours, recycling "edutainment" by Billy B, recycling games and activities, and free food and prizes. New this year is scarecrow making with a clothing or household goods donation. Visit *www.pwcgov.org/trashandrecycling* for scarecrow donation requirements and other details. PWWS will exhibit at this event; contact Nancy Vehrs for more detail: *nvehrs1@yahoo.com*, (703) 368-2898.

Saturday, October 15, 10:00 a.m., "Fall Color with Trees and Shrubs," Danielle Hall, Merrifield plant specialist. Bring all the brilliance of fall foliage into your garden. Danielle will highlight many of the best choices for years of beautiful autumn color. Merrifield Garden Center, 6895 Wellington Road, Gainesville. Free.

Saturday, October 22, 10:00 a.m., to 4:00 p.m., Manassas National Battlefield Park's Annual "*Saturday at the Park*." Hands-on discovery and exploration of the park! Exhibits will includes tons of fun and educational environmental science and historical activities including- Dress Like a Ranger, Bird Migration Obstacle Course, Junior Rangers, Macroinvertebrate Identification Station and more. (PWWS will have a booth at this event. Contact Nancy Vehrs about volunteer opportunities *nvehrs1@yahoo.com*, (703) 368-2898.) Located at the Brownsville Picnic area off of Groveton Road, Manassas, Va. 20109

Saturday, October 22, 10:00 a.m., "Creating a Deer Resistant Garden," David Yost and Renatta Holt, Merrifield plant specialists. Do you feel like your garden is nothing more than a buffet for deer? If so, come learn how combin g deer resistant plants, repellents, and other strategies can reduce damage to your landscape. Merrifield Garden Center, 6895 Wellington Road, Gainesville. Free.

Saturday, October 29, Noon to 1:00 p.m., "Seventh Annual Dog Halloween Costume Contest." Merrifield Garden Center, Gainesville. Grand Prize is a $100 Merrifield gift card. Registration begins at noon; contest begins at 1:00 p.m.; additional prizes will be awarded.

(N.B. Janet W., Winston definitely could win this one…!)

[Photographs: Charles Smith, courtesy of Charles Smith; *Monarda fistulosa* with Swallowtail, R.W. Smith, courtesy of Native Plant Information Network, Ladybird Johnson Wildflower Center, NPIN Image ID# 31710, accessed at *www.wildflower.org*; Monarda fistulosa closeup of inflorescence, Alan Cressler, courtesy of Native Plant Information Network, Ladybird Wildflower Center, NPIN Image ID#46048, accessed at *www.wildflower.org*; Collage of Cricket, Katydid, Grasshopper, and Cicada accessed at *songsofinsects.com*. Images: *Monarda fistulosa and M. didyma*, J. Endes, Revue horticole, serié 4, vol. 88: fig. 1 (1916), accessed at *www.plantillustrations.org*; *Monarda fistulosa,* Zorn, J., Oskamp, D.L., Afbeeldingen der artseny-gewassen met derzelver Nederduitsche en Latynsche beschryvingen, vol. 4: t. 316 (1800), accessed at *www.plantillustrations.org*. Female cricket anatomy, Illustrated by Ralph D. Scott, from *Field Guide to Grasshoppers, Katydids, and Crickets of the United States*, by John L. Capinera, Ralph D. Scott and Thomas J. Walker, Konza Prairie Biological Station, Kansas State University, accessed at *www.konza.ksu.edu*.]

NOVEMBER

Saturday, November 5, 10:00 a.m., "Landscapes with Winter Interest," Danielle Hall, Merrifield plant specialist. As winter approaches, it is a good time to add plants with colorful bark, berries or evergreen foliage to bring interest to your garden. Merrifield Garden Center, 6895 Wellington Road, Gainesville.

Saturday, November 12, 10:00 a.m., "A Naturalist's Garden," Andy Johnson, Merrifield plant specialist. Gardens can be much more than a place to enjoy pretty flowers. They are also a valuable part of the food chain as they support insects, birds and wildlife, and preserve the environment. Come see what you can do to help. Merrifield Garden Center, 6895 Wellington Road, Gainesville. Free.

Monday, November 21, 7:30 p.m., "Native Plants in Your Home Landscape, with John McGee, VNPS board member and professional landscape designer. The PWWS membership meeting for November features John McGee in a presentation of many of his designs from over the years incorporating native plants into the garden. More details on the program and John McGee will be forthcoming in the November-December issue of *Wild News*. The program is free and open to the public.

MONARDA – BEEBALM, BERGAMOT, OR OSWEGO TEA

By Marion Lobstein

Many aromatic perennial species of *Monarda*, the Lamiaceae or mint family, have a long and interesting history of medicinal and culinary uses. There are four species in the genus *Monarda* found in our area: *M. didyma* (Beebalm, Oswego tea, Indian flaming flower, Indian's plume); *M. fistulosa* (Wild bergamot), *M. clinopodium* (Basil balm), and *M. punctata* (Horsemint). A fifth species, *M. media*, is rare and found in only five Virginia counties to our south. The four common species bloom from late June through September and range from southern Canada or New England south to Georgia and west to Missouri. *M. didyma* is found in moister habitats than the other three species, which can be found in drier woods, thickets, and along roadsides.

The genus name *Monarda* is in honor of Nicolas Monardes, a Spanish botanist and physician who in the late 1500s published a book on Indian uses of American plants. The species epithets or names of our four species of *Monarda* are as follows: *didyma* refers to the paired stamens of the flowers of this species; *fistulosa*, meaning tubular, refers to the shape of the flowers; *clinopodium* (an ancient name for basil) refers to the basil-like fragrance; and *punctata* refers to dots on the corolla of the flower of this species.

The tubular nature of both the five-toothed calyx and the colorful corolla with a longer upper lip and a shorter three-lobed lower lip is common to the genus. The sizes of the flowers vary from one to one-and-a-half inches for *M. fistulosa*, *M. clinopodium*, and *M. punctata*, and from one-and-a-half to two inches for *M. didyma*. The flowers of the four species are found in terminal or axillary clusters

subtended by a whorl of colored bracts (modified leaves) in species. The color of these bracts vary from white-yellowish pink for *M. clinopodium* to yellowish with purple spots for *M. punctata* to magenta-purple for *M. fistulosa* to red for *M. didyma*. *Monarda* species have only two functional stamens. Pollination is by bees, butterflies, hawk moths, and ruby-throated humming birds (especially for *M. didyma*). Bees seem to really be attracted to members of this genus—thus the name Bee balm. (I have seen bees that appear intoxicated from visiting flowers of *M. clinopodium*. I have not been able to find an explanation for this phenomenon.) The fruit that forms is from the dried tubular calyx, each of which contains four brown nutlets 1/16-inch large; each nutlet contains a single seed.

The square stems of all these species varies from two to six feet tall and from smooth to hairy. All have opposite, ovate scalloped leaves that vary in texture and color. Most have horizontal stems by which new plants may form asexually.

These and other species of *Monarda* are a source of the drug thymol which has antibacterial, antifungal, and anthelminthic (eliminating parasitic worms) properties. American Indians used preparations of species of this genus to treat bronchial and pulmonary problems, digestive system disorders, skin problems, headaches, fevers, colds, sore throats, heart trouble, measles, nosebleeds, and intestinal worms. Many of these preparations were in the form of a very aromatic tea often called "Oswego tea," which is from an Indian term for flaming flower referring to the red color of *M. didyma*, although other species were used to make the tea and other preparations. In addition, various tribes used this group of plants to flavor meat and beans. American colonists used this species primarily as a pleasant tasting tea, which was especially popular after the Boston Tea Party. This genus was also used by herbalists to treat skin problems, headaches, and digestive problems. Leaves and flowers of this genus also have been used to flavor jellies and salads. In addition to American uses of the genus, *M. didyma* was introduced into Europe in 1656 for its herbal properties. That species and *M. fistulosa* were grown in many old-fashioned gardens.

During the summer and into autumn, enjoy the beauty and aromatic properties of members of this very handsome genus. None of these species are common in our area, but the time spent to find them is time well spent.

Wild Bergamot *Monarda fistulosa*

Derivation of Latin name

The Latin name is *Monarda fistulosa*. Linnaeus named the genus in honor of the Spanish physician Nicholas Monardes, who published several books in the 16th century on medicinal plants, especially those of the New World. The specific name, fistulosa, means hollow or reed-like, referring to the hollow stem.

Description

Patches of wild bergamot drift across fields and meadows and form mists of lavender-pink along roadsides, fence rows and forest edges from mid-summer to early fall in Virginia. Under the warm summer sun, a hint of mint hanging in the air and traveling far downwind is often the first clue to its presence.

Wild bergamot is a perennial member of the mint family, included in a group called the “horse mints,” coarser than those generally used in herbal cooking. Growing two to three feet high with multiple stems from a spreading rootstock, these plants have the square stems and opposite leaves typical of the Mint Family. The light bluish-green leaves with half-inch petioles are about twice as long as wide, broadly rounded at the base, tapering to a pointed tip, and toothed. Stems, leaves and flowers have soft, spreading hairs, some plants being “fuzzier” than others.

The lavender-pink flowers are borne in a tightly clustered head–really a cyme–at the top of the plants. The leaf-like bracts clustered just beneath the flower head are often tinged with pink. Each tubular blossom extends from a tubular calyx edged with five evenly spaced erect white hairs. The strongly two-lipped corollas have only two stamens (four stamens is typical of mints), which project beyond the upper lip of the flower along with the pistil. These exserted stamens and pistil and the beard of hairs on the upper lip of each flower lend the heads a fringed appearance. With the flowers opening from the center of the head outward, progressive development results in a "bald" center surrounded by a pink fringe, giving the head an almost daisy-like appearance from a distance.

Both bees and butterflies pollinate wild bergamot. When the fruits mature in the fall, four small nutlets form in the base of each calyx tube. The dry heads persist into the winter looking like coat buttons on the head of a knitting needle, and strewing seeds from the calyx cups as they wave in the wind.

Wild bergamot was so named by early plant collectors in North America for the similarity of its fragrance to the bergamot orange, a small orange-lemon hybrid from the region around Bergamo, Italy, which was used in perfumery as early as 1668. Virginia's other Monarda species are Oswego-tea or beebalm (M. didyma), horsemint (M. punctata) and basil-balm (M. clinopodia).

Watch for patches of the tall lavender-pink, wild bergamot in the upper Coastal Plain, Piedmont and Mountains wherever pastures have returned to meadows, and roadsides and fence rows are not mowed. The plants tolerate a range of soils from sandy clay to shallow mountain loam; in general they prefer moderately dry sites, in either open sunny places or light shade. On richer sites, the plants will be more robust and taller. Where mowing has been done, plants may be much shorter with multi-branched stems, each tipped with a small flower cluster.

The flowers may vary from deep pink to palest lavender or even, rarely, white. The nectar attracts bees, butterflies and hummingbirds as well as smaller insects that can crawl into the flower tube but are not large enough to pollinate the flowers. Walking through stands of these plants, summer or winter, and brushing them will release the volatile oil that produces the characteristic fragrance, a little stronger than peppermint and slightly different. Standing in a patch of wild bergamot in full bloom on a warm summer day is a heady experience. Picking the flowers carefully for bouquets will not harm the plants; they will bloom again if the flowers are picked early in the season. However, the flowers wilt fairly quickly on a warm day if not put immediately into water.

Finding the dry, button-like heads in the winter is especially fun for children, because they can readily identify the plant by crushing the heads to release their characteristic odor. Small seed-eating birds like goldfinches and field sparrows perch precariously on swaying stems and pick out the seeds. Dry stalks provide both textural contrast and light fragrance in winter bouquets and a pleasant tea can be made from dried or green leaves and seed heads.

Propagation

Wild bergamot provides an excellent background or mass of color in the perennial garden, especially when mixed with purple coneflower, lavender, phlox, black-eyed Susan and asters. Not a fussy plant, wild bergamot will grow well in sandy clay to light loamy soil, in fairly well drained, sunny locations. It tolerates drought and light shade, and is not bothered by insect pests.

Too much care in the form of fertilizer and water will overwhelm these plants. Their one disadvantage is a tendency to mildew, but this may be controlled by watering at the roots or early in the day, so that the foliage dries by evening. Spacing plantings for optimum natural air circulation is also beneficial.

Bergamot will spread outward from the center of the root clump, forming masses, but sometimes dying out in the center. Every two to three years, the clumps should be divided and re-planted. Divide them in late winter or early spring before new shoots appear. Plants can be grown from seed sown outdoors in the fall or indoors in January. Stems with green but mature seed heads can be cut and placed in water to ripen, or seeds can be collected from dry heads.

Wild bergamot was grown in the gardens of colonial Virginia, including those in Williamsburg and at Monticello. Taken to England from Virginia by John Tradescant in 1637, it became a favorite in English gardens and now comes back to us in many horticultural varieties.

Where it grows
Its range extends from southwestern Quebec and western New England west to Manitoba and British Columbia, south to Georgia, Louisiana and Arizona. Several forms have been described on the basis of variations in hair and leaf shape and length of petiole. In Virginia, most plants have soft, incurved hairs, deltoid leaves and petioles approximately one-half inch long.

Where to see it in Virginia
You'll find wild bergamot blooming in uplands throughout most of Virginia from July well into September along trails, roadsides, in abandoned fields and pastures, and along power lines and railroad rights-of-way. According to the Atlas of the Virginia Flora (1992), wild bergamot can be found in all counties in the Commonwealth, except the easternmost areas of the Coastal Plain. It is common in the Piedmont, along the Blue Ridge, or in the pastures, roadsides and edges of woods in the Shenandoah Valley and southwest Virginia.

[Catharine Tucker, 1993 Virginia Wildflower of the Year, ed. for the web by Stanwyn G. Shetler 1997, accessed at *www.vnps.org*.]

Late Summer Ramblings: Music of the Night

Darkness is shed on one of the great mysteries of the summer season via the recent piece by Pam Owen, "Heat Rises, Insects Harmonize," in her Wild Ideas column from the *Rapphannock News* (August 18, 2016). Owen, a naturalist, casts light on the species that make up the vast insect chorus of our late, hot summer days and nights, while giving much credit to Lang Elliott and Wil Hershberger's "ground-breaking book," *Songs of Insects* (2007), along with its accompanying CD.

Who *are* the chorus, really? Two orders of males serenading/calling females, are the virtuoso singers: Orthoptera (grasshoppers, katydids, and crickets) and Hemiptera (cicadas). I've often wondered who was singing what and what power governs the crescendos and decrescendos of their blended night concerts. It turns out that different insects use different parts of their bodies to create unique sounds. For example, the rubbing of one body part against another is called "stridulation," and crickets and katydids have a sharp edge or scraper located on the surface of the lower wing. The scraper is rubbed against "a row of bumps, known as the 'file' on the underside of the upper wing," according to Owen. Grasshoppers (also known as locusts) use their hind legs against the closed wings. Others, such as male cicadas, do not stridulate but instead use a pair of special sound-producing organs—"tymbals"—located on the sides of their lower abdomens. Muscle contractions cause ribs in the tymbals to bend suddenly and resonate in the abdominal air sac, which produces the "loudest of insect sounds, far surpassing the volume and range of Orthopteran singers."

Owen notes that "some species combine syllable types to form a more elaborate song, with pitch and volume varying according to the species." Orthoptera and Hemiptera species also are capable of multi-syllable sounds, which Elliot and Hershberger usefully categorize as chirp, trill, lisp, lispy trill, zit, tsip, and rattle. On their website, *songofinsects.com*, there is a description of each terminology along with a sound clip of each.

It is all even more wonderful and complex than I thought. Of course, I immediately ordered the book,

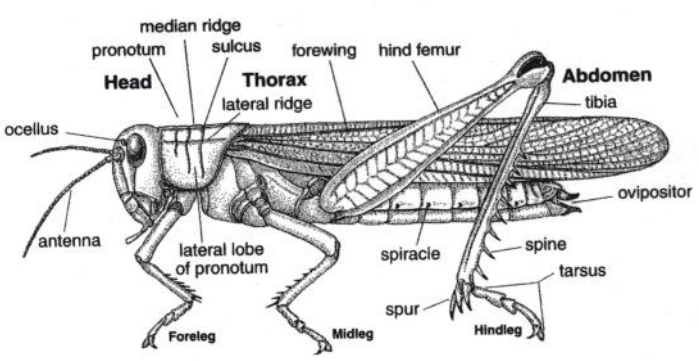

Figure 1. External anatomy of an adult grasshopper (female)

which is available used for a reasonable price. One hopes that the CD will still be intact. New copies are

harder to find, as the book is out of print, but the truly terrific website, ***songsofinsects.com*** is comprehensive. Four families, crickets, katydids, grasshoppers (locusts), and cicadas and their relative species are listed, with a descriptive page for each member of the species, their spring, summer, fall, and winter ranges, and, fabulously, sound-bar recordings of the songs of each. The site is compatible with cell phones.

Who knew that there were so many kinds of crickets, katydids, and cicadas? Some of the names are inviting: Confused Ground Cricket, Agile Meadow Katydid, Tinkling Ground Cricket, Handsome Meadow Katydid, Slightly Musical Conehead (perhaps from the south of France?), Common Virtuoso Katydid (surely a contradiction?), Dog-Day Cicada, and so on. Owen reports that where she lives in the Blue Ridge, the dominant insect voice is that of the common true katydid, which Hershberger and Elliott confirm can be *very* loud, with the insects perching high up in oaks and conifers—they cannot fly—ranging from northern New England down to the Mississippi Valley and west to eastern Texas. Apparently, they were so loud that they frightened the early Pilgrims, who had never heard such insect cacophony. Within the common true katydid group, the authors also have identified three distinct populations or subspecies, each with their own sounds/songs.

When cooler weather sets in and temperatures drop, the "males sing more slowly, with songs taking on a creaking or groaning quality." When the temperature hits 52◦F, they stop altogether. On the website, there is a recording of males singing a very slow and rasping "ka--ty--did" at 55◦F. The ardors of the mating season are palpably cooling down! *–Deanna LaValle High, editor*

[Thanks to the terrific article by Pam Owen,"Heat Rises, Insects Harmonize,"*Rappahannock News* (August 18, 2016; available online at *http://rappnews.com/2016/08/18/wild-ideas-heat-rises-insects-harmonize/150917/*); and to naturalists extraordinaires Wil Hershberger and Lang Elliott, authors of *Songs of Insects* (Houghton Mifflin 2007).

PRINCE WILLIAM WILDFLOWER SOCIETY
A Chapter of the Virginia Native Plant Society
P.O. Box 83, Manassas, Virginia, 20108-0083

PWWS Annual Meeting: Monday, September 19, 2016, 7:30 p.m.
Charles Smith, "Helping Nature Help Itself: Restoring the Land Using Natural Processes"
Bethel Lutheran Church, 8712 Plantation Lane Manassas, Virginia 20110