
Habitat Herald

A Publication of the Loudoun Wildlife Conservancy

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www.loudounwildlife.org

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Brood X: The Cicadas Are Back



by Cliff Fairweather

They have red eyes, red wing-veins, an astonishingly loud song, and emerge by the millions. They've been waiting underground for 17 years and they'll be among us from approximately mid-May through mid-June. "They" are Brood Ten (usually written Brood X) of the periodical cicada. You have been warned.

Not that there's anything to worry about. They don't bite, sting, spread disease, cause famine, or try to share your picnic. Well, they might literally crash your picnic, but they probably won't stay unless you choose to make them part of the menu.

Periodical cicadas are one of the great natural phenomena of the eastern deciduous forest. Twelve broods of 17-year cicada and three broods of the more southern 13-year cicada emerge on different schedules in different regions of the eastern half of the United States. They occur nowhere else in the world.

Brood X, one of the largest, most widespread periodical cicada broods and covering at least parts of 15 states, including the Washington, D.C. region, last emerged in 1987. I vividly recall driving down I-66 near Manassas, Virginia, with the car windows open, and hearing clearly the cicadas over the considerable din of traffic. I was awed by this auditory expression of cicada abundance.

Now, 17 years later, the progeny of that emergence are digging their way topside. They'll stop just below the surface, waiting for some unknown trigger to complete their excavation. Visible signs of their imminent arrival above ground should begin appearing within the next few weeks.

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The Loudoun Wildlife Conservancy is a non-profit 501(c)(3) group of volunteers who share a common goal of protecting and perpetuating natural habitats for the benefit of both people and wildlife. Contributions are tax-deductible to the extent allowed by the law.

The Loudoun Wildlife Conservancy Board meets the first Tuesday of each month. Board meetings are open to all members. For more information, or to suggest topics for discussion at upcoming meetings, contact Tom Bjorkman.

You can also visit us at:

www.loudounwildlife.org

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A Word from the President

by Tom Bjorkman

You Don't Have to Choose Between Ball Fields and Stream Buffers

I am proud of the contribution the Loudoun Wildlife Conservancy has made over the last decade through its nonpartisan, non-confrontational, science-centered approach to the mission of protecting wildlife habitat. We are known for our great educational programs, field trips, and informative quarterly magazine.

Being nonpartisan, our organization does not care about the political affiliation of our county leaders or their positions on issues that are not germane to our mission. However, being nonpartisan does not mean being apolitical. We care, passionately, about county policies that affect our wildlife, and we act on that passion.

Our job as a nonprofit, conservation organization is to urge county leaders to adopt policies that promote the preservation and expansion of wildlife habitat. This mission is mandated by our constitution, which enshrines one of our purposes as the promotion of "public policies that will encourage people to preserve wildlife habitat."

Undisturbed river and stream buffers are special places for wildlife and are critical to our mission. County policies regulating the activities that are allowed in these buffers must be of vital concern to our members. County leaders last year adopted regulations that created strong protections for undisturbed buffers and hence for wildlife habitat, as well as for other compatible goals such as protecting water quality and reducing flood damage. Current proposals under discussion by

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A Word...*continued from page 2*

county leaders to reduce those protections are of necessity a top concern for members of LWC. We agree that the county should find space for more ball fields and golf courses — the stated goal of those who favor reducing stream buffer protections. But we know that there are better places to put them — places that will create better ball fields and golf courses and will also protect Loudoun's wildlife. We reject the notion that Loudoun's citizens must choose between these two important objectives.

LWC's leaders, along with our partners among other conservation organizations, recognize the critical importance of protecting stream buffers and the need to respond forcefully to proposals that would erode those protections. We have organized an intensive effort to convince county leaders that current protections make good sense and are based on sound science. We have made the case that there are better places to put active recreation facilities — places that will save the taxpayers' money and make our soccer players happier in the long run. Over the past few months, LWC leaders and members have met individually with members of the Planning Commission and Board of Supervisors to make our case and have spoken out on the issues at public hearings.

However this important debate on stream buffers turns out, the reality of the current political scene in Loudoun and the intense development pressures ensure that over the next months you and I will be confronted with still more public policy issues whose resolution is vital to Loudoun's wildlife. You have a right to expect your Conservancy leaders to speak out on these issues and lobby county leaders in support of wildlife habitat. But county leaders are politicians, just as they should be. They will listen to our arguments only if they are convinced that pro-wildlife positions have broad-based support among Loudoun's citizens. That is where you come in. Please make your voice heard in the manner that suits you best, through public hearings, phone calls, emails, or letters to our leaders.

Brood X...*continued from page 1***Just Another Silly Love Song?**

The story of this year's periodical cicada emergence began at about the time I was listening to their fathers sing that June afternoon on I-66. Impressively loud, periodical cicada song measures at around 100 decibels, comparable to a lawnmower and only slightly below a chainsaw.

Only the male cicada-whose sound producing organ is a ridged membrane called a tymbal-sings, which it does primarily to attract females. A pair of tymbals flanks the first abdominal segment of the male, just behind and under the wings. Powerful muscles flex these membranes like drum heads to produce a sound that is then amplified by the male's hollow, resonating abdomen.

Both male and female cicadas hear the males' songs through their tympana, another membrane on the underside of their abdomens. Females, who ultimately make mate selections, need to hear for an obvious reason, but hearing is just as important for male periodical cicadas. Hearing the singing of the first males in a chorus recruits additional males until a large aggregation of singers acts as a sound beacon for females.

Males will change their tune, depending on where they are in the process of attracting a mate. They first give a calling song that attracts both females and other males. A responsive female then replies with wing-flicks that provide both a visual and an auditory signal to a male which, as he closes in on the wing-flicking female, switches to a series of three different courting calls. The male goes through his courting-call repertoire as he gets closer to the female, stopping altogether only after he mounts her and begins to copulate.

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Male cicadas also produce an alarm call when disturbed. It's a rougher version of the calling song, perhaps to startle potential predators. To hear and feel the alarm call, simply pick up or gently press down on a handy cicada.

What's in a Name?

Periodical cicadas-often, though incorrectly, called 17-year locusts-are members of the insect order Homoptera, which includes familiar insects such as aphids, tree hoppers and their kin, and the annual or dog-day cicada. Locusts belong to a different insect order, the Orthoptera, which is made up mostly of crickets and grasshoppers. Some locust species do occur in huge swarms, which is probably how they became etymologically confused with cicadas. Just to add to the confusion a bit more, the root of the name of another group of orthopterans, Tettigoniidae, is Greek for cicada. This group includes katydids and other long-horned grasshoppers, but no cicadas.

Now that that's straightened out, let's deal with one other confusing aspect of cicada nomenclature: annual versus periodical cicadas.

Annual cicadas, also known as dog-day cicadas, or harvestflies, have one-, two-, or three-year life cycles. Unlike the late-spring emerging periodicals, annual cicadas emerge as adults in the "dog days" of July and August. Since annual cicada broods overlap, one brood or another emerges every summer in a smaller and less concentrated emergence than the periodicals.

Annual and periodical cicadas demonstrate some physical differences as well-our local annual cicadas are a bit larger and bulkier than the periodicals, and lack the distinctive red eyes and wing veins. Further, while individually quite loud, they don't form the large calling choruses that make periodical cicadas so auditorily distinctive. More obscurely, the tymbals of annual cicadas are covered, while those of the periodicals are not.

Experts recognize three species of 17-year cicadas and all three species occur in Brood X-*Magicicada septendecim*, *M. cassini*, and *M. septendecula*. Another four species of *Magicicada* are recognized among the 13-year forms. Local cicada researcher John Zyla says entomologist William Davis, whom he describes as the father of cicada research in the late 19th and early 20th centuries, gave periodical cicadas their genus name, *Magicicada*-choosing the word "magic" because of the way they seemed to magically appear every 13 or 17 years.

The three *Magicicada* species are easiest to tell apart by their calling songs, although physical and habitat differences can help in identification. *M. septendecim*'s song is often described as sounding like the word "pharaoh." Found in a variety of habitats, it is the largest of the three-around 2 1/2 to 3 centimeters long-and displays broad orange stripes on the underside of its abdomen and orange markings ahead of the wings and behind the eyes. The smaller *M. cassini*, a little over two centimeters, prefers floodplain habitats and has narrow orange stripes on the underside and no orange ahead of the wings or behind the eyes. Its call is a series of ticks followed by high-pitched buzzing. Meanwhile, *M. septendecula* is pretty similar to *M. cassini* in size and appearance and the two can be difficult to tell apart without hearing the songs. Occurring less commonly than the other two 17-year *Magicicada* species, its calling song is a series of 15- to 30-second phrases. Their habitat preference is upland areas.

A number of *Magicicada* broods occur in the mid-Atlantic region. In his research, John Zyla focuses on what appear to be 20- to 30-mile gaps between the boundaries of most broods. Interestingly, very few *Magicicada* occur in Charles County, Maryland, which lies between the range for Brood II in St. Mary's County and Brood X, which extends south into Prince George's and northern Calvert counties. A similar gap occurs between Brood X and Brood V in northwestern Garrett County. Zyla hopes his research, which depends on the help of volunteer cicada monitors, will eventually reveal the reason for these gaps.

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AUDUBON NATURALIST SOCIETY WATER QUALITY PROGRAMS

The water quality of Loudoun County's streams is integral to the well-being of local wildlife and is an indicator of overall ecosystem health. Most of Loudoun County's streams support diverse communities of aquatic life, but in the nation's third-fastest growing county, these irreplaceable resources are under daily threat of destruction and need constant vigilance. Streams and shoreline habitats provide food, shelter, and travel corridors for animals and many of the migratory bird species that make their seasonal journeys across our landscape.

Stream Monitoring classes are taught by Cliff Fairweather of Audubon Naturalist Society (ANS). As our volunteer base grows, the LWC, in partnership with ANS, Loudoun Soil and Water Conservation District and the North Fork Goose Creek and Catoctin Watershed Committees, plans to establish stream monitoring teams for every watershed in Loudoun County. These programs are made possible, in part, by grants from the Virginia Chesapeake Bay Restoration Fund and the Virginia Department of Environmental Quality.

Please join us for one of our sessions.

They are educational, good for the environment, and fun for the entire family.

Classes are held at the Rust Sanctuary in Leesburg, VA — *Sign up is required.*

To register for any of the classes, contact Cliff Fairweather at (703) 803-8400 or cliff@audubonnaturalist.org.

MACRO-INVERTEBRATE IDENTIFICATION I: ORDER LEVEL

Sunday, June 13 (1:00 p.m. - 4:00 p.m.) - classroom

Sunday, July 18 (1:00 p.m. - 3:30 p.m.) - field

Benthic macro-invertebrates, boneless creatures that live under flowing water are important indicators of aquatic ecosystem health. Learn how to identify the major groups of these organisms, including aquatic insects and crustaceans, to the taxonomic level of Order (e.g., *Ephemera* or Mayflies).

PROTOCOL PRACTICUM

Saturday, June 19 (1:00 - 3:00 p.m.) — *Note: This class is for Loudoun Stream Monitoring participants only.*

Others should attend a Clifton/Manassas area session.

Using the data collection protocol developed for the ANS Water Quality Monitoring Project, participants will learn how to gather abiotic data (temperature, pH, and several habitat assessments) and use a D-frame net to collect stream organisms. This section will include additional habitat assessment instruction and will be held in both the classroom and the field. *Please bring boots or sneakers for wading.*

PROTECTING LOUDOUN'S STREAMS AND WATERWAYS

If you are interested in becoming a stream monitor, please fill in the following form and mail it to:

Stream Monitoring Project
c/o Audubon Naturalist Society
ATTN: Cliff Fairweather
Rust Sanctuary
802 Children's Center Rd, SW
Leesburg, VA 20176

Name: _____
Street: _____
City, State, Zip: _____
Phone: (H) _____ (W) _____

List the Classes and Dates you are interested in:

Class	1st Choice	2nd Choice

List the Stream you are interested in monitoring:

1st Choice	2nd Choice

If neither of those streams is available, are you willing to help monitor a site designated by the Project?

☐ Yes ☐ No

Are you interested in being one of our Team Leaders?

☐ Yes ☐ No

Would you be interested in helping us with some of our administrative functions (typing, maintaining our database, or record-keeping)?

☐ Yes ☐ No

For more information on any of the programs please contact:

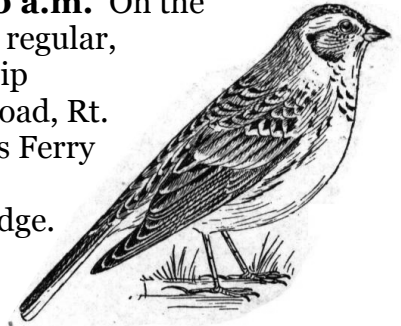
Audubon Naturalist Society — Cliff Fairweather (703) 803-8400

LWC PROGRAM CALENDAR

Space is limited for many of these programs.

Please call the designated program contact for further information and to reserve your spot.

BIRDING THE BLUE RIDGE CENTER – Saturday, May 22, 8:00 a.m. On the fourth Saturday of each month the Loudoun Wildlife Conservancy leads a regular, monthly bird walk at the Blue Ridge Center for Environmental Stewardship (BRCES). This beautiful 900-acre preserve is located on Harpers Ferry Road, Rt. 671, in northwestern Loudoun County. Only a few miles south of Harpers Ferry and the confluence of the Potomac and Shenandoah rivers, this property includes meadows in the valley and heavily forested slopes on the Blue Ridge. We will meet at the Neersville Volunteer Fire Station on Rt. 671 at 8:00 a.m. Questions – *Contact Joe Coleman at 540-554-2542 or jandkcoleman@erols.com.*



NATIONAL TRAILS DAY AT THE BANSHEE REEKS NATURE PRESERVE – Saturday, June 5, 8:00 a.m. to 4:00 p.m. Join us in celebrating the Banshee Reeks Trail System on the first Saturday in June, which is National Trails Day. Walks will take you through towering poplar and beech trees on the Cathedral Trail, to the water along the Goose Creek Trail, around the springhouse and pond along the Springhouse Trail, and through woods, meadows and ponds on the Beaver Creek Trail. Enjoy a few minutes or hours wandering the trails on your own or with a guide. Take in some fresh air and beautiful views, get your heart pumping, and take some time to get away from it all. No registration is required, but children must be accompanied by an adult. For information call Banshee Reeks at 703-669-0316.

BIRDING BANSHEE – Saturday, June 12, 8:00 a.m. Join the Loudoun Wildlife Conservancy and the Friends of Banshee Reeks at the Banshee Reeks Nature Preserve for the monthly bird walk. Because of its rich and varied habitat, this part of the county is a birding hot spot. Please bring binoculars. Questions - *contact Joe Coleman at 540-554-2542 or jandkcoleman@erols.com.*



BUTTERFLIES AND DRAGONFLIES AT BANSHEE – Saturday, June 19, 10:00 a.m. to 12:00 noon. Join the Friends of Banshee Reeks and the Loudoun Wildlife Conservancy for one of our free, summer butterfly and dragonfly walks. We will investigate some of Banshee's many diverse natural areas and identify all of the butterflies and dragonflies we can find. If you own binoculars, please bring them. Questions - *Contact Joe Coleman at 540-554-2542 or jandkcoleman@erols.com.*

SUNDAY IN THE PRESERVE – Sunday, June 20, 2:00 p.m. Join the Friends of Banshee Reeks for an informal, family walk around the preserve, searching for the many natural wonders that make this such a special place. For information call the Friends of Banshee Reeks at 703-779-2077.

BIRDING THE BLUE RIDGE CENTER – Saturday, June 26, 8:00 a.m. See the May 22 listing for details.

BIRDING BANSHEE – Saturday, July 10, 8:00 a.m. See the June 12 listing for details.

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BUTTERFLIES AND DRAGONFLIES AT BANSHEE – Saturday, July 17, 10:00 a.m. to 12:00 noon. See the June 19 listing for details.

BIRDING THE BLUE RIDGE CENTER – Saturday, July 24, 8:00 a.m. See the above May 22 listing for details.

AIRLIE BUTTERFLY COUNT – Saturday, July 24, 10:00 a.m. Participate in the annual butterfly count at the Environmental Studies at Airlie (Fauquier County). For further information contact Caryl Buck at 540-341-3239 or es@iamp.org.

ANNUAL LOUDOUN COUNTY BUTTERFLY COUNT – Saturday, August 7, 9:00 a.m. Join the Loudoun Wildlife Conservancy on its eighth annual Butterfly Count, centered in the Waterford area. No experience is necessary; novices will be teamed with experienced leaders in each segment of the count. Come out and have fun while contributing to butterfly conservation. Counters will also be visiting butterfly gardens in the area which stretches from White's Ferry in the east to the Appalachian Trail and the Blue Ridge Center for Environmental Stewardship in the west and from Point of Rocks south to Lincoln. This annual, mid-summer count, modeled after Christmas Bird Counts, is sponsored by the North American Butterfly Association. For more information or to register and receive directions, *contact Nicole Hamilton (540-882-882-4839 or nicole@gilandnicole.com) or Joe Coleman (540-554-2542 or jandkcoleman@erols.com).*

BIRDING BANSHEE – Saturday, August 14, 8:00 a.m. See the June 12 listing for details.

BUTTERFLIES AND DRAGONFLIES AT BANSHEE – Saturday, August 21, 10:00 a.m. to 12:00 noon. See the June 19 listing for details.

BIRDING THE BLUE RIDGE CENTER – Saturday, August 28, 8:00 a.m. See the May 22 listing for details.

BIRDS, BUTTERFLIES AND WILDFLOWERS AT THE BLUE RIDGE CENTER FOR ENVIRONMENTAL STEWARDSHIP – Saturday, September 4, 8:30 a.m. to 11:00 a.m. Join the Loudoun Wildlife Conservancy and the Potomac Valley Audubon Society on a general, natural history walk (about three miles long) at this beautiful preserve in northwestern Loudoun County. We should see butterflies using the late summer wildflowers as well as early migrating birds. The Blue Ridge Center for Environmental Stewardship is located on Harpers Ferry Road, Rt. 671, a few miles south of Harpers Ferry and the confluence of the Potomac and Shenandoah rivers. We will meet at the Neersville Volunteer Fire Station on Rt. 671 at 8:30 a.m. For more information contact Joe Coleman at 540-554-2542 or jandkcoleman@erols.com.

BIRDING BANSHEE – Saturday, September 11, 8:00 a.m. See the June 12 listing for details.

Questions about the above programs —
contact Joe Coleman at 540-554-2542 or jandkcoleman@erols.com.
For up-to-date information on our programs check our web site at www.loudounwildlife.org.

Brood X...*continued from page 4*

From Branch to Root

After finding suitable males and mating 17 years ago, Brood X fertilized females began to go about the business of egg-laying. Female cicadas have a sharp, saw-edged ovipositor-or egg-laying appendage-that they use to cut longitudinal slits into smaller twigs and branches.

They will leave up to a total of 400 eggs, with 10 or so elongate, white eggs in each slit. In six to ten weeks, the nymphs hatch out, fall to the ground, and dig into the soil below their host tree or shrub.

Magicicada species choose broadleaf deciduous woody plants for egg-laying, avoiding conifers, sumacs, and other plants that produce large amounts of resins in response to injury. This sticky sap appears to destroy eggs, although annual cicada species can successfully oviposit in conifer species such as loblolly pine.

Cicada ovipositing usually kills the affected twigs, causing their leaves to quickly turn brown. Often, the entire twig or branch droops in a phenomenon called flagging. Dr. Don Messersmith, an entomologist at the University of Maryland, calls the egg-laying effects a natural pruning and says that it can actually be good for mature forest trees.

Young trees might have more difficulty, however-since a large proportion of their structure consists of branches and twigs of the appropriate size for cicada egg-laying, they can experience a fatal pruning. Adult cicadas do feed, contrary to some information on the internet and elsewhere, but their feeding activity has little effect on trees and shrubs.



As for effects on larger ecosystems, a study by scientists at the University of Kansas, *Spatial Variability in Oviposition Damage by Periodical Cicadas in a Fragmented Landscape*, suggests that egg-laying by periodical cicadas might have long-term effects on forest succession. In particular, the authors suggest that cicada egg-laying could alter the dynamics of forest succession in disturbed areas, such as old fields with new woody growth. *Magicicada* appear to be especially attracted to younger trees. Possible effects include changes in the pace of succession and the mix of plant species, although the authors say more research is needed.

In any case, the lesson for gardeners this year should be obvious. This is not a good spring to plant new trees and shrubs. Waiting until the end of June, when the emergence has ended, will avoid any problems with cicadas on new plantings. You can go ahead and plant your annuals and perennials though-cicadas are not attracted to flowers and other non-woody plants for feeding or egg-laying.

Adult cicadas can live four to six weeks unless they meet with a predator, accident, or disease. All of the adults are gone by the end of June, although John Zyla notes that unseasonably low temperatures in early June can bring an abrupt and permanent halt to *Magicicada* mating activity.

Many individuals are infected by a parasitic fungus specific to *Magicicada*, called *Massospora cicadina*. Cicadas infected early in an emergence develop asexual fungal spores that render the animal sterile and cause the back of their abdomens to fall off, exposing a white mass of spores that infect other cicadas before the carrier dies. The secondarily infected cicadas develop a sexually-reproducing generation of spores that cause the ends of their abdomens to break off. Once released, the sexual spores lie dormant for 17 years until the next emergence. Some entomologists believe that the 13-year cycle of some periodical cicada species is an adaptive response to *Massospora cicadina*.

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Life Underground

Our soon-to-emerge periodical cicadas began life 17 years ago as nymphs the size of small ants. Their shape immediately out of the egg, enclosed by a sheath-like membrane, was rather like a larval fish with rear projecting appendages that resembled flippers as much as legs. While such a form might seem ill-suited for digging underground, a cicada nymph's first task is to struggle out of its egg shell and twig-slit nest. Their streamlined form and rear projecting appendages ease their forward progress out of the nest, but resist backsliding.

Once free of the egg slit, a cicada nymph loses its sheath, either before or after falling to the ground, which frees its appendages, including front-legs that are robust and well-adapted for digging. It promptly starts working its way two inches to two feet underground, exploiting cracks and fissures in the soil to find rootlets of a tree or shrub, which it will tap into to feed on sap with its piercing-sucking mouthparts.

The underground natural history of cicada nymphs is not well understood because it occurs out of sight, but we do know that they go through a series of instars, or growth stages. How many is not precisely known, although five or six are the numbers commonly given. An instar occurs each time an insect sheds its exoskeleton and, with a few exceptions, insects shed only during their immature stages. Once an insect reaches its adult stage-with fully developed wings and reproductive organs-it doesn't shed again.

After they've wriggled into the ground and found an appropriate rootlet for feeding, the nymphs remain active for about five years, digging deeper into the ground. Then they become virtually dormant for a seven year period, feeding only enough to maintain their metabolism. In their last five years underground, the nymphs become active again and start working their way towards the surface. They get to within an inch or two of the surface by the autumn before they emerge, go through their last nymphal instar, and become dormant again until they are ready to emerge. During this time, a nymph can grow from about 1/12 of an inch to 1 1/4 inches, and develops red compound eyes and the wing buds that hold its folded-up wings ready for deployment.

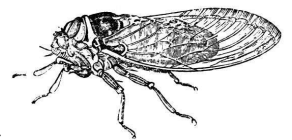
Seventeen years underground might not seem like much of a life to us, but it has its advantages for a slow, vulnerable, long-lived insect larva. It offers safety from most predators and other dangers of a surface life, although moles and shrews are probably major predators, especially as they come closer to the surface prior to emergence.

Up and Out

Shortly before *Magicicada* nymphs emerge, they excavate chambers just below the surface. Digging with their powerful front legs, they use their claws to pick away at dirt and then use their tibiae and femurs to rake up the loose dirt and press it into the sides of their burrows.

You might find short mud turrets sticking above ground from these chambers, especially in damp soil-resembling miniature versions of burrowing-crayfish chimneys, they are formed when the nymphs push mud out of their burrows.

The exact cue for emergence is not fully understood, although soil temperature may be an important factor. Sometime between mid-May and early June, the nymphs will depart their subterranean nurseries at night and climb up a tree trunk, fence post, wall, or any other handy structure. Most members of a population of cicadas usually emerge within a couple of nights of each other. Nocturnal emergence helps reduce the risk of predation, especially by birds. Also, freshly molted adults are vulnerable to water loss, so the cooler, more humid night air offers them a less dessicating environment.



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Brood X...*continued from page 10*

Once an emerged nymph has reached a suitable location, it grips the surface firmly with its front claws in preparation for their final molt when its back splits open and it wriggles free of its nymphal exoskeleton. The newly molted adult is soft and white, except for a couple of black eye-spots on its back, which John Zyla believes serve as a predator deterrent. A newly molted cicada extends its wings by pumping hemolymph (insect blood) into its wing veins. The animal then waits until its new adult exoskeleton and wings harden, usually by the following morning, during which time the animal's body also darkens.

The cast off nymphal skin often remains attached to the place an adult cicada left it, and during the upcoming emergence, you are likely to see dozens or more of these exuvia hanging from tree trunks in areas with large periodical cicada populations. Take a careful look at the exuvia, especially at the split, or ecdysial suture, where the adult broke out. Often you'll see what look like white threads sticking out of the split-these are part of the animal's respiratory system. Insect don't have any organs similar to our lungs. Instead, they have holes in the abdomen and thorax that lead to tubes, or trachea, to carry oxygen into the body. The trachea are part of an insect's exoskeleton, even though they are on the inside, so when it sheds, the trachea linings shed as well.

Mass emergence is an important element to the evolutionary success of periodical cicadas. By coming out into the open by the millions, these vulnerable, clumsily flying insects overwhelm their predators. It's not that lots of cicadas don't get eaten-just about any animal that can handle an insect that big will gorge itself on cicadas-but the predators can eat only so many and there will still be millions left. Nate Erwin, curator of the Smithsonian's insect zoo, notes that cicada predators, such as many bird species, realize greater reproductive success in an emergence year because of the additional food. But in subsequent years, that abundance of prey won't be around to sustain the enlarged population of predators and their numbers will fall back to pre-emergence levels well before the end of the next periodical cicada cycle.

The odds that any one cicada will survive long enough to mate and reproduce are pretty good. With such a long time between emergences, there is little likelihood of a predator evolving a similar life cycle to specialize on periodical cicadas. Provisioning their young for such a long larval stage would not be feasible-they would have to evolve some other means of surviving the 17-year stretches between cicada emergences, an unlikely scenario given that specialization on annual cicadas works quite well. Cicada killers wasps, for example, specialize on annual cicadas. These wasps reach maturity in mid- to late-summer to match the emergence of their prey and stock their nest burrows with paralyzed cicadas as food for their larvae.

Not all periodical cicadas emerge according to schedule. Zyla says that these off-schedule individuals, which can appear one to four years before or after the main emergence, don't successfully reproduce. He believes that aberrant emergences might be related to high nymph population densities.

Cicadas and People

I have friends who look upon the emergence of millions of large insects in a short period of time with some dread-especially in a season when most of us want to be outdoors. I don't know how to counsel them other than to tell them get a grip, relax, and enjoy the spectacle.

The most harm a cicada is likely to do is to bump into you. Other than that, they're pretty benign-wild rumors of cicadas flying en masse into people's mouths notwithstanding. Their only objective is to reproduce, not to make life miserable for us. That's not to say that there might not be a few annoyances.

Egg-laying periodical cicadas can cause a problem for ornamental and fruit trees, especially young specimens, but pesticides might not be a very effective response. At least one trial has shown no effect of pesticide use on cicada egg-laying damage. Some experts recommend covering vulnerable trees and shrubs with cheesecloth or netting, but others warn that such netting could be a hazard for birds. A more benign

Continued on page 14

ANS Environmental Education Programs

*The following classes are given by the Audubon Naturalist Society at the Rust Sanctuary in Leesburg, VA.
Please contact Tammy Schwab at tschwab@audubonnaturalist.org or (703) 669-0000
for more information or to register.*

Family Programs **(For beginners of all ages)**

Fees — ANS members: \$5 per child (\$3 for each additional child); nonmembers: \$8 per child (\$5 for each additional child). Please note that additional child discount is for siblings only. Adult participation required; adults do not pay fee unless otherwise noted. All programs require registration, but drop-ins are welcome!

Bug Babies

Saturday, May 29 (1:00 - 2:00 p.m.)

Come out to Rust and explore the fascinating world of bugs. This is the time of year when baby bugs are abundant, and we can use them to learn about life cycles and the many ways bugs have adapted to their environment. We hope to see a baby preying mantis and some lady bug larvae to name a few.

Cicada-bration!

Sunday, June 6 (2:00 - 3:30 p.m.)

They're loud, they have red eyes, and there are millions and millions of them! It's brood 10 of the periodical cicada, and they've been waiting 17 long years underground for this moment. Join us for a celebration of their emergence with a cicada walk, a craft, and your part in an insect orchestra.

Pond Life Up Close

Saturday, June 12 (10:00 - 11:30 a.m.)

Come out to Rust to experience an up-close and personal look at the many critters that live in and use the pond. We will use our nets to catch some animals for up-close study and a spotting scope to view the animals which are shy. This program is for families with children ages 5 and up. Bring your boots.

Summer Family Camp-Out

Friday, July 9 - July 10 (7:30 p.m. - 10:00 a.m.)

Bring your family out to Rust for an evening of nature fun, songs, snacks, and stories around the camp fire. We will learn a little about wilderness survival and go on a night hike. Bring your tent and enjoy our hospitality, then we will wake up with the birds and donuts — great fun for first time campers. ANS members: \$15 per family; nonmembers: \$20 per family.

Firefly Fling

Saturday, July 24 (8:00 - 9:30 p.m.)

Watch the meadows and woods sparkle as fireflies come out for their nighttime rounds. Discover what all that flashing means and how an insect can make its own light.

Mammals by Moonlight

Saturday, August 21 (7:30 - 9:00 p.m.)

Mammals are very secretive and prefer to come out at night. We will go out at the peak of their activity and watch for foxes, bats, flying squirrels, and nighttime's other furry hunters.

Insect Concert

Saturday, September 11 (7:00 - 8:30 p.m.)

When the sun goes down, crickets, grasshoppers, and katydids crank it up. As darkness falls, we'll switch on the blacklight to find out what other bugs are out and about.

Amateur Naturalist Series **(For adults and interested teens)**

Fee \$10.00 for ANS members and \$14.00 for non-members.

Skulls, Bones, and Other Animal Traces

Saturday, May 29 (10:00 a.m. - 12:00 noon)

Animals leave behind many tell tale signs of their living and dying. We will start out in the classroom at Rust and learn how to identify animal skulls and bones. Then we will hike the property to look for other animal signs. Learn about animal traces such as scat, rubbings, chew marks, and many others.

Continued on page 13

ANS Programs...continued from page 12**Basic Plant Identification****Saturday, June 12 (12:00 noon - 2:00 p.m.)**

Learn the basic skills that will help you identify flowers, shrubs, and trees and learn the vocabulary needed to use field guides and keys. Many reference books will be available for comparison, and you will have time to try your skills.

Butterflies: Flying Flowers**Saturday, July 10 (11:00 a.m. - 1:00 p.m.)**

In this class we will visit the Rust pollinator garden and explore different butterfly related topics such as: butterfly identification, habits and habitat, and creating your own butterfly garden.

Special Adult Classes*Fees listed for each class***Introduction to Nature Photography***Instructor: Leon Nawojchik***Thursday, June 10 (7:30 - 9:30 p.m.) and****Saturday, June 12 (1:00 - 3:30 p.m.)**

Join Naturalist Leon Nawojchik and share his experiences with capturing nature photographically. A two-hour Thursday lecture will be followed by an outdoor field session at Rust. Topics covered will include: equipment choices, film vs. digital, review of basic techniques, wildlife close-ups, lighting and filters, landscapes, lens selection, outdoor conditions, controlled subjects, environmental considerations, and composition. (Class is most suitable for teens and adults with basic knowledge and who own a camera with changeable lenses.) *ANS members: \$22; non-members: \$31.*

Introduction to Wetland Plants*Instructor: Antoinette Pepin***Wednesday, June 16 (7:30 – 9:30 p.m.) and****Saturday, June 19 (full-day field trip)**

Knowledge of wetland plants is critical to defining wetlands and understanding how they work as ecosystems. Join us for a Wednesday evening lecture at Rust followed by a Saturday field trip to Loudoun County wetland sites. Our primary focus will be on wetland plant identification, especially sedges, rushes and grasses, and their ecology, adaptations to habitats, and use in wetland identification. *ANS members: \$27; nonmembers: \$38.*
Antoinette Pepin is an environmental scientist and professional wetlands delineator living in Lovettsville.

Introduction to Tree Identification*Instructor: Bill Cour***Thursday, June 24 (7:30 - 9:30 p.m.) and****Saturday, June 26 (full-day field trip)**

Trees are an essential component of our mid-Atlantic ecosystems but identifying them can be baffling. Learn how to use clues trees provide, such as leaves, flowers, or fruits, to break the code. Thursday evening at the Rust Sanctuary, we will cover identification keys, terminology, and equipment for tree identification. On Saturday, we will visit field sites in Loudoun County to practice tree identification in a variety of habitats. *ANS members: \$33; nonmembers: \$46.*
Bill Cour is a naturalist and ANS member living in Loudoun County.

Nature Art Class — Introduction to Watercolor*Instructor: Merri Nelson***Session 1: Saturday, June 5 & 12 (10:00 a.m. - 2:30 p.m.)****Session 2: Wednesday, June 16 & 23 (10:00 a.m. - 2:30 p.m.)**

Watercolor is the perfect medium for nature art and illustration. In this introductory class, students will learn basic techniques, mix colors using a simple palette of six primaries, and try a variety of brushes and papers. A materials list will be sent; some supplies will be available to try and to purchase in class. All levels welcome, including beginners. Please register early as class maximum is 12. *ANS members: \$30 per session; nonmembers: \$42 per session.*
Merri Nelson is an artist, free-lance natural science illustrator, and art instructor. Her clients include the National Park Service, Smithsonian Associates, U.S. Botanic Gardens, and National Wildlife Federation.

Brood X...*continued from page 11*

approach to protecting young trees is to simply knock the cicadas off with water sprayed from a hose. Perhaps the best advice comes from Loudoun County Master Gardener Karin McDowell, who says, "One should just let the cicadas do their thing."

Actually, it's the cicadas who have something to complain about. We have a much bigger and far more adverse effect on them than they could ever have on us. Assuming that as a cicada, you weren't killed outright by the construction, imagine waiting 17 years underground for your short moment in the sun, only to find your path blocked by a parking lot.

Native Americans made good use of periodical cicada emergences in the same way they took advantage of shad runs, waterfowl migration, and other, more seasonal abundances—they ate them. Zyla says the Iroquois prepared cicada pie. Personally, I'm not too sure about turning something that appears only once every 17 years into a meal, if I don't need to. I like my *Magicalcicada* singing in mass choruses and I'll leave their consumption to their non-human predators.

I agree with Erwin, who suggests using the upcoming emergence to learn a little bit about habitat change and cicada distribution—perhaps by conducting a survey in your neighborhood, seeing which yards have cicadas, which don't, and trying to figure out the reasons why. Periodical cicadas present us with no danger and relatively little nuisance. They'll be gone after only a few weeks and their progeny won't emerge for another 17 years. I hope you'll join me in marveling at this display of natural abundance.



Virginia Important Bird Area Program

The Virginia Audubon Council, in cooperation with the Virginia Department of Game and Inland Fisheries and the Virginia Society of Ornithology, sponsors the VA IBA Program. Program goals are to (1) use standardized, science-based criteria to identify sites most important in VA for supporting vulnerable bird species, (2) prioritize the need for conservation actions at these sites through a conservation planning process, and ultimately (3) implement conservation actions at these sites to assure the long-term sustainability of vulnerable bird populations they support.

The cooperation and participation of private landowners and public land managers is a key part in the VA IBA Program. Discretion should be used to respect the rights and authority of landowners and managers when nominating a site as an Important Bird Area, whether public or private. The IBA Program offers potential recognition and assistance for good land stewardship, and should be used to foster trust and cooperation with landowners and managers.

There is no minimum or maximum size for an IBA. Whenever possible, a site should be large enough to encompass most of the needs of the birds for which the site is important. The site should be distinguishable from the surrounding landscape in habitat, character, or ornithological importance. Boundaries commonly used to delimit IBAs include roads, watercourses and other geographic features, and administrative boundaries. An IBA should exist as a protected or potentially protected area, or an area that can be managed for conservation purposes.

As a general rule, a site will qualify as an Important Bird Area if it provides essential habitat for a naturally occurring population of one or more species of birds in the state and it meets one or more of the established state-level criteria. The IBA designation is for sites that are truly important for birds, not necessarily for bird watching.

Nomination Forms and Instructions may be obtained by visiting the VA IBA web site at www.virginia-iba.org. For more information or assistance in any part of the nomination process for identifying IBA's in VA, e-mail coordinator@virginia-iba.org. The VA IBA Coordinator may also be contacted at 804-370-3528.

Member Survey a Success!

by Nicole Hamilton

Thank you to all LWC members who responded to our survey this past winter. We received over 40% response rate and have gained great insights into your interests and preferences. Over the coming months, LWC will be using this data to tailor programs and volunteer opportunities to best meet your interests. Here are the results of the survey.

Regarding communication, 87% told us that our current communication level is “just right,” so while we may try to find some new avenues to reach new members, we will maintain our current outreach to you. Additionally, almost 60% said that you prefer the *Habitat Herald* as your primary means of receiving information from us, followed by 35% preferring email. We will continue to communicate through both vehicles since combined they meet the needs of 95% of our members.

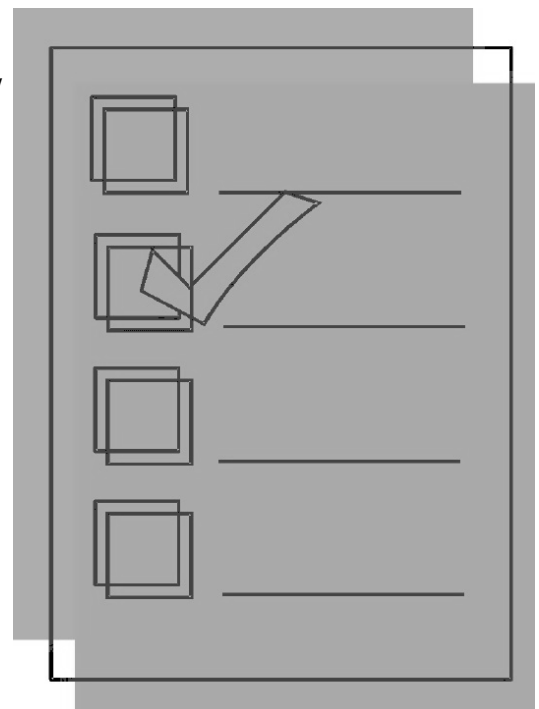
In terms of activities that are of interest, 60-70% would like to participate in more nature walks, bird watching, bird feeding and gardening for wildlife. Over 40% expressed interest in activities such as habitat restoration, followed by almost 35% wanting more environmental education and habitat monitoring.

In terms of nature subjects, members showed interest across the spectrum, but the highest ranked subjects were native plants (53%) and butterflies (40%). Interest in mammals and night sky both were tied in third place, with just over 30% interest. Other subject areas — reptiles, insects, amphibians and bees — trailed close behind, averaging 25% interest.

An area of the survey that we were eager to see was your interest in volunteer opportunities. Over the coming year, LWC hopes to draw in more of you to participate in providing educational programs, helping us “behind the scenes”, speaking out on behalf of wildlife, and engaging in habitat/wildlife monitoring programs. For those of you who indicated interest in volunteering, we will be contacting you as opportunities arise.

We also want to thank those of you who used the comment sections to provide additional ideas for programs and activities. Some of your suggestions for new topics included starting an owl/raptor census or frog/amphibian census, having a program on ferns and their relatives, providing an event centered on bees, engaging in habitat protection programs and endangered species issues, and looking at water resources. Some of the volunteer ideas you recommended included looking at homeschool educational programs, working with girl scouts/boy scouts, and developing some online educational tools.

LWC really appreciates all of your ideas, suggestions and input. Over the coming months, watch for our website to be updated with not only a new look and feel but also more of the educational items you have suggested. Additionally, watch for more programs in the areas that were of top interest to you. Please keep the input coming! We’re always interested in new ideas for programs and activities — especially those in which you will want to be involved!



Loudoun Science Fair Winners



by Darrell Schwalm

On March 11, 2004 two volunteers from LWC with biology education experience served as judges at the 23rd Annual Loudoun County Regional Science Fair held at Stone Bridge High School. The three recipients of the LWC awards are as follows:

1st Place recipient of a cash award of \$250 -- Alex Seebeck, Loudoun Valley High School for his project titled, "A Comparison of Habitat Suitability Index Models for Barred Owls in Loudoun County, VA." The purpose of his experiment was to test existing habitat suitability index models for Barred Owls against known habitats in Loudoun County. His results showed that the models were of only limited value in predicting where Barred Owls are found, and that Barred Owls in Loudoun County have some habitat preferences not previously documented. The LWC judges felt that Alex showed outstanding creativity in extending his previous work with barred owls in an important manner. His study provides data on a wildlife management issue about which the county has a low level of awareness. His study included an impressive design, he presented his findings in a clean manner that showed its application to real world concerns, and he showed a level of knowledge of the issue that is a tribute to a high school student.

2nd Place recipient of a cash award of \$125 -- Dhruva Rajendra, Dominion High School for a project, titled "The Effects of Fertilizers on the Breakdown of Motor Oil in a Freshwater Environment." The purpose of the experiment was to determine the effect of bioremediation on cleaning-up oil spilled into freshwater environments. The experiment results showed that adding fertilizers to oil contaminated water and soil samples was not an effective method of bioremediation by itself. The LWC judges felt that Dhruva's project was based upon a good scientific design, and was kept simple by not introducing too many variables. Using water and sediment from the Potomac River provided a good integration of natural components and controlled laboratory methods. Dhruva showed a good knowledge of the subject, and discussed the experiment in a clear manner.

2nd Place recipient of a cash award of \$125 -- Stephen Spurlock, Loudoun Valley High School, for his project titled, "Chronic Wasting Disease in Virginia." The purpose of the experiment was to test white tail deer killed during hunting season in Northern Virginia for the presence of Chronic Wasting Disease, and to increase public awareness of the potential health hazard associated with this disease. The LWC judges felt Stephen showed good creativity in designing a project that addresses a unique but important subject. He developed data on a wildlife management issue about which the state may be doing less than what is needed, and had a level of concern and awareness not often found in high school students. Stephen also showed a high level of knowledge of the issue, and clearly discussed his project and its application to real world concerns. LWC hopes that Stephen will provide the data to the Virginia Department of Game and Inland Fishery, and meet with the regional wildlife manager. Citizen input does make a difference.

Congratulations !

Blue Ridge Center for Environmental Stewardship BioBlitz

The Blue Ridge Center needs volunteers for a timed, 24-hour biological survey!

The Blue Ridge Center for Environmental Stewardship is seeking volunteers to be involved with BioBlitz on June 4 and June 5, 2004. Beginning at 3 PM on June 4, 2004, scientists, naturalists and volunteers will comb Loudoun County's largest piece of private protected property as part of the first-ever Blue Ridge Center BioBlitz.

WHAT: Blue Ridge Center BioBlitz is a 24-hour biological survey of all living things found on our 900 acres. It is a race against the clock to see how many species can be collected, identified and recorded before the clock runs out. It is an excellent tool for exciting children about science. BioBlitz generates energy and enthusiasm among scientists and citizens alike. It's an opportunity for biologists from many disciplines to get together, share their passions with each other and the public, and work toward a common goal: finding as many critters as possible! It's botanists competing against mycologists, entomologists against mammalogists, ichthyologists against herpetologists!

WHO: Blue Ridge Center BioBlitz is being organized by The Blue Ridge Center for Environmental Stewardship in collaboration with various organizations.

WHERE: 11661 Harpers Ferry Road, Purcellville, VA. We are located about 2 miles from the Potomac River in northwestern Loudoun County, between Short Hill Mountain and the Blue Ridge.

WHEN: **Volunteers should be ready to show up on Thursday, June 3** to help set up tables and chairs, test equipment, organize food, help with parking and work on last minute logistics. During the event, volunteers will register scientists, work in the first aid tent, brew LOTS of coffee, organize trash and recycling, be available to answer questions and give directions, and clean up. **Volunteers will be fed and free camping is available!** Visitors and guests are invited to attend on Saturday, June 5 to interact with scientists and help count critters.

WHY: The goal of Blue Ridge Center BioBlitz is to raise awareness of the astonishing number and variety of living things found on planet earth and how they all play an important role in the healthy functioning of an ecosystem.

If you are interested in helping out with this exciting event, please call Cassie Cohn. She can be reached at 540-668-7640 or at ccohn@conservationfilm.org

The Blue Ridge Center for Environmental Stewardship is a nonprofit environmental learning center, community farm and heritage area. The Blue Ridge Center's 900 acres are home to deep woods and streams, wildflower meadows, historic farmsteads, wildlife and farm animals. The public is invited to visit the pick-your-own flower garden, attend public events, help on a summertime archaeological dig, and walk the 12 miles of trails. Volunteers are needed to help in the garden and adopt trails. Education and youth groups are welcome. For information, visit www.blueridgecenter.org or call 540-668-7640.

Darrell Schwalm Named 2004 Outstanding Environmental Volunteer

Darrell Schwalm has dedicated himself to work on behalf of Loudoun County citizens to protect the water quality of the creeks and streams in our communities. As an active member of the Loudoun Wildlife Conservancy and Loudoun Watershed Watch, Darrell tirelessly volunteers his time and energy, and provides expertise in water testing and in making citizens more aware of water quality in our community. He has contributed in numerous areas with a fervent commitment to the preservation and restoration of streams in Loudoun.

He has led volunteer and citizen involvement efforts, made presentations on the State of the Streams to elected officials, spearheaded a two-day workshop with attendees from around the DC area, and provided technical expertise and information about stream monitoring. He has received the Loudoun Soil and Water Conservation District Award and the Outstanding Citizen Activist Award by Virginia Citizens for Water Quality.

Congratulations !

Darrell Schwalm

Loudoun County's Outstanding Environmental Volunteer

LWC Needs YOU!

Members of the Loudoun Wildlife Conservancy can be proud of all we have accomplished since the organization was founded in 1995. With this solid foundation, the LWC Board is committed to increasing our membership and our impact on preserving and expanding wildlife habitat in the county. Rapidly growing development pressures demand nothing less.

To this end, the Board is seeking volunteers to help us in two critical areas:

1. We are blessed with a membership that is highly talented and committed. We need volunteers who will help us design and implement initiatives to better identify our members' talents and put them to good use in all of our activities. If you would like to discuss this opportunity, please contact LWC President Tom Bjorkman at (540) 882-3960 or TNBj@megapipe.net.
2. Our Stream Monitoring Program has been one of our most rewarding and successful activities. We are looking for volunteers to help re-energize and expand this program. If you would like to discuss this opportunity, please contact Phil Daley at 540-338-6528 or phidaley@aol.com.

The following Board/Committee Chair positions remain unfilled:

Children's Programs
Membership

Programs (Assistant / Co-chair)
Stream Monitoring (Assistant/Co-chair)

YES, I want to become an LWC Member!

Membership Benefits Include:

- * Subscription to *Habitat Herald*
- * Volunteer Opportunities
- * Classes and Workshops
- * Regular Membership Meetings and Programs

Mail this form along with your payment to:

Loudoun Wildlife Conservancy
PO Box 2088
Purcellville, VA 20134-2088

Name: _____

Street: _____

City, ST, Zip: _____

Phone: (H) _____ (W) _____ E-mail _____

Please indicate your membership level:

(*membership runs from January 1- December 31)

☐ \$10 Student*

☐ \$30 Family*

☐ \$200 Individual Lifetime

☐ \$20 Individual*

☐ \$75 Corporate*

☐ \$300 Family Lifetime

☐ Additional Donation \$ _____

☐ Renewing Member

☐ New Member

Programs at a Glance

(see pages 5-8 and 12-13 for complete descriptions)

May

- 22 Birding the Blue Ridge Center (L)
- 29 Bug Babies (A)
- 29 Skulls, Bones and Other Animal Traces (A)

June

- 5 National Trails Day (L)
- 5 Nature Art Class—1 (A)
- 6 Cicada-bration! (A)
- 10 Introduction to Nature Photography (A)
- 12 Birding Banshee (L)
- 12 Pond Life Up Close (A)
- 12 Introduction to Nature Photography (A)
- 12 Nature Art Class—1 (A)
- 13 Basic Plant Identification (A)
- 13 Macro-Invertebrate ID I (W)
- 16 Introduction to Wetland Plants (A)
- 16 Nature Art Class—2 (A)
- 19 Butterflies and Dragonflies (L)
- 19 Introduction to Wetland Plants (A)
- 19 Sunday in the Preserve (L)
- 19 Protocol Practicum (W)
- 23 Nature Art Class—2 (A)
- 24 Introduction to Tree Identification (A)
- 26 Birding the Blue Ridge Center (L)
- 26 Introduction to Tree Identification (A)

July

- 9 Summer Family Camp-Out (A)
- 10 Birding Banshee (L)
- 10 Butterflies: Flying Flowers (A)
- 17 Butterflies and Dragonflies (L)
- 18 Macro-Invertebrate ID I (W)
- 24 Airlie Butterfly Count (L)
- 24 Firefly Fling (A)

August

- 7 Annual Loudoun Butterfly Count (L)
- 14 Birding Banshee (L)
- 21 Butterflies and Dragonflies (L)
- 21 Mammals by Moonlight (A)
- 28 Birding the Blue Ridge Center (L)

September

- 4 Birds, Butterflies and Wildflowers (L)
- 11 Birding Banshee (L)
- 11 Insect Concert (A)

A = ANS L = LWC W = Water Quality

Loudoun Wildlife Conservancy
P.O. Box 2088
Purcellville, VA 20134-2088

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