

# Watershed Observer



NEWSLETTER OF THE AMERICAN CHESTNUT LAND TRUST - VOLUME 27 NO. 3, SUMMER 2013

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## COMING UP ON THE CALENDAR

### AUGUST

- 3 **GUIDED CANOE TRIP** (11:30 – 2:30 P.M.) (SUNDAY RAIN DATE)
- 24 **WALK ALONG THE BAY MEMBERSHIP EVENT**

### SEPTEMBER

- 7 **HOLLY ARBORETUM WORK DAY AT WARRIOR'S REST** (9:00 A.M. – 12:00 P.M.)
- 7 **GUIDED CANOE TRIP** (3:30 P.M. – 6:30 P.M.) (SUNDAY RAIN DATE)

SEE MORE OF THE 2013 CALENDAR ON PAGE 4 OR ON THE WEB.

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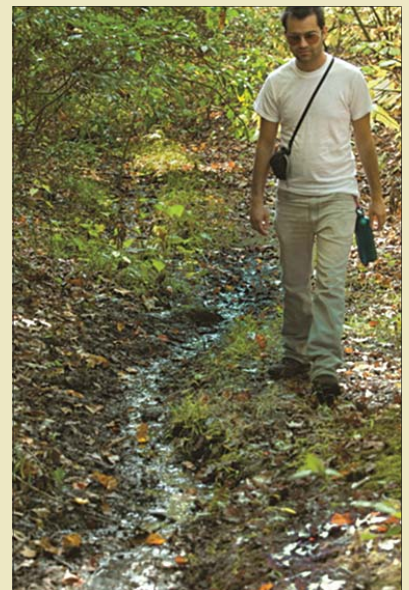
## Science in the Watershed

### Many streams run through it: How ACLT's headwater streams represent the pulse of human activity and conservation in Calvert County

Streams shape the environment in which we live and provide a variety of benefits to society. Most visitors to ACLT have likely noticed the abundance of streams that crisscross every forest trail. Though they are small, research taking place at ACLT is uncovering the important role that these streams play in restoring the Chesapeake Bay, and in our environment as a whole. Spread over 3,000 acres, most of the land owned and managed by ACLT falls within the watershed of a single stream known as Parkers Creek. A watershed is the area of land in which all water drains to a common point. So when we say that ACLT is part of the Parkers Creek watershed, this means that a drop of water landing on most any part of ACLT property will eventually flow to the mouth of Parkers Creek, and from there into the Chesapeake Bay. Each drop has to travel quite a distance before ever reaching the Bay. This water must first enter the stream 'network' through one of many small streams called 'headwater streams' before joining larger sections of the stream which then go on to form big streams we know more commonly as rivers.

From an ecological perspective, these headwater streams play a critical role in our ecosystem. Headwater streams serve as the interface between the landscapes on which we live and the rivers on which we depend. In this way, one can think of stream and river networks as the earth's circulatory system, transporting materials from the land to the ocean. Streams are more than just water conduits. Research tells us that they are responsible for many functions including pollutant removal, water purification, and providing vital habitat for animals such as fish and amphibians. For these reasons, streams are studied and monitored to understand the health of our environment much like blood tests are used to assess our personal health.

Headwater streams—the smallest in a river network—lie close to a stream's origin; in Calvert County this is usually in the form of a small spring known as a 'seep'. Headwater channels may be quite small, but scientists are continuing to uncover more about their importance to the health of the entire ecosystem. One reason why headwater streams are so important is simply a matter of abundance. According to work published by Luna Leopold (former director of the United States Geological Survey and son of famous naturalist and author Aldo Leopold), there are almost 2.4



A small headwater stream, near its source, demonstrates the small beginnings of river networks.

(CONTINUED ON PAGE 9)



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Editors: Ellen and David Farr

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## From the President's Desk

*"When Summer gathers up her robes of glory  
And, like a dream, she glides away." (Sarah Helen Whitman)*

As the dog days of August hang heavily upon us, we are aware of their thickened presence and simultaneously the sense that their 'robes are being gathered' for an imminent departure. I hope your summer has given you and your families many cherished moments and maybe a few more before she is completely gone.

Lurking behind summer is fall's energy creating expectations and activities for young and old alike. Whether it is returning to work or starting a new year of school, its demands can be both exciting and exacting.

Here at ACLT, the fall calendar is also full with guided hikes on our trails and canoe tours up Parkers Creek, a volunteer appreciation dinner and, of course, our annual dinner and auction which will be held on November 2nd. You can be assured that staff and volunteers are well underway in their preparations for these events. You will be hearing more on all of them soon.

Today I write to ask, before we launch forward into the myriad of activities of the next few months, that we take one of these last lazy days of summer, draw a deep breath of that warm air and reflect on some of the memorable moments of ACLT to date in 2013.

For example, we opened the Prince Frederick to the Bay Overlook Trail on Earth Day. This is at least a 4.5 mile hike that takes you from the St. John Vianney Family Life Center parking lot in Prince Frederick to our existing trails on the north side of Parkers Creek and to the bay overlook. Finishing touches are still underway by staff and a host of volunteers, but nothing that would disturb a hike you could take today.

The Double Oak barn was completed in June by hardworking and generous volunteers and our barn builder. The structure's design is impressive in that it is both functional and inviting. It will serve as the trailhead for our northern trails as well as a handy place to store much of our heavy equipment, especially for the CSA farm.

Speaking of the CSA, we are fully subscribed again with 24 paid shares and 5 work shares. Jeff Klapper and his team have been providing hearty and tasty baskets of vegetables each week despite some challenging weather conditions.

A totally new venture that ACLT has been instrumental in launching was The Maryland Master Naturalist program in Calvert County. ACLT hosted this effort in partnership with Battle Creek Nature Education Society and Cove Point Natural Heritage Trust. The program ran from February through May providing 60 hours of training and experience to 17 participants. ACLT land manager Steven, among others, played a key role in making the program a success by all accounts.

We owe Karen a great deal of gratitude for all the effort she has put into helping ACLT on its way to becoming a nationally accredited land trust. This is a tedious and demanding process of compiling and organizing endless amounts of information about every aspect of ACLT and then submitting it to the Land Trust Accreditation Commission. We are currently under review but are hopeful we will be reaching the elite status that only a relatively small group of land trusts have achieved before us.

Lastly, we are very close to adding 36 more acres of preserved land to the ACLT portfolio. We have a signed contract on the Harrod property and hope to go to settlement on September 1. Again, thanks to Karen for driving the deal to closure and the many members who have given and or committed substantial amounts of money to make this purchase possible.

As you can see it's been a good year and it's just a little more than half over. While all of these accomplishments are worth noting, we must also recognize the hard, important but less visible work that Karen, Steven, then Kady and now Tricia, along with dozens of volunteers do every day. None of this would be possible without all their efforts. Much gratitude is owed to all of them.

Enjoy the rest of the summer!

Pat Griffin, President

# Around ACLT

## Mark your calendar – ACLT Annual Dinner & Auction: Saturday, November 2, 2013

The ACLT Dinner & Auction Committee invites you, your guests and friends to our 18<sup>th</sup> Annual fundraising event on Saturday, November 2<sup>nd</sup> at St. John Vianney in Prince Frederick, MD.

Since its inception over twenty-five years ago the ACLT has guided and grown the organization and now manages over 3,000 preserved acres in Calvert County. The responsibility of maintaining and protecting the land is not easy and if it were not for the volunteers, working hundreds of hours to keep the 15 miles of publicly accessible hiking trails open, there might not be trails, the wonderful overlook, the barns, or the Community Supported Agriculture program. And of course, this would not be possible without our members' support.

This year the committee recalled the comments of last year and listened to our members. We are pleased to announce that we're doing it again; a great seasonal dinner followed by some wonderful local desserts. We'll have a vegetarian option and we can't forget that there will be plenty of beverages to choose.

And like last year and so many prior years, we'll have the grand silent (and live) auction. This is the largest fundraising event of the ACLT and no one can deny that the auction last year was one of best in memory. This year will be even better. You will be impressed by both the live and silent auction items. We will again have pieces of original art, dinners at local fine restaurants, special services, private dinner parties, vacation rentals, fishing trips (perhaps a couple plane tickets, too) and so much more. Please be prepared to "bid high, bid often!" Live music will be performed throughout the evening. Look for items and their descriptions to be posted on the ACLT website so you can be prepared (<http://acltweb.org/Events/Auction/index.cfm>).

New this year is an opportunity to purchase a premium table for eight. The premium table price will include a portion that is tax deductible. Your donation will be used to support restoration of one of the barns located on the Goldstein Bay Farm. Premium donors will be able to choose the location of their table and be recognized in the program and at the event. This opportunity is limited to the first five people who return their reservation card or purchase their tickets on line once the invitations are mailed.

We look forward to seeing you on November 2<sup>nd</sup>—mark your calendar. More information regarding how you may donate an auction item or become an Auction "Angel" is included in the "Save the Date" insert to your newsletter.

Steve Kullen  
2013 Dinner / Auction Chair

## New Community Relations Coordinator

Hello! I'd like to introduce myself to the American Chestnut Land Trust membership. My name is Tricia Reabuto and I am the new Community Relations Coordinator. I just started in late June and I am still learning the ropes. Before coming to ACLT I spent five years working at St. Mary's College of Maryland as the Coordinator of Orientation and Service and then as the Assistant Director of Admissions. In both roles, I was responsible for a lot of event planning and volunteer coordination, which is part of the reason I was interested in this position. I moved to St. Mary's County a little over five years ago and have fallen in love with the nature and uniqueness of Southern Maryland.



I call Cape Cod, Massachusetts home but spent the earlier years of my life in Upstate New York. I hold a Bachelor of Arts in Communication Studies and a Minor in Business from Bridgewater State in Bridgewater, Massachusetts and a Master of Science in College Student Affairs with a concentration in Conflict Analysis and Resolution from Nova Southeastern in Fort Lauderdale, Florida. In my spare time I enjoy experimenting with new dishes in the kitchen, going to the beach, reading and running; I actually will be running my third half-marathon in January 2014 at Walt Disney World.

I was attracted to working for the ACLT because I wanted to be involved with an organization that was doing something for the community. I believe that the land conservation and preservation of the area, as well as access to the land is very important. I want to help in getting the local community aware and more involved in taking care of this beautiful place that happens to be right in their backyard! I hope in the near future I can hike more of the trails, paddle out on one of our canoe trips and organize a trail race on property. If you would like to contact me, email [volunteer@acltweb.org](mailto:volunteer@acltweb.org) or call 410-414-3400.

## ACLT American Chestnut Pollination Endeavor

So, why would some knuckleheads try to angle a helium balloon through the forest canopy at ACLT? Well, in case you are unaware, chestnut trees are in flower this time of year. As we all know, the ACLT namesake tree succumbed to disease and wind throw a few years ago. Fortunately, the American chestnut is a prolific stump-sprouter and has some impressive offspring. These stump sprouts were flowering a few weeks ago, as were a handful of other 100% American chestnuts on our managed properties. Considering that most 100% American chestnuts will likely be killed by the chestnut blight fungus within a few years, the idea that we even have living chestnuts that reach reproductive maturity is extremely rare. So, this year a few motivated volunteers and the ACLT Land Manager decided to add some genetic diversity to the gene pool.

In order to accomplish this, the American Chestnut Foundation (ACF) provided us with 100% pure American chestnut pollen from a blight-resistant parent tree at ACF's Sugarloaf Orchard. This pollen was deposited into several helium balloons. The balloons were then tied to a fishing line and directed up into the canopy of ACLT's chestnuts. When the balloon was positioned above the trees' flowers (which took some effort given wind conditions and the presence of several holly trees), the balloons were shot—exploding the pollen onto the awaiting female flowers. Hopefully, a few of the female flowers will be exposed to this new male pollen. Ideally, the offspring of two different blight-resistant parent trees will yield offspring that are even more resistant to the chestnut blight fungus. If all goes according to plan, the pollinated females will form the characteristic chestnut burrs, which will be collected in the fall. With any luck, the offspring will sprout and be nurtured in one of ACF's orchards and grow to maturity where they can pass on resistant genetics to future American chestnuts.

Of course ACLT could not get out of this collaborative effort without our own unique contribution. So, before the balloon was sent up and the pollen rained, some male flowers were clipped and collected from the sprouts of ACLT's namesake tree. This collected pollen will be used to hand-pollinate female flowers in ACF's orchard in Germantown, Maryland. All in all, ACLT is proud to be able to contribute to the restoration of the American chestnut. This really is an exciting chapter in the evolution of this land trust.

Steven Gaines  
ACLT Land Manager



Balloon containing the pollen of blight-resistant American chestnuts. Pictured balloon was shot, dispersing male pollen onto female flowers.

## American Chestnut Land Trust 2013 Calendar of Events

### August

- 3 Guided Canoe Trip (11:30 – 2:30 p.m.) (*Sunday Rain Date*)
- 24 Walk Along the Bay Membership Event

### September

- 7 Holly Arboretum Work Day at Warrior's Rest (9:00 a.m. – 12:00 p.m.)
- 7 Guided Canoe Trip (3:30 p.m. – 6:30 p.m.) (*Sunday Rain Date*)
- 21 Guided Canoe Trip (3:30 p.m. – 6:30 p.m.) (*Sunday Rain Date*)
- 28 Vine Vindicator Work Day/Training (9:00 a.m. – 2:00 p.m.)

### October

- 5 Guided Canoe Trip (2:00 p.m. – 5:00 p.m.) (*Sunday Rain Date*)
- 12-13 Patuxent River Appreciation Days (10:00 a.m. – 5:00 p.m.)
- 19 Vine Vindicator Work Day (9:00 a.m. – 12:00 p.m.)
- 19 Guided Canoe Trip (2:00 p.m. – 5:00 p.m.) (*Sunday Rain Date*)
- 27 Fall Foliage Hike: PF2Bay Trail (1:00 p.m. – 4:00 p.m.)

### November

- 2 **Silent Auction & Dinner**

### December

- 1 Arboretum Work Day at Warrior's Rest (1:00 p.m. – 4:00 p.m.)
- 6 Greens Sale Prep & Wreath-making Workshop (10:00 a.m. – 3:00 p.m.)
- 7 Greens Sale & Beach Hayride (11:00 a.m. – 2:00 p.m.)

**Walk Along the Bay**  
**Saturday, August 24th**  
**10am-12pm**

**For  
New  
Members**

**Join us for an educational tour**  
Learn more &  
sign up by visiting:  
<http://acltweb.org/calendar/calpage.cfm>

## Harrod Property Update

ACLT has a contract with Mr. & Mrs. Harrod to purchase their 36-acre wooded property near the intersection of Parkers Creek Road and Scientists Cliffs Road. The tract has 700 feet of frontage on Scientists Cliffs Road and 550 feet of frontage on Parkers Creek Road—as marked by lime green ribbons.

The cost of acquiring the Harrod property will be approximately \$323,500. ACLT has submitted an application to the Board of County Commissioners to borrow 80% of the total acquisition cost, or \$252,800, from the Calvert County Revolving Loan Fund for Open Space. Our request will be considered by the County Commissioners on August 20, 2013. If the county loan is approved, ACLT has agreed to provide the remaining \$70,700, at settlement, from its Land Acquisition Fund for the 20% down payment and settlement costs.

In order to repay the county loan, we requested your financial support for the purchase of the Harrod Property

in the Spring newsletter. The response has been excellent! Thus far, the ACLT supporters listed below have pledged to donate approximately \$143,000 towards this purchase over the next five years. This, combined with funds designated by the ACLT Board of Directors from Ralph Dwan's bequest, should be sufficient to repay the majority of the county loan within five years.

Additional funds are still needed, however, to reimburse ACLT's Land Acquisition Fund for the down payment in order that funds will remain available for future purchases, so please keep those pledges coming! You can download the pledge form from the home page of ACLT's website, <http://acltweb.org>.

The Board of Directors and Staff of the American Chestnut Land Trust wish to acknowledge the following supporters for their donations received to date and for their generous five-year pledges to support the Harrod Property acquisition:

### American Chestnut Pledge Level (\$25,000 and above)

Bequest of Ralph H. Dwan, Jr. (as designated  
by the Board for the Harrod Acquisition)  
Dr. & Mrs. David Farr

### Bald Cypress Pledge Level (\$10,000 to \$24,999)

RADM & Mrs. James Greene, Jr. USN (Ret.)

### White Oak Pledge Level (\$5,000 to \$9,999)

Mr. & Mrs. Paul Berry  
Mrs. Mary Dwan  
Mr. & Mrs. Philip Fleming  
Mr. & Mrs. Patrick Griffin  
Mr. & Mrs. Robert Jaeger  
Mr. & Mrs. Gary Loew  
Mr. Bruce McDonald  
Mr. & Mrs. Franklin Nutter  
Dr. & Mrs. Austin Platt  
Mr. & Mrs. Robert Ruhling  
Col. Caroline VanMason, USA (Ret)  
Dr. & Mrs. Peter Vogt

### Mockernut Hickory Pledge Level (\$1,000 to \$4,999)

Ms. Harriet Yaffe & Mr. Jerry Adams  
Dr. Christine & Col. Dan Boesz  
Mr. & Mrs. David Bonior  
Mr. & Mrs. Greg Bowen  
Dr. & Mrs. Walter Boynton  
Mr. & Mrs. Ty Clark  
Drs. Judith & Donald Dahmann  
Ms. Kathy Daniel  
Mr. & Mrs. Paul Dennett  
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Ms. Denise Breitburg & Mr. Mark Smith  
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Mr. and Mrs. Guy Tomassoni  
Ms. Leslie Starr & Mr. Joseph Turner  
Dr. & Mrs. Volker Vogt  
Mr. & Mrs. Jonathan Warner

### Flowering Dogwood Pledge Level (up to \$999)

Mr. & Mrs. Frank Caldwell, Jr.  
Mr. & Mrs. Edwin Ford  
Mrs. Magda Freeman  
Mr. & Mrs. Lawrence Gates  
Mr. & Mrs. Roger Lesser  
Mr. J. Borrell, Jr. & Ms. Joanne Longhill  
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# Land Manager's Corner

## Nematodes: A Slight Introduction

Simple building blocks are often overlooked when thinking in terms of ecosystem management, let alone Watershed-Wide Ecosystem Management. Often times, microscopic organisms such as bacteria, fungi, and viruses are never discussed until there is a serious problem. This season's article will focus on the most numerous multi-cellular organisms on the planet—the nematode. I bring this topic up because there is always plenty of conversation among ACLT folks about biodiversity, invasive species, and biological control. Of course this article will hardly skim the surface on the science, but really nematodes are just as fascinating as birds, trees, and mammals—one just has to think on a much smaller scale.

So, here are a few interesting details about nematodes. These critters are absolutely everywhere and I mean everywhere—in fact they are about the only multi-cellular life form to occupy every environment on the planet, including polar icecaps, deserts, deep ocean trenches and your back yard. There are over 28,000 species of nematode that we are aware of, and scientists estimate at least 1 million different species within the phylum Nemata (Hugot, 2003). The presence of nematodes is astounding, often exceeding a million individuals per square meter and accounting for about 80% of all individual animals on earth (Lampshead, 1993). Furthermore, they are found on most surfaces, from yard soil and tree bark to the guts of humans, insects, and livestock. Nonetheless, nematodes are very sensitive to changes in the environment, with temperature, pH, and water availability being major factors.

So what are they? Nematodes are actually transparent round worms which molt, having 4 different larval stages and an adult stage. Although they appear to look like regular worms, the fact that they shed their cuticle places them in the same family as insects and arachnids. One of the more remarkable facts about nematodes is their life expectancy. Most nematodes live an average of 20 days (Lampshead, 1993), but really they live until they have finished their life cycle. This means that if they are interrupted somewhere in their development they will metabolically shut down until they get the opportunity to finish. This life state is called cryptobiosis, a state in which an organism that has been exposed to an unfavorable environmental condition (freezing, desiccation, depleted oxygen, etc.) will physiologically shut down—pausing all development, reproduction, or repair until optimal conditions return. Theoretically, nematodes can live indefinitely, shutting down in harsh conditions and getting back to business when things get back to normal. Sizes and shapes vary considerably, with the average sizes about 1 mm. The largest nematode

yet encountered was over 7 meters long, and is a known parasite of the placenta of the sperm whale (Gubanov, 1951). Many species are pathogenic to plants and animals. Ever heard of elephantitis? That is caused by a nematode. However, most species are fairly neutral as far as human interests go. There are, of course, exceptions which we will discuss shortly. Most nematodes feed on various bacteria, algae, fungus, plants, living/dead tissue, in addition to other nematodes. Most species are dioicous, with male and female individuals. The body of the worm is described as a “tube within a tube” with openings at both ends, complete with modest digestive, excretory, and nervous systems. As far as complexity goes, nematodes are rather simple organisms; extremely efficient, but simple. As science would have it, a nematode was the first animal to have its DNA chain completely decrypted, allowing for in-depth genetic analysis. In short, between their copious dietary menus, plethora of reproductive practices, and acute sensitivity to environmental conditions, nematodes are the absolute pinnacle of diversity within a species.

There are several species of nematode that are parasitic and harmful to plants, animals, and humans. Actually, over half of the 28,000 known species are described as parasitic on some other organism (Lampshead, 1993). As far as human health goes, the most common diseases include trichinosis, elephantitis, and ascariasis. All in all there are about 60 species of roundworm that have been found to be parasites on humans. Most of which can be avoided by eating meat that is well cooked (especially pork) and being extra careful about drinking water and mosquitos when traveling abroad. Below the soil is a whole different ball game. Infestations of nematodes on crops can destroy whole rotations. Among some of the more notorious crop predators are the root-knot nematode, pine-wood nematode, cotton nematode, and sugar beet nematode. Furthermore, nematodes can vector viral diseases that can negatively impact plantations as well. Although nematodes are often known for feeding on plant root systems, they can feed on all parts of the plant including stems, leaves, flowers and seeds. Nematodes are able to inflict enormous injury very quickly due to overwhelming population numbers, extremely high reproductive potentials, and multiple generations per year (depending on environment). Impact to crop plants often takes place in the form of stunted growth, reduced yield, and reduced shoot development. Once established on a site nematodes are difficult to eradicate, often requiring nematicides. Of course it doesn't help that nematodes are easily dispersed by flooding, wind, and an uncanny ability to hitchhike on farm equipment or insects and birds. To top things off, parasitic nematodes often have a variety of plant hosts that can sustain them.

And, of course, I cannot talk about nematodes without bringing up at least one personal favorite. ACLT folk are well accustomed to talking about the endless labors associ-

ated with invasive species. Nature has already worked out the checks and balances of resource relationships found in native areas. This brings significant hardship when an exotic species enters the equation that doesn't play by the same set of rules. This has been evident with the arrival of the exotic Chestnut Blight from Asia in the early 1900s and the Emerald Ash Borer (also from Asia) in 2002. But what we often fail to realize is that the US is just as guilty of spreading unwanted organisms to other countries. The Pinewood Nematode is a North American native that has spread to Asia and Europe and has caused immense mortality in conifer stands. This nematode is thought to have arrived in foreign lands via infected nursery stock and products and damages plants by feeding on the vascular system of the twigs, stems, and roots of conifers—mostly pine trees but also cedar, larch, and spruce. And although the PWN does kill trees on this continent, it has much less significance than the damage incurred in other areas of the globe. For example, conifers in Japan have been essentially decimated by this little roundworm, with timber losses of 26 million cubic meters reported since World War II (Dwinell, 2004).



Figure 1: Microscope enhanced photograph of the Pinewood Nematode. Courtesy of Dale Begdahl, Professor of Forest Pathology, University of Vermont.

Just as nematodes can be detrimental to some crops and timber products, they can also be incredibly beneficial in land management. As management practices shift from the use of chemicals towards greener alternatives, biological control measures are becoming regular options. There are several species of nematodes that are used extensively in agricultural endeavors to alleviate infestations of insects, spiders, leeches, annelids, mollusks, and crustaceans. In fact, researchers representing more than forty countries are working to develop nematodes as biological insecticides. Furthermore, nematodes have been marketed on every continent except Antarctica for control of insect pests in high-value horticulture, agriculture, and home and garden niche markets (Shapiro-Ilan, 2002). One primary benefit of using specialized nematodes as biological control is that the pests are specifically targeted, leaving little chance for damages to non-target crops. Also, site applications are

relatively simple in that all applicators have to do is mix with water and spray on a site. On the down side, applications are limited by environmental constraints as well as production constraints. Nematodes are exceptionally difficult to mass produce, not to mention the fact that conditions have to be ideal to support and sustain populations of a specialized nematode consuming one specific pest. However, the research is thriving and agricultural scientists are hopeful.

As I mentioned earlier, this article only scratches the surface on this topic. It is one thing to mention some facts to pique interest, it is an entirely different matter to collect some soil and observe these critters under a microscope. One can literally take a single shovelful of soil and extract thousands of nematodes. There is remarkable potential within these organisms, not only as a biological control from an agricultural standpoint, but also from a human health perspective. Science has discovered several medical uses for nematodes in dealing with some human digestive afflictions such as ulcerative colitis and Crohn's disease (Whelan, 2012). There has also been promising research suggesting that the ingestion of specific nematodes can alleviate some of the more destructive symptoms of autism (Richards, 2012). It is interesting to think that we have mapped the genome for one of the most abundant organisms on the planet; one that has been around for an estimated 1 billion years, yet we are just now getting around to understanding them. About the only thing that is certain is that they will still be here, doing the exact same thing they always have been doing long after we are gone.

Steven Gaines  
Land Manager, ACLT

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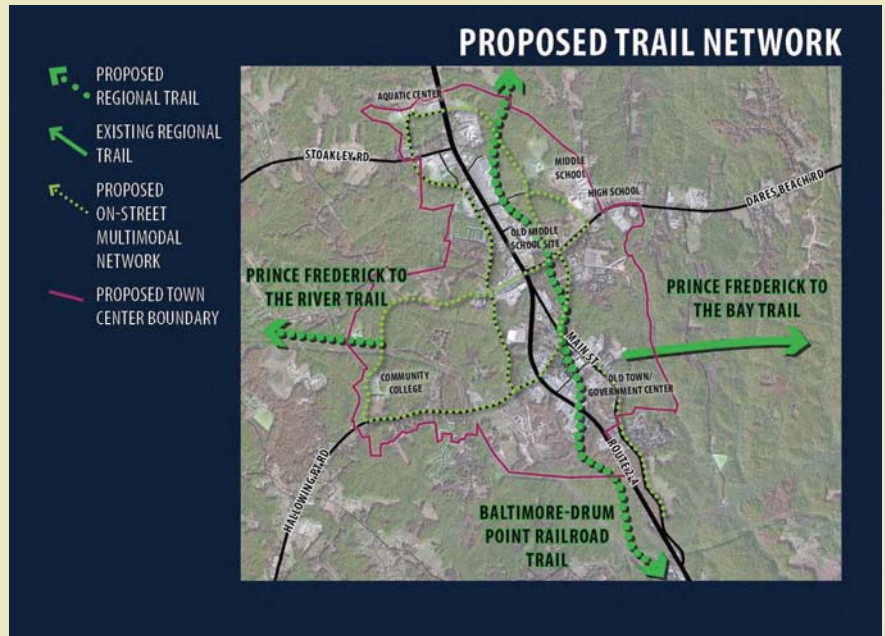
# Community News: Prince Frederick Charette

Calvert County has not held a planning charette for many years and it was great to once again see citizens share their thoughts, ideas and visions in a charette regarding the future of the Prince Frederick Town Center. The Calvert County Department of Community Planning and Building retained The Lawrence Group to lead the six-day design process to update the 24-year old master plan for Prince Frederick that culminated in a final presentation on June 18<sup>th</sup>. Sessions were held on topics including the environment, recreation, retail and commercial development, transportation, and housing, among others.

There was agreement among participants during the opening session that Prince Frederick doesn't really have a central downtown, or "heart," at the present time. As the week progressed, recommendations coalesced around the existence of a number of smaller "activity centers" that could be grouped into three main districts including the Hospital District (to include the hospital, aquatic center, and library), the Cultural District (to include the Armory, the middle school and the high school), and the Civic District (to include the historic Main Street area centered on the Courthouse and other government buildings). There was also general agreement that Route 2/4 running north/south through the middle of the town center is a challenge to make both attractive and safely crossable by pedestrians in order to create linkages between the various areas.

It was also recommended that the town should have a system of bicycle paths and trails that both connect areas within the town and connect the town to the rural land surrounding it and to the river and the bay. ACLT's Prince Frederick to the Bay Overlook Trail was cited as an example, with the recommendation that the county also consider a Prince Frederick to the River Trail through the Battle Creek watershed. Portions of the former Baltimore-Drum Point Railroad right-of-way running north/south through the town center could also be redeveloped to create walking or bicycle paths.

Of greatest concern to ACLT, with respect to protection of Parkers Creek, is the current "forest district" along the southernmost town center boundary to the west of Route 2/4. Sullivans Branch flows south from its headwaters near Route 231 and joins the main stem of Parkers Creek in the forest district. The streams here are



Proposed Trail Network prepared by the Lawrence Group and presented during the closing session of the Prince Frederick Charette.



Proposed changes to the Prince Frederick Town Center boundary prepared by the Lawrence Group and presented during the closing session of the Prince Frederick Charette.



surrounded by steep slopes and would be difficult to develop without impacting water quality in Parkers Creek. The forest district was originally included in the town center in order to be able to connect to a small commercial district that already existed south of town.

A consensus emerged during the charette, however, that it would be preferable to expand the town to the west to connect with the college, rather than to maintain a long, narrow town center running from north to south along Route 2/4, further aggravating the challenges presented by the highway through the center of the town. The charette resulted in a recommendation that a portion of the forest district, shown in green on the “Proposed Town Center Boundary” map (see facing page), be removed from the town center.

At the same time, existing transportation plans call for the Loop Road to continue south from Route 231 through the forest district. It was pointed out that, given the topography of the area, this would be a very long and expensive section of road to construct. It was, therefore, recommended that a shorter connection to Route 2/4 be located further north. Changes were also suggested to the Loop Road in the Hospital District to shorten the route and provide a more economical and environmentally sustainable road plan.

If you are interested in seeing the entire closing presentation for the Charette, you can access it on the Calvert County website at <http://www.co.cal.md.us/DocumentCenter/View/3799>. Much remains to be done and there will be additional opportunities for citizen input before any of the recommendations prepared by the Lawrence Group are officially considered by the Board of County Commissioners, but we commend the county for providing an opportunity to explore a new vision for the Prince Frederick Town Center.

Karen H. Edgecombe  
Executive Director

(CONTINUED FROM PAGE 1)

million miles of headwater streams in the United States alone. This accounts for more than 73 percent of all stream and river length in the country. By contrast, the mighty Mississippi River is only about 2,320 miles long. Clearly, although a single stream may have a small individual footprint, the cumulative impact of headwater streams can be immense.

### **Life in Headwater Streams**

Headwater streams are very productive ecosystems, home to a diverse set of aquatic organisms. The great number of headwater streams serves as a sort of environmental insurance policy, helping to maintain this diversity. If a stream is disturbed, from either natural or human-induced causes, a community of organisms may become lost in one stream. If other headwater streams nearby remain intact, organisms living in those streams are available to repopulate the impacted stream. Many of these stream organisms are known as macroinvertebrates, which are invertebrates – mostly insects – that can be seen with the naked eye. A majority of macroinvertebrates are ‘immature,’ spending anywhere from months to years growing in streams before emerging from the water as adults. While this may conjure up images of mosquito breeding grounds, flowing waters are not ideal homes for immature mosquitos, which live primarily in stagnant pools of water. Instead, insects living in headwater streams include a diverse array of organisms, many of which are beneficial. These include the many species of dragonflies and damselflies that we often see flying through ACLT. Don’t be fooled; these eye-catching, acrobatic insects are voracious predators, consuming many of the pesky insects that would otherwise be biting us!

Insects living in headwater streams are also a great food source for the many animals that live in and around ACLT streams. One important example is amphibians, mainly salamanders and frogs, who rely on macroinvertebrates as their primary source of food. The small streams at ACLT are often inaccessible to larger predators making them beneficial for amphibians. That’s why frogs and salamanders reproduce and lay their eggs here. While you won’t be finding any fish worth catching in most headwater streams in Calvert County, headwater streams do serve as food sources for fish downstream. Once insects and amphibians venture beyond the protection of headwater streams and head into the larger streams and rivers, they become fair game for hungry fish.

Headwater streams also provide food for terrestrial animals. As macroinvertebrates emerge from headwater streams to begin lives on land as adults, they become food for the many birds and other animals that make their homes near streams. Based on recent research, ecologists have dubbed this a “subsidy” of food since streams turn out to be a major source of energy for animals living on dry land.

### **Headwater Streams Retain Excess Nutrients**

Streams do more than provide habitat, they also help retain the excess nutrients that are causing problems in the Chesapeake Bay. Eutrophication in the Chesapeake Bay is caused by excessive algal blooms and those algal blooms are caused by excessive inputs of nutrients. These nutrients come from a variety of sources: fertilizers from agriculture and lawns, exhaust from cars and fossil-fuel burning power plants, and effluent from sewage treatment plants, among others. Streams form the last line of defense before nutrients, such as nitrogen and phosphorus that are washed off lawns, fields, roads, and driveways, enter the Chesapeake Bay. Removal of these excess nutrients is done by communities of microbes living in stream beds. As water passes over and through

stream beds, microbes living in sediments filter out nutrients like nitrogen and phosphorus and use them to grow.

Now that these nutrients have been captured by microorganisms, these resources become available for other creatures living in streams. Many microbes, such as the single-celled algae that reside on most stream beds, are consumed by macroinvertebrates. Much like a cow eating grass on land, some macroinvertebrates spend their time walking across the stream bed eating clumps of algae. Perhaps not surprisingly, scientists call this group of stream animals ‘grazers’. These grazing invertebrates include insects such as mayflies, who spend their lives consuming algae from stream beds before a brief day or two as flying adults. Many grazers do not make it to adulthood. Instead they are often consumed by stream predators, including immature ‘larval’ dragonflies. Just like their flying adult form, larval dragonflies are adept predators, stalking their prey across stream beds for years before reaching adulthood. These predators, in turn, are often eaten by fish or frogs who likewise become food for birds (or even us humans). By protecting and ensuring healthy headwater streams, nutrients that are considered pollutants in the Chesapeake Bay can be harnessed to support communities of animals (and microbes) that are part of a healthy stream.

### Headwater Stream ‘Health’

Headwater streams are valuable because these little streams are so numerous, but for the same reason, these streams are also among the most threatened. These tiny waterways are closely connected to the land, and are the first to receive the harmful impacts from human activities. If you live near the Chesapeake Bay, you probably already know that agricultural activity in watersheds has a strong impact on headwater streams. Disturbance of soils from tilling and other activities causes excess erosion that sends plumes of pollutant-laden sediment into streams. Fertilizer applications cause problems in streams by delivering loads of nutrients that are impossible for an ecosystem to absorb.

Loss of sediment into streams is a visible problem here in Calvert County. Most of the sediments here are fine-grained, with little to hold stream banks in place. This means that stream banks in our region are especially susceptible to erosion from fast-flowing waters. You may have even seen the effects of erosion on some of the streams you encounter while walking through ACLT forests. Although streams on ACLT- owned and managed property have largely been protected for decades, the effects of agriculture are still visible. Small streams are surrounded by eroded banks as high as 10 feet or more.



An incised headwater stream (with the author for scale) demonstrates the lasting impact of stream bank erosion.

Here in Calvert County, and all around the world, the development of cities and suburbs also causes problems for streams. Much of the negative impacts on streams in urban and suburban areas stem from increased amounts of waterproof or ‘impervious’ surfaces. This includes: roads, sidewalks, parking lots, and rooftops. When rainwater comes in contact with a forest floor, much of the water is absorbed into soil where it slowly percolates downhill toward a stream. When a rain drop lands on an impervious surface, it is not absorbed but instead moves rapidly downhill. This fast-moving water quickly enters the nearest stream, usually a small headwater stream, causing high-volume flows that scour out the bottom of streams, sweeping sediments and attached organisms to downstream streams, rivers, and the Bay. Research tells us that one of the biggest problems with impervious surfaces is that even a small amount of impervious cover—less than 10% of a watershed—can negatively impact the health of a stream and the organisms that live there.

The combination of fertilizer applications, agricultural legacies, and our growing cities and suburbs, all play a role in affecting the health of Calvert County’s streams and the Chesapeake Bay. This is why the strategy to protect Parkers Creek as a watershed that has been pursued by ACLT is effective. By focusing conservation efforts on a watershed, ACLT is protecting not only forest habitat but streams and wetlands as well. The result of this strategy is that approximately 76% of the Parkers Creek watershed is forested. Even though this may not seem like a lot, Parkers Creek is currently one of the best protected streams in Southern Maryland! This is an impressive achievement and recent work by ACLT to preserve new properties highlights that there continue to be opportunities to protect the headwaters of Parkers Creek. Meanwhile, research by scientists and volunteers who help monitor our environment’s ‘circulatory system’ will continue to use stream studies to track the pulse of both our land and water. Next time you stumble upon the tiny creeks of ACLT, consider the journey that each drop of water takes, bringing with it a record of our livelihoods on the land into the Chesapeake Bay.

Jake Hosen, PhD Candidate  
University of Maryland,  
Chesapeake Biological Laboratory

*Editor’s Note: The author will report on his long-term study findings in the Fall 2013 newsletter.*

# Thank you for your support ...

## New Members

ACLT would like to welcome the following new members since the Spring 2013 newsletter:

Mr. & Mrs. Wayne Anderson  
Mr. & Mrs. John Barberio & Family  
Dr. Sylvia Batong  
Mr. Jim Robert Burke  
Mr. Charles Britt  
Ms. Kellie Carlisle  
Mr. Alan Christian  
Ms. Melanie Crowder  
Ms. Ann-Mari Gemmill &  
Mr. Mitchell Ratner  
Mr. & Mrs. Nicholas Graziano & Family  
Ms. Hali Kilbourne & Dr. Johan Schijf  
Mr. & Mrs. Don Kraemer  
Mr. & Mrs. Charles Philipp  
Dr. Hugh Philipp  
Ms. Pamela Saalbach & Mr. Mark Schleicher  
Mr. & Mrs. Craig Simmons  
Ms. Lucie Snodgrass  
Mr. Michael Vealey

## Sustaining Membership

Congratulations to the following members who have reached the level of Sustaining Membership:

Mr. & Mrs. Michael Cunningham  
Dr. & Mrs. Volker Vogt

## Matching Gifts

Thank you to the following members who have made matching contributions:  
Macy's Foundation & Greg and Linda Locraft

## Memorial Contributions

Thank you to the following members who made a memorial contribution since our last newsletter:

In memory of **Mr. Robert Douglass** who was a Charter Member, a longtime supporter and dedicated volunteer:

Ms. Joy Bartholomew  
Mr. & Mrs. Glynn Frank  
Mr. & Mrs. Daniel Head  
Mr. & Mrs. Ed Kobrinski  
Ms. Jennifer Letout  
Capt. & Mrs. Patrick Murphy, USN (ret.)

In honor of **Mr. Steven Gaines** ACLT's Land Manager and his first **Master Naturalist Class**:  
His students, the Calvert County Master Naturalist Class of 2013

In honor of **Messrs. Ron, Ray & Ian McClain** for their outstanding efforts in leading the planning and construction of the five footbridges for the new Prince Frederick to the Bay Overlook Trail:  
Dr. & Mrs. Glenn Edgecombe

In honor of **Mr. Ken Romney** for his engineering advice and technical support to the Boy Scouts in the construction of the five footbridges for the new Prince Frederick to the Bay Overlook Trail:  
Dr. & Mrs. Glenn Edgecombe

## General Contributions and Designated Gifts

Thank you to the following for your generous gifts and support:

Anonymous  
Mr. & Mrs. Bob Douglass  
Mr. Peter Johnson  
Mr. & Mrs. Craig Shelden & Family  
Ms. Hali Kilbourne & Dr. Johan Schijf  
Mr. & Mrs. George Switzer  
Cub Scout Troup 789

Through Americas' Charities:  
Mrs. Dorothy Howe  
Ms. Allison Wells

Through IBM Work Place Giving:  
Anonymous

## Spring Appeal:

The Staff and Board of Directors wish to thank the following for their contributions to the 2013 Spring Appeal:

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Ms. R. Safer & Mr. Klaus Zwilsky  
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The American Chestnut Land Trust is a 501 (c) (3) charitable organization. A copy of the current ACLT financial statement is available on request. Requests should be directed to the American Chestnut Land Trust, Inc, P.O. Box 2363, Prince Frederick, MD 20678 or call (410) 414-3400. For the cost of copies and postage, documents and information submitted under the Business Regulation Article of the Annotated Code of Maryland are available from the Secretary of State.