

# Watershed Observer



NEWSLETTER OF THE AMERICAN CHESTNUT LAND TRUST - VOLUME 28 NO. 1, WINTER 2014

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## COMING UP ON THE CALENDAR

### FEBRUARY

- 22 VINE VINDICATOR WORK DAY (9:00 A.M. - 12:00 P.M.)
- 22 WINTER HIKE AT DOUBLE OAK FARM (1:30 - 3:30 P.M.)

### MARCH

- 8 ANNUAL MEMBERSHIP MEETING (9:30 A.M. - 12:00 P.M.)
- 22 SPRING HIKING TRAIL MAINTENANCE DAY (9:00 A.M. - 12:00 P.M.)

SEE MORE OF THE 2014 CALENDAR ON PAGE 5 OR ON THE WEB.

## Land Manager's Corner

### Perils of the Snakehead

It is no secret that the number of exotic species being passed from country to country is on the rise. With today's ease of travel and trade any foreign organism (animal, plant, or pathogen) can move from one end of the planet to the other in a matter of days. The issue of concern is how these exotics will behave once they get settled into their new environments and the trickle down effects they might have on the native floras and faunas. Experience has shown that new introductions, whether accidental or on purpose, can have disastrous effects on natural systems. Past articles in this newsletter have discussed the epidemic of invasive species and the process by which new species may colonize new environments. This article will focus on the snakehead fish, and the effects this species of fish may have on waters in the United States.

The snakehead is an interesting invasive case with a disturbing method of introduction. There has been a lot of press associated with the invasion—referring to the snakehead as “Frankenfish”. Add the snakehead's unique ability to survive out of water to the press hype and it's easy to see why this critter's introduction has attracted national attention. The snakeheads are a primitive fish, members of the freshwater perciform family Channidae, and are native to Africa and Asia. There are about 30 different species of snakehead, with adults varying in size from 9 inches to 3.3 feet in length. One of the more unique traits of the fish is the ability to breathe air, more than likely an adaptation designed to deal with seasonal droughts in their native range. Over the eons, this fish evolved a labyrinth organ, which is more or less a primitive lung that allows the fish to circulate air (Printer, 1986). As a result the snakehead can survive for a short period of time out of water provided they stay moist. This unique adaptation, coupled with the ability to travel over land to new bodies of water by wiggling their bodies over the ground, gives the snakehead a competitive edge over other fishes in securing habitat and expanding its range (MD DNR, 2002). The most abundant snakehead being found in our waters is the northern snakehead (*Channa argus*). The main worry is the fact that this is a top shelf predator. In other words, it is at the very top of the food chain in our freshwater streams and occupies a diverse array of habitats and stream temperatures.

Snakeheads are efficient predators. More specifically, they are efficient generalist predators. From a proficient invasive species point of view, they have it



all. Let's examine some of the traits of an efficient invading species as it relates to this particular fish. First of all, they have to have a good avenue of introduction. The snakehead are regarded as a delicacy in several Asian cuisines, which is the primary reason they have been introduced into many countries, from Hawaii to Japan to Uzbekistan. Also they are great sport fish, providing a similar

(CONTINUED ON PAGE 8)

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Published quarterly by the American Chestnut Land Trust. The ACLT is dedicated to the preservation of Calvert County, Maryland's Natural and Historical Resources. Since it was established in 1986, ACLT has preserved over 3,000 acres. We own 958 acres, manage 1,780 acres owned by the State of Maryland, and hold conservation easements on 374 privately-owned acres.

Editors: Ellen and David Farr

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# From the President's Desk

## LNG/ Cove Point Update: ACLT Action Update

I would like to give you a brief update on the Board's actions taken to date regarding the LNG/Cove Point project.

This clearly is a project that is not without complexity and controversy. It evokes powerful emotional responses both from those opposing it as well as from its staunch supporters. While the Board did not formally poll its members, we did hear from a number of them, and their views fell across the entire spectrum of opinion. Initially, there was also no obvious consensus among the Board as to what if anything ACLT should do given its relatively narrow mission.

However, after a thorough and careful investigation, we concluded that the project's projected increase in tanker traffic would raise two serious concerns affecting the environmental health of the Parkers Creek and Governor's Run watersheds. One had to do with the possibility of non-indigenous invasive species being introduced into the Bay's fragile ecosystem by ballast water discharges from these foreign tankers. The other had to do with the cumulative effect the emissions of these tankers could have on our regional air quality, which has already been designated as substandard. (You can find more detailed discussion of these issues in Karen's article on page 3 of this newsletter.)

As a result, we sent a letter to the Federal Energy Regulatory Commission (FERC) with copies to multiple Federal, State, and County officials as well as numerous community stakeholders. The letter carefully delineated our concerns and asked how they would be addressed. We specifically requested that FERC respond to our issues in the context of the Environmental Assessment they are currently conducting. However, we also indicated that we would welcome them to be examined as part of a typically more comprehensive study known as an Environmental Impact Statement.

Hopefully, The FERC will see fit to address our concerns one way or another. Nevertheless, the Board will continue to monitor the project's developments as they occur and be prepared to consider further actions if the FERC response is inadequate.

Feel free to share your thoughts on the matter. We will do our best to keep you informed.

Thank you,  
Patrick J. Griffin, President

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# Around ACLT

## ACLT's 18th Annual Dinner & Auction

This year, our 'Raise the Roof' theme and barn motif help to illustrate the work that ACLT is doing in the community to preserve Calvert County's cultural heritage by stabilizing old tobacco barns that dot the landscape within the Parkers Creek Preserve. This year, members were encouraged to purchase a premium table at the auction to support this work. ACLT matches these donations and will use the funds in the coming year to support stabilization work needed on the Goldstein Bay Farm barn featured on the auction invitation.



The annual dinner and auction held on Saturday, November 2nd in the Vianney Room at St. John Vianney was a great success. Tasty food prepared by Expressions of St. Mary's and great music provided by Scott Hymes and his trio were enjoyed by over 200 guests. Many of our auction guests became the happy owners of some of over 100 auction items. Popular auction items included vacation rentals in the Bahamas, Baja Mexico, Florida, and Michigan, airline tickets on Southwest Airlines, original local art, sporting event tickets, wine tastings, restaurant gift certificates, the ever-popular Whiskey cakes and so much more.

Funds raised through the auction are a fun way for our members, their guests and the public to support ACLT's work. We are hoping you are looking forward to the auction in 2014! Save the date for our 19<sup>th</sup> annual auction and dinner, slated for November 1<sup>st</sup>. If you are interested in becoming a member of the auction committee and helping plan the event, contact Tricia Realbuto at [volunteer@acltweb.org](mailto:volunteer@acltweb.org).

## ACLT Concerns about the Proposed Expansion of the Cove Point LNG Facilities

The Board of Directors invited representatives of Dominion Resources and the Patuxent Riverkeeper to its November meeting to discuss proposed plans to permit liquefaction of natural gas for export. Following the presentations, the Board appointed an *ad hoc* group to make recommendations to the board. This group met several times and conducted additional research on the potential environmental impacts of the proposed facility. As a result of their inquiry, the Board submitted a letter to the Federal Energy Regulatory Commission (FERC) requesting that they address in their upcoming Environmental Assessment "concerns relating to air and water quality impacts of the proposed liquefaction and export processes that are likely to extend well beyond the footprint of the existing facility and could degrade the local and regional environment."

The Board expressed concern about air quality, in particular, because Calvert County is already a nonattainment area for nitrogen oxide and volatile organic compounds. We understand that Dominion would be required to purchase "pollution offsets" for these two pollutants. Our board has asked FERC "will emission offsets be required to be obtained locally to mitigate air quality problems in Calvert County?"

We also asked whether air quality modeling information supplied by Dominion is based on Dominion's current "expectation" that approximately 85 ships per year will dock at the pier and that only one ship will be docked at any given time, or is it based on "worst case conditions" that Dominion is permitted to receive 200 ships per year and that their pier design can accommodate two ships simultaneously of up to 267,000 cubic meters in size?

The Board's second concern relates to water quality and specifically "the potential for nonindigenous invasive species (NIS) to be released in ballast water or to hitchhike on the hulls of the ships." ACLT's concern is that this will be the largest concentrated release of ballast water into the Chesapeake Bay "outside of the industrial ports of Baltimore, Norfolk and Hampton Roads." We requested that FERC recommend to the U.S. Coast Guard that it require "best available technology standards and inspection procedures uniformly to all ships calling at the pier without regard to cost" given the "fragility of Bay waters at the site, and the potential for substantial environmental and economic harm caused by NIS."

We requested that FERC address these concerns in "determining whether an Environmental Assessment (EA) is sufficient or whether an Environmental Impact Statement (EIS) is required".

Karen H. Edgecombe  
Executive Director

## Volunteer Spotlight: Leon Myers

For the first newsletter of 2014, ACLT has decided to highlight Leon Myers for our volunteer spotlight! Leon is not only a long-time member and volunteer of ACLT, but he is one of the founding members of the hunt club. Since he and his wife, Cherie, are moving to Delaware in the not so distant future, we decided he deserved to be recognized for all of his work over the years before heading off.

Leon moved to Calvert County in 1990, and has always loved the outdoors. Before moving here, Leon had called Washington, D.C., Greenbelt, MD and Clinton, MD his home. Leon shared with me how the area is very different now than it was in the early 1990s, and that it was difficult to get to know the area and get involved. He learned about ACLT through former Director Peg Niland. At the time, ACLT was working on preserving the area on the north side of Parkers Creek. Leon jumped at the chance to be involved in preserving the land that is now the Double Oak Farm property. Although hunting and being outdoors were always a passion for Leon, land conservation also became a priority for him.

In 1997, Leon became one of the founding members of the hunt club. When the hunt club at ACLT started, it was merged with other groups that hunted in nearby properties. Initially, hunt club members only needed to join ACLT to be part of the group. Over the years, the group has grown and hunters are now required to perform 18 hours of stewardship service each year. Leon has put in above and beyond the required hours year after year.

As far as volunteering, Leon has been involved with earth day clean ups, trail maintenance days, mowing and many other projects on ACLT property. Leon is most proud of an area on the north side known by many as “Leon’s dump.” For over four years, Leon and other volunteers cleaned out a trash pit that had been growing for many years. The pit had car batteries, household trash and “enough D-cell batteries to fill up a truck bed.” It was a difficult task not only to clean out the area, but to access it. Next time you drive to the North Side trails, before you take a left at the fork to drive down to the trailhead, look to your left. You will see a deep ditch; that is the area that Leon and countless volunteers worked on clearing out.

Outside of volunteering for ACLT, Leon was a Capitol Police Officer from 1978-2011. He was one of the first members of the dignitary protection program. At first, the group would only travel and protect dignitaries within 50 miles of Washington, D.C. Once Congress passed the law that the dignitary protection group would travel across the country, Leon was traveling across the country as well. Leon really enjoyed traveling to different parts of the country, especially Memphis, TN. Since Jimmy Carter was in office, Leon has been able to meet all of the sitting presidents and has been involved in protecting them. Chicago was Leon’s sec-

ond home for a while as he was protecting Henry Hyde, the congressman who oversaw President Clinton’s impeachment trial.

Although Leon has put in many hours of service to ACLT, he feels the most sense of accomplishment when it comes to spreading the word about the organization. Leon has made a point to inform people he has met through service projects and just walking the trails about the opportunities and activities at ACLT. He has always gone out of his way to teach and inform others about the importance of the work going on and how they can become involved.

Leon recounted some of his efforts over the years to help encourage visitors to join ACLT and to volunteer. “I spend a lot of time checking up on the north side after office hours and weekends and talk to tons of hikers and runners who want to know more about the ACLT, some don’t even know about the south side trails. Others have asked if there is a launching area for canoes and kayaks on the pretty little stream at the end of the trails. Most of the people are local and we just haven’t reached out enough to them. You know how you hear friends complain that they need to work out more, or need some down time to unwind, their kids don’t have anything to do that doesn’t cost an arm and a leg, or I’m retired and I just need something productive to occupy my time. My reaction is, hey, I’ve got the place just down the street—the trails and volunteer work are free, you get so much more information if you join the ACLT and it costs next to nothing (\$.10 cents a day) for your whole family.”

ACLT will certainly miss having Leon around once he moves to Delaware. Leon and Cherie have owned a home there for eight years and have looked forward to making it their permanent home since Leon retired in 2011. Of course, Leon cannot sit still for very long and has already put in an application to work for the Prime Hook National Wildlife Refuge. He is looking forward to the fishing, hunting and golfing opportunities in Delaware. Cherie is looking forward to living closer to the ocean as well as becoming a member of various dance clubs.

Although he is excited for the next chapter of his life in Delaware, he will miss the camaraderie of ACLT and the people he has met here over the years. Leon always strongly believed in our mission of connecting people with the land, and went above and beyond to live that mission throughout his years of involvement at ACLT. The staff at ACLT, past and present, cannot thank him enough for all of the hours he has given to the organization and the stewardship he has provided to the land.



Leon Myers. Photo by Tricia Realbuto.

Tricia Realbuto  
Community Relations Coordinator

## Volunteer Notes

ACLT has many exciting projects, activities and training projects coming up this year and we are looking for volunteers! More information about our events is always available on our website at [www.acltweb.org](http://www.acltweb.org).

- This year, we have training sessions for volunteers interested in vine vindication, becoming canoe guides, or conducting water quality monitoring. These training sessions are not only a learning experience, but a way to experience ACLT property in new and exciting ways.
- Interested in working outdoors? We have two trail maintenance days this year, March 22<sup>nd</sup> and September 6<sup>th</sup>. On these days, volunteers help with mending bridges, vine removal, mulching and more. These maintenance days help ACLT to make sure the trails are clear and safe for visitors throughout the year. We are also in search of volunteers to serve as trail stewards, see the "help wanted" box below.
- Instead of an earth day clean up this year, we are hosting our inaugural earth day 5k trail run and family day. We will need volunteers to assist with handing out runner packets, manning the water station and to serve as cheerleaders! More information about signing up to run or volunteer will be available soon on our website.

### Wanted: ACLT Trail Stewards

The American Chestnut Land Trust is seeking several motivated volunteers that would be responsible for reporting on trail conditions. As most of us ACLT trail users know, we always ask visitors to sign in before they hike our trails and report concerns or trail obstructions when they return. The TRAIL STEWARDS would divide up ACLT's trail system and agree to walk their trail sections regularly to identify hazards and obstructions. Reporting would be of most significance following storm events or high wind conditions. ACLT asks for a commitment of 1 year. Selected volunteers will be presented with a personalized ACLT walking stick and will be consulted before each Land Management Committee meeting. Interested persons should contact the ACLT office at 410-414-3400 or reach out to ACLT's volunteer coordinator at [volunteer@acltweb.org](mailto:volunteer@acltweb.org).

As always, we recognize that ACLT would cease to function without its dedicated volunteers. Please help us keep our trails safe and accessible. We could not do this without you.

Kindest Regards, ACLT Staff

## American Chestnut Land Trust 2014 Calendar of Events

### February

- 22 **Vine Vindicator Work Day** (9:00 a.m. - 12:00 p.m.)
- 22 **Winter Hike at Double Oak Farm** (1:30 - 3:30 p.m.)

### March

- 8 **Annual Membership Meeting** (9:30 a.m. - 12:00 p.m.)
- 22 **Spring Hiking Trail Maintenance Day** (9:00 a.m. - 12:00 p.m.)
- 23 **Water Quality Monitoring Training** (9:00 a.m. - 1:00 p.m.)

### April

- 26 **ACLT Trail Run** (9:00 a.m.)

### May

- 3 **Green Expo** (10:00 a.m. - 4:00 p.m.)
- 10 **Canoe Guide Training** (11:00 a.m. - 3:00 p.m.)
- 24 **Guided Canoe Trip** 11:00 a.m. - 2:00 p.m.) (*Sunday Rain Date*)

### June

- 7 **Guided Canoe Trip** (9:00 a.m. - 12:00 p.m.) (*Sunday Rain Date*)
- 21 **Guided Canoe Trip** (9:00 a.m. - 12:00 p.m.) (*Sunday Rain Date*)

### July

- 26 **Guided Canoe Trip** (2:00 p.m. - 5:00 p.m.) (*Sunday Rain Date*)

### August

- 9 **Guided Canoe Trip** (1:00 a.m. - 4:00 p.m.) (*Sunday Rain Date*)
- 16 **Walk Along the Bay Membership Event** (tentative date)

### September

- 6 **Holly Arboretum Work Day at Warrior's Rest** (9:00 a.m. - 12:00 p.m.)
- 6 **Fall Hiking Trail Maintenance Day** (9:00 a.m. - 12:00 p.m.)
- 13 **Park to Park Paddle** (8:00 a.m. - 12:00 p.m.)
- 20 **Guided Canoe Trip** (12:00 p.m. - 3:00 p.m.) (*Sunday Rain Date*)
- 27 **Vine Vindicator Training** (9:00 a.m. - 2:00 p.m.)

### October

- 4 **Guided Canoe Trip** (time to be determined) (*Sunday Rain Date*)
- 11 **Patuxent River Appreciation Days** (10:00 a.m. - 5:00 p.m.)
- 18 **Guided Canoe Trip** (time to be determined) (*Sunday Rain Date*)
- 25 **Vine Vindicator Work Day** (9:00 a.m. - 12:00 p.m.)
- 26 **Fall Foliage Hike at Double Oak** (1:00 p.m. - 3:00 p.m.)

### November

- 1 **19<sup>th</sup> Annual Auction & Dinner**
- 29 **Arboretum Work Day at Warrior's Rest** (1:00 p.m. - 4:00 p.m.)

### December

- 5 **Greens Sale Prep & Wreath-Making Workshop** (10:00 a.m. - 3:00 p.m.)
- 6 **Greens Sale & Beach Hayride** (11:00 a.m. - 2:00 p.m.)

# Science in the Watershed

## The Inhabitants of Mayapples

A common sight when walking the South Side trails of ACLT in the early spring is the colonies of mayapple (*Podophyllum peltatum*). These distinctive plants are common and often occur in large colonies. The white flowers, produced later in the spring, are partially hidden by the leaves. In the summer the flowers give rise to an apple-like fruit.

This article looks at mayapples from a mycologist's point of view. For 34 years I worked as a research scientist for the USDA's Systematic Mycology and Microbiology Laboratory, a group mainly concerned with the identification and life histories of fungi that are pathogens of plants.

If you look around a mayapple patch you might notice some plants with white to light yellow spots on the leaves. If you turn these spotted leaves over you will see that the spot is actually a bright yellow-orange bump on the underside of the leaf. The spots are the result of a fungal infection and the spots are actually clumps of spores that can spread the infection to other plants. The spores are small rounded, orange bodies approximately 0.0019 inches in diameter. Unfortunately the true beauty of the spot can only be appreciated with some additional magnification. These fungi are commonly referred to as rust fungi due to the orange-red color of the spore clusters.

Several springs ago I encountered some spotted mayapples and decided that I should try to get some photographs of the spots. So I collected several leaves and took them to the laboratory for examination using a microscope. As I examined the spots I noticed that there were insect larvae in the spots that were the same color as the spores. Actually the larvae appeared to be ingesting the spores of the fungus. Thus I began to wonder how common the larvae might be. So I returned to ACLT and collected additional samples of rust-infected leaves. I also noted that the same rust also occurred on jack-in-the-pulpit plants. Back in the lab. I found that many of the mayapple rust infections contained insect larvae. Additionally many of the jack-in-the-pulpit samples also had larvae associated with the rust.

The laboratory where I worked maintains an extensive collection of dried specimens of fungi. So in addition to the fresh collections we were able to get a better idea of the distribution of the fungus and insect. The insect found eating the fungus is in the genus *Mycodiplosis*. This group of insects is cosmopolitan in distribution but is restricted to feeding on either rust fungi or another group of fungi (powdery mildews). The larvae feed primarily on fungal spores for which they have specially adapted mouth parts.

We became interested in assessing the co-occurrence of *Mycodiplosis* on rust fungi especially in Maryland. In summary about 25% of the collections of rust fungi from Maryland were infected with the insect larvae. There were about 45 different types of rust fungi infected with the insect larvae. Similar percentages were true of the collections from around the world although the number of available collections from other areas was smaller. The rust fungus may form a systemic infection in the mayapple—it stays in the plant from generation to generation. The wind can also blow spores to new plants. So it does not appear likely that the insects are important in spreading the fungus to new plants. At this point you might wonder how the insect finds the rust fungus. Some preliminary work has suggested that the fungus produces a volatile compound that alerts the insects to the availability of the fungus for dinner. Rather amazing!

In summary there is a group of insects whose larvae feed exclusively on the spores of rust fungi and because of the close relationship have probably evolved along with the fungus. But many of the details of this association between mayapples, rust fungi and *Mycodiplosis* insects remain unknown. This is but one example of the amazing diversity of relationships between organisms and why land preservation is so important in maintaining these interactions which are important to forest health.

This research was published in the journal *Fungal Ecology* (Henk, D. A., D. F. Farr and M. C. Aime. 2011. *Mycodiplosis* (Diptera) infestation of rust fungi is frequent, wide spread and possibly host specific. *Fungal Ecology* 4: 284-289).

David Farr



*Podophyllum peltatum* (mayapple).



Figure 1. Mayapple leaf with spots from a rust infection.



Figure 2. Underside of mayapple leaf. Using a hand lens, the 'bumps' on the leaf are seen to be composed of many small cups.



Figure 3. Rust infection on a jack-in-a-pulpit.



Figure 4. Enlarged view of the cups which contain the spores (see Figure 2).

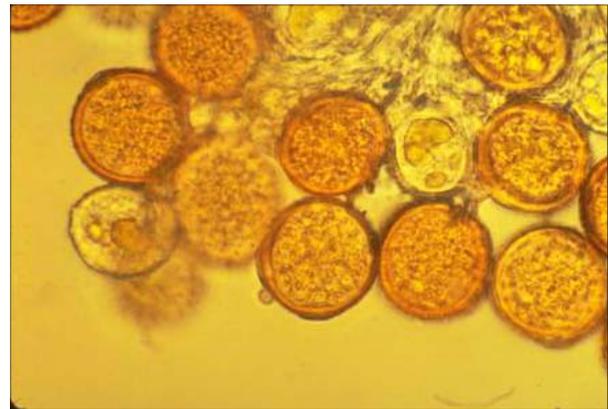


Figure 5. Spores of the rust fungus on which the larvae feed.

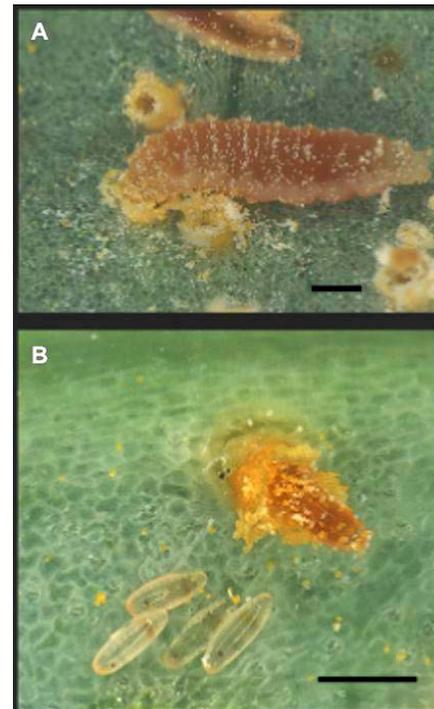


Figure 6. Larvae feeding on spores. The larvae have their head in the cup.

(CONTINUED FROM PAGE 1)

fight to largemouth bass for anglers. Second, most successful invasive species (plant, animal, pathogenic) have a very high reproduction rate; snakeheads grow to sexual maturity at 2 years of age and have a capacity to produce up to 15,000 eggs per spawn with a potential 5 spawns per year (ISSG, 2004). Third, the invasives must be able to adapt to new environments and compete with the natives. It so happens that snakehead can occupy most stream habitats, preferring stagnant shallow ponds, swamps, or slow moving streams and rivers; they can also tolerate water bodies that have low oxygen, and in some cases low salinity. Snakeheads can also tolerate a wide range of temperatures (from 32 to 86 degrees F). So really, the snakehead fits the criteria to be very successful in much of North America. The fourth characteristic that favors the snakehead is that there are no natural enemies present in our waters and no notable means of population control.

The presence of this particular exotic species is a hot topic in Maryland and the surrounding region. Despite several introductions of the species in the U.S., a pond in Crofton, Maryland housed the first established population of snakehead (that we are aware of) in the summer of 2002. The first documented account of snakehead in the U.S. was in California in 1997, followed by an incident in Florida in 2000. Luckily, in May of 2002 a Crofton fisherman caught a suspicious fish and asked the Maryland Department of Natural Resources to identify it. Fisheries biologists confirmed the identity and started to investigate the pond, unveiling several adults and over 100 juveniles. On August 18, Fisheries Service personnel began a 2-step process of eliminating the snakeheads by applying herbicides (Diquat and Glyphosate) causing oxygen levels in the pond to drop, and making likely a subsequent fish kill. Two weeks after the initial application, the pesticide Rotenone was used to kill the remaining fish. The pond and the adjacent tributary were closely monitored for the next few months and the snakehead was found to have been effectively eliminated from Crofton. Within a few weeks, water quality levels returned to normal. Despite efforts such as the Crofton example, snakeheads have become established in Virginia, Maryland, Pennsylvania, Massachusetts, Rhode Island, New York, Arkansas, and Hawaii. They have also occurred (but are not thought to be established) in California, North Carolina, Illinois, and Delaware (MD DNR, 2002).

So, what's all the fuss about? Fish have been transported by humans for quite some time, dating back to ancient Rome. In most scenarios the introductions don't stick. It usually takes repeated introductions to start a colony of any new species—the alarming bit is that this introduction became established quickly and quietly. We may find that the snakehead will not have the negative impact that is anticipated; however, there is some potential that this species

could have an overwhelming detrimental effect on many waters throughout the United States. History is full of examples of ill-fated introductions of predators to new environments. For example, the mongoose was introduced to Hawaii in the 1880's to control a large scale rat infestation on some of the islands. Upon establishment, the mongoose opted to pursue a variety of species of ground nesting birds and reptiles instead of the rats, resulting in several extinctions (Hoagland, 1989). Similarly, the largemouth bass was introduced into Japan (courtesy of the U.S.) in the 1920's and has resulted in the decline of several fish species, in addition to amphibians and insects (Murakami, 2009).

Disturbances on impacted waters could originate on a number of fronts, but researchers are mostly concerned with snakehead influence on species diversity, competition for resources, interbreeding with similar species (genetic pollution), and the arrival of new parasites or diseases. A large percentage of the snakehead diet is fish (about 97% of the adult diet), with young snakehead generally consuming zooplankton and progressing to larger prey as they mature (MD DNR, 2002). The problem is that they are not picky about their diet. Many predators are quite specialized and feed on a specific prey type, always evolving to become more efficient. Likewise, their prey evolve to become more elusive. Consumable prey have no evolved defenses against this foe, therefore snakehead can decimate smaller fish populations, not to mention put competitive pressures on comparable species such as largemouth and smallmouth bass. This also creates further stress for fish that are already endangered. Generally speaking, as competition increases at any level of the food chain, the entire food web may shift to compensate for the lack of resources – an effect that spirals throughout the entire ecosystem.

The threat of foreign pathogens is of particular concern when anticipating the impact of an invasive species. Introduced species can bring along new pathogens or contribute to the mutations of present diseases or parasites, allowing for an even greater impact to the natural balance of the system. So far researchers have not encountered any immediate threats brought on by the snakehead, but there is potential. The U.S. Geological Survey recently described a virus that has been recorded in snakehead, the pathogen referred to as Largemouth Bass Virus (LMBV). This virus is present in many species of sunfish but has, so far, only proved fatal for a small percentage of largemouth bass. LMBV is one of an estimated 100 naturally occurring viruses that affect fish, but not warm-blooded animals. The virus does not seem to develop into disease that harms the snakehead, however the worry is that snakehead could be reservoirs of this virus and capable of transmitting the pathogen to bass populations (L. Iwanowicz, 2013). Although the snakehead has yet to be negatively impacted, the fact that there is a great deal of habitat overlap with

largemouth and small mouth bass is of concern.

So, what is being done about the snakehead invasion and where are they now? From a regional perspective, the snakehead is just about in our backyard. Northern snakeheads are found in the Potomac River from Great Falls downstream to the Chesapeake Bay. Although verified in the non-tidal section of the Potomac and its tributaries above D.C., most snakeheads are still found in the tidal waters from D.C. downstream to Colonial Beach (and in tributaries of D.C., Maryland and Virginia within this reach). They were also documented in 2012 in the Rappahannock River system. Snakeheads apparently colonized several creeks in the lower portion of the tidal Rappahannock via natural dispersal from the Bay. To add complications to the invasion, they appear to be using freshets to ride less dense fresh water over saltwater during storm events to further their dispersal (MD DNR, 2013). Shortly after the Crofton incident snakeheads (and close relatives) were added to the injurious wildlife species list which, now under the Lacey Act, prohibits the importation and transportation of snakehead between states, the District of Columbia, and U.S. territories without a permit. "Maryland Fishing regulations allow the taking of snakehead (regardless of season) so long as the fish is immediately killed and its head removed, or the fish is gutted, or both gill arches removed, or the fish is filleted" (MD DNR, 2013). Anglers in Virginia waters who encounter snakehead must immediately kill the fish and report the catch to the Virginia Department of Fish and Game.

It is hard to say what the future will bring for the snakehead. As stated earlier, it is too early to tell what impacts this introduction will have on native fish populations. History has taught us that it is nearly impossible to eradicate an invasive species once it has integrated into the environment. The best action we can take is to learn to identify the problem and become familiar with prescribed management practices. And of course, educate ourselves and talk about the problem often—perhaps over a tasty dish of snakehead filets.

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Steven Gaines  
ACLT Land Manager



**Join ACLT for our  
inaugural  
Earth Day 5k  
Trail Run &  
Family Fun Walk  
Saturday, April 26th  
9am  
South Side Trails**

**Check [www.actweb.org](http://www.actweb.org)  
for more information  
and registration**

# Thank you for your support ...

## New Members

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

Mr. & Mrs. Alan Bloom  
Mr. Arthur Boesz  
Mr. & Mrs. John Butterfield  
Mr. Gary P. Clarke  
Mr. & Mrs. Kevin Cloud  
Ms. Terry Delp & Ms. Debbie Morgan  
Mr. & Mrs. Alan Doda & Family  
Mr. Mark E. Drager  
Ms. Alice H. Edmondson  
Mr. Eric See, See Environmental Services  
Mr. & Mrs. Horace P. Garrison  
Ms. Alejandra Garza  
Mr. James E. Godbold  
Mr. Robert Holland Head  
Mr. & Mrs. Jerry Helmrich  
Mr. & Mrs. John Hofmann  
Dr. Donna Hoffmeister  
Mr. Robert Holland  
Ms. Georgina Johnson  
Mr. Robert D. Jones  
Mr. & Mrs. Donale Lawyer  
Mr. Robert E. Maxson  
Mr. Jeff Miller  
Mr. & Mrs. Ray Pace  
Ms. Patricia Peak  
Ms. Terry Pennington  
Mr. & Mrs. Brian Rowe  
Mr. Jack Upton

## Sustaining Membership

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

Dr. Kathleen & Mr. Michael Ellwood  
Mr. & Mrs. W. Reid Goforth  
Messrs. Greg & Jeff Owens  
Ms. Mary Parish & Mr. Sherman Suter

## Memorial Contributions

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

In memory of **Mr. Jack Andrews** who was a longtime member, a dedicated supporter and volunteer:  
Mr. & Mrs. Daniel Head

In memory of **Mr. Paul Berry**, who was a Sustaining Member and dedicated volunteer, and served many years on the ACLT Board as Treasurer and on numerous committees:

Ms. Marsha Berry  
Mr. & Mrs. David Bohaska  
Mr. & Mrs. Patrick Griffin  
Mr. & Mrs. John Little

In memory of **Dr. Christine Boesz** who was a Charter Member, a longtime supporter and dedicated volunteer:

Mr. Jerry Adams & Ms. Harriet Yaffe  
Ms. Joy Bartholomew &  
Mr. Mark Edmondson  
Col. Daniel Boesz  
Mr. & Mrs. Dwight Blankenbaker  
Mr. & Mrs. David Bonior  
Mr. & Mrs. John Butterfield  
Mr. & Mrs. Scott Butterfield  
Mr. & Mrs. G. Stewart Brown  
Drs. Donald & Judith Dahmann  
Ms. Kathy Daniel  
Mr. & Mrs. Paul Dennett  
Mrs. Sally Douglas  
Dr. & Mrs. Glenn R. Edgecombe  
Ms. Paula Johnson & Mr. Carl Fleischhauer  
Mr. & Mrs. Daniel Head  
Ms. Wendy Jones  
Capt & Mrs. Patrick Murphy, USN (Ret.)  
Mr. & Mrs. Robert Runk  
Ms. Roberta Safer & Mr. Klaus Zwilsky  
Dr. & Mrs. John Saunders  
Mr. Byron Schneider  
Mr. & Mrs. Peter Stathis  
Mr. Steve Straka  
Mr. & Mrs. John Little,  
Flag Harbor Marine Service  
Col. Caroline VanMason, USA (Ret.)  
Mr. & Mrs. Robert Yuill

In memory of **Ms. Andrea Clarke** who served on the ACLT Board of Directors and was a longtime supporter and dedicated volunteer:

Ms. Joy Bartholomew &  
Mr. Mark Edmondson  
Mr. David Virgil Buland  
Dr. & Mrs. Glenn R. Edgecombe  
Dr. Anne Shoemaker  
Ms. Eileen Shoemaker  
Col. Caroline VanMason, USA (Ret.)

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

In memory of **Mr. Ralph Dwan** who was a Charter Member and one of the founders of the ACLT. Ralph served as ACLT's first President, and over the years served on the Board of Directors as Secretary, Treasurer, and again as President and numerous committees throughout the years:  
Anonymous  
Dr. & Ms. Peter Vogt

In memory of **Mr. & Mrs. Byron Hanke** who were Charter Members and longtime supporters:

Mrs. Emily Hanke vanZee

In memory of **Mrs. Susan Dawn Slaughter**, sister of Ralph Dwan, who was a Charter Member and dedicated supporter:  
Anonymous

## In Honor of Contributions

In honor of **Mr. Jerry Adams & Ms. Harriet Yaffe**, who are longtime members and dedicated supporters and volunteers:  
Dr. Marie & Mr. Randy Estabrook

In honor of **Dr. Stephen Peters and Mr. Alan Wilson** who are Sustaining Members and dedicated supporters and volunteers:  
Dr. Marie & Mr. Randy Estabrook

## Gift Memberships

Thank you to the following who gave a gift membership since the last newsletter:  
Ms. Joy Bartholomew & Mr. Mark Edmondson  
Col. Daniel Boesz  
Mr. & Mrs. Patrick Griffin  
Ms. Colleen Minder  
Mrs. Carol Hanke Teich &  
Mrs. Emily Hanke vanZee,  
Walden Three Heritage III  
Col. Caroline VanMason, USA (Ret.)

## General Contributions and Designated Gifts

ACLT would like to thank the following members who gave a general contribution and designated gifts since the summer 2013 newsletter. This section was not included in the fall 2013 newsletter.

## General Donations:

Anonymous  
Ms. Joy Bartholomew & Mr. Mark Edmondson  
Ms. Louise Davis  
Ms. Erin Fitzgerald  
Mr. James Green  
Dr. Donna Hoffmeister  
Mr. & Mrs. John Hofmann  
Dr. & Mrs. Mark Kushner  
Ms. J. Longhill and Mr. J. Borell, Jr.  
Mr. Jeff Miller  
Mrs. Eleanor Rickel  
Mr. Jonathan Riddile  
Mr. Greg Silber

Ms. Elaine Strong  
Ms. Wanda and Ms. Holly Van Goor  
Mr. William Waller

### **Through America's Charities:**

Mrs. Dorothy Howe  
Mr. Jason Vogt  
Ms. Allison Welles

### **Through IBM Work Place Giving:** Anonymous

## **Land Acquisition**

Mr. and Mrs. Conrad L. Hoska

## **Auction Donations**

ACLT would also like to thank those who made monetary contributions in support of our annual fundraiser:

Ms. Joy Bartholomew & Mr. Mark Edmondson  
Ms. Marsha Berry  
Mr. & Mrs. David Bonior  
Col. Dan Boesz  
Mr. & Mrs. Frank Caldwell, Jr.  
Mr. Tom Dennison, SMECO  
Mr. & Mrs. Philip Fleming  
Mr. William Glascock,  
Patuxent Yacht & Property Management  
Mr. Rodney Gertz, Quality Built Homes  
Mr. & Mrs. Pat Griffin  
Mr. & Mrs. Daniel Head  
Mrs. Frank Jaklitsch  
Ms. Paula Johnson & Mr. Carl Fleischhauer  
Mr. & Mrs. Jeff Klapper  
Mr. & Mrs. Ellis Knox  
Mr. Ronald Klauda  
Mr. & Mrs. Steve Kullen  
Mr. & Mrs. John Little  
Ms. J. Longhill & Mr. J. Borell, Jr.  
Mr. & Mrs. Christopher Reynolds  
Mr. Gerald Van De Velde

## **2013 Fall Appeal**

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

Dr. & Mrs. Ernest Ambler  
Mr. & Mrs. Louis Amtmann  
Mr. & Mrs. Arms  
Dr. Sylvia Batong  
Mr. & Mrs. Stanley Benning  
Hon. Charles Bernstein  
Ms. Leila Blackwell & Mr. John Watson  
Mr. and Mrs. Taylor Bowen  
Mr. Frederick Bumgarner  
Mr. & Mrs. William Bushnell  
Mr. & Mrs. Blythe  
Mr. & Mrs. Robert Coker  
Drs. Judith & Donald Dahmann  
Ms. Kathy Daniel

Mr. & Mrs. Davidson  
Mr. & Mrs. David Didion  
Mr. & Mrs. Curtis Drumm  
Mr. & Mrs. Samuel Dyer  
Mrs. Ralph H. Dwan, Jr.  
Dr. & Mrs. Glenn Edgcombe  
Mr. & Mrs. Samuel Ellsworth  
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Mr. & Mrs. W. Reid Goforth  
Dr. & Mrs. Edward Graham  
Mr. & Mrs. Edward Greene  
Mr. & Mrs. Patrick Griffin  
Mr. & Mrs. Daniel Head  
Mr. Reed Hellman  
Ms. Gail M. Hoerauf-Bennett & Dr. Charles Bennett  
Mr. & Mrs. James Hollowell  
Mr. & Mrs. James H. Howard  
Mr. & Mrs. Steve Howerton  
Dr. Robert Keisling & Ms. Johnston  
Mr. & Mrs. Martin Kilpatrick & Family  
Mr. & Mrs. Steven Kullen  
Mr. Max Lederer  
Mr. & Mrs. Gregory Locraft  
Ms. J. Longhill & Mr. J. Borell, Jr.  
Mr. & Mrs. John Lucas  
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Mr. & Mrs. Ron Magnussen  
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Mr. Bruce McDonald  
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Ms. Mary McGahey & Mr. Todd Sheldon  
Ms. Mary McHugh  
Mr. & Mrs. Lee McKnight  
Dr. & Mrs. James P. McVey  
Dr. Kathleen Miller  
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Mr. Russ Mogel  
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Ms. Pamela-Jean Moran  
Mr. & Mrs. Thomas Morton  
Ms. V. Moss & Mr. Flawn Williams III  
Mr. Kevin Murphy  
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Mr. & Mrs. Ronald Schoenfeld  
Mr. Gerald Sneeringer & Mrs. Christina Lansford  
Mr. and Mrs. Steven Stadelman  
Mrs. Carol Hanke Teich & Mrs. Emily Hanke vanZee,  
Walden Three Heritage III  
Ms. Leslie Starr & Mr. Joseph Turner  
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Ms. Anne Warner & Mr. Michael Makuch  
Mr. & Mrs. Graham Waters  
Mr. & Mrs. Linden Welch  
Mr. John Whelan  
Mr. & Mrs. David Williamson  
Ms. Louise Woerner & Mr. Don Kollmorgen  
Mr. & Mrs. Richard Woppert  
Mr. & Mrs. Robert Zwissler & Family

## **2013 Spring Appeal**

The Staff and Board of Directors wish to thank the following for their contributions to the 2013 Spring Appeal:  
Mr. & Mrs. Patrick Griffin

## **Harrod Property New Pledges**

Mockernut Hickory Pledge Level  
(\$1,000 to \$4,999)  
Mr. & Mrs. David Bohaska

Flowering Dogwood Pledge Level  
(up to \$999)

Dr. Kathleen & Mr. Michael Ellwood  
Ms. L. Schaeffer and Mr. Gian Carlo Guarda



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| <input type="checkbox"/> Land Protector—\$60.00    | <input type="checkbox"/> Trustee of Land—\$1000.00  | <input type="checkbox"/> Land Protector Corporate—\$250.00   |
| <input type="checkbox"/> Land Conservator—\$150.00 | <input type="checkbox"/> Sustaining—\$2500.00       | <input type="checkbox"/> Land Conservator Corporate—\$500.00 |

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