The Marsh Wren

SINCE 1976 | THE FRIENDS OF DYKE MARSH | SPRING 2017

FODM Quarterly Meeting

Wednesday, May 10, at 7:30 p.m., Huntley Meadows Park, Norma Hoffman Visitor Center, 3701 Lockheed Blvd., Alexandria, VA 22306. Phone 703 768-2525. Free to all.

Calendar of Events

April 22, 10 a.m. - Raptor Rapture in Belle Haven Park.
May 6, 10 a.m. to 2 p.m. - NPS Invasive Plants Training.
June 10, 10 a.m. - Tidal Marsh Ecology Walk, see p.7.
2017 Quarterly Meetings
September 13, November 15.

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The Geology of Northern Virginia

Join the Friends of Dyke Marsh on May 10, 7:30 p.m. at our quarterly meeting at Huntley Meadows Park to hear about natural communities. Much of the greater Washington, D.C., region comprises the physiographic provinces called the Piedmont, Fall Zone and Coastal Plain, perhaps the most geologically and floristically diverse area in the eastern U.S., if not the country.

The underlying geology and soils give rise to a diversity of natural communities. Rod Simmons will give a presentation on the geology and the common forest communities in and around the nation's capital, including less well-known ones like diabase and siltstone flatwoods of the Triassic Basin, serpentine barrens, D.C. area pine barrens, magnolia bogs, small stream forests, shell-marl ravine forests and associated communities. He will also explore coastal bottomland communities and nontidal wetlands, which collectively give rise to freshwater tidal wetlands such as Dyke Marsh.

Geologists Steve Self, Tony Fleming, and Callan Bentley examine granite outcrops. Photo by R.H. Simmons.

Rod has a background in biology and geology and has extensively surveyed the flora and natural communities of the mid-Atlantic region, especially the inner Coastal Plain and Piedmont of the greater Washington, D.C., area. He is the Natural Resource Manager and Plant Ecologist with the Natural Resources Division, Alexandria's Department of Recreation,

MEETING *(continued on page 2)*

DAB Approves Dyke Marsh Restoration Project

BY BRENT STEURY, NPS Natural Resources Program Manager

The restoration of Dyke Marsh reached another milestone on March 7, 2017, by obtaining project approval from the National Park Service's (NPS) Design Advisory Board (DAB). The DAB reviews, comments on, and, if found sufficient, recommends construction projects over $500,000. Prior to the DAB review, NPS and the U.S. Army Corps of Engineers (USACE), Baltimore District, hosted a two-day value analysis (VA) which considered several factors intended to clarify development concepts into a single coherent project. The alternative chosen

Some trees are falling because Dyke Marsh is losing 1.5 to 2 acres a year from erosion. Credit: Glenda Booth

by the VA was presented to the DAB. The project was further refined during a three-

RESTORATION *(continued on page 2)*

FODM Welcomes New Board Members

At FODM's February 26 meeting, members elected two new members of the Board of Directors. Laura Sebastianelli, who lives next to Dyke Marsh West, is a professional ecology educator, amateur natural sound recordist and photographer and leader of FODM frog, cricket and katydid surveys and sound walks. Drew Arnold, who has lived much of his life in the Mount Vernon area near Dyke Marsh, is a retired Montessori teacher and native plant gardener. Welcome!

We extend our deep appreciation to three members who will no longer serve on the Board: Kurt Gaskill, John Perry and Robert Smith. Kurt for many years organized our Sunday morning bird walks, engaging expert birders. Robert was our Treasurer for many years, a huge job. John advised us expertly on scientific and administrative issues. We hope you will stay involved and thank you for your dedication to Dyke Marsh.

RESTORATION *(continued from page 1)*

day value engineering (VE) meeting that took place March 28-30, 2017. Considerations at the VE will include the results of modeling efforts undertaken by USACE to determine the most beneficial alignment of the breakwater and the structure and location of off-shore sills. Future actions include preparing the joint permit application materials for submittal to USACE, Norfolk District, and other associated agencies.

The project continues to progress toward fulfilling Public Law 93-251 which mandates the restoration of the historic and ecological values of Dyke Marsh, including the protection of the remaining marsh acreage that is currently eroding at an average rate of one-and-a-half to two acres per year, as reported by the U.S. Geological Survey.

AmazonSmile Donations

A big thank you to our members who have been using AmazonSmile when they purchase items from Amazon. We received the largest donation to date from Amazon. Amazon donates .5 percent of the purchase price of most items to us if you shop through AmazonSmile and designate FODM as your charity. .5 percent may not sound like much, but it adds up if many people participate. You can use the same Amazon account you have always been using. Just bookmark the AmazonSmile site and shop as you normally do. To get started, go to http://smile.amazon.com/ch/54-1550071. Thanks for your help.

MEETING *(continued from page 1)*

Parks and Cultural Activities; a Research Associate with the National Museum of Natural History, Smithsonian Institution; and a member of the Virginia Botanical Associates. He works closely with the Virginia and Maryland natural heritage programs. He is the author of numerous technical reports, papers and articles, and has published in scientific journals. He is a member and a past president of the Botanical Society of Washington and serves on the boards of the Maryland and Virginia Native Plant Societies, and is a regular field trip leader.

The program is cosponsored by the Friends of Huntley Meadows Park, the Northern Virginia Conservation Trust, the Friends of Little Hunting Creek, the Four Mile Run Conservatory Foundation and the Friends of Mason Neck State Park. If you use a GPS device to find the park, do not use the park's name. Enter the park's address, 3701 Lockheed Boulevard, Alexandria, VA 22306, ph. 703 768-2525.

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or on **Facebook.com**

Board members can receive email at info@fodm.org. *The Marsh Wren* is a quarterly publication of the Friends of Dyke Marsh, Inc., a nonprofit 501(c)(3) organization. Letters and submissions to *The Marsh Wren* are welcome. Send them to the address at left. Special thanks to Duncan Hobart for managing our website (www.fodm.org).

President's Message

Glenda C. Booth, President, Friends of Dyke Marsh

Delighting in spring's annual rituals, we welcomed "our" ospreys back in early March, spotted woodcocks and a barred owl. Shad are swimming up the river to spawn and wetland vegetation is emerging. The bad news is that neither bald eagle nest appears to be active.

Vigilance

Protecting and restoring Dyke Marsh continues to be challenging. We are troubled by the Park Service staff's tree removal practices and will continue discussions with them. We appreciate their commitment to some shrub and tree planting and hope they'll ensure the plantings' long-term survival. We fear that many birds and other wildlife were disturbed by noisy, tree-cutting operations during the breeding season.

Volunteers work regularly in Dyke Marsh to control non-native plants. Photo by Glenda Booth

We are exploring a more aggressive invasive plants control effort, targeting invasives along the Haul Road. Although our team has made some progress, our efforts can never control the too-pervasive invasives. Non-natives provide little value to the food web. Natives provide more support to the wildlife that co-evolved with them. Effectively addressing invasive plants on a larger scale long term will be very expensive. Share your ideas.

Think Outside the Park

Luckily, we have some natural jewels up and down the Potomac River, like beads in a necklace. It's all connected. We've argued for more conservation corridors in Northern Virginia, as promoted in a 2012 Northern Virginia Regional Commission study. Recently-retired NPS Director Jonathan Jarvis reinforced these goals in a National Wildlife Federation magazine article authored by Joel K. Bourne. Director Jarvis urged NPS managers to address activities outside park boundaries. "The secret to managing for change," Jarvis is quoted as saying, "is to think outside park boundaries and manage on an ecosystem or landscape scale. That means creating corridors of connected habitat across federal, state and private lands (the latter with conservation easements) and removing barriers to wildlife migration by, for example, building wildlife tunnels under highways. 'That's where the future potential really is,' says Jarvis. 'The park service is kind of the anchor store in these larger landscapes, and then we work cooperatively on adjacent lands where critical components need to be connected so that you have a functional and sustainable ecosystem.'" With the potential for the GW Parkway to be a green, linking ribbon, we hope that NPS/GWMP will truly become the manager of the "anchor store."

Budget Challenges

The Trump Administration's 2018 "budget blueprint" proposes a 12 percent cut for the Department of Interior (DOI) and a 31 percent cut for the Environmental Protection Agency. Interior Secretary Ryan Zinke said, "America's public lands are our national treasures and the President's budget sends a strong signal that we will protect and responsibly manage these vast areas of our country 'for the benefit and enjoyment of the people'. . . this budget allows the Interior Department to meet our core mission and also prioritizes the safety and security of the American people. . . this budget enables the Department to meet its core mission and prioritizes programs that will put Americans' security first."

Our legislators are considering budget cuts for the DOI and the EPA. Photo by Glenda Booth

John Garder, National Parks Conservation Association, commented, "Many details are lacking, and while it does include increased funding to tackle parks' $12 billion deferred maintenance backlog, the deep cuts . . . demonstrate how irresponsible this budget is. The cuts to land acquisition, water restoration and historic preservation programs are nothing short of alarming. . . Our parks face many challenges that require more funding, not less. This budget proposal, if enacted, would threaten the air, water, wildlife habitat, historic protections and interpretative services critical to national park sites."

In the July 10, 2016, Washington Post, Marylander Gabriel Popkin rallied for local national parks: "So, yes, we should better fund the amazing national parks out west, but we should also better manage the little pockets of green that dot our urbanized landscapes back east. Otherwise the silent spring that Rachel Carson famously warned of and, through her book helped halt, may finally arrive."

Glenda C. Booth

Glenda C. Booth is the president of the Friends of Dyke Marsh and active in conservation issues in Virginia.

FODMers Document Butterflies, Dragonflies and Damselflies

BY JESSICA STROTHER

In 2016, FODM volunteers conducted surveys in Dyke Marsh to document butterflies, dragonflies and damselflies in a several areas of the marsh, ending the surveys in November. With the help of expert naturalist Jim Waggener, a dedicated group developed a baseline of data on butterfly species. We also added to the dragonfly and damselfly data that FODM contracted with the Virginia Department of Conservation and Recreation to collect in 2011.

We identified species and recorded the total number of species. Here are some highlights of our surveys:

- We documented 25 butterfly species, 17 dragonfly species and six damselfly species.
- The total count from past and present records for dragonflies is now 19; for damselflies, 8.
- Two dragonflies, the autumn meadowhawk and Rambur's forktail were two first records for Dyke Marsh. In other words, no one has recorded them in Dyke Marsh before.
- As the season neared the November close, we saw many common buckeye butterflies in the marsh and throughout our region. This is a common fall species in our area.

We are conducting these surveys to better understand the biota of the land, to know what's there and to help inform the National Park Service's (NPS) management activities. Invasive plants and climate change are adversely affecting our natural resources everywhere, including Dyke Marsh. Knowing what exists is vital.

We provided our data to NPS as required in the survey permit. George Washington Memorial Parkway biologists Brent Steury and Colin Davis assisted. We will resume the survey work soon and hope to add to what we and others have documented.

A Red Admiral butterfly, *Vanessa atalanta.* Photo by Ed Eder

A Rambur's Forktail (*Ischnura ramburii*), a new species for Dyke Marsh discovered during the survey. Photo by Ed Eder

Stopover Habitat Preserved

Interstate traffic streaks by on the I-95 elevated highway heading east to the Woodrow Wilson Bridge and local traffic zooms on and off the cloverleaf ramps. A construction crane looms on land nearby. The birds and other critters down below appear undisturbed. The Northern Virginia Conservation Trust has recently accepted ownership of two acres of wetland at the confluence of Cameron Run and Hunting Creek on Alexandria's southern border and invited FODMers to advise them on the management of the property. During a March 21 visit, FODM bird experts stressed the importance of the area as stopover habitat for many migrating shorebirds. Ed Eder explained that peregrine falcons that have nested on the Wilson Bridge forage in this area. On March 21, ospreys hovered, red-winged blackbirds called and killdeer squeaked. A Wilson's snipe rested in the mudflats. Botanist Elizabeth Wells urged that cattails be added to those there now to help stabilize the soil.

The property newly-acquired by the NVCT is important migratory shorebird stopover habitat. Photo: Glenda Booth

Keeping Sediment Out of Dyke Marsh

In previous issues of this newsletter, we have reported that Fairfax County, at our urging, undertook a project in Mount Vernon District Park, just west of Dyke Marsh, last fall to end the volumes of sediment flowing into Dyke Marsh during storms. The stormwater was ripping out streambanks, causing serious erosion and flowing downhill into the marsh, often turning the wetland orangey-brown. Thankfully, the county has addressed a failing stormwater outfall in the park, restored the stream and stabilized the stream banks. This project is nearing completion with native plantings to be done soon. The Friends of Dyke Marsh are very grateful to Fairfax County officials, especially to Charles Smith, Branch Chief, Stormwater Planning, Department of Public Works and Environmental Services, for responding to our concerns and addressing the problem.

Storms are severely gouging out streambanks and sending volumes of sediment into Dyke Marsh. Photo by Glenda Booth

NPS Tree Removal Makes Major Changes in Habitat

In our last issue, we reported on the National Park Service, George Washington Memorial Parkway (GWMP) office's massive tree-cutting in the Dyke Marsh Wildlife Preserve and along the parkway and outlined our concerns. GWMP officials maintain that they are targeting hazardous trees identified by their arborist. GWMP says that trees are deemed to be hazardous if they have two conditions: the tree has a defect which may result in the tree falling and the tree is close to a target like a road, building or trail. Please see our *Marsh Wren, Winter 2017,* for GWMP officials' explanation of their tree-removal practices.

They maintain that many of the targeted trees are ash trees and are or will be infected by the emerald ash borer, an invasive insect that causes the death of the infected tree. As we previously reported, at GWMP's request, FODM paid for the treatment of 13 trees in an effort to save some ash trees. GWMP cut down three of the treated trees, which they said were "mistakenly removed." The tree-cutting continued in February and March, including tree-cutting activity near a bald eagle nest in the Spout Run area during the nesting-breeding season.

Many large trees were cut. Photo by Glenda Booth

In a December 5 meeting, GWMP Superintendent Alex Romero made several commitments, including notifying FODM when they plan major tree-cutting activities. They also agreed to identify opportunities this spring to plant native trees and shrubs in the areas where trees were removed. They say they do not replace trees "one for one." NPS is planting some shrubs and trees in Dyke Marsh this spring.

On March 4, FODM urged GWMP to stop removing trees at this time. Here is an excerpt from our letter:

"We believe that this major tree-cutting activity, people, vehicles, machinery and loud noises would create serious disturbances to nesting bald eagles and other wildlife during this spring courtship and breeding season. As I emailed previously, we are not certain if the two bald eagle nests are active nests, but several people have seen bald eagles on both trees supporting the nests this spring. Yesterday, Ned Stone photographed a bald eagle perched on the tree supporting the 'Tulane nest.' We believe that GWMP should take a cautious, protective approach and assume that the bald eagle nests are active and not risk their reproduction."

NPS conducted extensive tree cutting and removal. Photo by Glenda Booth

In our February 16 letter to Superintendent Alex Romero, we urged that GWMP follow the bald eagle protection guidelines and seasonal limitations published by the Virginia Department of Game and Inland Fisheries and the U.S. Fish and Wildlife Service. Both sets of guidelines recommend creating protective zones and recommend avoiding this kind of activity during bald eagle nesting season.

We are having ongoing discussions with GWMP staff. In terms of this tree-cutting activity, among other requests, we have asked NPS to implement a replanting plan; retain tree snags and stumps, as they are valuable habitat; factor in the impact on erosion when deciding if trees should be removed; use contractors qualified to work in natural areas; impose seasonal limitations, i.e., refrain from tree cutting and removal during the bird and wildlife breeding and nesting season.

FODM will continue to advocate for preserving and restoring the ecological health of the Dyke Marsh Wildlife Preserve.

FODM Joins Plant NOVA Natives Campaign

FODM recently joined the "Plant NOVA Natives" campaign, a public-private partnership of more than 30 member organizations that works to promote the use of native plants in the landscape by home gardeners, private groups, and commercial organizations. The hope is to reverse the decline of native habitats, and the wildlife those habitats support, in Northern Virginia.

Plant NOVA Natives partners include state and regional government organizations, non-profit organizations, and businesses in the landscaping industry. It's especially important to partner with the nursery industry to try to make native plants more widely available; after all, there's little use in generating interest in the use of native plants if gardeners can't find those plants.

The Plant NOVA Natives website contains a wealth of information about using native plants. One of its most colorful products is the Plant NOVA Natives Guide developed in concert with the Virginia Native Plant Society. This beautifully illustrated booklet highlights plants native to the Northern Virginia area that are "attractive, relatively easy for the home gardener to acquire, easy to maintain, and offer various benefits to wildlife and the environment" and offers advice for using them in the landscape. The 50-page booklet can be downloaded free in pdf format from a link on the Plant NOVA Natives home page; a paper copy can be ordered online for $8.95.

The website also includes information for garden centers on how to participate in the partnership, lists of sources for native plants, and a list of demonstration gardens across Northern Virginia that are open to the public. Check out this great resource at http://www.plantnovanatives.org/. Plant NOVA Natives is also on Facebook.

Meet the Plants of Dyke Marsh — Groundnut

BY PATRICIA P. SALAMONE

It's quite a delight to come upon the exquisite flowers of the groundnut (*Apios americana*) when it is blooming in late summer. Groundnut is a perennial climbing vine that can grow to about 15 feet. The plant is in the pea family, and this shows in its lovely sweet pea-shaped flowers. The flower color is unusual, probably best described as maroon to brownish red (or maybe even puce?).

The small fragrant flowers grow in dense, conical clusters (racemes) 3 to 5 inches long that arise from the leaf axils. The plant has alternate pinnate (feather-like) leaves 3 -6 inches long with 5–7 leaflets.

Groundnut prefers low, wet areas, including wet meadows, low thickets, streambanks, ponds, and moist woodlands. Its National Wetland Indicator Status for the Atlantic and Gulf Coastal Plain region is facultative wetland (FACW), meaning it is usually a hydrophyte but is occasionally found in uplands.

The pods, 2-5 inches long, appear in late summer and autumn; each pod contains a few beans that are edible when cooked. The tubers are also edible, and a number of the plant's many common names (groundnut, Indian potato, wild potato) refer to this characteristic. The tubers are produced in strings of 2 to 20 along the rootstock. The tubers are pear-shaped—the generic name Apios comes from the Greek for pear—and range from grape-sized to grapefruit-sized; they are typically about an inch thick and 1.5 inches long.

Another common name, hopniss, derives from a Native American word for the plant. Groundnut tubers were a staple food for many Native American groups within the plant's natural range (most of the eastern half of North America, as far west as the Great Plains states.) According to one source,* "Ethnohistoric records for eastern North American Indians probably cite this species for its use as food more often than any other kind of tuber."

The maroon to brownish red flower of the groundnut vine blooms in late summer. Photo by Ed Eder

European colonists also learned to use groundnuts as food; it is said that the Pilgrims learned about groundnuts from the Wampanoag people and relied on them as a food source during their initial years in Massachusetts. Later on, Henry David Thoreau also recorded having roasted and boiled groundnuts for dinner. The tubers have been prepared in many ways, including roasting, boiling, frying, putting them in soup and stews, drying them for later use, and boiling them in maple syrup (that sounds good!).

And humans aren't the only ones who use the plant as food; it also serves as a larval host for the caterpillars of the silver-spotted skipper (*Epargyreus clarus*). A great plant all around!

* "Domestication of *Apios americana*," Reynolds, B.D., et al., 1990. pp. 436-442. In: J. Janick and J.E. Simon (eds.), Advances in new crops. Timber Press, Portland, OR.

https://hort.purdue.edu/newcrop/proceedings1990/V1-436.html

The Fish of Hunting Creek

BY C.J. CARROLL SCHLICK

Faculty and students with the Potomac Environmental Research and Education Center (PEREC) at George Mason University are studying the water quality and biological ecosystems of Hunting Creek where treated wastewater from Alexandria Renew Enterprises enters the creek system. This study is an ongoing investigation, funded by Alexandria Renew Enterprises, of the ecosystem to inform management of water quality and aquatic community changes and to ensure well-grounded and timely information for ecosystem maintenance and improvement.

Fish Ecology Lab scientists, under the direction of Dr. Kim de Mutsert, conduct fish surveys from March to September within Hunting Creek to monitor the resident and transient fish communities, as well as their life history strategies, like growth rates, diets and mortality rates. Many anadromous species (migrate to freshwater to spawn), such as American shad and river herring (alewife and blueback herring), only utilize freshwater tributaries like Hunting Creek as nursery habitats. Shad and herring species (currently under a fishing moratorium in the Chesapeake Bay) have been important fisheries in the Chesapeake Bay for centuries and monitoring spawning grounds allows scientists to examine the reproductive potential of the populations. Continued monitoring of the fish communities in Hunting Creek will provide information about how to better manage and protect our waterways.

American shad (*Alosa sapidissima*). Credit:Duane Raver/USFWS

Among our tentative findings, we determined that the fish community examined in Hunting Creek was typical of a freshwater tributary of the Potomac River. The tributary serves as a nursery to several species of clupeids (shad and

FISH *(continued on page 7)*

Did You Know?

You can see the status of your membership, your past contributions and the latest copy of *The Marsh Wren* by logging into our site. You can also change your address, email, user name and password and renew online. You can view your past contributions through the My Contributions tab in the top menu bar and you can make changes to your information on the My Profile page. You can find your membership renewal date with your latest contribution information or on your profile page. If you do not know or forgot your user name and/or password, email us at info@fodm.org and we will send you your login information.

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herring), which occur in high densities as larvae and many are still present as juveniles. White perch, spottail shiner, and banded killifish are also highly abundant in Hunting Creek, typical of a Potomac River tributary. Many species of sunfish, as well as blue catfish, yellow perch, brown bullhead and largemouth bass have also been captured in Hunting Creek. Future research will be focused on continuing the community monitoring, analyzing species interactions within the community by examining diet analysis and creating models of the ecosystem based on the food webs.

Our findings and other information are available at www.perec.gmu.edu. Dr. Chris Jones, Dr. Robert Jonas and Dr. Thomas Huff are also conducting research in Hunting Creek. See the PEREC website for more details.

U.S. Park Police, Emergency Number: 202-610-7500

Welcome New FODM Members

We welcome **new members** Betsy Anderson, Cathleen Bassett, Marcia Katherine Gillespie, Alyssa Pease, Michael Pederson, Kay Stirling, Carolyn G. Turner and Jason Yee.

And we welcome our new **Life Members** Amy Carpenter, Philip Davis, Glen Gerada and Paul Krizek.

Calendar of Events

April 22, Saturday, 10 a.m. - noon, Raptor Rapture, Belle Haven Park, Celebrate Earth Day by learning about owls, hawks and falcons and see live raptors that were injured but cannot survive on their own. Great for kids. Sponsors: FODM, NPS and Secret Gardens Birds and Bees.

May 6, 10 a.m.-2 p.m., NPS Invasive Plants Training. Hone your skills at controlling invasive plants, first in a classroom and then in Dyke Marsh, at a free training conducted by NPS biologist Colin Davis. RSVP to Colin at 571-305-3218 or email him at Colin_Davis@nps.gov.

May 10, 7:30 p.m., FODM meeting, see page 1.

June 10, 10 a.m. Walk on tidal marsh ecology with expert naturalist Charles Smith who will lead a walk focused on tidal marsh ecology, vegetative communities, system stressors and the importance of Dyke Marsh ecosystems. Participants should meet at the Haul Road entrance to Dyke Marsh.

Sunday Morning Bird Walks

Bird walks are held Sunday mornings, all seasons. Meet at 8 a.m. in the south parking lot of the Belle Haven picnic area. Walks are led by experienced birders and all are welcome to join us.

FODM Membership - Dues and Contributions

Support the Friends of Dyke Marsh by becoming a member or renewing your membership. Benefits include the Friends' quarterly publication, *The Marsh Wren*; quarterly membership meetings with knowledgeable speakers; Sunday morning bird walks and notification of activities in and around the marsh. Most importantly, your membership lends your voice in support of the Dyke Marsh Wildlife Preserve and our efforts to advocate for full restoration of the marsh. We encourage you to save paper (trees) and mailing costs by becoming a member or renewing your membership online at www.fodm.org. Just click on the "Join" or "Donate" button on our membership page to make your tax-deductible contribution by credit card or from your bank account securely through PayPal. For help, info@fodm.org. If you prefer, you can send a check, payable to FODM, P.O. Box 7183, Alexandria, Virginia 22307. The annual dues are $15.00 per household, $250.00 for life membership for an individual. You will receive a separate notice by mail or by email when your renewal is due. Thank you for your support of FODM.

DUES AMOUNT..…..… $ _____
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TOTAL AMOUNT ENCLOSED..……. $ _____

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Please address any questions or comments about *The Marsh Wren* to Dorothy McManus and about membership to Bob Veltkamp. You may contact them by mail at FODM, P.O. Box 7183, Alexandria, Virginia 22307 -7183, by telephone or by email (see page 2).

The Mystery Snail of the Potomac and Occoquan Rivers

BY MICHELLE RYAN

Bellamya chinensis and *Bellamya japonica* are two non-native gastropods commonly referred to as "mystery snails." Originally transported from Asia and sold as a food commodity or ornamental garden species more than 100 years ago, the snails are now found across North America, including areas within the Potomac River watershed near the George Washington Memorial Parkway, Mason Neck State Park, Belmont Bay and Occoquan Bay. (Editor's note: Their shells are often seen in Dyke Marsh, as Dr. Ryan reported to FODM in *The Marsh Wren*, Spring 2013 issue.) These areas comprise the study area for this research.

Despite their widespread distribution, the morphology and possible impacts of *B. chinensis* and *B. japonica* on native freshwater ecosystems are poorly understood in North America, as is the taxonomic classification of the two species. The purpose of this study was to perform a spatial analysis of *Bellamya* spp. within the waters of the study area for relationships with water quality metrics (pH, water temperature, oxidation reduction potential (ORP) and electrical conductivity (EC)), and a histological analysis of collected snails for morphological variation.

Findings from the spatial and water quality measu rements revealed a correlation between the snails' external shell measurements and ORP, and the mystery snails have adapted to larger ranges of pH, electrical conductivity and temperature than previously noted in the literature. Additionally, the histological studies reveal conflicting results for species identification. Results from these studies will aid natural resource managers in developing invasive species management activities for *Bellamya* spp. within the Potomac River watershed and will contribute to the scholarly debate concerning the snails' taxonomic assignments. You can reach the author at michelle.ryan@comcast.net.

Researchers measure the "mystery snails" size. Photo by G. Booth

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