

M A R S H N O T E S

An Investment Worth Protecting

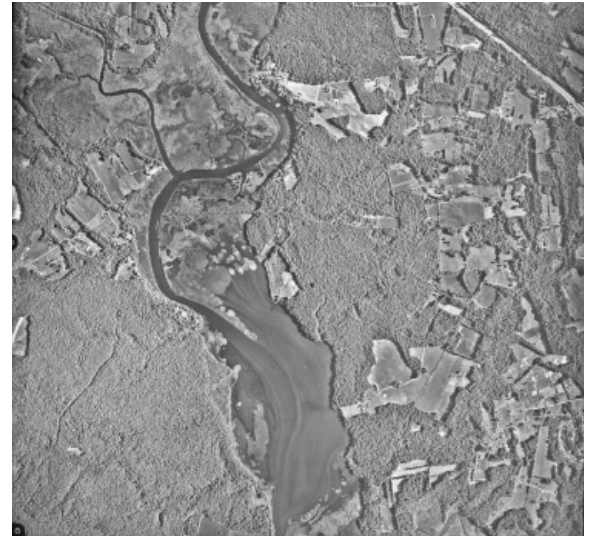
By Chris Swarth

Sanctuaries and nature preserves may seem to be protected forever, but are they? Parks, refuges and wildlife sanctuaries were historically located in rural or wild areas. An hour or more was needed to drive there. Today, distant parks are not so distant as suburban development creeps ever outward to formerly rural areas. Consider Dyke Marsh in Alexandria, the Patuxent Wildlife Refuge in Laurel, or the Anita C. Leight Estuarine Center, in Harford County. Each of these nature preserves is experiencing heavy development pressures that may push right up against their boundaries. At Blackwater Refuge on the Eastern Shore, for example, there is a plan to build 3,200 houses along the Little Blackwater River, which drains directly into the refuge. As sprawl begins to engulf refuges, they become “habitat islands”—regions of protected natural lands that are surrounded by a “sea” of development.

Another threat could come from efforts to sell off publicly owned parklands or to convert them to uses for which they were not intended. In recent years, efforts to sell public regional and state parklands in Maryland were thwarted by outraged citizens. Could this happen at Jug Bay? Not likely! Actions by hard-working citizens and dedicated government officials working together should make this scenario very unlikely. I describe here some of the ways that lands within and around the Sanctuary are protected.

Levels of Protection Around the Sanctuary

Several important government-sponsored plans preserve open space and the rural lifestyle of southern Anne Arundel County. The Anne Arundel County **Greenways Master Plan** was prepared in 2002 by former Recreation and Parks Department Environmental Chief Brian Woodward. It calls for



Aerial photo of the Jug Bay region showing wetlands, forests and agricultural fields. The Patuxent River is on the left and Route 4 is in the top right corner.

creating a network of greenways that protect ecologically valuable lands as a means of reducing the fragmenting effects of development and preserving open space. The Patuxent Greenway comprises a broad swath of land along the east side of the Patuxent River north to Route 50, including the entire Sanctuary. Once the goals of the plan are achieved, open space lands will be linked in a network that will enhance habitats for wildlife and will help to preserve the Patuxent and the Chesapeake Bay. This plan can be viewed by going to <http://www.aacounty.org/PlanZone/MasterPlans/Index.cfm>.

Program Open Space (POS) conserves our natural resources and provides outdoor recreational experiences for everyone in Maryland. The idea is that open space lands will be preserved to match the pace at which the landscape develops. Funds generated from the state’s real estate transfer tax are placed in the POS fund and made available to every county. Over 300,000 acres have been preserved in Maryland since the program began in 1969. Most of the parcels that comprise the Sanctuary were purchased with POS funds. While POS limits development, certain activities that would not be appropriate here (for example, hunting areas, playgrounds, golf courses, and ball fields) are allowed on POS lands. This year Anne Arundel County Recreation and Parks Department has about \$22,000,000 available for POS land purchases.

Another county effort to encourage preservation of open space is the **South County Small Area Plan (SAP)**. The County authorized 16 of these SAPs all

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Jug Bay Wetlands Sanctuary
1361 Wrighton Road
Lothian, MD 20711
410-741-9330
e-mail: jugbay@toad.net

Jug Bay Home page:
www.jugbay.org

Jug Bay Wetlands Sanctuary is operated by the Anne Arundel County Department of Recreation and Parks. It was established in 1985 with the goals of wetlands research and environmental education. The Sanctuary is a limited-use park. Visitors are requested to make a reservation by calling the office before planning a visit.

Jug Bay Wetlands Sanctuary is a member of the Chesapeake Bay - National Estuarine Research Reserve system, which promotes scientific research, public education, resource management and stewardship in estuarine reserves across the nation.

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Andrew Wood, Maintenance Assistance

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Ken Riggelman, Sandy Teliak, Brian
Woodward

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welcome.**

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Continued from page 1

across the county. The plan for our area was completed in 2001 by a committee of 16 south county residents (whose rallying cry was “Keep South County Rural”) led by the Trust for Public Land’s Debi Osborne. The SAP vision states: “A high priority is placed on protecting the area’s natural resources, including its wetlands, shorelines, woodlands, fields, wildlife and their habitats.” The SAP is only “advisory” at this time, but there are efforts to give parts of the plans some regulatory force. The SAP calls for low-scale development in Wayson’s Corner where a Target Store is now proposed. The South County SAP can be viewed at <http://www.aacounty.org/PlanZone/SAP/Index.cfm>

A number of our direct neighbors on Wrighton Road, Plummer Lane and Pindell Road have their property in an agricultural, conservation, or forest easement. According to the Maryland Environmental Trust, “a **conservation easement** is a tool for landowners to protect natural resources and preserve scenic open space. The landowner who gives an easement limits the right to develop and subdivide the land, now and in the future, but still remains the owner. The organization accepting the easement agrees to monitor it forever to ensure compliance with its terms. No public access is required by a conservation easement.”

Easements provide a critical buffer surrounding the Sanctuary, shielding the Sanctuary from harm. Because many animals readily move back and forth between protected lands and private property, populations are safer and healthier, using larger habitat areas that support their needs. These buffers also help improve water quality and reduce soil runoff.

Levels of Protection in the Sanctuary

Purchasing land for resource protection is the first critical step to creating a nature preserve. But long-term protection does not end with this one act. For example, at some point in the future protected lands could be converted to incompatible uses for which the land was never intended. Legal documents with explicit language or with codified management practices may be needed. To make certain that the Sanctuary is protected for future generations of citizens

and wildlife populations, government officials and dedicated citizens have worked long and hard to ensure that the Sanctuary will remain protected in perpetuity. Today, there are several layers of county, state, and federal protections over the Sanctuary. The most important of these is the **Environmental Covenant** that was signed by County Executive Janet S. Owens in March 2006. This document sets forth restrictions and makes explicit the County’s intent to manage the Sanctuary for the purposes of environmental education, ecological research, and habitat stewardship. Activities that are not consistent with this mission are simply not allowed.

In 1990, the Sanctuary joined the Chesapeake Bay National Estuarine Research Reserve. The Reserve program is a partnership between the National Oceanic and Administrative Administration, Maryland’s Department of Natural Resources, and the county. As part of that process the county signed a Memorandum of Understanding (MOU) with the state to manage the Sanctuary in ways that do not harm the environment. The MOU is very specific and covers such issues as erosion, commercial activities, degradation to water quality, excavations and trash dumping.

In 2001, the Sanctuary was expanded with the purchase of the 600-acre Parris Glendening Nature Preserve—the first such parcel purchased as part of the Governor’s innovative GreenPrint program. The land is also subject to special restrictions that are outlined in a Conservation Easement that is held by the state. The easement requires the County to minimize damage to water quality and to wetlands, among a host of other activities. By paying attention to threats from without as well as to improper actions within, we—staff, volunteers, the Friends of Jug Bay—can ensure that the Sanctuary will remain in healthy natural condition for generations to come.

To learn more about these issues, contact FOJB Stewardship Committee Chair Al Tucker (301 229-4826).

To view the MOU, the Environmental Covenant and the Conservation Easement, go to the Sanctuary web page at www.jugbay.org, and click the links on the home page under “More Information.”



Dear Friends,

What a beautiful time of year. Although I have only been out on the river once in the last 10 days, I have managed to find opportunities during these busy days to somehow enjoy the change of the seasons. I suspect I am in the company of many of you, who must also get in a car every day during the week and drive to work, rather than to the more preferable destination of a wetland sanctuary! Yet even while we are creeping along in traffic, if you look, there can be occasional moments of joy. Have you noticed the increase in wildlife activity lately? It can be witnessed from just about anywhere. On most days during late October and early November, whether in the morning or afternoon, if you look for it you can see and enjoy wildlife and nature. Maybe it's a scavenger such as a raccoon or opossum scampering along the shoulder of the road trying to find additional calories to fatten up on for the winter, or a whitetail deer running around a bit crazy due to the "rut," or a flock of blackbirds that seems to stretch forever, making you wonder where they came from and where they are going. And who doesn't marvel when the glorious leaves are turning, or when the timing and conditions are just

right and the wind blows causing these same leaves to lose their grip en masse, filling the sky. Sadly, many people are too busy and tend to either ignore the opportunity to enjoy this, or worse, they simply don't even notice.

So—how much have you noticed—and enjoyed lately? I hope that all of you have had ample time and opportunity to enjoy the beauty and marvel of nature this autumn.

And speaking of change, I also hope that you read our recent letter from the FOJB Board Members, regarding the proposed development (Target) at Wayson's Corner. Most of all, I hope you found the time to contact and communicate your concern to either an elected official or a candidate, or one of the regulatory agencies that have the authority to either approve or deny the proposal. Or all the above! The march of "Progress" could have a very negative impact on the Jug Bay Wetlands Sanctuary/Glending Nature Preserve. This is certain: If this proposal is approved, it will be impossible to avoid some significant permanent adverse impacts to the Sanctuary; however, if we are cautious and if the state and local regulatory agencies are willing, perhaps together we can persuade the developer to take voluntary (extra) measures to minimize some of the impacts. There can be a substantially different outcome between "meeting the code" and addressing public concern.

This is not the first, and certainly won't be the last issue that the FOJB have to deal with regarding appropriate land use and development that is compatible with the surrounding community. The FOJB Board will continue to plan for and act on ideas and activities that can accomplish the core FOJB missions - to protect the Wetland Sanctuary and surrounding environment; to provide the public with opportunity for environmental studies and education; and to engage in outreach to raise public awareness about the unique status and irreplaceable beauty of Jug Bay.

We hope you will be able to participate in the Sanctuary's program activities this autumn. Come out and enjoy the Sanctuary soon!

Jeff Shenot, President

NOTE: We presently have a couple vacancies for FOJB Board Members. If you are interested in becoming a Board member, please contact one of us and let us know.

The FOJB is a nonprofit organization that supports and enhances Sanctuary activities.

fojbws@yahoo.com

Presentation of the Jug Bay Award 2006 to Doug Kuzmiak

also featuring the slide talk
"Northern Pakistan: Home of the Snow Leopard"

Saturday, December 9
5 p.m. at the Wetlands Center

Doug Kuzmiak, former president of the Friends of Jug Bay, will receive the 2006 Jug Bay Award for his years of tireless dedication to the Sanctuary. Among his many accomplishments: raising \$50,000 to create and install the Wetlands Center interactive exhibits and spearheading the campaign to save from development the hundreds of acres of forest and meadows now known as the Parris N. Glending Nature Preserve.

Following the presentation of the award, Doug, an accomplished lecturer and photographer, will give a slide talk on northern Pakistan. He will describe the rescue of an orphaned snow leopard who—with the help of the State Department's Dave Linthicum, another Jug Bay Award winner—has found a new home in the Bronx Zoo.

The evening will begin with a potluck supper. Please bring a dish you would like to share.

RSVP: (410) 741-9330 or fojbws@yahoo.com

Of Mud and Microbes

By Pat Megonigal, Senior Scientist
Smithsonian Environmental Research Center

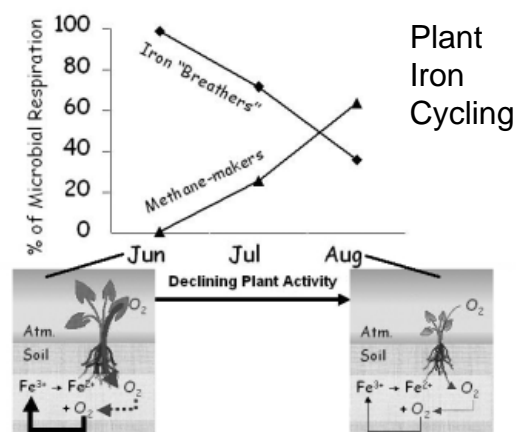
Microbes rule! Or at least that was the perspective of scientists from local institutions who met recently at the Jug Bay Sanctuary. The meeting was organized by Chris Swarth and Marilyn Fogel (Carnegie Institution) to bring together scientists working on the cycling of important environmental elements at Jug Bay and the Patuxent River.

Dr. Tom Jordan (Smithsonian Environmental Research Center) and Dr. Jeff Cornwell (Horn Point Environmental Lab) talked about a project that goes by the snappy acronym SNAPI, which stands for Salinity Nitrogen and Phosphorus Investigation. Tom and Jeff are interested in how salt levels affect the availability of phosphorus and nitrogen, important pollutants in the estuaries such as the Chesapeake Bay. More than 90% of the phosphorus carried by rivers downstream to estuaries is bound in sediments that are suspended in the water, the same sediments that prevent Bernie Fowler from seeing his shoes! These solid forms of phosphorus contribute less to water pollution than dissolved forms because they are unavailable to plankton, and much of the solid form is bound up with the element iron. Dr. Jordan reported that changes in salinity in estuaries (such as with sea level rise) may dissolve some of the solid phosphate through a complex series of events that begins with microbial respiration or “breathing” (microbes don’t have lungs, but you get the point!). Some microbes that live in oxygen-free environments can “breathe” sulfate, a compound that is enriched in sea water. These organisms produce hydrogen sulfide, the gas with the rotten-egg smell. Finally, the hydrogen sulfide binds to iron particles in sediments, displacing the phosphorus and making it available to plankton. The release of phosphorus caused by the increase in sulfate was particularly dramatic when Dr. Jordan added extra organic matter to the sediments, which sulfate-breathing microbes use for energy.

Jeff Cornwell has been working on the same Patuxent River sediments as Tom Jordan, but his interest is in the effects of salinity on nitrogen coming from the sediments. He found that the amount of nitrogen coming from sediments (due again to microbial activity!) did not change dramatically as salinity increased. Considering both the phosphorus and nitrogen work, it seems that changes in the supply of organic matter and sulfate from sea water can alter the relative availability of phosphate versus nitrogen in estuarine waters. This could help explain why the growth of plankton tends to be limited by phosphorus in freshwaters (such as Jug Bay), but by nitrogen in coastal marine waters.

Dr. Jason Keller and Dr. Pat Megonigal (both at the Smithsonian Environmental Research Center) presented their work on iron-breathing microbes and rusty roots. Certain types of bacteria can use iron for respiration when oxygen is absent (the sulfate-breathers above being another example), and these compete with one another for organic matter energy. Perhaps the most

famous group of microbes that the iron-breathers compete with is the methane producers. Methane is a powerful greenhouse gas that causes 20% of current global warming, so there is intense interest in these microbes! As nature would have it, the iron-breathers can out-compete the methane producers. So wherever rust-colored iron is found, there is relatively little methane gas produced. One such place is the roots of wetland plants. In fact, wetland plant roots are often covered with a rusty red coating of iron. Dr. Keller presented the results of a field study that showed the respiration of iron-breathing bacteria is greatest when plants are most active. He thinks this is because active plants deposit large amounts of rust-colored iron on their roots where the iron-breathing microbes can use it. As a result, the activity of methane-producing is lowest when plant activity is highest. Knowledge of the connection between the dynamic world of soil microbes and their plant neighbors offers ideas for managing emissions of greenhouse gases such as methane.



Dr. Karen Bushaw-Newton and Caroline Fortunato (both of American University) discussed Ms. Fortunato’s work for her Master’s thesis. They noted that the microbial world is our greatest biological frontier. We have described just 1% of the microbes that exist and are thus ignorant of the biological diversity that exists in this group! Ms. Fortunato sampled three sites in the Patuxent River near Jug Bay and two wetlands in order to assess microbial community diversity using DNA analyses. They were particularly interested in DNA that codes for parts of the nitrogen cycle. What they found was impressive differences in microbial diversity between sites and, in some cases, even within sites.

Dr. Marilyn Fogel (Carnegie Institution) discussed her work using stable isotope tracers to examine microbial processes in the wetlands. Dr. Fogel has worked on various projects with students and postdoctoral fellows since 1989 when her husband Chris began work at the Sanctuary. Groups from the Carnegie have studied how marsh plants decompose and eventually become fossils, the diets of red-bellied and eastern box turtles and queen snakes, the source of gases bubbling up through the marsh sediments, and nutrient cycling in tidal waters. Her work with Susan Ziegler (intern at Jug Bay in 1991 and postdoctoral fellow with Marilyn in 2001) showed that microbes were responsible for providing many of the organic molecules that are important for driving the ecosystem, particularly at night when photosynthetic organisms (algae) were essentially “asleep.”

Wetland Appreciation Enhanced Through Eagle Scout Projects

By Lindsay Funk Hollister

Boy Scouts John Hammond, of Laurel Troop 9, and Steven J. Medina, of Pasadena Troop 870 came to us determined to complete their Eagle projects here. With steady focus and an eagerness for work these upstanding young men worked with Sanctuary staff to design and install projects to enhance visitor appreciation of our wetland habitats.

John Hammond came to check out Jug Bay in the fall of 2005 based upon a recommendation from his science teacher, our own former FOJB co-President Peggy Brosnan. At only 15 years of age, John was looking forward to completing his Eagle requirements long before his 18th birthday. Based on his previous experiences, and “looking to do an environmental project”, John decided to recreate the Marsh Boardwalk finger piers that have been absent since Hurricane Isabel destroyed them. The winter was spent researching and planning, and as soon as the school year came to a close, construction became a top priority. Led by their Eagle candidate, Troop 9 came out on weekends in June to prepare the materials for the three piers and by early July they were ready to install. It did not take long for them to learn that marsh mud is not easy to move through, so John crafted “duck board” planks to aid the installation process. Once the pilings were driven, laying

the decking was easy in comparison. The boardwalk fingers have already proved to be a valuable asset to us when teaching wetlands ecology to a group, affording everyone an up-close look at the fascinating tidal plant communities below.

Steve Medina, a 16 year young Boy Scout, was also driven to complete his Eagle project early. He came to us this spring after learning about the Sanctuary through our website. He too had a desire to work on “an environment related project” and settled on creating an observation platform for the Two Run Beaver Pond. After a period of consultations to determine a style, the installation went very smoothly. Joined by over a dozen troop members and family, the construction took only one day to complete. Jutting from the hillside, overlooking the Beaver Pond, this new observation deck will provide countless opportunities for teaching moments and makes for an inviting place where visitors can stop and observe the many charismatic animals that use the area.

A hearty thanks to you John, and to you Steven; your respective projects have each given us all the opportunity to better observe, and perhaps stay a bit longer to see something new in our wonderful wetlands. The high quality craftsmanship of your projects will ensure that you will be able to come back to Jug Bay for years to come to enjoy the work you have done.



Eagle Scout John Hammond (holding hammer) with troop members and family who helped him build boardwalk extensions.



Boy Scout Troop 870 constructs the Beaver Pond observation platform for Steve Medina's Eagle Scout project.



Captive Box Turtle Enjoying New Abode

The Sanctuary has a new resident, a three-legged Box Turtle named Tripod. This female turtle lost a leg due to an injury and was rehabilitated by the Mid-Atlantic Turtle and Tortoise Society. The Society's president, Sandy Barnett, and members Keith Kelly, Jim Kohler, Ray Bosmans, Billy

Director Chris Swarth holds Tripod, the injured Box Turtle that will live in the newly constructed enclosure on the north side of the Nature Center.

Heinbuch, and Colin Barnett worked through hot summer days to build a beautiful turtle enclosure with a pond and appropriate shade plants on the north side of the Wetlands Center. Chris Swarth, Frank Speaks, and Lindsay Funk Hollister provided labor as well. FOJB supplied funds for the construction materials. At the end of the summer, Tripod was placed in her new home, and she appears to like it very much. She is hibernating right now, but this people-friendly turtle will be meeting many school children and summer campers this next year.

New Maintenance Worker Joins Jug Bay

Andrew Wood is now a part-time maintenance worker at the Sanctuary. Andrew, a resident of Davidsonville, visited the Sanctuary with his parents, Colin and Anne Wood, who were volunteers, when he was a boy. Andrew is also attending classes at Anne Arundel Community College. Welcome, Andrew!

Alice's Goodbye

By Alice Rohrer,
Administrative Assistant

I'd like to take this opportunity to say goodbye to everyone. November 29 is my last day at the Sanctuary. It is a sad occasion for me but also a happy one! The happy part of leaving is that I will be able to spend more time with my family and volunteer for Hospice, which has always had a place in my heart.

The sad part is saying goodbye to all the wonderful people whom I have met during my six years at Jug Bay. I want everyone to know that I will remember them with fondness and will truly miss them. So instead of goodbye, I will say, "Happy trails to you~until we meet again!"

The Sanctuary's new Administrative Assistant, Cathy McKenney, begins work in December. Stop by and say hello!

Thanks for Your Donations

- Jeff Campbell for the *Field Guide to Wildlife Habitats of the Eastern United States* by Janine M. Benyus
- Clint Cosner donated *Quick Games from Trash*, many craft materials, and a starfinder

Lights, Camera, Action!

The Sanctuary's Marbled Salamanders recently became movie stars. As they migrated to breeding pools on rainy autumn nights, they were being filmed by photographers working for the British Broadcasting Company. The footage is to become part of a David Attenborough series, *Life in Cold Blood*, scheduled for release in 2008.



Lindsay Funk Hollister

When evening rain was in the forecast, professional nature photographers Michael Male and Judy Feith traveled from their home in Locustville, Virginia (near Chincoteague), on a quest to capture images of the sleek, black and white amphibians moving over the forest floor, laying eggs in the vernal pool area, and moving away again. Watching a nature show and seeing wild animals up close is easy; however, photographing them is a difficult endeavor that requires lots of time and patience. No one has ever caught the mating of *Ambystoma opacum* on film because this species—unlike spotted salamanders that gather en masse for breeding—is more reclusive and dispersed throughout the wetland area. Michael and Judy also found that Marbled Salamanders—members of the mole salamander family that live underground—were rather camera-shy and “froze” in the camera's lights. Capturing the animals in action required creative solutions. For instance, Michael and Judy collected soil and leaves (with the correct chemical properties) from the vernal pool area and created a simulated “forest floor” on a raised surface, so that their cameras could meet the salamanders at eye level.

We look forward to seeing the Attenborough series. Who knows? Volunteers who've photographed the salamanders for the amphibian breeding study might recognize an old friend!

Sandy Teliak Wins Volunteer Award

Congratulations to Sandy Teliak, who was presented with Anne Arundel County's Ron Blake Outstanding Volunteer Award. Sandy began volunteering at the Sanctuary in 2004 after his retirement from the National Security Administration. He jumped right in, assisting with MAPS netting and bird banding and clearing debris from the Glendening Preserve. Developing an interest in the MAPS data, he analyzed some of the numbers and wrote several articles for Marsh Notes featuring the research results. Before long, he was also monitoring amphibian traps for vernal pool studies, and searching for Box Turtles. This past year, he has taken an active part in the Friends of Jug Bay by becoming a board member, reviewing the by-laws, preparing for the 20th anniversary party, and getting involved in advocating for the Sanctuary in the face of development nearby.



Volunteer Sandy Teliak won the 2006 Ron Blake Outstanding Volunteer Award.

Sandy's enthusiasm and hard work are a great asset to the Sanctuary. Thanks, Sandy, and congratulations!

Volunteer Duo Enjoys a Variety of Studies

By Elaine Friebele

In 1993, volunteers Mary and Gordon Burton, saw an ad in the *Pennysaver* for a winter bird walk series at Jug Bay. They joined Chris Swarth for this educational program every other week. "It was really cold," remembered Gordon, "and we froze, but we came back." The Burtons have kept coming back ever since, immersing themselves more deeply in the Sanctuary's ecological research projects.

By the spring of 1998, Mary and Gordon had retired from their day jobs (Mary was a teacher and Gordon, a geologist) and were monitoring pitfall traps for Spotted Salamanders in the spring. Though the Burtons never saw a single Spotted Salamander, they returned week after week to check the traps. Their persistence paid off, for soon they were monitoring amphibian migration in the fall, when the more common Marbled Salamanders are captured as they move to vernal pools on rainy nights. Eight years later, they are among the most experienced volunteers who collect, weigh, sex, and photograph the 400 or more Marbled Salamanders captured during the breeding season. Karyn Molines credits them with helping her develop a coding system to characterize the silver pattern on the back of each salamander, so that recaptured individuals can be identified. Of the coding process, which can be quite tedious, Gordon said, "Our marriage survived!"

Although they say that salamanders are their first love, Mary and Gordon have become involved in other research projects. For many years, Mary has also been a water quality monitor, collecting water samples and preparing them for analysis. She often checks to see if volunteers are needed and fills in voids on the schedule. For two years, Mary and Gordon regularly participated in the habitat survey, which involved identifying trees and characterizing different areas of the Sanctuary's forests, wetlands, and meadows. They also had a brief dalliance with the Box Turtle and Wild Rice research projects.

"We've enjoyed learning a lot about everything from bugs to birds," said Gordon.



Mary agrees. "The training courses give you a basic knowledge, and then when you get into a project, you learn a lot over time," she said.

What draws them to the Sanctuary? "We love volunteering here because it gives us a good reason to be outside," said Mary. "If we have something specific to do at Jug Bay, we go out and enjoy it. Volunteering provides that structure."

Other reasons? "I enjoy her company,"

Volunteer Mary Burton weighs one of many Marbled Salamanders while her husband, Gordon, records the data.

Gordon deadpans. They obviously have a good time, as they infuse everything they do with humor.

"We volunteer at Jug Bay because we like animals, and we get along better with them than we do humans!" Mary jokes. She also notes that they've "met a lot of nice people."

Teachers Trained in Forest Program at Sanctuary

In early November, science teachers discovered how to "See the Forest Through the Trees" from Jug Bay naturalist Karyn Molines, at the National Science Teachers Association conference in Baltimore. Teachers attending the program learned how to demonstrate the concepts of forest succession through field investigation, and also to explore with their students how changes in forests over time are connected to human history.



A high school teacher from New York measures a tree during a National Science Teacher's Association workshop on teaching about forest succession.

On the following day, 20 teachers boarded a bus for Jug Bay, where they participated in forest succession activities, including identifying and measuring trees and then predicting a forest's age. Teachers also explored investigative activities that teach about forests and trees in situations where schoolyards have few trees and field trips to forests aren't possible.

W I N T E R 2006 2007



DEPARTMENT OF RECREATION AND PARKS

Jug Bay Wetlands Sanctuary
1361 Wrighton Road
Lothian, MD 20711
410-741-9330

Fall Volunteers (August - October 2006)

Liz Ahmann	Kathy Ellett	Kyle Maduro	Sandy Teliak
Jane Baker	Kim Elliott	Judy Mauriello	One Timers
Sandy Barnett	Maureen Fine	Steven Medina	Peter Uimonen
Helen Beard	Caitlin Fleming	Caitlin Megonigal	Nancy Weber
Peg Benton	Bob Ford	Bill Miles	Bruce Weidele
Mike Blackstone	Brigitte Fortin-Zaidan	Louise Miles	Clare Whittaker
Susan Blackstone	Jared Frank	Dotty Mumford	Bob Williams III
Jess Boesch	Robert Frezza	Jennifer Muro	Sea Williams
Cynthia Bravo	Rosemary Frezza	Janis Oppelt	
Judy Burke	Diane Goebes	Jan Owings	
Jon Burns	Brandon Greene	Michael Palombi	
Gordon Burton	Julia Hagemeyer	Sandi Palombi	
Mary Burton	Tasha Hagemeyer	Keri Parker	
Danny Bystrak	John Hammond	Michael Quinlan	
Jeff Campbell	Jim Harle	Gordon Reynolds	
Betty Chaney	Carol Hayes	Arlene Ripley	
Ginger & Betty Chaney	Ben Hollister	Rogard Ross	
Kathleen Chow	Lynn Kenny	Alex Saviet	
Antonio Cordero	Peter Kenny	Jack Schultz	
Eric Dabney	Elizabeth Kurgansky	Bob Smith	
David Davis	Bill Lauffer	Bill Steiner	
Mark Delfs	Deb Leifer	Al Sutherland	
Eric Duce	David Linthicum	Liz Sutherland	
Becky Elam	Buddy Littler	Yuka Tasumi	



Winter 2006/07 Programs at Jug Bay

- Reservations and entrance fees are required for all events, unless noted.
- Call 410-741-9330 or e-mail jugbay@toad.net
- Check out www.jugbay.org for information, directions and updates to our schedule.
- Open to the public 9 am-5 pm Wednesday and Saturday (and Sunday March-November)
- Programs are open to families and individuals. An adult must accompany children under 13.
- Scouts and other groups must call to arrange a separate program.
- Please note age limits for each program.

Entrance Fees: Adults \$3; Children under 18 \$2; Over 60 \$2; FOJB family membership \$25.

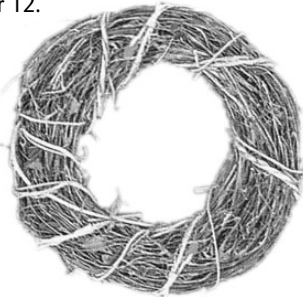
Birding at Jug Bay

Saturday, January 6; 8-11 am

Saturday, February 3; 8-11 am

Saturday, March 3; 8-11 am

Learn the skills of identifying birds by sight and sound. Binoculars and field guides will be available to borrow. Not appropriate for children under 12.



Make a Honeysuckle Wreath

Saturday, December 9; 1-3 pm

Invasive Japanese Honeysuckle vine is a big problem in our forests, but makes a great hand-made wreath! Bring family and friends out for an afternoon of crafting—we'll be doing good by gathering some vines near the Wetland Center then create our wreaths from them. Decorate the finished product with supplies provided by us. All ages welcome.

Winter Solstice Hike

Friday, December 22; 3-5 pm

The Winter Solstice marks the longest night of the year and the start of winter. Celebrate the season while hiking the winter woods. We'll end the day watching sunset with a light snack. All ages welcome.

Help a Hungry Bird

Saturday, January 6; 10 am-noon

What do birds do in winter? How do they keep warm and what do they eat? We will explore bird behavior, search for birds, and then make bird feeders so you can help feed a hungry bird. Dress warmly. All ages.

Aquatic Insect Ecology

Saturday, January 6; 2-4 pm

Bundle up and come explore a stream! Winter is the best time to study and identify aquatic insects. We will learn how to differentiate between the larvae of mayflies, stoneflies, caddisflies, true flies and other stream invertebrates. The role of invertebrates in monitoring stream health will be discussed. Then join us on January 12 to monitor the stream. For adults and children over 10.

Winter Detectives

Saturday, January 13; 2-4 pm

Come to Jug Bay and become a winter detective! Dress warmly for our hike to search for winter animals and plants. Hot chocolate will warm us up after the hike. All ages.

Winter

Woods Walk

Saturday, January 20; 1-3:30 pm

The trees may be bare, but there's still life out there! Bundle up and join a naturalist to discover the beauty of the woods in winter. Bring binoculars if you have them. Hot chocolate will help warm us after our hike. Meet at the River Farm. All ages. No entrance fee.

Story Tellers

Friday, January 26; 10:30 -11:30 am

Thursday, February 8; 10:30-11:30 am

Friday, February 23; 10:30-11:30 am

Thursday, March 8; 10:30-11:30 am

Friday, March 30; 10:30-11:30 am

Come relax by the fire and listen to a tale while sipping on hot chocolate. We'll take a short nature hike and make a nature craft. All ages welcome.

Full Moon Hike

Friday, February 2; 6-8 p.m.

Enjoy the rising moon as we explore the fields and forests of the Glendening Preserve. Wear study footwear and be prepared to hike several miles on natural surface trails. Bring a flashlight and dress for the weather. Meet at the Preserve entrance on Plummer Lane. Note that there are no restroom facilities at the Preserve. For adults and children over 10 years old. No entrance fee.

Keys to Plant Identification

Saturday, February 10; 10 am -noon

Alternate, opposite, toothed, entire, umbels, sepals? If such terminology mystifies you, this program is the answer! We'll learn the basics of plant identification using keys and field guides, then take a hike to use our knowledge. This program is designed for those with little or no experience and will focus on identifying trees using their twigs and bark. For adults and older teens.

Leave it to Beaver

Saturday, February 10; 3:30-5:30 pm

Learn about the beavers and their wetlands. We will learn about beaver adaptations, and then take a hike to the beaver ponds. Dress warmly and wear footwear that can get muddy. All ages.

Beneath Your Feet

Saturday, February 17; 1-3 pm

Join a naturalist to explore the world of earthworms, pillbugs, bess beetles and other creatures that live down low. We'll learn about the adaptations of underground animals and investigate a rotting log to learn how soil forms. Dress for the weather. All ages.

Coastal Erosion

Saturday, February 24; 10 am-noon

What is erosion, what causes it and who cares? We will learn about the causes and impacts of coastal erosion, experiment with erosion through hands-on demonstrations. Children must be at least 10 years old.

Stalking the Wild Timberdoodle

Friday, March 9; 5:30-6:30 pm

Late winter is the time for the annual courtship display of the American woodcock, a.k.a. timberdoodle. You can watch this dazzling aerial show right from your car! Male woodcocks should be performing their mating ritual at dusk over the meadow in front of the Wetland Center parking lot. Binoculars are not necessary, but it's always a good idea to bring them along, just in case some other interesting creature wanders past. You might even see the bird on the ground after it has landed. Free. For adults and families with children at least 10 years old.

Jug Bay Wetlands Sanctuary
410-741-9330
www.jugbay.org

Birds for Beginners

Saturday, March 10; 10 am-noon

Children too young for our monthly bird walks can explore the avian world in a program designed just for them. We'll learn about bird adaptations, take a hike to look and listen for birds that stay here all winter, and make a peanut butter pine cone feeder to take home. Dress warmly. All ages including adults with little birding experience.

Tree-iffic

Saturday, March 17; 10 am-noon

Explore trees and the stories they tell us. We'll learn different types of trees, how they grow, and how important they are for people and wildlife. Come dressed for the weather and ready to hike. All ages welcome.

Nature Journal Workshop

Sunday, March 18; 1-3 pm

Come walk in the woods watching for the first signs of spring. We'll learn how to sense and record our insights to nature using words, images, and color. Bring a notebook or journal. For adults and teens.

Vernal Equinox Hike

Friday, March 23; 4:15-6:15 pm

The Vernal Equinox marks the first day of spring. Hike the Sanctuary's trails to look for signs of the new season. We'll end by watching sunset from the marsh boardwalk, followed by a snack in the Wetlands Center. All ages welcome.

Bringing Back Bluebirds

Sunday, March 25; 1-4 pm

Come learn about bluebirds and how they live. Each participant will assemble a nest box to take home and put up, hopefully to welcome bluebirds into your yard. We'll provide all the materials. Bring hammers and rechargeable drills and screwdrivers, if you have them. To reserve a space, mail the program fee of \$10.00 per box (including FOJB members), in advance, to the Sanctuary. All ages welcome.

Reptiles and Amphibians

Saturday, April 14; 1-3 pm

Snakes, turtles, lizards, frogs, toads and salamanders will be the stars of this program. We'll explore the forest and ponds to learn more about the similarities and differences between reptiles and amphibians. Wear waterproof boots or shoes that can get wet. All ages.



Volunteer activities are free (unless noted) and new volunteers are always welcome.

Volunteer Appreciation Social

Sunday, February 18; 1-6 pm

Historic London Town and Gardens Tours, Dinner, and Awards

Friday Night at the Movies

Friday, December 29; 7-9 pm

"Winged Migration"

Friday, February 23; 6-8 pm

"Parrots on Telegraph Hill"

Join fellow volunteers for a fun evening in the Wetlands Center. Afterwards we can discuss the movie. Space is limited, so please call or email your reservation. \$1 per person fee, which will cover the cost of the movie, popcorn, and sodas.

Stream Monitoring

Friday, January 12; 9:30 am-noon

Volunteers are needed to help collect, identify, and count stream invertebrates that are used to evaluate stream health. Dress for the weather and wear waterproof boots or shoes and clothes that can get wet and muddy. Bring a change of clothes and a towel. For adults and children over 12 years old.

Soup and Science

Saturday, January 27; 5-7 pm

Enjoy home made soup as you learn about some of our winter ecological research: wintering ducks and geese; stream insects and healthy streams; and vernal pools as amphibian habitats. Please make reservations by January 22. For adults and older children.

Become a Trail Monitor

Saturday, February 24; 1-3 pm

Our Trail Monitor program is having its one year anniversary. Existing Monitors can share their experiences and volunteer for another year. Volunteers interested in the project are welcome to come learn how to adopt their own trail.

Naturalist Training

Saturday, March 3; 12:30-4:30 pm

Volunteers are needed to lead our public education programs. Here's your chance to learn about plants and animals and practice activities that make a nature walk fun and educational. For adults or older teens.

Non-native Plants: The Green Invasion!

Saturday, March 17; 1-3 pm

This indoor slide lecture will focus on the problems non-native invasive plants cause in natural ecosystems and how to identify the native and non-native species of concern. Come learn about our "Adopt-a-Plot" initiative to help control the invasives at the Sanctuary where individuals, families and groups adopt their very own plot to monitor, map and manage the invasives. Leaders (adults and teens) of scouts, schools and community groups who would like to participate in Adopt-a-Plot workdays are encouraged to attend.

Water Chemistry and Nutrient Dynamics Training Workshop

Saturday, March 24; 10:30 am-1 pm

Since 1988, volunteers have monitored nutrient pollution, dissolved oxygen levels, pH and water clarity in Jug Bay's waters. We will refresh those skills and train new volunteers. Additional training is provided during the sampling dates. The workshop is recommended for all volunteers, new and experienced. For adults or teens.

Marsh Clean Up

Saturday, March 31; 10 am-3 pm

Volunteers will pick up trash that has floated into the marsh. Please dress in work clothes (long sleeves and long pants), including boots or shoes that can get wet, and bring work gloves, a bag lunch, a change of clothes and a towel. Children should be at least 6 years old. Scout troops and community groups are encouraged to participate.

HOME SCHOOL PROGRAMS

Nature Did it First!

Wednesday, January 24; 10 am-1 pm

Ages 7 and up

Insects: Stream Canaries

Wednesday, February 21; 10 am-1 pm

Ages 9 and up

Vernal Pools

Wednesday, March 21; 10 am-1 pm

Ages 7 and up

For class descriptions, registration and further information, please visit our website, www.jugbay.org.

Pre-registration required. To register, please call (410) 741-9330 or fill out registration form on our website and send it to the Sanctuary.

Cost: \$1.00 (payment on arrival)

Please bring a lunch.

Parents are not required to stay with their children, but they are welcome if they choose to do so.