Fish Seining for Fun & (Scientific) Profit

by Karyn Molines and Chris Swarth

Tidal wetlands on the Chesapeake Bay are recognized as crucial habitats for a variety of migratory and resident fish, especially the juvenile life stages. Commercially and recreationally important species such as the Striped Bass and White Perch depend on shallow estuarine waters and marshes during their early years of growth. Areas like Jug Bay—just upstream from the brackish parts of the Chesapeake estuary—support migratory (anadromous), estuarine and year-round resident species. In 1987 we began surveying this diverse fish community using a variety of capture methods. The purpose of our research is:

- To determine species diversity.
- To determine the age and size classes of fish using the wetlands.
- To compare tidal versus non-tidal habitat use.
- To document seasonal fluctuations in population size and species composition.
- To provide an opportunity for the public to become involved in wetlands research.

Fish surveying is great fun! Armed with seines, dip nets, buckets, rulers, and a clipboard, teams of volunteers, led by an experienced fish identifier, head into the shallow waters in search of Striped Bass, Yellow Perch, Mummichogs, and Eastern Mud Minnows. Captured fish are held just long enough to identify them and to make some basic measurements before they’re released. Fish that are unusual or difficult to identify are brought to the lab and held in aquaria for further study. To make our work easier, Shannon Smithberger and Doris Peters created a pictorial identification guide featuring key characteristics of all adult fish in our area. As a further aid, volunteer photographer Carroll Hughes has taken close-up photos of 25 species, which we are organizing into a field guide.

Over the ten years, we’ve netted 40 different species (see table on page 5). Of this total, 19 species occur in both tidal and non-tidal habitats; 11 in tidal habitats only; and 10 only in non-tidal habitats. The most commonly caught species over the sampling period were Mummichog, Inland Silverside, Alewife, Banded Killifish, White Perch, Spottrail Shiner, Bay Anchovy, Tessellated Darter, Golden Shiner, Creek Chub-sucker, Bluegill Sunfish, Satinfin Shiner, and Mosquitofish.

Study Site Descriptions

Tidal Shoreline: Shallow, sloping shore with firm to mucky substrate along the edge of Jug Bay. The Farm Point site (now Sweet Flag Picnic Area) has no rooted vegetation, but the Otter Point site has dense Spatterdock.

Non-tidal Creeks: These creeks consist of glides or non-rocky riffles with fast-moving waters, pools of deeper quiet water, tree roots and submerged logs. The substrate is firm.

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Bird Alert

Spring research projects are poised to begin, timed to catch the earliest waves of bird migration. Volunteers are welcome on the following projects; please call Judy Burke at the Sanctuary if you are interested.

**Migration banding.** Volunteers Danny Bystrak, Lloyd Lewis and Mike Quinlan will be netting and banding migrating birds along Railroad Bed Trail, beginning about April 15. The netting will be in the morning several times a week for six to eight weeks.

**Saw-whet owls.** Danny Bystrak will be leading an attempt to catch Northern Saw-whet Owls in mist nets in the evening, beginning around March 5-6. He and other volunteers banded 40 owls in the fall — a big surprise to many birders who thought our area of Maryland had none — and they are curious about the spring movement of these tiny migratory owls. No one has netted in spring before; this project is an experiment.

**Breeding Songbird Population Study (MAPS).** Chris Swarth will coordinate the “bird banding” study set to start on May 17 and continue through mid-August. This will be the 7th year that we’ve participated in this nationwide project to measure the survivorship and breeding productivity of songbirds. Nets are opened about every ten days, usually on Tuesdays and Sundays. Volunteer duties include opening and closing mist nets and identifying, aging, measuring, weighing, and banding songbirds. Prior banding experience is helpful but not required. An orientation meeting is scheduled for May 9 at 7:30 p.m.

**Project Manager**. Lloyd Lewis will be expanding the Sanctuary’s study of tanagers this year and would welcome assistance beginning in April. Volunteers will be searching for nests and trying to assess the behavior and reproductive success of breeding pairs. The study will require several sessions in the woods, each one beginning about 8 a.m. and lasting for three to five hours.

**Bluebird boxes.** Mike Quinlan is planning a bluebird jamboree — assembling and erecting nest boxes for bluebirds — on Saturday, March 23 at 1 p.m. Volunteers will meet at the Wetlands Center to build the boxes from kits, which Mike will prepare. Then they will head out to erect the boxes, putting one box in the field near the parking lot and probably 11 others at the farm near the edge of the woods. Later in the season, volunteers may be needed to help monitor the boxes. The three boxes that were available to birds last year near the Center produced one clutch of bluebird eggs, which promptly disappeared (probably as snake food), and one brood of tufted titmice. Sign up with Mike by phone: (301) 805-4278; or by e-mail: Mike MQ @ aol.com.

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**Conference—Wetland Plants of the Mid-Atlantic States: Distribution, Ecology and Conservation**

Saturday, June 22, 1996; 8:30 a.m. - 5:00 p.m.

Keynote speaker: Dennis Whigham, Ph.D., of the Smithsonian Environmental Research Center.

This conference, sponsored by the Sanctuary, will bring together field botanists, scientists, resource experts and others to discuss research results, population monitoring projects, and wetland restoration efforts. Equipped with new information, we’ll be in a better position to work together to understand and protect wetland plant communities. Fifteen-minute oral presentations and extended afternoon technical sessions in the field will cover a variety of topics. Advanced registration fee ($15.00) is required (includes lunch, coffee, and munchies). For more information, call conference organizer Chris Swarth at (410) 741-9330.
Dear Friends,

I hope that all of you made it through the Blizzard of 1996 and the subsequent snow and cold weather without too many problems. I, for one, am ready for Spring!

The annual meeting of the Friends is scheduled for Sunday, March 24, at 2:00 p.m. We will elect officers and new board members for the coming year. County Recreation and Parks Department Environmental Chief Brian Woodward will address the audience with a talk titled, "A String of Sanctuaries." Chris Swarth, along with the design team of Chris White Design, will describe plans for the new exhibits at the Center. These plans are quite different from the exhibits generally seen in nature centers, and we would appreciate your opinions about them. A variety of delicious refreshments will be available, including "Cakes by Suzanne."

In order to reduce mailing costs, we will be mailing membership renewal letters along with the announcement for the annual meeting. As you know, our membership year runs from April 1 of one year to March 31 of the following year. Your membership dues are the backbone of the funds that we use to help the Sanctuary with its educational and research programs, and I hope that you will continue your support.

This is my last message to you as president of the Friends of Jug Bay. Doug Kuzmiak (subject to elections at the annual meeting) has agreed to be our new president. Doug was an outstanding master-of-ceremonies and organizer of the ten-year celebration last October. He is very energetic and capable, and I know that you will enjoy having him as your president.

It has been an honor to serve as your president for two years. My heartfelt thanks to all who have made my tenure so pleasant. I plan to remain an active participant on the board. See you at the annual meeting!

Dotty Mumford

Sanctuary Receives Education Award

The Jug Bay staff received an appreciation award from the Maryland Association for Environmental and Outdoor Education for helping to organize an education conference held in Baltimore in February. The award was presented by MAEOE president Britt Slattery to conference co-chair Chris Swarth. The meeting attracted almost 300 educators from throughout the mid-Atlantic states region. Invited speakers Mike Wielbacher from Philadelphia and Dr. Tom Lovejoy from the Smithsonian Institution discussed, respectively, theories of environmental education and the value of preserving global biodiversity. The one-day conference also featured 34 workshops and discussions sessions and 15 exhibits. A highlight was a special members-only evening reception at the National Aquarium. The staff thanks the Friends of Jug Bay for covering our conference-related expenses. Thanks also to Brian Woodward, County Recreation and Parks Department Chief of Environmental and Facilities Programs, for his support during the busy period leading up to the conference.

Give Wildlife a Break!

Spring cleaning of the marsh to be held March 16
Details in Spring events insert
and clayey with no rocks. Shaded banks help maintain a constant water temperature during the warm months.

Permanent and Temporary Ponds:
Year-round beaver ponds have deeper, slower-moving water interspersed with hummocks of mallow, rose, buttonbush, alder, and silky dogwood. Channels created by the beavers offer a deeper habitat. Several seasonal or temporary ponds hold fish washed into them during periods of flooding.

As a group, darters are abundant in North America; more than 135 species have been described. Three-inch Tesselated Darters are common in Two-Run Creek, but we also find them in tidal wetlands. We’ve captured over 175. This unusual fish, which is related to the yellow perch, can turn its head without moving its body and can even roll its eyes around in their sockets. The recent rediscovery of the similar “extinct” Striped-backed Darter by fisheries biologists in nearby Prince George’s County points to the value of surveys. Perhaps this tiny fish will be discovered in Anne Arundel County as well.

American Shad and Striped Bass supported important commercial fisheries in Maryland, but their populations have plummeted due to overfishing and declining habitats. Shad were specifically impacted by barriers (dams, weirs, culverts, pipelines) placed along their migration routes. In an effort to reestablish them in the Patuxent River, over the last three years the Department of Natural Resources has released more than 1 million hatchery-reared American Shad into the waters of Jug Bay. The two-inch fingerlings were treated with tetracycline, which stains their ear bones. Upon recapture, it’s possible to identify these marked fish so as to estimate the survival of the marked population. We’ve caught small numbers of young shad (such as Blue-backed Herrings and Alewife), but juveniles are difficult to identify to species. We will develop an identification key so that volunteers can distinguish juveniles in order to help the DNR in their efforts to monitor the released populations.

Jug Bay is the farthest upstream spawning area for the Striped Bass in the Patuxent River, and the marshes here offer ideal habitats for egg and young development. Our data on seasonal occurrence and on the size classes found throughout the year will offer additional insight into the time spent by stripers in these upstream marshes before they head to the sea.
Fish occurring in the Jug Bay tidal wetlands and non-tidal streams

[T = Tidal; N = Non-tidal; A = Tidal and Non-tidal habitats]

- Alewife - T
- American Eel - A
- American Shad - A
- Banded Killifish - T
- Bay Anchovy - T
- Black Crappie - T
- Blacknosed Dace - N
- Bluegill Sunfish - A
- Bluespotted Sunfish - A
- Brown Bullhead - A
- Cham Pickeral - A
- Channel Catfish - A
- Common Carp - T
- Creek Chub - N
- Creek Chubsucker - N
- Eastern Mudminnow - A
- Eastern Silvery Minnow - A
- Fallfish - N
- Gizzard Shad - T
- Golden Shiner - A
- Hickory Shad - T
- Hogchoker - T
- Inland Silverside - A
- Largemouth Bass - T
- Least Brook Lamprey - N
- Mosquitofish - A
- Mummichog - A
- Pumpkinseed Sunfish - A
- Redfin Pickerel - N
- Rosybel Dace - N
- Satinfin Shiner - N
- Spot - T
- Sportstail Shiner - A
- Striped Bass - T
- Swallowtail Shiner - N
- Tessellated Darter - A
- White Crappie - T
- White Perch - A
- White Sucker - N
- Yellow Perch - A

Volunteers make this study possible

Recent volunteers include Doris Peters, Vinnie Salamone, Dr. Katalin Szlavcz (who brings her Johns Hopkins ecology students) and Carroll Hughes, our official fish photographer. Others who have helped over the years are Larry Allen, Mike Allen, Marty Barron, Peter Bergstrom, Todd Blanc, David Bleil, Dale Buffington, Robert Buffington, Gayla Campbell, Jim Harle, Matt Horine, Nelson Horine, Foster Lipphard, Woody Martin, Liz McClunin, Ellen McCormick, Diana McLaughlin, Bill Mills, Holly Mills, Tommy Peters, Bill Rodney, Joshua Skolnick, Shannon Smithberger, Julie Woodcock, George Zinkgraf, and Mike Zinkgraf.

Additional volunteers are needed to help us document the importance of tidal wetlands and small streams for fish! We want to continue our standard surveys, to investigate Pinell Creek and to improve our ability to recognize young American Shad and Striped Bass in order to help with the state-sponsored release programs. If you want to help, please call Karyn Molines or Judy Burke.

South County Community Garden News

By Tom Wright, Garden Coordinator

For gardeners, seed catalogs have a wonderful way of relieving winter frustrations and annoyances stemming (this year) from government shutdowns, dreary, dark days, and large snows. The recent arrival of several catalogs reminded us that it was time to think about plans for the South County Community Garden.

The Community Farm, now in its third year, is four acres of open farmland located in the middle of the Jug Bay Wetlands Sanctuary, on the Patuxent River, just south of the Visitors Center. Two old tobacco barns and adjacent woods provide a quiet, beautiful setting in which to garden in an environmentally responsible way; to learn about the interplay and trade-off between our need for food, the adjacent terrestrial environment, and the tie to the Chesapeake Bay system; and to share among all the members whatever is grown.

The Community Farm welcomes anyone with a desire to participate in growing fresh vegetables to join at the farm this season. There are several ways that you can participate. For $125.00 per year, you (and family) can join other members (last year about 15 people) and participate in planning, preparing, planting, weeding, and picking the vegetables—from spring radishes to late-fall broccoli. We have grown a wide variety of vegetables, and we often have five or six different ones ready each week during the season (about April to October). For those interested in a less intense mode of participation, we welcome you for a series of Farm Days, during which some specific task will be done—such as setting out seedling cabbage plants or digging potatoes. Farm Day activities will be posted at the Center and also at the Farm. You and your family can come and watch or participate in the work if you like. You could, for example, plan to bring your kids to plant potatoes and again later to help dig them up. Finally, we will find jobs for volunteers who would occasionally like to do something at the Farm.

We'll hold a planning meeting at the Red House on the Farm March 26 at 7:30 p.m. We will go over final plans for the crops we intend to grow, how we'll schedule various farming tasks, and how we might be able to facilitate distribution of the produce. For more information, call Tom Wright at (703) 306-1552 (work), or (202) 333-8672 (home), or leave a message at the Sanctuary.
Oxon Hill High School Student Investigates DO Measurement Methods

by Chris Swarth

Monitoring dissolved oxygen (DO) levels is a good way to keep tabs on the health of our water. Three methods of measuring DO are now used at Jug Bay:

- modified Winkler method (the popular Lamotte Kit)
- YSI portable electronic meter
- YSI automatic DataSonde

The placement in June 1995 of an automatic, round-the-clock DataSonde into a tidal channel by estuarine researcher David Nemazie raised the question, How similar are readings between this and the other two methods? A chance to answer this question materialized when high school senior Deidre Washington asked if I would supervise her senior science project. Between August and November Deidre made more than thirty trips to the Observation Blind in order to make simultaneous measurements of DO using the kit and the meter. David then downloaded the DO data from the DataSonde to his laptop computer and made them available to us so that we could compare the values.

The results of this comparison are shown in Figure 1. Although the methods gave quite similar results between mid-October and December, they differed significantly when data from all months were combined and analyzed statistically. One reason for the discrepancies in the summer is that DO concentrations can change rapidly over short periods, sometimes doubling in less than 30 minutes. Since it takes 15 minutes or longer to make measurements in the field, a brief time lag can produce widely differing results. Later in the season when water temperatures declined, the methods agreed more closely. Also, notice the increase in DO into the fall in response to falling water temperatures. We also noticed that the DataSonde usually gave the lowest readings and the Winkler method the highest. The DataSonde rests on the bottom of the channel, sometimes 24 inches below the surface, where DO concentrations are probably lower than at the surface where the other measurements were made. Taking the time lag and depth of sampling into account, the methods appear to be in close agreement. Deidre will present the results of her investigation at a statewide science fair at the University of Maryland in March.

Concentrations of dissolved oxygen (DO) in water vary widely (0 - 15 mg/liter) due to physical and biological factors. For example, because colder water holds more DO than warmer water, we find that DO levels in winter are generally higher than in summer. DO concentrations also vary with depth — surface waters usually have greater concentrations than bottom waters because of diffusion from the atmosphere and mixing due to wind and waves. In spring and summer growing algae and SAVs release oxygen during the photosynthetic process. Superimposed on these natural environmental factors are anthropogenic inputs of nutrients from point and non-point sources. Excess nutrients, chiefly inorganic nitrogen, can disrupt the "ecological balance," leading to a decline in DO. Because aquatic animals like fish and crabs require certain levels of DO, a decrease can have severe consequences. Fish kills and "crab jubilees" are dramatic Chesapeake Bay indicators of severely depressed DO levels.

Comparison of Three Methods Used for Measuring Dissolved Oxygen; (Summer - Fall 1995)

Figure 1.
With Special Thanks

• to Jack Smith, owner of Smith Building Supply in Churchton, for a much-needed donation of pressure-treated lumber.
• to David Laughlin for donating four nail aprons. The tree study is going much more smoothly now that people don't have to carry tree tags, hammers, compasses and pencils all in their pockets.
• to Doug Kuzniak, who wrote a vibrant and informative article, "Jug Bay: An Ecological Gem," which appeared in the December 1995 edition of Maryland Magazine. The article highlighted many of our volunteers and stressed the importance of the research done at JBWS, on both local and global levels.
• to David Laughlin, who added a wealth of knowledge on woodland plants to the Winter Walk Feb. 10.
• to Danny Bystrak for developing a new scheme for maintaining the meadow near the parking lot.

Volunteer Excursion

Three bald eagles, the loud call of cranes and heavy snow on the back roads made the volunteer trip to Patuxent Environmental Science Center on January 21 an adventure for the senses as well as for the cars. Fifteen people joined the trip, which started with a visit to the bird-banding laboratory and ended five hours later with a glimpse of the wastewater treatment pond at the National Wildlife Visitors Center (a prime spot for amphibians in the spring.)

Sam Droge, a staff biologist at Patuxent, led the tour with good humor, unfazed when high water on the back roads forced a last-minute change of direction. He pointed out kildeer and sapsuckers, he discussed the pre-Civil War history of the land, and he hiked the group through cold and snowy woods to a shrubby clearing visited by eagles.

Chris Swarth tested the volunteer spirit when his pickup truck got stuck in the snow. People pushed, rocked and rolled until the truck came clear; that was after several people helped Doug Kuzniak and Humaira Khan change a flat tire!

Many thanks to Sam and to all who joined us to make the excursion fun.

Volunteers Needed for Turtle Study

Chris Swarth is studying Jug Bay's turtle community of seven species in order to measure population size, breeding effort, reproductive success, and habitat use. Last spring and summer 211 turtles were measured and marked. With this large population of individually marked animals, there is a tremendous amount of valuable information to be gained by searching and rediscovering these turtles. If you would enjoy

• setting hoop traps in intertidal channels to catch painted and musk turtles
• searching the meadows in June for females excavating nest sites
• exploring the woods in search of box turtles

then get involved! For more information, call Judy Burke or Chris. An orientation meeting is set for Thursday, April 25, at 7:30 p.m.

Organic Garden Planning Session

Tuesday, March 26; 7:30 p.m.

Want to join the garden gang? The purpose of this meeting is to explain how the community garden project works and to make decisions on the crops to be grown this season. The garden is a great success but we need more members! For more information, call garden coordinator Tom Wright at (202) 333-8672 (evenings), or leave him a message at the Sanctuary office.
Volunteers Needed

The Great Herp Search

Saturday, June 1; 10:00 a.m. - 2:00 p.m.

Join us for our eighth annual census of reptiles and amphibians (otherwise known as herps). Box turtles will be notched, salamanders will be weighed, and Six-lined Race Runners will be watched running away! Everyone will be involved in gathering important information and documenting herp population changes at Jug Bay. Participants will be assigned to teams that will search the forest leaf litter, stream banks and marsh edges for these cold-blooded creatures. Special teams for families led by volunteer naturalists will get a chance to learn more about reptile and amphibian biology. Please make advance reservations for the Family Teams.

Aquatic Macroinvertebrate Population Survey

Friday, May 3; 10:00 a.m. - 2:00 p.m.

Our latest research project involves exploring Two-Run Creek to identify the aquatic insects, snails and other invertebrates living there. No experience is needed, but be ready to get your feet wet! Call Karyn Molines for more information.

Conference on the Wetland Plants of the Mid-Atlantic States to be held at the Sanctuary on June 22.
Details on page 2

Become a Jug Bay Volunteer
For more information call 410-741-9330
Reservations for most programs are required. Space is limited! Advance payment required for canoe trips. Make reservations by calling (410) 741-9330. Admission is $2.50 for adults, $2.00 for senior citizens, and $1.50 for children under 18. Fee for canoe trips is $5/person (including FOJB members.) Most activities are free for volunteers and FOJB members.

**LECTURES-IN-THE-FIELD**

**Marsh Ecology by Canoe**
Saturday, April 13; 1:00 - 4:00 p.m.
Sunday, April 28; 1:00 - 4:00 p.m.
Saturday, May 11; 12:00 - 3:00 p.m.
Sunday, June 9; 12:00 - 3:00 p.m.
Saturday, June 23; 9:00 a.m. - 12:00 p.m.

Observe water birds, discover the marsh awakening from its winter rest and learn about the ecology of freshwater wetlands. Trips are led by experienced volunteers or staff naturalists. To reserve a space mail your payment ($5 per person) in advance to the Sanctuary. FOJB members must also pay the $5 fee. Please include first and second choice dates, daytime phone number, address, the number in your party, and ages of children. Canoe instruction and all equipment provided.

**Spring Bird Migration Along the Patuxent**
Saturday, May 11; 7:00 a.m. - 5:00 p.m.
Leader: Chris Swarth
The forests, swamps, and wetlands along the Patuxent River support an array of northbound migratory birds. We'll discuss the ecology of migration and identify as many birds as possible. On this trip for beginner and intermediate birders, we'll explore the Sanctuary, then caravan by car to Battle Creek Cypress Swamp and Jefferson-Patterson Park and finish up in Solomons. Meet at Jug Bay's Wetlands Center at 7:00 a.m. Maximum 15 people (18 years and older). Cost: $7.50, advance registration.

**Workshop: Introduction to Wetlands Ecology**
Thursdays 4:15 - 7:15 p.m. (May 2 - 23)
Saturday 9:00 a.m. - 5:00 p.m. (May 11)
This workshop is designed for school teachers and environmentalists (volunteers welcome, too!) Learn about wetlands as well as interesting activities that can be used in the classroom or the field. The instructors are Karyn Molines, the Sanctuary's Education Coordinator, and Chris Swarth, the Sanctuary's Director. MSDE credit is available. Teachers may register through the Anne Arundel Schools Office of Staff Development (Course No. 94-69) by calling 410-222-5831; others may call the sanctuary directly. Tuition is $35 (free for teachers who register for MSDE credit, thanks to a grant from the Chesapeake Bay Trust).

**Historical Distribution of SAVs in Patuxent River**
Saturday, June 15; 10:00 a.m. -1:00 p.m.
Leader: Mike Naylor
Join biologist Mike Naylor of the MD Department of Natural Resources for a discussion of the importance of submerged aquatic vegetation (SAV) in the Patuxent estuary. Learn about the current and historical status of the SAV resource, including the potential impacts of the exotic Hydrilla, take an interpretive canoe trip to several SAV beds, and find out how to identify SAV. Please wear old clothes and bring a lunch.

**Marsh Boardwalk Tour**
Scheduled for the second Saturday of every month
March 9, April 13, May 11 & June 8
10:00 - 11:00 a.m.
Join a naturalist for an informal introduction to the ecology of the amazing freshwater tidal wetlands of Jug Bay. The tour takes place on a boardwalk that runs along the edge of the marsh. Participants will learn about the plants, animals, and environment of this portion of the Patuxent River. Families welcome. Open to all ages.

**Marsh Clean-up**
Saturday, March 16; 9:00 a.m. - 1:00 p.m.
Learn more about our wetlands while helping the wildlife and plants that depend on this habitat. Volunteers are needed to pick up trash (bottles, cans, old tires, Styrofoam) that has floated into the marsh. Please dress in work clothes, including boots and gloves, and bring a bag lunch. We'll provide sodas. Call Judy Burke to sign up. Free.

**DISCOVERY PROGRAMS**

Discovery Programs allow families to explore the natural world at Jug Bay. Children under 13 must be accompanied by an adult. Led by staff naturalists Marcy Damon and Judy Burke.

**Night Hike**
Saturday, March 2; 6:00 - 8:00 p.m.
What creatures are stirring so close to spring? Owls in their nests? Spring peepers singing in the marsh? Salamanders migrating to breeding pools? Let's find out! Dress warmly and wear waterproof shoes or boots for this late winter hike under a full moon. Ages 8 and up.
Ospreys: From Costa Rica to Jug Bay
Sunday, March 17; 1:00 - 3:00 p.m.
Celebrate the annual return of Jug Bay’s ospreys from Central and South America by making a mobile that shows what these “fish hawks” look like, where they nest, and what they eat. We’ll venture outside with binoculars and scan the sky and nesting platforms to glimpse these magnificent raptors. Materials provided. Ages 6 and up.

Explore a Woodland Pond
Sunday, April 21; 1:00 - 3:00 p.m.
This time of year, woodland ponds are teeming with life: salamanders, frogs and toads come to breed and lay their eggs, whirligig beetles and water striders move about on top, and dragonfly larvae hide in the leaves underwater. We’ll use dip nets and collecting jars to see these animals up close and learn about their life cycles. Equipment provided. Wear rubber boots or old tennis shoes that can get wet. Ages 8 and up.

Children’s Day
Spring Migrations
Saturday, May 18; 11:00 a.m. - 3:00 p.m.
Find out what animals migrate in the spring and why. Fun and games for the whole family. Bring a picnic lunch or purchase lunch to benefit the Friends of Jug Bay. Free.

Mother’s Day Scavenger Hunt
Sunday, May 12; 1:00 - 3:00 p.m.
Invite your mom out for the day. Using a map and a series of clues, visit different parts of the Sanctuary for a variety of activities. You can explore under a log, record all the birds you see and hear, catch water striders in a stream, and play a matching game with wetland plants. We’ll end the day by making a corsage to take home. Equipment and instructions provided. All ages.

Father’s Day Adventure
Sunday, June 16; 2:00 - 4:00 p.m.
What do you do with a trail map, a compass, a magnifying glass, and a dip net? Answer: Have a great time together exploring the woods, wetlands, and creeks of Jug Bay. You can do a log search, count fish swimming under a bridge, observe osprey behavior on their nesting platform, or search for deer tracks. Make a colorful handkerchief as a gift. Equipment and instructions provided. All ages.

Summer Science Day Camp
Session 1, Reptiles & Amphibians
(for children currently in 4th and 5th grades)
June 24 - 28 (Monday - Friday);
9:30 a.m. - 3:30 p.m.
Session 2, Our Blood Runs Cold...
(for children currently in 6th and 7th grades)
July 8 - 12 (Monday - Friday);
9:30 a.m. - 3:30 p.m.
Children will explore marsh, forest, farm, stream and pond ecosystems. They’ll learn about the cold-blooded animals (reptiles, amphibians, fish, invertebrates) of each of these habitats through such activities as hiking, canoeing, fish seineing and interactive games. A nocturnal Herp Hunt, star-gazing and a sleep-out in tents are always camp highlights. The cost is $95.00 per session ($85.00 for FOJB members).

To register your child for camp, a completed registration form and payment should be mailed or delivered to the Sanctuary. Registration forms are available by calling the Sanctuary at (410) 741-9330, Monday - Friday, 9:00 a.m. - 5:00 p.m.

Volunteer Opportunities
These educational & research opportunities are available to the public. Free.

Canoe Guide Training
Saturday, March 30; 12:00 - 5:00 p.m.
Canoeing the marshes provides a most exciting way to learn about the ecology of wetlands. At least twice a month from April to October, “Marsh Ecology by Canoe” trips are offered to the general public and to private groups. Two canoe guides are needed for each trip, and volunteers are the backbone of the Sanctuary’s ability to meet the demand for these programs. For both experienced and new volunteers, we offer this workshop to teach basic canoe safety and techniques, to provide background on general marsh ecology, to discuss canoe routes, and to review Sanctuary policies. New volunteers are required to attend this training in addition to accompanying an experienced guide on a trip. Much of the training will take place in canoes on the river. Wear shorts! The 1996 schedule will be mailed to all who are interested. If you cannot attend this training but are interested in being a canoe guide, please call Judy Burke or Karyn Molines at (410) 741-9330.

Fish Surveys
Sunday, April 14; 1:00 - 5:00 p.m. (Sweet Flag Picnic Area, formerly Farm Pt.)
Saturday, May 4; 11:00 a.m. - 4:00 p.m. (Pindell and Two Run Creeks)
Sunday, June 9; 11:00 a.m. - 4:00 p.m. (Sweet Flag Picnic Area)
Volunteers willing to get wet are needed to conduct the monthly surveys of capturing, identifying and releasing the fish found throughout the Sanctuary. No identification skills are needed — this is your chance to gain some hands-on experience. Please call Judy Burke or Karyn Molines at (410) 741-9330 if you would like to help.