Potomac Basin
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C. Dalpra

Dairy farmer Glen Moyer (l) finds out about the creatures living in the stream from ICPRB staffers Jim Cummins and Jan Ducnuigeen (r).

ICPRB Biologists Survey Pennsylvania Streams

A warm autumn morning again found ICPRB Living Resources Unit staff members Jim Cummins and Jan Ducnuigeen far from the office. They set up a small office of their own along the bank of Little Cove Creek, in Franklin County, Pa., just downstream from a dairy farm. The office–some buckets, seine nets, sorting trays, and reporting forms–went up quickly, and soon the two researchers had trapped an array of creatures from the gravel and mud of the stream bed. The net was emptied into a tray, and the tallies of numbers and types of creatures were recorded.

As the team worked, Dairy Farmer Glen Moyer, who greeted the team earlier that morning, appeared streamside accompanied by his dog. After watching the team work the net, Moyer asked many questions about the types of bugs being recorded and what they told about the quality of the stream that runs through the farm. After about 40 minutes, cow duties called Moyer back, but he left knowing more about the local stream and its residents. It is an often-repeated feature of the project. "Talking to the landowners and their families about what we're finding in the streams is an added benefit to this project," Cummins said.

The effort to characterize the more than 2,000 miles of streams in the Pennsylvania portion of the Potomac basin contributes to the Department of Environmental Protection's (DEP) Unassessed Waters Program. Pennsylvania is creating an inventory of stream quality throughout the state that will be used to prioritize streams needing attention in the form of Total Maximum Daily Load (TMDL) plans aimed at bringing them up to standards.

During the last four years, ICPRB has

Our mission is to enhance, protect and conserve the water and associated land resources of the Potomac River and its tributaries through regional and interstate cooperation.

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been assessing stream quality through surveys of biology and habitat status, and has surveyed about 85 percent of the streams in the Pennsylvania portion of the Potomac. Assessing the streams helps Pennsylvania identify sources of nonpoint-source (runoff) and point-source (end-of-pipe) pollution in impacted streams, and verify the identity of good-quality waters.

During the past fiscal year, ICPRB staff conducted 60 site surveys, and found six stream segments with biological and habitat conditions of concern in the primarily rural region of the basin. The work has been slowed somewhat because of the lengthy span of drought conditions throughout the watershed, making these small streams difficult to characterize. Many of these streams will be visited again during more-representative conditions.

No abnormal conditions were found in the Little Cove Creek watershed. The small stream was unusual in that its flow had remained good despite a long stretch of drought conditions. Cummins and Ducnuigeen were prepared for a lower-quality stream as they set up shop on the streambank just down-current from cow pastures. The Little Cove Creek survey showed good quality, however.

The good results likely are in part due to innovative practices on the Cove Mountain Farm, owned by the American Farmland Trust. The trust, a nonprofit group that seeks to stop the loss of productive farmland and promote farming practices that lead to a healthy environment, was given the farm in 1996, with the promise that it would be used to create a grass-based dairy farm. Unlike more conventional operations where cows are kept and fed in barns, Cove Mountain Farm cows live in pastures planted in grass and legumes. The 120-head herd can be handled with minimal labor as cows live in and are rotated between fields. Grass farms such as Cove Mountain use significantly less fertilizer and pesticides than conventional dairies, and there is little concentration of manure spreading. These practices can have a significant effect on water quality. To document the benefits, the trust is working with the U.S. Department of Agriculture Research Service, which has installed equipment to monitor surface runoff and groundwater quality.

The small, 200-acre farm seeks to demonstrate the viability of small, family-run operations that leave a small environmental footprint. The farm has hosted a beginning dairy grazier course, as well as other seminars designed to help small farms implement sustainable practices while turning a profit. The site is well visited, noted farmer Glen Moyer, who runs the operation. Moyer noted that grazing operations are becoming more numerous in the area.

Jim Cummins and Jan Ducnuigeen collect invertebrates from Little Cove Creek. C. Dalpra

The ICPRB's role in Pennsylvania's Unassessed Waters Program will continue in 2002, with assistance from some county conservation districts. Work with Scott Alexander of the Fulton County Conservation District will allow the group to configure their water monitoring program to dovetail with the state monitoring effort. Fulton District personnel helped to provide introductions to local landowners that allowed easy access to stream monitoring points by the ICPRB team. The conservation districts also are working with ICPRB and the state to lay the groundwork for TMDL projects to help impaired streams. The ICPRB has been designated to develop several TMDL plans this year.

Tony Shaw, the DEP Chief of Field Sampling and Laboratory Support, describes the ICPRB work as very helpful. With similar support from the Susquehanna River Basin Commission and the state's Fish and Boat Commission, Shaw estimated that up to 20 biologists are working on the statewide program during the sampling season (spring and fall). Pennsylvania is scheduled to have all 83,000 of its stream miles assessed by 2005, and has completed about two-thirds of the streams. "The program is a top priority for DEP," Shaw said, "and will identify nonpoint-source pollution that has been under-reported in the past." Remedial actions (TMDLs) will be based on the program, and will assist DEP in providing cleaner streams for the residents of Pennsylvania and the Potomac basin, Shaw noted.

For further information on the Unassessed Waters Program, visit www.dep.state.pa.us/dep/deputate/watermgt/Wqp/WQStandards/UnassessWater.htm.

For more information on the American Farmlands Trust and the Cove Mountain Farm, demonstration project, visit www.farmland.org.

Md. Advisory Warns About Eating Fish

The Maryland Department of the Environment (MDE) in December issued new health advisories to limit consumption of certain fish caught in the tidal Potomac River and other rivers in the state. The advisories are aimed at protecting the public health, particularly those who regularly consume the fish they catch.

The advisories, issued in December, do not restrict public use of the resource, but are meant as a guide to minimize human exposure to contaminants found in fish. These advisories are not due to increased contamination of fish, according to MDE.

For the tidal Potomac River between Washington, D.C., and the Governor Nice (U.S. Route 301) Bridge, MDE advises these limits on consumption:

American Eel: One meal per month for the general population and women, none for children due to PCBs (a banned industrial solvent and insulator used in electrical equipment) and dieldrin (a pesticide) contamination.

Channel Catfish: Do not eat fish greater than 18 inches. For channel cats less than 18 inches, one meal per month for general population and women, none for children due to PCBs and dieldrin.

White Catfish: Do not eat fish greater than 18 inches. For fish less than 18 inches, two meals per month for general population, one per month for women, none for children due to PCBs and dieldrin.

Striped Bass: For fish between 18 and 26 inches, the general population and women should eat no more than one meal per month, none for children due to PCB

contamination.

Small- and Largemouth Bass: No guidance for men, eight meals per month for women and children due to methyl mercury.

Carp: Avoid consumption.

These guidelines are based on an eight-ounce meal for the general adult population, a six-ounce meal for women of childbearing age who are or may become pregnant, and a three-ounce meal for children.

The new advisories were implemented after recent changes in consumption estimates by the U.S. Environmental Protection Agency, new monitoring data collected by the state in 14 water bodies, and new analytical techniques.

In addition to the Potomac, 13 other tidal rivers in the state are subject to the new advisories. MDE also has issued advisories for lakes and impoundments statewide:

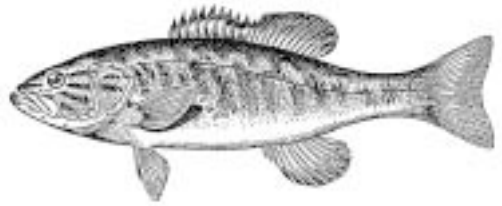
Small- and Largemouth Bass, Pickerel, Northern Pike, Walleye: Four meals per month for men and women, two meals per month for children due to methyl mercury.

Bluegill: Eight meals per month due to methyl mercury.

The contaminants of concern will not affect people who occasionally eat fish, and the advisories are geared toward those who regularly consume the targeted species. The advisories are aimed at reducing the risk of cancer in those who regularly eat the fish during a significant portion of their lifetimes. Exposure to PCBs and dieldrin can be further limited by removing the skin and trimming fat (where the contaminants concentrate) from the fish, and cooking in a way that allows fats to drain away from the meat. Larger fish can generally have higher concentrations of contaminants because their age has allowed them to concentrate more toxins from food. Bottom-dwelling fish tend to concentrate contaminants from the sediments and the food sources that live there. Mercury, on the other hand, binds directly to muscle tissue, and cannot be reduced through cooking or preparation methods.

The advisories do not affect fish purchased at a store, which can come from many sources and is regulated by the federal Food and Drug Administration.

The recent recommendations resulted from fish tissue monitoring data and updated federal guidelines. The state samples fish from locations around the state on a three-year cycle, and the latest data showed the presence of contaminants. The state's determination of allowable levels of the contaminants has changed because of U.S. Environmental Protection Agency estimates that show increased consumption of fish. The increased amount of fish eaten per meal has decreased the amount of meals per year deemed



statistically safe without significantly increasing overall levels of cancer within the population.

The cyclical sampling will continue, noted Rich Eskin, MDE Acting Deputy Director of the Technical and Regulatory Services Administration. Testing fish tissue for contaminants is expensive, costing several thousand dollars per sample, he said.

Eskin noted that results for some sites on the Potomac upstream of Washington, including the mainstem near Shepherdstown, W.Va., Conococheague Creek, and the Monocacy River will be assessed by spring. More advisories are likely to come from further testing, he said.

The advisories regarding lakes in the state also are the result of monitoring and new federal recommendations concerning mercury levels. Mercury tends to accumulate in top predators. Although the state did not sample pickerel, northern pike, and walleye, MDE decided to include them in advisories because they are top predators like bass.

Pennsylvania also issued advisories for contamination based on federal recommendations. Last April, the state set a blanket advisory of one meal per week for all fish caught in the state's waterways. Some waterways in the state were given stronger advisories. In the Potomac basin, smallmouth bass caught in Licking Creek in Franklin and Fulton counties from Big Cove to the Maryland border should be eaten only twice per month. Walleye taken from Meadow Grounds lake in the watershed should be eaten only twice per month. Those two advisories are because of mercury levels.

Pennsylvania issued the statewide advisory to limit confusion that the many different types of advisories can create for anglers. "By having one overarching statewide advisory of one meal per week for all fish, we can ensure that Pennsylvanians heading out to our waterways can safely enjoy the fish they catch," said Pennsylvania Fish and Boat Commission Executive Director Peter A. Colangelo said.

For more information in Maryland, visit www.mde.state.md.us/fishadvisory/index.html/.

For Pennsylvania, visit http://sites.state.pa.us/Pa_Exec/Fish_Boat/pfbchom2.html/.

ICPRB Units Evolve to Meet Changing Demands

James H. Gilford, Chairman of the Interstate Commission on the Potomac River Basin, recently announced two organizational changes for the Commission that reflect the commission's dynamic role in preserving and protecting the basin's water and related resources.

The first change, undertaken to reflect the increased technical support and assistance being provided to the Metropolitan Washington water suppliers who operate collectively as the CO-OP Utilities, is the creation of a key position known as the Deputy Director for CO-OP Operations. The second organizational change clarifies and expands the agency's education and outreach efforts with the creation of a Communications Section.

"Creation of the position of Deputy Director for CO-OP Operations allows us to focus attention on the expertise and support we provide to the metropolitan area water suppliers," said ICPRB Executive Director Joseph K. Hoffman. "The lingering drought conditions, evaluations that we have assisted the suppliers in developing, and the suppliers' recent request to us to coordinate with them to expand the available water supply by looking at a range of alternatives have expanded our mission," he said. "Water supply will continue to draw increasing attention in the face of increasing growth and development." The new position emphasizes this special support compared with efforts directed toward other areas of the basin.

The ICPRB Section for Cooperative Water Supply Operations on the Potomac (CO-OP) was formed in 1979 to assist the major metropolitan Washington, D.C. water utilities, which collectively provide water to about 80 percent of the metro area's residents. The CO-OP works with the utilities to provide adequate supplies of water from the Potomac River and storage in reservoirs during times of low flow. It provides this service through modeling and cooperative operations of water assets. The section's role has evolved, and it now provides a range of services, including demand forecasting and other projects to help assure adequate water for the region's future.

Hoffman announced the appointment of Erik Hagen to the deputy director post to manage the staff and activities of the CO-OP Unit. "Mr. Hagen is an exceptionally talented registered professional engineer who brings modeling skills and a creative mind to the position. He has shown an ability to develop ways of managing cooperative water demands and extend existing resources to meet long periods of below normal precipitation that we had in 1999 and again this year." Hoffman noted that the Commission has also received a commitment from a talented engineering student from the Massachusetts Institute of Technology to join the staff in March 2002.

The second change at the commission is the renaming of the Public Affairs Unit as the Communications Section, reflecting the wide range of efforts undertaken in providing information and education about the agency, the basin, and the promotion of greater public stewardship for natural resources. Curtis Dalpra, who headed the commission's Public Affairs Unit, has been designated as Communications Manager, and will head the section. "The staff in the Communications Section do much more than public affairs work. This unit is critical to ensure that the science and technical work of our several units is clearly delivered through different methods to the member jurisdictions and to the public." Those efforts include ICPRB's bimonthly *Potomac Basin Reporter*, and development and maintenance of ICPRB's website (www.potomacriver.org). The section also handles press releases, responds to the many information requests received, manages the ICPRB library (used by researchers of Potomac issues), maintains an extensive image library, coordinates with other organizations, and provides other communications functions.

These changes complement ICPRB's strong efforts in enhancing and protecting the water quality and related resources of the basin. For more information on the ICPRB efforts to enhance water supply, water quality, increase knowledge and communication, and perform a wide range of other activities, visit the ICPRB website.

Striped Bass Reproduction Excellent in Bay, Near Average for Potomac

The Maryland Department of Natural Resources reported in October that striped bass reproduction was the second-highest ever measured since the annual survey was instituted in 1954. The record occurred in 1996. The Striped Bass Young-of-the-Year Survey samples fish at a number of stations around the bay, and is considered to be an accurate tool in forecasting future populations.

The Potomac River, however, did not share in the bounty, and produced near-

average amounts of young striped bass for the second consecutive year. The Potomac had previously experienced several years of above-average recruitment. The 1998 and 1999 surveys were twice the long-term average. The complexity of the ecosystem defies answers as to why the Potomac did not share in the near-record recruitment.

Eric Durell, project leader for the Maryland survey, noted that there are many factors that play into the reproductive success of the fish in any given year. Water quality, temperature, storms, and availability of food all play into reproductive success. The continuing overall success of the species is boosted throughout the bay by large numbers of year-classes–the age group of the fish–being on site to spawn.

Fish of different ages may spawn at slightly different times, so having different year-classes involved lengthens the spawning period, muffling the effects of isolated weather or other factors.

Durell noted that areas such as the Nanticoke River are surprising researchers with the number of juvenile fish being found. He surmised that the large numbers of spawning fish may be "spreading out" from their more traditional spawning areas.

Years of above-average spawning success have come after the population crashed and a harvest moratorium lasting several years was enacted in the 1980s. Since the lifting of the ban, strict quotas on commercial and recreational harvest have resulted in the return of large numbers of the fish.

A similar survey for Virginia's portion of the bay and its tidal tributaries also showed very good recruitment.

Watching the River Flow

Flow of the Potomac River remained at very low levels throughout October and November, according to the U.S. Geological Survey.

Measured near Washington, D.C., the river's mean flow in October was 1.1 billion gallons per day (bgd), just 55 percent of the long-term average of about 2.0 bgd. Daily extremes ranged from a high flow of 1.4 bgd on October 1 to a low or about 0.9 bgd on October 11. Municipal withdrawals from the river for drinking water averaged about 399 million gallons per day (mgd), about two percent more than in October 2000. Freshwater inflow to the Chesapeake Bay also was very low, the 10.1 bgd being only 38 percent of the normal flow. The Potomac contributed about 16 percent.

In November, things got worse. Average flow for the month was about 1.1 bgd, only 21 percent of the river's normal November flow. Daily extremes ranged from a high of 2.0 on November 26 to a low of 0.9 bgd, which was reached on November 10, 20, and 23. Municipal diversions averaged about 386 mgd, up four percent from the previous November. Chesapeake Bay freshwater inflow averaged about 9.3 bgd, only 25 percent of the long-term average of 36.9 bgd. The Potomac contributed about 18 percent of the total.

Shad Returning to Potomac in Record Numbers

The Maryland Department of Natural Resources reported that the annual Chesapeake Bay survey assessing the abundance of American shad showed the highest numbers of juvenile fish ever measured for the bay and the tidal Potomac River. The annual survey was begun in 1958. In assessing reproductive success for the Maryland portion of the bay, researchers found nearly twice as many fish as in 2000 (the previous record). The record bay numbers were driven by the record Potomac production.

The news is welcomed by agencies such as ICPRB, which have been working for years to restore American shad populations to the river and bay (see May/June 2001 *Reporter*). Historically one of the most economically and socially important fisheries in the Potomac, American shad populations declined steeply in the 1950s due to fishing pressure, pollution, and loss of habitat. Stocks fell to the point that Maryland banned harvest of the fish in

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Jim Cummins fertilizing shad eggs at riverside.

1980, and a bay-wide moratorium remains in effect today.

The ICPRB has led a cooperative project for several years to stock shad fry to an area upstream of the Little Falls Dam just north of Washington. The dam represented a major loss of habitat to the migratory shad, which were stopped from traveling upstream. After a long effort, a fish passage device was installed in the dam by the U.S. Army Corps of Engineers in 2000, and the structure has allowed fish access to upstream areas for the past two seasons. Assessing the number of fish that have used the passage structure is difficult, although sampling has been done at the foot of Great Falls, the natural upstream limit to migratory fish travel.

The ICPRB project has for several years involved a local waterman, school groups, volunteers, the U.S. Fish and Wildlife Service's Harrison Lake National Fish Hatchery, and other agencies. Project participants capture migrating shad in the tidal Potomac River, harvest eggs and milt, hatch and mark the fry at a hatchery and in school classrooms, and release the fry in the Mather Gorge area upstream of the Little Falls Dam. After several years in the sea, the shad return and find the passage through the dam to return to the upstream segment of the Potomac to spawn. The project is aimed at delivering an added boost to the population by quickly introducing millions of fish to the area newly opened by the passage.

Although nobody can tell exactly why the shad are doing so well in the Potomac during the last few years, there are some strong contributing factors, noted ICPRB Associate Director for Living Resources James Cummins. "First, the Potomac was and is a remarkably productive river. Second, the return of submerged aquatic grasses (SAVs) and the shad moratoriums helped set the stage. Finally, the shad stocking effort, while designed primarily to restore shad to the river between Little Falls and Great Falls, gave an extra shove, a kick-start, to a shad population that was barely maintaining itself," he said. "The SAVs had been doing well in the freshwater tidal Potomac for almost 20 years, more than a decade before the stocking effort started. A moratorium was in effect in the Potomac for 13 years before we started stocking and nothing apparent was happening. These were also reasons we started the stocking effort," Cummins said.

Whatever the combination of factors, it is hoped that the encouraging results will continue, ushering a new viability for the species in the Potomac. "If these counts of young shad are predictive of adult returns, and I think that they are, numbers as large as those found in 2001 and 2000 mean that big changes are coming," Cummins said. "The Potomac might be a template for opening fisheries up and down the coast, and I want it to be a good one. Reopening the shad fishery, an ultimate test of recovery, will be a particularly daunting, yet all the more interesting task that we need to begin work on now."

Annual Potomac Cleanup Set for April 6; New Sites Needed

The 14th annual Potomac Watershed Cleanup is scheduled for Saturday, April 6, 2002 from 9 a.m. until noon. But we need your help now!

Last year, about 4,000 volunteers removed more than 70 tons of trash from 110 sites throughout the watershed. *To build on the success of the cleanup, more stations and volunteers are being sought, particularly in the Pennsylvania, West Virginia, and western Maryland portions of the watershed.*

People anywhere in the basin are welcome to identify a site in their

neighborhood that needs cleaning. Those with a new site should contact the cleanup organizer, the Alice Ferguson Foundation, at (301) 292-6665, or visit the cleanup website at www.potomaccleanup.org. New sites must be registered by February 15 to be included in promotional materials that will advertise the event.

The cleanup is organized by the Alice Ferguson Foundation, which runs the Hard Bargain Farm, an environmental education facility in southern Prince George's County. The ICPRB is one of many agencies and groups involved in the effort. The commission helps with event publicity strategy, and identifies new sites in the watershed.

While removing tons of trash from the river and its tributaries is a valuable exercise, the cleanup is equally important in raising the consciousness of the basin's residents, and spreading the message that a healthy Potomac watershed requires the active stewardship and interest of its residents.

Pa. Hosts February Nutrient/Sediment Forum

The Pennsylvania departments of Environmental Protection and Agriculture, in cooperation with several other cosponsoring organizations, will present a Nutrient Management and Sediment Control Innovative Technology Forum on February 12-14, 2002 at the Holiday Inn in Grantville, Dauphin County.

The forum will highlight new techniques for control, providing users with cost-effective answers to pollution control through exposure to new technologies. More details on the technical program for the Forum (including a registration form) can be found on DEP's website at www.dep.state.pa.us (direct link "Innovative Technology Forum"). For more information on registration or exhibitor arrangements, call the Pennsylvania Association of Conservation Districts (PACD) at (717) 545-8878 or visit www.pacd.org.

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