



C. Dalpra

The Potomac basin's water resources are relied on for drinking, agriculture, industry, waste management, ecological health, and recreation, and all are best sustained by high-quality rivers and streams.

Restoration, Partnerships, and Education are ICPRB 2008 Focus

The past year was one of challenges for the Potomac River basin. Several reports by federal agencies and nonprofit groups, as well as the experts who attended the 2005 ICPRB Potomac Biology Symposium, all noted a lack of continued improvement of the river during the past decade. A common conclusion was that while a great effort is being made for river restoration and protection on many fronts, those efforts aren't keeping pace with growth and development in the region.

The news media have highlighted several issues, including intersex fish in the Shenandoah basin and elsewhere; chronic fish kills in parts of the Potomac watershed; concerns about levels of chemicals from pharmaceuticals, personal care products, and other consumer and industrial compounds on water and drinking water quality; the effects of the continuing drought on water quality and supply. At the same time, the

resources needed for river restoration are decreasing from tightening budgets at the local, state, and federal levels.

The ICPRB is addressing these issues in partnership with many government agencies and groups on projects that directly assist state and federal programs. The ICPRB also seeks increased public awareness and participation for its projects, resulting in stronger efforts bolstered by citizen stewardship.

Water Quality Restoration Projects

The ICPRB staff is continuing its strong involvement in the modeling for and writing of **Total Maximum Daily Load (TMDL) plans**, particularly for watersheds shared by multiple states. The plans are required for water bodies that do not meet state water quality standards or support their designated uses. A TMDL study determines how much the pollutant load from each source must be reduced to restore the stream to its designated use.

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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Commission staff continue working on several TMDL efforts in the watershed, and recently completed a TMDL involving the District of Columbia, Maryland and Virginia that addresses the contamination of tidal Potomac River fish by polychlorinated biphenyls (PCBs). The ICPRB will continue to work with the three jurisdictions and the U.S. Environmental Protection Agency to coordinate implementation of the PCB TMDL.

This year, ICPRB will work on a nutrient TMDL for the nontidal portion of the Anacostia River in Maryland. The plan will be finished by the end of the year. In a separate project, ICPRB is assisting the Maryland Department of the Environment with modeling that will help the state with nutrient and sediment TMDLs all over Maryland. Staff are using a Geographic Information System to characterize watersheds by soil types, climate, land use, and other basic measures in another project. Other work for Maryland includes review of other TMDL documents, model calibration, and analysis.

Much research and regulatory activity in the Potomac basin jurisdictions is aimed at reducing local pollution and improving the Chesapeake Bay. To that end, ICPRB is heavily involved in the activities of the state-federal **Chesapeake Bay Program**. Several members of the ICPRB staff actively participate in the program's Implementation, Water Quality Steering, and Budget Steering committees and the Monitoring, Living Resources, Toxics, and Modeling subcommittees. Staff also are involved in the overall CBP effort to reorganize, streamline, and focus the cooperative interstate-federal program.

Protecting and Enhancing Water Resources

The region's water resources have blessed residents with a high quality of life. Perhaps the most essential use of the basin's water resources is as a source of drinking water for millions of residents. Some rely on groundwater resources, which are interconnected with the surface systems. Additionally, the Potomac's waters are used for irrigation, cool power plants, and carry sewage. These many uses demand a level of quality, and so water quantity and quality are inseparable. The ICPRB serves as coordinator of the **Potomac Basin Drinking Water Source Protection Partnership (DWSPP)**, a growing group of water suppliers; federal, state, and local government agencies; and other groups focused on protecting public drinking water by addressing threats to the quality of the source waters. The groups' efforts are focused in several directions, including encouraging increased research about potential effects of endocrine disrupting compounds and other



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Threats to drinking water come from many sources. Agricultural practices, such as unfenced cattle operations, are just one of many issues.

contaminants that are found in the region's streams and rivers. The group identifies regional priorities for protection efforts, coordinates efforts to benefit multiple water systems where possible, establishes and maintains communications among suppliers, managers and other groups, and develops new initiatives that ensure higher quality drinking water. The ICPRB leadership organizes DWSPP meetings and reports, and performs stream sampling during storms to determine storm-related increases of contaminant levels.

The ICPRB is working with other groups such as the Interstate Council on Water Policy to integrate water quality and safe drinking water programs through better research and drinking water practices.

The quantity of water available for residents of the metropolitan Washington area has long been a focus of ICPRB, specifically the **Section for Cooperative Water Supply Operations on the Potomac (CO-OP)**. CO-OP works with the three major metropolitan area water suppliers (the Washington Suburban Sanitary Commission, the Washington Aqueduct Division of the U.S. Army Corps of Engineers, and Fairfax Water) to ensure a safe and reliable supply of water as the region continues to grow. Nearly 4.1-million people are served by these water suppliers and most of that water comes from the Potomac. The river easily obliges under almost all conditions. During extreme droughts, however, water demands can exceed the historical low flow of the river. Careful planning and development of reservoir storage has kept the region generally free of unnecessary restrictions on water use. During droughts, the normally independently operated utilities work together with CO-OP to coordinate withdrawals from the Potomac, and share water stored in the Jennings Randolph and Little Seneca reservoirs. Reservoir water is

released to boost river flows so that water suppliers can meet demands while leaving enough water to protect the river's biological resources. The water sent downstream from Jennings Randolph Reservoir (on the Potomac's North Branch) helps keep flows up along the river between the reservoir and the intakes, benefitting fisheries, recreationists, and other users. In years of ample river flow, the water suppliers and CO-OP practice operations using simulated droughts that keep all involved well versed in the procedures and reveal new actions that help the system become more efficient. Staff also maintain and operate a spill model that can help track sewage or

chemical spills that could impact water supply withdrawals.

The CO-OP also is working with stakeholders to develop new ways of operating Jennings Randolph and Savage reservoirs in a way that might better balance recreation, water quality and water supply needs. The North Branch Advisory Group has been meeting for more than two years to provide input to the Corps of Engineers and the Upper Potomac River Commission (who operate the two reservoirs) on preferred flows for fish habitat, fishing activities, and whitewater boating activities. The ICPRB began working with the group last summer to facilitate technical studies that can help guide future management and operations of the reservoirs. The latest meeting of the group was held on February 25 and included discussions of how to model reservoir impacts on water temperature in the river (an important driver of fishery health) and how to study economic impacts of recreation in the region. The ICPRB will be meeting with the management agencies and stakeholders over the next several months to design and initiate these new studies. Eventually, the results of these studies will provide needed information on how reservoir operations affect these important issues.

As the quality and amounts of drinking water available become an increasing public concern, the Potomac basin jurisdictions are **assessing their water resources**. The ICPRB has been supporting the efforts of Pennsylvania on its Water Supply Act (Act 220). Under the act, Pennsylvania is performing a comprehensive assessment of water resources to guide its future. The Department of Environmental Protection will use assessments to provide tools that will allow local governments to plan for future development with sustainable water supplies while preserving the state's heritage of waterways that provide water for

agriculture, fisheries, and recreation.

The ICPRB, with the U.S. Geological Survey, will help assess the state's Potomac watersheds, producing a water balance between users and sources. As the state grows, the act and its supporting research can help guide use and development of resources to meet multiple demands. Staff from ICPRB also assist the regional councils formed to implement the plan, and are helping to organize meetings for user groups in the state's Potomac watersheds and with other outreach efforts.

Putting the "Living Resources" Back into the Potomac

Gathering data, analyzing it, and using the analyses for restoration are ways the ICPRB living resources team are making the Potomac healthier.

A long-term objective of the ICPRB is the **analysis and interpretation of monitoring data** to evaluate the health of Potomac



Pennsylvania stream monitoring.

aquatic ecosystems. Ecosystem health, or more scientifically, the structure and function of habitats and biological communities as compared to conditions that are desirable or thought to be normal, is measured with a suite of indicators and indices. These quantitative measures represent key components of the food web, such as submerged aquatic vegetation (SAV), plankton, benthic stream animals, and juvenile fish, as well as harvested fish and shellfish species. The information gained from the evaluations helps to determine what improvements are needed in environmental conditions such as nutrients and underwater light levels to keep the Potomac ecosystems healthy.

The ICPRB is currently investigating fresh approaches to **characterizing and mapping ecosystems** as good, fair, or poor based on these quantitative evaluations. This coming year, staff will work to develop a suite of indicators for tidal embayments, in order to better understand the competing influences of coastal streams and the Potomac estuary on the embayments. The ICPRB staff also are examining how land use affects neighboring streams.

Freshwater indicators, such as benthic stream animals and fish, are sensitive to various land use practices in urban and agricultural areas. While it is clear that land use affects the immediate subwatershed, the downstream extent of benefits or damage from a particular type of land use is unclear.

Another long-term ICPRB objective is to help partners of the Chesapeake Bay Program (CBP) **maintain and update the very large databases of non-tidal and tidal monitoring data** collected in the Chesapeake watershed. Information derived from these databases allow analysts to look at the entire watershed and track problems back to their sources. "By providing this data and tying non-tidal and tidal areas together, the public gets a better understanding of the waters around them-upstream and downstream," said Tami Huber, ICPRB's water quality database manager. Huber, and ICPRB's living resources data manager/analyst Jacqueline Johnson, are responsible for assuring the quality of the data and keeping consistency among the data sets. The data are used by diverse groups, including resource managers, analysts, researchers, students, and the general public. They are critical in assessing progress toward meeting commitments and restoring the Bay. The data are available on the CBP website at www.chesapeakebay.net/data/index.htm.

Staff are continuing **biological stream assessments** in Fulton, Bedford, and Franklin counties in Pennsylvania. Many of the streams in the area were classified as impaired between 1997 and 2003 and the impaired streams were prioritized for additional monitoring this year. Macroinvertebrates, animals that live in the stream bed, will be identified to the genus level to provide as much information on stream quality as possible. Staff will also be **helping Virginia and West Virginia to monitor streams** in areas they have not been able to cover due to resource limitations.

In addition to monitoring benthic animals, staff are also continuing efforts to **monitor American shad stocks** in the Potomac River. Monitoring provides valuable data about how well the shad population is doing. After years of ICPRB-led stocking of American shad in the river, the effort has paid off. Shad are returning to the river to spawn and populations have been on the rise since the effort began. Since 2002, the Potomac has been the egg source for all of Maryland's streams that are being restored with shad, as well as the Rappahannock in Virginia, the Susquehanna (Maryland/Pennsylvania), and some of Delaware's rivers.

Each year, school groups are invited to

participate in the project by raising shad in the classroom. This year, more than 30 metropolitan area schools will participate, more than any previous year. Living Classrooms, Inc., secured substantial funding from private sources, and coupled with funding from the Virginia Bay Restoration Fund, will help continue the educational efforts. The school program also will be featured at the National Casting Call at Fletcher's Boathouse April 27-28. For more information about the Casting Call, visit www.nationalcastingcall.com.

The Maryland Water Monitoring Council also will benefit from ICPRB's staff this year in planning their second in a series of **seasonal pools workshops**. Ecologically

important seasonal pools are unique because they are not connected to streams and dry up each year. Jim Cummins, ICPRB's director for living resources, noted that seasonal pools provide important ecological functions such as breeding habitat for salamanders, frogs, and toads and that those animals help control many pest insects, such as mosquitoes. In turn, birds, reptiles, mammals, and fish eat the salamanders, frogs, and toads. "Seasonal pools contribute to the ecological balance of the Potomac and its environs. They need restoration and protection," said Cummins. Maryland is the first state to hold this type of training and it is geared to anybody involved in the field, including private environmental consultants, educators, and agency personnel. The date will be announced soon.



Watching the River Flow

Coming into 2008, flow of the Potomac River measured near Washington, D.C. continued well below normal, according to U.S. Geological Survey provisional data.

In December, Potomac River flow averaged about 5.4 billion gallons per day (bgd), almost 29 percent below the long-term December average of 7.4 bgd. River flow ranged from a daily low of about 1.6 bgd on December 2 to a high of about 13.6 bgd on December 18. Water withdrawn from the river for water supply averaged about 400 million gallons per day (mgd).

January 2008 flows turned lower. The Potomac River flow for the month was about 5.2 bgd, or about 44 percent less than the January average of about 9.2 bgd. The river's flow ranged from a high of about 11.2 bgd on January 14, falling to a low of about 3.0 bgd on January 31. Withdrawals for water supply averaged about 400 mgd in January.

While there has been some precipitation around the basin, both streamflows and groundwater levels remain low. Continued low precipitation could require drought operations to meet water supply demands in the late summer and fall.

Changing Attitudes and Behaviors Essential for Restoration

The communications team will continue efforts to educate citizens and decision-makers about Potomac basin issues and a range of ICPRB technical projects, such as biological stream monitoring, total maximum daily loads modeling, and fish and habitat restoration. These efforts will build partnerships and support for restoring, protecting, and conserving the Potomac watershed.

Learning by doing is this year's theme for ICPRB's communications and outreach staff. River trips and rain barrels will help turn citizens into stewards throughout the watershed. The ICPRB also will continue to provide valuable information through its website www.potomacriver.org and through its newsletter, the *Potomac Basin Reporter*. Staff also will continue to assist watershed groups with capacity-building and on-the-ground initiatives.

The ICPRB will host another **Potomac River Ramble**, a river journey that invites young and old, novice and experienced paddlers alike to enjoy the river's beauty, build camaraderie, and encourage stewardship. This year's journey will take paddlers along a beautiful stretch of the tidal Potomac from Fort Washington to Mason Neck Wildlife Refuge. This trip will be a birdwatcher's paradise and filled with historical treasures for the history buffs among us. The journey is scheduled to begin on June 19 and will end in the late afternoon on June 22. Ramble fees include a shuttle bus ride from the take-out point, expert river guides, educational programs, camping fees, and meals. Ramble fees do not include the cost of boat rentals. To learn more about this year's summer Ramble, visit www.potomacriver.org/ramble.htm.

In addition to getting folks out on the river, staff will be offering **watershed-wise landscape workshops** where ICPRB's coveted **Rain Bear™ rain barrels** will be

sold. Through partnerships with Stadler Nursery in Frederick, Md.; the Accokeek Foundation in Accokeek, Md.; and the Clarke County, Va., government, ICPRB will distribute 500 barrels to Potomac watershed citizens not reached in previous years. Workshops are required for new barrel owners and will provide safety and maintenance information about the product as well as valuable landscape ideas that complement the barrel. The barrels not only help conserve water for dry days, but can also play an important role in reducing stormwater runoff when installed with a watershed-wise landscape. Those who attended a workshop in 2007 may reserve barrels without attending another workshop. To register for a workshop and reserve a barrel, visit www.potomacriver.org/about_ICPRB/rainbarrelinfo.htm.

Assisting watershed groups will remain a priority for ICPRB. The Antietam Creek Watershed Alliance, a group that formed in 2007 with help from ICPRB Watershed Coordinator Adam Griggs and Emilie Cooper of Maryland Department of Natural Resources Western Maryland Resource Conservation and Development Council, has been cleaning up trash along Antietam Creek and working to gain official non-profit status. The ICPRB, Anacostia Watershed Citizens Advisory Committee, Metropolitan Washington Council of Governments, River Network, and Clean Water Action are partnering to offer capacity-building workshops to Anacostia-focused groups, specifically targeting increasing membership, sustainable fundraising efforts, and effective outreach and education platforms. Griggs also is helping a fledgling group focused on Seneca Creek with capacity-building and organization.

The Friends of Sligo Creek and ICPRB are developing a **pilot monitoring program** to gather basic water chemistry and bacteria data. The equipment for the project

was purchased with grant money from Norcross Wildlife Foundation. The ICPRB and Friends of Sligo Creek will be offering training sessions and certifying volunteers to help gather the data along the creek.

The **Potomac Watershed Cleanup**, an annual effort to pick up trash around the Potomac watershed, is led by the Alice Ferguson Foundation. The ICPRB has partnered on the cleanup for 17 years and serves as a supply station for site leaders to pick up supplies. Staff also help at several sites throughout the watershed. Nearly 292 tons of trash were removed during the 2007 cleanup effort. **This year's cleanup will be on Saturday, April 5** from 9 a.m. to noon. For more information about the cleanup, visit www.potomaccleanup.org. The ICPRB also participates in the cleanup's sister effort, the **Trash Free Potomac Initiative** to get the Potomac watershed trash-free by 2013. The initiative is meant to reduce trash and encourage more recycling and educate citizens about the affects of trash on the watershed.

Staff are also becoming more involved in **educating citizens about invasive species** by participating in surveys, such as the one for submerged aquatic vegetation conducted by the U.S. Geological Survey, and providing information to media and citizens, and user groups. In addition, the *Potomac Basin Reporter*, ICPRB's newsletter, highlights invasive species news.

To find out about ICPRB's mission, specifics about projects, to register for Rambles or rain barrel workshops, **the website** offers a complete guide to the commission. The website provides access to the ICPRB newsletter, the *Potomac Basin Reporter*, reports by commission staff, updates on the American shad restoration project, TMDLs and many other topics. Visit the ICPRB website at www.potomacriver.org for more information on these projects.

ICPRB Chairman's Report

by Robert M. Summers, Maryland Deputy Secretary of the Environment, ICPRB Maryland Alternate Commissioner, and 2007-2008 ICPRB Chairman

We face many environmental challenges in the Potomac Watershed and throughout the Chesapeake Bay region. With this brief article, I would like to provide a quick overview of some of the aggressive actions Maryland is taking to restore and protect water quality, our fresh water supply, control the environmental impacts of growth and development, clean our air, reduce greenhouse gasses, conserve energy and

deal with climate change. All are critically important to our future. All are integrally related. To be successful, Maryland needs to work closely together with our neighboring jurisdictions through ICPRB and other similar organizations.

What is the economic value of a healthy environment? In its 2004 report, The Chesapeake Bay Blue Ribbon Finance Panel put it this way:

“A University of Maryland study completed 15 years ago attempted to place a number on the value of the Bay and came up with \$678 billion. Today inflation alone would likely push that number above a trillion. Any way you calculate it, the economic value of the Bay and its rivers is enormous.”

The Chesapeake Bay is not unique in this respect. The Potomac River is equally important to the economy of the watershed states. A healthy environment is central to the economic health of any region, not to mention the health and quality of life for its citizens.

The most recent Chesapeake Bay Report Card prepared by the University of Maryland’s Center for Environmental Science gave the tidal Potomac a D and the Bay a D+ overall based on a comprehensive analysis of water quality and habitat health indices. But it’s not just the Bay and its tidal tributaries that are being affected. Deep Creek Lake in Western Maryland is under increasing development pressure and competing demands for its water for power generation, boating, fishing, white-water rafting, drinking. In Central and Southern Maryland and on the Eastern Shore, water supplies are being over-taxed and water use restrictions must be instituted in some communities even in moderately dry years such as 2007.

Over the past two decades, since the signing of the first Chesapeake Bay Agreement between Maryland, Virginia, Pennsylvania, the District of Columbia and the federal government, hundreds of millions of dollars have been spent and we have made substantial progress in some areas. Unfortunately, at the same time, population growth and development is continuing and is overtaking these efforts with increased impervious surface and associated urban and suburban runoff, more septic systems, more intensive animal agriculture (and more manure) and more vehicle miles traveled with increasing tail pipe nitrogen emissions. Taken all together, according to the Bay Program, we have made progress, about a 30% reduction in nutrient loading to the Bay and its tidal tributaries and a similar level of improvement in water quality and habitat indicators, but it is not nearly enough to restore water quality and the living resources.

We need to eliminate the impacts of new impervious surface from development through widespread use of environmental site design and low impact development design practices. As a result of the Stormwater Management Act of 2007, Maryland is currently developing new guidance and regulations to require the use of such practices to the maximum extent practicable. Think green roofs, porous

pavements and rain gardens with native plants rather than asphalt and lawns. But dealing with new development alone will not do it. We need to retrofit our existing developed areas with similar practices and reduce impervious surfaces when we redevelop these areas to achieve an overall decrease in pollutant loading from urban and suburban lands. Maryland currently is revising and strengthening our Municipal Separate Storm Sewer System (MS4) Permits.

To ensure that these and all of Maryland’s other water quality restoration efforts are as effective as possible, Governor O’Malley has established an interactive accountability process, called BayStat, where all of the Cabinet Secretaries, and Governor’s senior staff meet regularly to review progress and evaluate efforts to restore the Chesapeake Bay, make certain that we are taking the most cost-effective actions in a timely manner, and to increase public awareness of, and participation in, efforts to restore the vitality of the Bay.

Fresh water supply is of even more economic importance to our region and our quality of life. In 2002, we experienced one of the worst droughts in our history, highlighting the urgent need to obtain a better understanding of the sustainable yield of our water supplies and to ensure that growth and development plans are appropriately scaled to ensure the long-term viability of the region’s water supplies. In 2006, Maryland enacted legislation to require local government comprehensive land use plans to include consideration of water supply, waste water assimilative capacity, stormwater management, wetlands and forest land protection. To make sure that this happens, Governor O’Malley has reinvigorated the Smart Growth Sub Cabinet, reestablished the Office of Smart Growth, and has charged his Secretaries of Planning, Natural Resources, Agriculture, Transportation and Environment with putting together and implementing a comprehensive strategy for working with local governments to deal with the significant challenge of growing smarter, while restoring and protecting our environment.

Equally important to clean water is clean air. When we clean up our air, we also are improving water quality since 30 percent of the nitrogen and much of the mercury entering our waters originates from power plant and automotive emissions. The Healthy Air Act of 2006 required Maryland’s power plants to implement significant upgrades to reduce emissions. It also required Maryland to join the Regional Greenhouse Gas Initiative (RGGI), a coalition of northeast states that is working together to begin to control greenhouse gasses. The Clean Cars Act of 2007 signed

last year by Governor O'Malley ensures that all new cars registered in Maryland will have the lowest emissions possible under federal law. Controlling the most important greenhouse gas, carbon dioxide, is the hardest air quality challenge yet. There are no scrubbers to remove carbon dioxide. Increased energy efficiency and renewable energy sources like biofuels, solar, and wind are the answer.

As a first step, the **EmPOWER Maryland** program was announced by Governor O'Malley on July 2, 2007 to reduce per capita energy consumption by 15 percent in 2015 and reduce GHG emissions by around 17 million tons/year. Governor O'Malley has also established the Maryland Commission on Climate Change (MCCC) and has charged the Commission with developing an action plan to address the causes of climate change, prepare for the likely consequences and impacts of climate change to Maryland, and establish firm benchmarks and timetables for implementing the Commission's recommendations.

These goals are a huge challenge, but increased energy efficiency and reductions

in greenhouse gas emissions require the same comprehensive steps to reduce the impacts of our growth and development that are needed to restore the Chesapeake Bay. Our concerted efforts in energy conservation will have benefits that go far beyond green house gas reduction alone, including reduced energy costs, lower emissions and less suburban sprawl development that harms water quality and the environment throughout the State.

We must act decisively and we must act now if we are to preserve Chesapeake Bay, Maryland's environment, our quality of life and our economy. We know what needs to be done to control these sources and restore our environment. We also know it will be expensive. The question is, will the federal, state and local governments, businesses, farmers and all of the other the citizens of region rise to the challenge, make the additional investments and take the additional steps that are needed to solve the problem? If we want a clean environment and maintain our health and quality of life, we are going to have to pay for it and we are going to have to change our ways.



Potomac Basin

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