

REPORTER



C. Dalpra

Development near the river just upstream of Washington from a picture several years old. Patterns and methods of land development will need to be changed to maintain water quality gains that have made the river a valuable resource.

Doing Too Much and Not Enough

Potomac's Grades Continue to Disappoint

The Potomac Conservancy, a nonprofit environmental organization, recently became the latest group to assess the status of the Potomac basin, giving the river a "D+" grade and listing population growth and rapid, unmitigated development as the major factors impacting the river. In a nutshell, the report's point is that there is too much development taking place without the environmental safeguards that could protect the river. The report states that the river's restoration has "reached a plateau" after decades of improvement following the Clean Water Act and its amendments in the 1970s. The Potomac Conservancy

was assisted by ICPRB in acquiring data for the report.

This latest report complements a growing number of similar assessments, including those by ICPRB, Potomac Riverkeeper, Chesapeake Bay Program, Chesapeake Bay Foundation, and the U.S. Environmental Protection Agency (EPA), all in general agreement that despite strong efforts, new, stronger initiatives will be needed just to hold on to the gains made during the past several decades.

The report illustrates how quickly the region is growing, noting that while developed land comprises only about 9.7 percent of the watershed the amount has

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doubled since 1970. Developed lands, with their higher level of impervious surfaces (roads, rooftops, parking lots, etc.), harms river water quality through increased stormwater runoff, while decreasing the amount of rainfall that percolates through the soil to replenish groundwater. Citing Metropolitan Washington Council of Governments' data, the report notes that impervious cover in the metropolitan area grew from 12.2 to 17.8 percent from 1986 to 2000. The report noted a 41 percent increase in impervious surface for every eight percent of population increase.

The increased population that drives development leads to more sewage, air, and thermal pollution, as well as increasing related demands for water. The report notes that the basin's population is expected to increase by 10 percent in each of the next two decades, reaching more than 6.25-million residents by 2020.

The report acknowledges that modeling results show decreases in nutrient pollution and sediment loads, but these pollutants remain in amounts significantly greater than what has been estimated for substantial water quality improvements.

The report includes several strong recommendations for improving the Potomac, such as increasing forest buffers and protecting forest resources; mandating use of low impact development techniques in construction; full state funding of cost-share programs and best management practices; and updating the federal Clean Water Act to encompass new pollution sources, such as toxic and endocrine disrupting compounds that are increasingly found in the water. More details about what can be done from a government policy perspective can be found in the Potomac Conservancy's Potomac Agenda on its website, www.potomac.org, noted Executive Director Hedrick Belin.

Belin noted that his organization continues to partner with many others on initiatives that will help put the river back on the track that turned it from a thing to be avoided to a resource that has improved the quality of life for the region's residents. In particular, the Potomac Conservancy has focused on increasing forest buffers in riparian areas, and encouraged government efforts to address stormwater pollution.

The report echoes conclusions reached by Potomac biologists and other researchers who gathered for an ICPRB-sponsored symposium in 2005 that was in turn based on symposia ICPRB held in the mid 1970s, and included many of the same experts (See November/December 2005 *Reporter*). The take-home message of the symposium was that while much had and continues to be done to preserve and protect the river, those strong efforts are simply not enough to deal with the increase in population that is driving development and changing land

use.

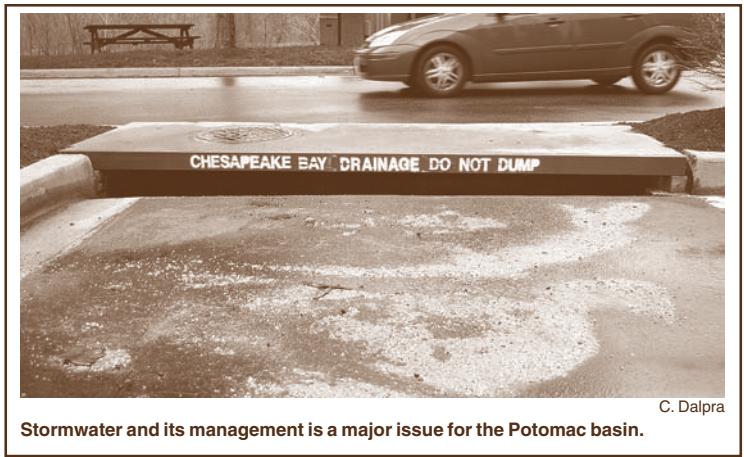
The keynote speaker for the 2005 symposium, Johns Hopkins University Emeritus Professor M. Gordon “Reds” Wolman gave credit to all involved in restoration efforts, but that the situation was reminiscent of the Red Queen In “Through the Looking Glass,” who spoke of running faster and faster just to stay in the same place. He

noted that in the 1970s, biologists were warning of the same issues that are cited today—preventing pollution rather than mitigating it, the difficulty in dealing with nonpoint pollution (stormwater runoff) in urban and agricultural areas, and the other impacts population growth has on natural resources. “They (the biologists of the 1970s symposia) were right then. They hit the nail on the head, except the nail is much larger [than originally thought],” Wolman said. “We know what is wrong, and we know how to fix it. We just don’t have the resolve,” one conference attendee noted.

From a larger perspective, the Chesapeake Bay Foundation’s 2007 State of the Bay Report found conditions about the same as the previous year, and noted that the net improvement to the bay, of which the Potomac is the second-largest tributary, has been slight since the reports began in 1998. The state-federal Chesapeake Bay Program noted that key water quality results were mixed last summer, and the governors of the Chesapeake Bay states (Maryland, Pennsylvania, Virginia, and West Virginia) and the mayor of the District of Columbia stated at their annual bay meeting on December 5 that the cleanup goals targeted for 2010 would not be completed in time.

The problems were reiterated in a September 2007 report by the EPA inspector general, which at the direction of Congress examined how well the agency is doing in working with the bay jurisdictions to restore the Chesapeake. Its title, “Development Growth Outpacing Progress in Watershed Efforts to Restore the Chesapeake Bay,” pretty much says it all. The report noted that the 2010 nutrient and sediment reduction goals would not be met, and that “new development is increasing nutrient and sediment loads at rates faster than restoration efforts are reducing them.”

The report recommended that a start to decreasing those loads from developed land is for communities to concentrate on



Stormwater and its management is a major issue for the Potomac basin.

reducing pollution from new developments, and that the Chesapeake Bay Program should work with its bay partners to set realistic, community level goals for reducing pollution loads from developed and developing lands, and that EPA should establish an approach to stormwater permitting that will meet the reduction goals.

There seems to be little disagreement on how much the Potomac has improved during the last several decades, its current status, and that the future, without a course change, will see the river revert back toward its pre-restoration past. While many government agencies and organizations are laboring to effect change through restoration and education, those efforts must be increased and combined with better development practices if future generations are to view the same (or hopefully, better) Potomac we see today.

Poorly Understood Bacteria a Crucial Part of Potomac Ecosystem

Data collected by the National Oceanic and Atmospheric Association (NOAA) Oxford Cooperative Lab and analyzed by ICPRB’s Living Resources Data Manager and Analyst Jacqueline Johnson suggest that *Mycobacterium spp.* and *Vibrio parahaemolyticus* and *V. vulnificus*, all bacteria that are normally found in estuarine waters, have been thriving in the Potomac’s estuary, and other Maryland waters in the Chesapeake Bay.

Vibrio spp. are in the same genus of bacteria that cause cholera. *Vibrio vulnificus*, the culprit of most *Vibrio* infections reported to the Centers for Disease Control (CDC), and *Vibrio parahaemolyticus* are typically transmitted by eating raw seafood, particularly oysters, or direct contact in the water through a wound. According to reported incidences to the CDC, infections from these two *Vibrio* species cause illness in as many as 20 people per year in the

Potomac watershed.

Mycobacteria are a genus of bacteria that are very common in water and soil. "In the Potomac estuary, over the past two years, Mycobacteria levels have been consistently high in comparison to other areas of Chesapeake Bay. Recent surveys estimate that a high percentage of striped bass in the Bay also have some level of Mycobacterial infection. Mycobacteria can cause 'fish-handler's disease,' a common ailment among fishermen. Mycobacterial infections are generally only a problem for people with compromised health," said Johnson. John Jacobs of the NOAA Cooperative Oxford Lab indicated that there are over 100 recognized species of Mycobacteria and most are not harmful.

The samples collected in the Potomac River show that Mycobacteria were widespread in the summer of 2006, but were completely absent from some stations in 2007. A look at the weather may give a clue to the discrepancies. Data from June 2006 were collected just after a major storm event, when there were heavy freshwater, sediment, and nutrient inputs to the Potomac estuary. "The positive reading for Mycobacteria at these stations could be caused by pathogens from land, aquatic, or sediment resuspension sources," said Johnson. In the future, scientists at the NOAA Oxford Lab hope to further refine their efforts with Mycobacteria to learn more about the relative roles of the harmful and non-harmful species and sources.

Pathogen distributions show a large amount of annual variability. Preliminary models suggest that levels of *Vibrio vulnificus* are driven by traditional physical water quality parameters (water temp,



C. Dalpra

Fisheries are impacted by some bacterial strains. In some cases, exposed people can become ill.

salinity, dissolved oxygen and water clarity). While Mycobacteria abundance is better explained by nitrogen enrichment, increased turbidity, and decreased oxygen. Years with high fresh water river flow, and commensurate high nitrogen and sediment loading associated with flow may promote increased levels of Mycobacteria. In contrast, drier years could provide conditions more favorable to the development of the *Vibrio*. The current tributary management strategies in the bay region place a heavy emphasis on reducing the loads of nitrogen and sediments to the Chesapeake Bay. This same management strategy may potentially allow for control of some pathogens in Bay waters.

Educating about Water Lettuce and Other Invasives

Water lettuce (*Pistia stratiotes*), the latest exotic invasive plant to be found in the Potomac, could become a problem and some plans are being pursued in case the plant is found in the river again next year (see September/October 2007 Reporter).

The plant's discovery and possible impacts were discussed in December at the annual meeting of the Freshwater Submerged Aquatic Vegetation (SAV) Partnership, a group of federal, state and university staff focused on aquatic plants. The group, which is coordinated by the Chesapeake Research Council, listened to a presentation by USGS plant researcher Nancy Rybicki, who annually assesses the tidal freshwater Potomac's plant communities.

The plant could become a problem for the river if it becomes established. Researchers will be watching closely in the coming spring to see if the floating plants, which die off in the winter, are capable of returning through seeds deposited on the river bottom. Stands of the plant are known to occur as far north as New York State, but little is known about where the plant can flourish, its ability to withstand cold winters, and how its range might be affected by rising water temperatures.

The plant could pose problems on the Potomac similar to the water chestnut, which was furiously harvested in the 1950s by the U.S. Army Corps of Engineers. Water chestnut grows in expansive floating mats,

similar in habit to water lettuce. The water chestnuts eventually succumbed to intense harvesting and the poor water quality that defoliated the tidal freshwater Potomac for more than two decades. Water chestnut, while not currently in the Potomac, has become established and is causing problems in two other Maryland rivers where ongoing seasonal harvesting from personal watercraft have kept the stands in check.

The SAV Partnership members concluded that the plant bears watching to see what might happen in the Potomac and that increased public education and awareness of the plant can help in monitoring. Several partnership members will produce a fact sheet on the plant that can be posted on websites and boating facilities on the river. The active involvement of the boating and fishing community will be essential in keeping track of the plant's habits and location.

Last fall, the plants were first found in Mattawoman Creek in Charles County, but later seen in the mainstem Potomac, five miles or so both upstream and downstream of the creek.

More information on water lettuce, as well as other invasive species' impact on the environment can be found at

the website of the Maryland Invasive Species Council (MISC) at www.mdinvasivesp.org.



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Water chestnut once choked the Potomac, as seen in the top photo of stranded boat on the Potomac in 1941. The plants were aggressively harvested, as was Hydrilla for a few years, as in this 1986 photo (center). Water lettuce (bottom photo) has some potential to cause similar impacts.

Forum Renews Enthusiasm to Continue Watershed Work

With a rating of "D+" from the Potomac Conservancy's State of the Nation's River Report, the need for a watershed-wide cleanup every year, unexplained fish kills, and myriad other dilemmas, those who consistently work to improve the Potomac watershed sometimes get discouraged. The annual Chesapeake Watershed Forum has become one of the most anticipated gatherings of volunteers, citizens, organizations, and government groups each year to renew excitement about watershed restoration.

The second forum, sponsored by the Alliance for the Chesapeake Bay, Chesapeake Bay Program, National Fish

and Wildlife Foundation, and Chesapeake Bay Trust, featured six topic areas, ranging from the basics of fundraising and communications to growth management and restoration. The National Conservation Training Center in Shepherdstown, W.Va., hosted the event October 12-14.

Within each track, attendees have the opportunity to learn from leaders in the watershed community. "Reaching Beyond the Choir" was an eye-opening session about reasons that we have trouble reaching out to people not already on the watershed bandwagon. The facilitator, President of the Kenian Group, Iantha Gantt-Wright, led us in an exercise to

identify stereotypes that inadvertently block us from including those not like ourselves and how to reach out to those groups.

Another valuable session, "Delineating Lands Important to Water Resource Management," demonstrated the value of connecting hubs and corridors, fragmented green spaces that provide valuable habitat, in protecting land resources. The session was led by Bill Jenkins of the Environmental Protection Agency, Jeff Lerner of Defenders of Wildlife, Mike Pieper of KCI Technologies, and Nancy Ailes of Cacapon and Lost Rivers Land Trust. Each

speaker highlighted important aspects of land delineation including Geographic Information Systems (GIS) mapping of critical areas, long-term goals and value of partnerships in conserving lands, and the Watershed Restoration Action Strategies (WRAS) planning process. The WRAS process can be a valuable tool to prioritize projects in the watershed and ICPRB was part of the upper and lower Monocacy WRAS programs. Over several years of collaboration, those efforts led to strong partnerships and on-the-ground efforts that continue to improve the quality of the watershed today. As a testament to the strong partnerships developed, the group continued on as the Monocacy Catoclin Watershed Alliance (MCWA) after the WRAS process was completed. The MCWA partners meet regularly to work more efficiently in the basins and use all the resources within the group to make on-the-ground improvements.

Another valuable session allowed grantors the opportunity to explain their programs and provide insight to the grant application process. Especially useful for those groups who are new to the grants scene, potential grantees have the opportunity to ask questions and learn about the particulars each funder looks for in a grant request.

Engaging the community with the latest cyber technologies was the topic of the keynote address. Executive Director of Green Media Toolshed, Marty Kearns, outlined the many options for engaging the public through web tools, cell phones, and personal media devices. Bobbi Russell, director of media services and marketing of Green Media Toolshed, outlined many of the current options to reach those audiences in her session, "Putting the 'e' in Communications." Many of the strategies are applicable to smaller watershed groups. While these technologies are ideal for getting messages out, funding concerns often put these strategies out of reach. Many watershed organizations cannot afford to purchase software for complex websites or constantly monitor a blog, both invaluable tools for reaching an increasingly technology-oriented audience.

Overall, the forum was an excellent opportunity for watershed workers to share information, learn new trends, increase awareness of new technologies, and develop partnerships. Networking is perhaps the most valuable component of the forum. New partnerships bring more minds to the table and more feet on the ground to accomplish common goals. The ICPRB staff look forward to attending the forum in 2008.

For more information on the 2007 forum, visit the Alliance for the Chesapeake Bay website at www.acb-online.org/project.cfm?vid=290.



Watching the River Flow

Flow of the Potomac River measured near Washington, D.C. continued to show the effects of the prolonged drought, according to U.S. Geological Survey provisional data.

In October, Potomac River flow averaged about 1.5 billion gallons per day (bgd), less than 29 percent of the historical average for the month. River flow ranged from a daily low of about 905 million gallons per day (mgd) on October 18 to a high of about 3.9 bgd on October 31. Water withdrawn from the river for water supply averaged about 500 mgd.

November flow improved slightly. The average of 2.0 bgd flow for the month was about 39 percent of the historical average flow. The river's flow ranged from a high of about 3.3 bgd on November 1, falling to its low of about 1.4 bgd on November 11. Withdrawals for water supply averaged about 400 mgd in November.

While some rain has been falling in the basin, both streamflows and groundwater levels remain low. Continued low precipitation through the winter and spring could result in the need for active drought management of the Potomac in the fall.

American Shad Program Succeeds in River, Classroom

The American shad population in the Chesapeake Bay, and in particular the Potomac River, continues to show strong signs of recovery, in contrast to general declines along the East Coast. An annual survey of shad stocks by the Maryland Department of Natural Resources (DNR) found 2007 the second highest for young-of-the-year American shad (fish hatched in that year) since the survey began in 1959. The strong reproductive success bay-wide was carried by record numbers found in the upper bay and another very productive year on the Potomac.

The 2004 survey showed the highest bay-wide reproduction in the history of the survey. The Potomac system was mostly responsible for the 2004 numbers, and has shown the highest numbers in both years.

The 2007 survey results continue a trend of marked improvement that began more than a decade ago. Potomac stocks were boosted in part by a cooperative restocking and restoration program begun by ICPRB in 1995 and the installation of a fish passage structure at Little Falls Dam in 2000, which reopened about 10 miles of the Potomac to spawning.

"It was another very productive year," said Eric Durrell, who monitors the fish for DNR. "Both the upper bay and the Potomac produced good year classes at the same time. That produces a great overall year class," Durrell said.

The fish also set records at area schools, which have raised shad fry in their classrooms and studied the fish as part of their curriculum. The Schools in Schools Program was used in 18 schools in Virginia, the District of Columbia, and Maryland, involving more than 1,250 students and 100 volunteers. The educational program released 29,800 shad fry, a record for the project, which began in 1996.

The project, which provides meaningful educational experiences focused on an actual restoration need, is a partnership between ICPRB, Living Classrooms of the National Capital Region, Virginia Department of Game and Inland Fisheries, DNR, the Chesapeake Bay Foundation, and the Anacostia Watershed Society.

While the strong stocking effort on the Potomac has ended, the ICPRB program still monitors shad stocks and collects shad eggs each spring. The collection supplies shad fry that are stocked into the neighboring Rappahannock and Susquehanna



C. Dalpra

Students release the shad fry they raised in the classroom into the Potomac River. Public education and outreach have been a hallmark of the cooperative shad restoration program.

watersheds. In 2007, a total of about 4.3 million shad fry were stocked in the Potomac and Rappahannock rivers. More than 36-million fry have been stocked since the program's inception in 1995.

For more information, visit http://www.potomacriver.org/living_resources/shad.htm.

ICPRB Commissioner Now an Admiral

James H. Gilford, an ICPRB Commissioner representing Maryland since 1995, was recently designated an Admiral of the Chesapeake by Governor Martin O'Malley.

Gilford was presented with the award for his more than 50 years of service to the state in various roles. He has served on the state's sportfish advisory commission for 28 years, as well as some 14 other commissions and organizations, including the Middle Potomac Advisory Council, the Monocacy Scenic River Advisory Board, the Wild Turkey Advisory Committee, the C&O Canal National Historical Park Commission, and several boards regarding striped bass and other fish.

The award comes to Gilford after a long career as a fisheries scientist, outdoor writer, college professor, and fly fishing instructor. As an active commissioner, Gilford has lent his support to a number of ICPRB initiatives, including the shad program and in ICPRB involvement in trout restoration projects. Congratulations, Jim Gilford!

Long-Time Commission Council Dies

Henry P. Stetina, who served as ICPRB general counsel for more than 17 years, died on November 9, 2007. He was 86.

Stetina served as the commission's counsel from 1975 until his retirement in 1992. During that time, he represented the commission before Congress for its appropriation, and assisted in representing ICPRB before both federal and state governments. He was an important part of the negotiations that resulted in agreements among the metropolitan area's water suppliers to share resources during droughts, ensuring an adequate public water supply for decades to come.

Stetina had previously worked for the Federal Water Pollution Control Administration, and its successor, the U.S. Environmental Protection Agency, where he worked on interstate compacts, promoting uniformity of state environmental regulations, and on the Clean Water Act.



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Henry Stetina (center) assists with the signing of the 1982 Water Supply Coordination Agreement, one of a series that helped ensure a reliable metropolitan area water supply. Baltimore District Army Corps of Engineers Col. Gerald Brown (left) watches ICPRB's Dan Sheer affix a seal.

Stetina worked on ICPRB's water quality and water supply issues during an exciting time when the region really began to make headway on restoring the river and safeguarding its drinking water, and his legacy will remain for many years to come.



Potomac Basin

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