

REPORTER



M. Bailey

Local angler Greg Wilson with a beautiful American shad hooked near Fletcher's Boat House in Washington, D.C. Stocking efforts have helped boost the population of shad returning to spawn, and a recreational season may soon be considered.

2006: Taking Stock

Many of us use this time of year to take stock of what has happened during the past twelve months in our lives and to help set a course for the future. Government agencies and organizations that work to preserve and restore natural resources do the same thing, although it can be very difficult to provide a true assessment of a watershed from year to year.

The environmental picture often changes in small increments, and organizations from the Chesapeake Bay Program to small citizen environmental groups struggle to develop meaningful, simple indicators that portray environmental status in a way that is easily understandable by the general public. Rather than create a scorecard to submit to argument, this article will take a brief look around the basin, highlighting the status of some natural resources that in the minds of many people make the Potomac an important resource and part

of their life in the region.

This quick look should be viewed in the context of basin history. Although the basin's natural resources face challenges, it is important to realize the huge successes that have lifted the status of the Potomac's fisheries. While we struggle with issues, it must be remembered that many of the fisheries barely existed 40 years ago, when industrial and mining pollution devastated the North Branch Potomac, the metropolitan river was described as "an open sewer," aquatic plants were absent, and largemouth bass were nowhere to be found in the waters of the District of Columbia.

North Branch Potomac

In the northwestern part of the basin, the legacy of coal mining remains a primary impact on the basin's waters. Much work has been done during the past few decades to improve water quality, and miles of the North Branch Potomac and tributary streams now hold trout and other fish. In turn, they are providing new recreational

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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opportunities and economic growth. The ICPRB has worked with citizen groups in the region and has helped to acquire and place lime dosers that mitigate acid mine drainage impacts.

A major setback occurred in 2005 in George's Creek, which runs through the Maryland towns of Lonaconing, Barton, and Westernport. Acidic seepage from the abandoned McDonald mine, which discharges to a small tributary, had been successfully treated by a lime doser since 2001. The discharge changed drastically in character, turning the small George's Creek tributary orange with highly acidic water and metals that flowed into the creek, killing the stream for several miles.

The Maryland Bureau of Mines has been working on the problems with the help of local organizations such as the George's Creek Watershed Association and other groups that have worked to improve their local environment for more than a decade. The mysterious change in the mine drainage may be from subsidence deep in the mine, according to experts. The toxic nature of the mine seepage decreased late in 2006, but even if it returns to pre-subsidence state, it will be some time before the creek returns as a recreational magnet in the affected segment. The current status of the creek highlights the difficulties in maintaining the treatment facilities needed to overcome the legacy of coal mining in the northwestern watershed, and the need to continue to support those efforts.

South Branch Potomac

Fish kills primarily of smallmouth bass, along with a few other species occurred beginning in 2002. An intense research effort continues today. Fish collections revealed many smallmouth with lesions and bacterial infections of the skin and organs. Researchers noted that the fish were environmentally stressed, but could not determine a cause of death. Examination led to the discovery of a condition known as "intersex" in male smallmouth bass, which were found to be carrying eggs. Collections of more fish from other areas showed more lesions and intersex condition. A fish kill of primarily redbreast suckers occurred in May 2006, but again, an exact cause of the kill could not be determined. Additional kills last fall have prompted not only increased research, but greater coordination among the area's river watchers. A website, Potomac Water Watch (www.potomacwaterwatch.org) was set up several months ago to allow for quicker reporting of fish kills, to provide more tools in determining the cause of the repeated fish kills, and to serve as a clearinghouse for information on emerging contaminants that may be stressing fish or causing the intersex condition, which may or may not be

related to the kills.

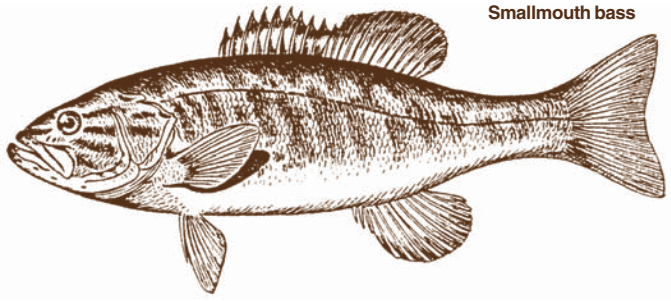
The website, sponsored by the Cacapon Institute, Friends of the Cacapon, the Appalachian Center for the Environment and the Economy, and the West Virginia Rivers Coalition also provides a way for people to report fish kills, giving researchers a chance to arrive on the scene quickly.

Researchers convened to brainstorm about the kills at a meeting in September, "All agreed that one key to understanding the problem is to know when and where fish kills are occurring in real time," said Cacapon Institute Executive Director Neil Gillies. Finding afflicted, but still alive fish is key in finding a cause. It is hoped that the addition of rapid-response reporting, plus intensive water quality monitoring and other research will provide answers as to what is killing fish in the South Branch. Despite the kills, biologists note that the watershed's fish populations were in generally good condition, and fish growth rates are considered good.

Shenandoah Watershed

The same can't be said for the Shenandoah system, where unexplained fish kills similar to the South Branch events have been occurring during the past three years. In 2004, the North Fork Shenandoah experienced a large smallmouth bass fish kill, with many fish developing lesions and parasite problems before succumbing. From April through July 2005, an estimated 80 percent of the adult smallmouth bass and redbreast sunfish population in the South Fork Shenandoah River died, decimating the population. Reports of fish kills on the South Fork continued in 2006, additionally affecting two species of suckers, a bottom feeding fish. Again, despite ongoing research into the fish themselves and water quality, no direct cause of the kills has been found. Fish kills also have been noted in the mainstem Shenandoah.

In response, Virginia resource agencies formed the Shenandoah River Fish Kill Task Force to focus and coordinate the efforts of a growing number of state and federal agencies and other organizations. Possible contributing factors being pursued by the task force include point and non-point sources of pollution, disease, parasites, spawning stress, temperature, sediment chemistry, and population dynamics. At the same time, researchers, particularly the U.S. Geological Survey Leetown, W.Va., Fish Health Center have been examining the fish and water of the area, as well as investigating the growing prevalence of intersex fish being found in a growing number of waterways, including largemouth bass in the District of Columbia



portion of the Potomac.

The Shenandoah's reputation as one of the top river systems for smallmouth bass angling has suffered greatly, along with segments of the economy that depend on angler tourism. There is some good news for the Shenandoah, as the kills have involved adult fish, and the area has had very good spawns during the same time period as the fish kills. If these fish survive to adulthood, the river will again be a popular venue for anglers, although the fish hatched in 2004-2005 will take 5 to 10 years to reach good size.

The Shenandoah Pure Water Forum maintains an informative site on the Shenandoah fish kills and the activities of the task force at www.purewaterforum.org/fishkill. The ICPRB has worked on several pollution problems in the watershed, and has met with Pure Water Forum members and other groups to address water quality and water resources planning issues.

Upper Potomac Mainstem

Monitoring by the Maryland Department of Natural Resources (DNR) shows the free-flowing Potomac to be in good shape with respect to fisheries. Reproduction was just above the long-term average, according to DNR Fisheries Biologist John Mullican. He noted that years of very good smallmouth bass reproduction need the right climate, most importantly, with stable river flows.

Adult fish also were found to be generally healthy, and anglers noted catches that in size and number were improved compared with the previous few years. Habitat and other river factors in the area of Dargan Bend make it particularly productive for larger fish. Mullican keeps aware of the problems further upstream and on the Shenandoah, and looks out for lesions and other problems, but has found no evidence that those problems have moved downstream. The occurrence of intersex in this region has not been heavily researched, although it may eventually be found in areas throughout the watershed.

Tidal Potomac

The largemouth bass dominates the attention of anglers in the Potomac from the District of Columbia to the Route 301 Bridge over the river. By most accounts, it was a banner year for anglers. Bass guide Ken Penrod described his experience on the tidal Potomac as one of the best seasons in



Largemouth bass.

T. Knepp/USFWS

important species, such as the largemouth bass, which may have to compete for habitat and available food.

Habitat is a critical need for healthy fish stocks, and the upper tidal Potomac generally provided during the year with increased submerged aquatic vegetation. The mild winter and dry spring got aquatic plants growing early in the season, and the stands of plants were established and resistant to several major storm events later in the year. Eight different species of aquatic plants were observed in the upper tidal river and were still alive in December,

noted U.S. Geological Survey Scientist Nancy Rybicki. The healthy stands of plants bode well for 2007, she added. The picture was not so rosy in the District of Columbia, where plants are still recovering from a significant decrease in 2003. The lower Potomac also is recovering from an eel grass die off last season that some attribute to high water temperatures and other factors. The middle portion of the tidal river also saw some blooms of blue green algae, which in high concentrations can poison fish or humans that come in contact with it. The blooms are indicative of high nutrient concentrations.

After a long absence, the migratory American shad continues its resurgence in the Potomac, led by the ICPRB stocking program that began in 1995. With assistance from state and federal agencies, watermen, volunteers, and school students, the program captured adult spawning shad that were stripped of eggs and milt. The fertilized eggs were hatched in federal fisheries facilities and school classrooms, and fry were released at upstream sites that had previously been blocked to migration by the Little Falls Dam just upstream of Washington, D.C. The dam was modified in 2000 to allow the passage of fish, and fry placed upstream are now returning to the newly opened area of the Potomac.

The species, harvested by George Washington, was one of the most economically important fish to inhabit the Potomac. Pollution, overfishing, and habitat destruction decimated the species in the 1950s, and a harvest moratorium has been in place in Maryland for decades. While the species is still a remnant of its former strength in the Chesapeake Bay as a whole, the fish has begun returning in significant numbers in this decade. Maryland researchers have been tracking the status of American shad with seine net

memory. Other tidal Potomac bass guides have issued similar glowing reports.

Largemouth bass fishing is popular throughout the upper tidal Potomac, but is centered in a large area around Mattowoman Creek, perhaps the Potomac's most productive tributary. The large creek, with its high diversity of fish and aquatic vegetation, is a growing focus of local environmental groups as well as the government of Charles County, Md. A state park adjacent to the creek hosts bass and catfish tournaments that are held on most weekends, generating significant economic activity for La Plata, the county seat, and other nearby communities.

The county is growing quickly, and county council members are on record as realizing that future planning will be critical for preserving the watershed's many values. Yet, both environmental groups and government officials know that the existing development is impacting the environment, and this central Maryland county may be a true test case in observing how development affects the ecosystem of this much studied and cared-for creek. The decisions being made serve as a microcosm for development issues occurring throughout the Potomac watershed.

Researchers also are keeping an eye on the river's most recent immigrant, the snakehead (see July/August 2006 *Reporter*). Snakeheads seem here to stay, and research showed the species increasing in numbers and range in the Potomac. While area fisheries biologists are collecting as much information as time and funding allows, knowledge about how the foreign species will interact (and impact) the Tidal Potomac's ecology and food web is in short supply. One aspect that resource managers are watching closely is effects that the species may have on other

surveys since 1958, and reported a young-of-the-year index (a measure of the reproductive success for the year) down from the two previous years, but still above the long-term average. The successful index was, however, “based entirely on the strength of the Potomac River’s index,” said Maryland Department of Natural Resources’ (DNR) Eric Durell. “Right now, it is the stronghold of the bay.”

That success is helping other rivers in the bay watershed. Eggs taken from Potomac American shad are being fertilized and sent to provide stock for the Susquehanna River in Pennsylvania and Maryland, and the Rappahannock River in Virginia. Other jurisdictions also are using volunteers and school groups as an important public outreach portion of the projects that create public understanding and support for the projects. These groups learn about the shad life cycle and its importance as a part of the ecosystem—a role it is only beginning to again assume. A strong shad population in the river can help it in many ways.

When the project and its leader, ICPRB Director for Living Resources Jim Cummins, were honored by *Field & Stream Magazine*, Cummins noted that his dream



Watching the River Flow

October and November precipitation raised river flows to above normal levels, according to data collected by the U.S. Geological Survey (USGS).

Provisional data collected near Washington, D.C., showed that October flows averaged about 4.1 billion gallons per day (bgd), about five percent more than the normal flow of 3.9 bgd. Daily extremes ranged from low of about 1.5 bgd on October 3. Rains quickly pushed flow of the river to a monthly high of about 10.7 bgd on October 10.

November flows averaged about 12.9 bgd, or about 60 percent above the normal flow of 4.3 bgd. Flows ranged from a low of about 4 bgd on November 7 to a high of 40.2 bgd on November 18.

was an end to the harvest moratorium, and a “Potomac so full of shad that Congress has to shut down for a day because everybody on Capitol Hill has gone fishing.” Cummins’ dream may become reality soon, as a limited recreational season may only be a couple of years away.

“We are well on our way toward seeing light at the end of the tunnel,” said Kirby Carpenter, executive secretary of the Potomac River Fisheries Commission (PRFC), a bi-state (Md. and Va.) agency that regulates fishing in the tidal Potomac downstream of Washington, D.C. The PRFC is participating in producing a stock assessment for the river that will eventually be used to set restoration targets and suggest harvest limits.

Carpenter also pointed to improved crabbing as a bright spot for the lower Potomac, although harvests remain below the long-term average. Regulations that limit harvest amounts and sizes has stabilized the fishery, Carpenter noted.

Oyster populations in the Potomac remain a shadow of earlier years. The most recent catch of about 3,000 bushels pales to the half-million bushels that were taken from the river 30 years ago, and there is not much hope of reviving native stocks that are stricken by two oyster parasites. The PRFC is part of an effort to assess the viability of introducing non-native oyster species to the river, with a draft environmental impact statement scheduled for completion this spring.

Although many fisheries within the Potomac are in generally good shape, the region’s fisheries in general are under increased stress through pollution largely associated with human population growth and land use change. Nutrients that help feed algae blooms and chemical pollutants that cause lesions and may be creating intersex conditions in fish enter the water from discharges, stormwater, and even the atmosphere create a cumulative stress for fish and other aquatic populations.

Many of the species of fish are the subject of state consumption advisories that recommend limiting or avoiding eating some fish altogether. The two most common pollutants are mercury and polychlorinated biphenyls (PCBs). A suspected carcinogen, PCB production has been banned for decades, but were used commonly in many industrial applications, and are long-lived in the environment. The ICPRB is working with Virginia, Maryland, the District of Columbia, and the U.S. Environmental Protection Agency to devise a cleanup plan aimed at reducing the level of PCBs found in Potomac fish. While these cleanup plans are important, they can be of greatest effect when coupled with regulations and other efforts designed to keep these substances from entering the fragile aquatic environment.

ACWA Takes Antietam Creek by Bootstraps

Antietam Creek is a little cleaner this year thanks to Antietam Creek Watershed Alliance (ACWA), a newly formed group that focuses on the Maryland portion of the creek. The Alliance has already begun taking care of the creek's trashy banks by organizing a successful Rubbish Roundup earlier in the year. They have plans to continue their good work and spread the word about the resource in their backyards.

With assistance from ICPRB's Watershed Coordinator, Adam Griggs, and Emilie Cooper, watershed forester for the Western Maryland Resource Conservation and Development Council (working with the Maryland Department of Natural Resources (DNR)), the group has organized several meetings and started working through the process of becoming a 501 (c)3 organization. Cooper contacted the Commission for assistance in organizing the new group after the DNR Forest Service in Washington County partnered with ICPRB for the rain garden and riparian planting at Byron Memorial Park in Williamsport, Md.

The ICPRB has helped several small watershed groups with organization, public relations, project expertise, and other needs, including the highly successful Friends of Rock Creek's Environment (FORCE). The ICPRB has assisted ACWA with capacity-building and public relations and forming agendas, organizing educational speakers, and developing and printing flyers for the meetings. The DNR Forest Service has been on hand to assist with meetings, posting flyers, and providing technical expertise and organization for on-the-ground efforts.

At the past two meetings, educational speakers have helped make ACWA members more informed about the basics of watershed health and ideas to help restore and protect the resource. Cooper spoke about what a watershed is and where Antietam fit into the larger Chesapeake Bay watershed picture. The group will continue to have speakers at each meeting to learn about other projects in the region, develop partnerships, and encourage new members to join.

"The commission's compact directs it to provide assistance to the public and citizens groups to inform and empower them toward greater stewardship," said ICPRB executive Director Joseph Hoffman. "At the same time, these groups can help ICPRB and state resources agencies by providing input and support for programs that protect and preserve the river," he said.

The ICPRB and Maryland DNR Forest Service have helped strengthen ACWA's meetings and future project plans and will continue to direct resources to the group until they can operate without assistance. With a strong organizational structure, the



A. Griggs

Antietam Creek near Funkstown, Md. The ACWA will focus on problems such as severe bank failure. About 79 percent of the creek's buffer zones are inadequate.

group hopes to serve as an umbrella group for other watershed groups in the area undertaking similar restoration efforts. The next ACWA meeting will be on January 23 at 7 p.m. at the Quality Inn, 1101 Dual Highway, Hagerstown, Md. For more information, contact Adam Griggs at 301-984-1908 ext. 103 or Emilie Cooper at 301-791-4733.

Free Water for Everyone

As long as rainwater has been falling on rooftops, humans have collected it for drinking and watering crops. According to ICPRB's Section for Cooperative Water Supply Operations on the Potomac, the average single family household uses about 185 gallons of water per day, the average multi-family household uses 168 gallons, and employees each use an average of 51 gallons per day at work. During July's heat, Washington metropolitan area residents use about 124 million gallons more per day than in February, the month of lowest water demand. Much of that water in summer months is used to hydrate lawns and gardens. In May 2006, 90 residents in Middletown, Md., with the help of ICPRB, Chesapeake Bay Trust, the Town of Middletown, and Ingalls Lumber, reduced their need for municipal water for landscaping purposes by installing 60-gallon rain barrels under their downspouts to collect rainwater.

Not only do the barrels reduce the amount of water needed from municipal supplies, but they also help reduce stormwater runoff. Unfiltered rainwater is perfectly suited to landscape needs and even benefits waterways by slowly filtering toxins out of the stormwater in lawns. Middletown, Md., has been working to curb water use and found rain barrels to be a good way to encourage residents toward conservation.

The barrels ICPRB chose for the project are a specific design that takes the periodic Mid-Atlantic downpours, mosquito issues, and safety into account. The Rain Bear is a

recycled food-grade barrel that is designed to sit outside. It's black plastic contains carbon, a UV-resistant material that will not allow algae to grow in the barrel, which could clog the spigot and the overflow hose. The Rain Bear also has a screw-top lid to keep children and curious animals out and makes it very easy to clean at the end of the season. The lid is also recessed, which allows rain to swirl and slow before pouring in the barrel. This is an important feature because typical rain barrels have flat tops, which prevents fast-moving water from dropping into the barrel and instead shoots off the top of the barrel. Many flat-topped barrels are designed for use in drier areas, where rainfall is slow and minimal, but the Mid-Atlantic sees heavy downpours, with several inches at a time. A screen keeps mosquitoes and large debris from getting into the barrel and a large overflow hose helps divert excess water out of the barrel to a garden or other vegetated area. A second overflow hose can be attached or the barrel can be linked to another to capture excess water. The brass spigot is located at the base of the barrel to provide access to all the water. One inch of rain on 1,000 square-feet of rooftop yields 623 gallons of free rainwater. Whether that runs to a barrel, garden, or to the nearest storm sewer is up to the homeowner.

The ICPRB received a grant for \$4,410 from Chesapeake Bay Trust to offset the cost of 90 barrels and the Town of Middletown supported the project by providing workshop space and handling the barrel sales. The ICPRB collected data from barrel users over the summer and based on a core group of participants, concluded that the barrels have the potential to collect about 31 to 38 percent of the stormwater that falls on rooftops. During heavy downpours, such as the one that dropped about five inches of rain over a two-day period last summer, the core group collected only 300 of the possible 8,095 gallons. However, when only one-eighth an inch of rain fell over a week, the core group collected 120 of the possible 130 gallons. This data indicates that rain barrels are effective at collecting rain, but are more beneficial when installed with a rain garden or other vegetated area that can accept excess rain water diverted from the barrel once it is filled. Then, barrel water can be dispersed slowly as needed over the landscape during drier days.

Xeriscaping, or landscaping with drought-tolerant plants, and Bay-Wise landscaping are two ways to transform vast expanses of lawn into diverse, drought-tolerant, often native, gardens. These gardens are planted with hardy shrubs and perennials that can withstand the periodic downpours and long stretches of drought that are part of the region's normal weather patterns. But, a coifed lawn is often what

homeowners want.

Reasons for the vast expanses of turf range from believing that a lush lawn is a healthy lawn to believing that shrubs will bring vermin into the home. Neither are true. Lush lawns often require heavy

fertilization and many gallons of water to keep them green. Many homeowners also spray for weeds, making the turf a monoculture not suitable for animals other than Japanese beetle grubs. Lawns must also be mowed weekly in the summer, which can increase air pollution and compact the soil. Shrubs and perennial plants provide food and cover for many animals, including birds, insects, and small mammals. Offering a diverse food source and shelter keeps animals happy in their natural habitat and not in our basements. Other ideas to replace turf include planting hummingbird and wildflower gardens. Each of these gardens is well-suited to accept overflow water from rain barrels and will benefit from the barrel's rainwater during drier days, limiting the amount of turf that must be mowed, fertilized and watered with municipal water sources.

The demand for Rain Bear barrels was so high that ICPRB decided to continue the project in 2007. The ICPRB is partnering with ThorpeWood, an environmental education center in Thurmont, Md. ThorpeWood will provide storage and workshop meeting space and volunteers to help assemble the barrels before the season begins. Beginning March 1, anyone can register to get a rain barrel by filling out the online form at www.potomacriver.org. Barrel purchasers must also register to attend one of the ten workshops at ThorpeWood. Each workshop will last two hours and will help new barrel owners learn how to install and maintain barrels and how the barrels can be used in the landscape. The workshop will also include information about Bay-Wise, xeriscaping, hummingbird, and wildflower landscapes. Barrels will be available for pickup following each workshop.

For more information about rain barrels or other ways to conserve water and improve water quality, visit www.potomacriver.org/get_involved.htm.



A rainbarrel in action.

B. Duggan

Pennsylvania Group Honored for Protecting Water Source

The Land Conservancy of Adams County received the 2006 Source Water Protection Award for Pennsylvania from the U.S. Environmental Protection Agency (EPA) Region 3 for their outstanding efforts in using land conservation to protect Marsh Creek, the primary drinking water source for the Gettysburg Municipal Authority (GMA). Marsh Creek joins Rock Creek to form the Monocacy River, which flows through Maryland before emptying into the Potomac near Frederick, Md. The rural basin is undergoing intense development pressure in both states.

The award is bestowed for leadership and commitment to protecting drinking water sources used by public water systems. The Conservancy was selected for their Marsh Creek Watershed Protection Project, which involves the permanent protection of large land parcels via conservation easements within the Marsh Creek source water area. The basin includes a surface-water intake and some wells that typically serves about 12,000 people in historic Gettysburg and portions of two surrounding townships, although the population swells in the summer when the majority of two million annual visitors come

to the National Military Park. Project partners include GMA, the Adams County Conservation District, the Adams County Office of Planning and Development, and Watershed Alliance of Adams County. Through conservation easements, the effort has protected more than 1,000 acres of land and two miles of stream banks. For more information, contact the conservancy at skuhn@adamscounty.us.

This and other efforts to protect source water throughout the watershed are supported by a basin-wide group, the Potomac River Basin Drinking Water Source Protection Partnership. Composed of water suppliers, state agencies, and other organizations, and coordinated by ICPRB, the partnership promotes protection on a number of fronts. The group held its annual meeting in Gettysburg, and visited some sites where the conservancy has worked. For more information, visit www.potomacriver.org/water_quality/safewater.htm.



Potomac Basin

REPORTER

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