

Black Bass Annual Review

From the Tidal Bass Manager
Joseph W. Love, Ph. D.



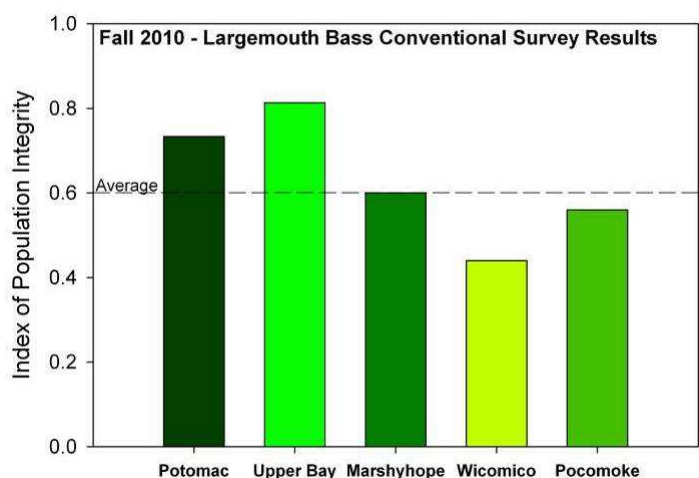
This version of BBAR conveys a lot of great work done in 2010. All of the work can be read on-line or in our federal aid report. I'll shoot a copy of the federal aid report to folks who are interested. We had some challenges, but worked with lots of good folks to help manage the bass fisheries in the tidal rivers. Special thanks go to the anglers, tournament directors, MD Bass Federation Nation, Wheelabrator Technologies, U.S. Fish and Wildlife (Maryland Fishery Resources Office), and our own Biologists in the Southern and Eastern Regions. For more information on our work or for questions, please contact myself (jlove@dnr.md.state.us; 410-260-8257), the southern regional manager, Mary Groves (mgroves@dnr.md.state.us), or the eastern regional manager, Rick Schaefer (rschaefer@dnr.md.state.us). Thanks and I look forward to hearing from you soon!

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STATUS OF BLACK BASS POPULATIONS

Throughout the tidal bass survey in 2010, a total of 1154 largemouth bass (*Micropterus salmoides*) was collected from targeted drainages of the Chesapeake Bay watershed. Only about 20% of available largemouth bass habitat was surveyed for each river. Each captured fish was measured, weighed, and most were released at their site of capture. Fish ranged in size from 1 in – 28 in.

A mean of twelve indices was used as a population integrity index that reflected the status of a population. The status of populations in the targeted drainages was generally average or above average (see figure below). The population for the Wicomico River had an index well below average. Due to below average reproduction in 2010, the Pocomoke River also had an index that was below average. However, both Wicomico River and Pocomoke River indices were based on a reference dataset of 3 - 4 years and require more data.



The **Potomac River**'s catch index is similar to previous year estimates. There was a greater proportion of 12 inch (305 mm) or larger fish than previous years. This could reflect good recruitment over the past 2 years and a strong age class. In 2010, the sample was dominated by 12 – 15 inch fish and a good proportion of fish larger than 15 inches (33%). Body growth rates and condition of largemouth bass were excellent and similar to previous years.

The **upper Chesapeake Bay** had higher catch estimates relative to previous years. The survey consisted of more fish that were 15 inches or larger than previous years' surveys. The proportion of these older, larger fish will increase or decrease, depending on growth and survivorship of young age classes. Body growth rates and condition of largemouth were excellent and similar to previous years.

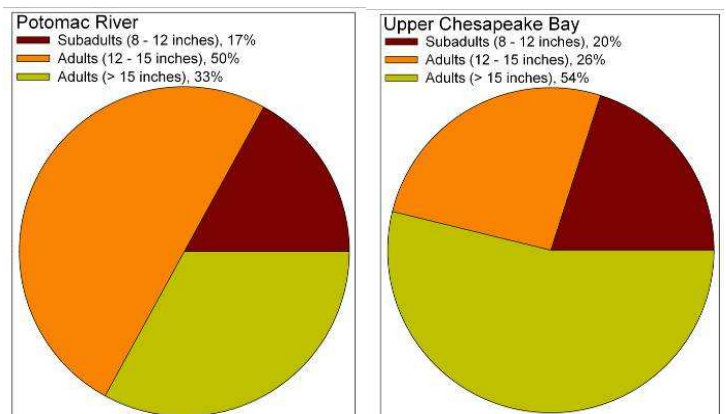
The catch estimates for the **Wicomico River** is lower than previous years, though the available reference time series is limited to only 3 years. The proportion of 12 inch or larger fish was higher than in previous years. Given time, these fish will grow to 15 inches or larger, possibly resulting in an improving fishery. However, body condition was lower than in previous years, but higher than national standards. This population will continue to be monitored to determine if catch rates or body condition indices change in the coming years.

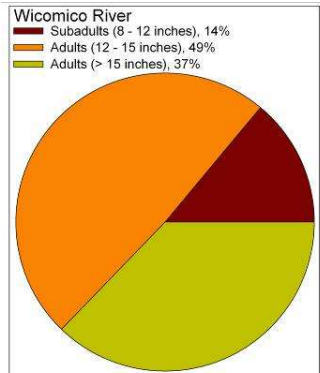
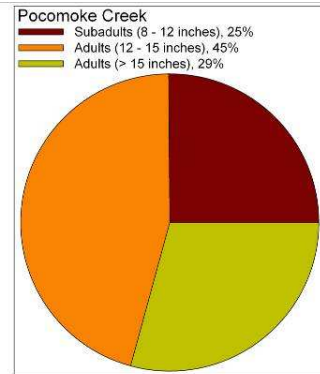
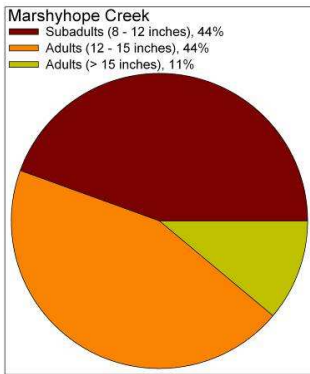
Catch of largemouth bass on **Marshyhope Creek** was slightly lower than previous years. There were fewer 15 inch fish than expected from previous years. This could possibly result from fish displacement following heavy sport fishing events or high mortality of older age classes. Growth rates were better this year than in past years.

The population of the **Pocomoke River** has not changed appreciably, relative to the

short time series available for the river. The number of fish caught was slightly lower than 2009, but not remarkably so. However, reproduction was lower than average this year than in previous years (see below). Growth rates and body condition were similar or higher than previous years for the population in the Pocomoke River. Continued monitoring of targeted drainages cited here is encouraged, particularly for eastern shore drainages that have less extensive datasets.

The population of **Middle River** was not surveyed because our sampling gear doesn't work well there. We are currently planning a juvenile survey of the nearby Gunpowder River for 2011. Once considered a popular fishery, angler catches in Middle River have reportedly declined over recent years. While some stocking events over the past 2 years may help improve catch success, the drainage itself may not be as suitable for largemouth bass as it once was. Rapid development of the subwatershed of Middle River has likely led to an increase in the density of impervious surfaces, which can reduce water quality. As a result, natural mortality or displacement to other rivers may have contributed to declines in abundance.



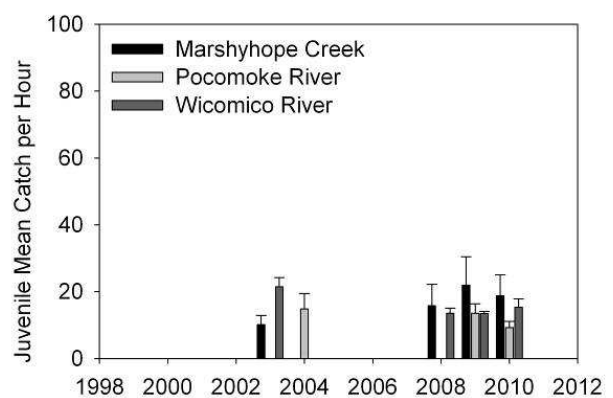
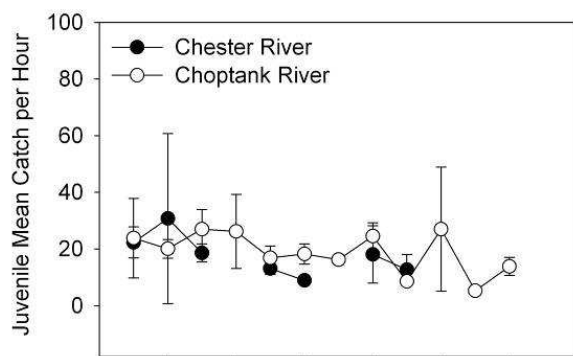
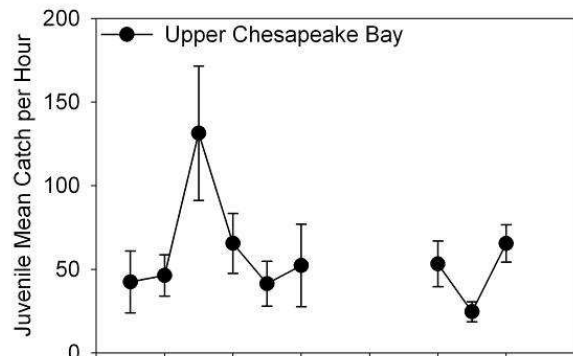
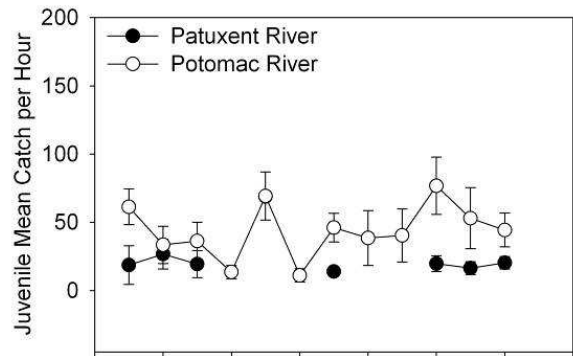


JUVENILE PRODUCTION

Juvenile production was assessed in: Potomac River, Patuxent River, the upper Bay, Choptank River, Marshyhope Creek, Pocomoke River, and Wicomico River. The catch of juveniles among drainages was fairly similar to that observed in previous years. As is typical, juveniles were proportionately more abundant than other age classes in the Potomac River and upper Chesapeake Bay.

The catch of juveniles on the Patuxent River has been and continues to be similar over the years. The similarity in juvenile catch over years may be, in part, because of relatively routine stocking of fingerlings each year to the river. The catch of juveniles was generally low for eastern shore drainages, which is also typical. Catch was lower than most previous years for the Choptank River, Wicomico River, and Pocomoke River. The catch of juveniles on the Choptank River in 2010 was low, but higher than in 2009. The distribution of juveniles in the Choptank River was not different than in 2009.

For the Wicomico River and Pocomoke River, the distributions of juveniles have shrunk slightly. The datasets representing the Wicomico River and Pocomoke River are restricted to only 3 years, making robust conclusions difficult.



Revenue from the fishing license fee increase pays for Maryland's tidal bass program. Thanks to the anglers who pay for the license and take part in protecting their fishery.



HATCHERY CONTRIBUTIONS

During the stocking season of 2010, 59,389 fingerlings were released. A pilot project was conducted to determine if nesting boxes were used by largemouth bass in hatchery ponds. Nesting boxes were not widely used so they were renovated and will be redeployed in 2011. Some 3000 fry were released to a stormwater management pond operated by the State Highway Administration (Denton, MD). Only 61 fingerlings were recovered from the pond. These fish were released to the Choptank River. There were 1042 microtagged fingerlings released to Middle River after their being raised by Wheelabrator Technologies (as part of a cooperative agreement between MDDNR, Wheelabrator INC., and Maryland Bass Federation Nation). There were 46,610 tagged fingerlings released to western branch of the Patuxent River in July 2010. Three months later, 1,511 advanced fingerlings (76 – 241 mm) were tagged with PIT tags and released to western branch. The proportion of each stage will be evaluated for the next 3-5 years to determine recruitment of each size class. In 2011, over 100,000 fry are scheduled to be released to the Choptank River.



Youth Chapter of Maryland Bass Federation Nation assists MDDNR Biologists in recovering adults from hatchery ponds.

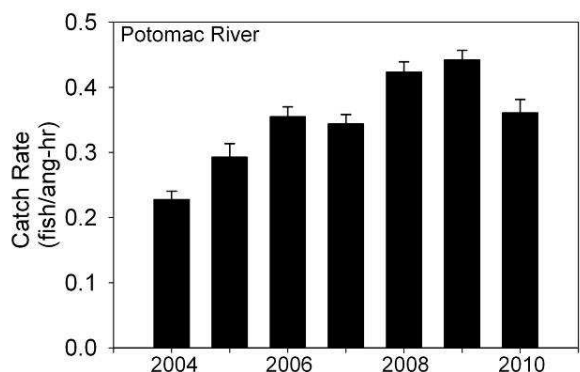
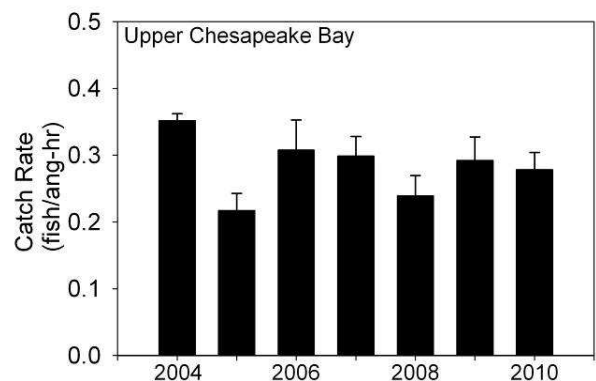
TOURNAMENT FISHING

Tournament angling for black bass can be an exciting event for anglers fishing the tournament or for folks watching the fish get weighed in. While it usually costs money to compete, watching the tournaments is a free and fun way to spend an afternoon. Most black bass tournaments held on tidal rivers of the Chesapeake Bay are held from March through September.

Data were collected for 122 tournaments in 2010. Anglers fished an average of 8.3 ± 0.63 SD hours per tournament on the upper Chesapeake Bay and the Potomac River from March – November in 2010. The number of tournament anglers in 2010 (N = 3962) is higher than in 2009 but lower than that recorded for

most years (2004 – 2010). The catch rate for the Potomac River during the 15 inch season (1 fish per 3.6 hrs) was higher than that for the upper Chesapeake Bay (1 fish per 5 hrs). The catch rate for the Potomac River during the 12 inch season (1 fish per 2.7 hrs) was also higher than that for the upper Chesapeake Bay (1 fish per 3.4 hrs). Catch estimates for the Potomac River were higher from 2008 – 2010 than previous years; but catch for 2010 was slightly lower than 2008 – 2009. In general, for the same 8 hour day, anglers caught more, but less heavy fish in the Potomac River (avg. wt. = 2.09 lbs) than in the upper Chesapeake Bay (avg. wt. = 2.40 lbs) during the 12 inch season.

Catch rates for other drainages, such as Nanticoke and Pocomoke Rivers, are under-reported by tournament directors currently. However, the data that are available indicate that catch rates for the Pocomoke River are similar to those of the upper Chesapeake Bay. Catch rates for the Wicomico River, in particular, are low. Tournament related mortalities were low, generally less than 5% of the catch. Initial mortality was generally low for 2010, ranging from 0 – 3.1% of all fish caught, on average. However, initial mortality for some smaller tournaments was reportedly high (> 10%). For anglers hoping to release live fish, MDDNR has worked with members of BASS and other agencies to produce important information for improving survivorship of their largemouth bass.



Are you a Tournament Director?

If you're a director, register your tournament and provide us your catch data. Download forms at: <http://www.dnr.state.md.us/fisheries/recreational/tidalbass/tournaments.html>.

Want to Fish a Tournament?

If you're looking for a tournament to fish tidal bass in the Chesapeake Bay, check out the list at: <http://dnr.maryland.gov/fisheries/bass/ta.asp>

TOURNAMENT ANGLERS PROTECT THE FISHERY

Wipe down live wells and transport tanks thoroughly before using them

Organic material, such as mud or grass that remains in the live well can reduce dissolved oxygen in the live well. Bacteria that break-down the organic material use oxygen. As a result, it's more difficult to maintain dissolved oxygen levels. In addition, cleaning live wells also helps to prevent transmission of disease or bacterial infections. We also recommend immediate removal of dead fish from live wells.

Use an effective culling strategy

Use non-invasive clips or mesh bags that do not wound the skin. Quickly weigh fish and release fish, if it is to be culled. Do not expose the fish to air for longer than a minute because important tissues of the fish can dry, possibly leading to suffocation and death. In our tidal waters, plastic clips may be preferred over metal ones because metal can rust. Clips are preferred over pins that puncture the skin. A cull bag can be used to either weigh the fish and/or separate fish in the live well.

Use a combination of ice and water exchanges to keep live well temperature within 5 – 7 °F of the water temperature (2' below surface)

Use ice to lower water temperature as necessary, but do not overcool. Because the addition of more bass to tanks will warm water, you must regularly check temperature and adjust temperature with ice when necessary.

Use an aerator, continuous recirculation, half-water exchanges (every 3 hours), and compressed oxygen (if possible) to keep dissolved oxygen near 100% saturation

To keep good water quality in the live well, exchange tank water with good quality water, usually clear water in submerged vegetation areas or water with high flow or current (e.g., mid-channels). If your live well stops working, then try this: 1) Every 15 minutes, bucket 1/3 of water from the live well and replace it with fresh water from 3 feet deep; 2) Divide fish between live wells; and 3) If the fish dies, put the fish on ice and bring it home – **do not release dead fish to the waterway**. Release boat captains keep a density of 1 pound of bass per 1 gallon of water. When bass weight exceeds the capacity of the live well, oxygen can rapidly be depleted and water can quickly be fouled.

WHAT HAPPENS TO BASS AFTER TOURNAMENTS?

Many people have tried to answer the question of what happens to fish after they are released at a tournament. Less than 50% of them try to return to where they were captured. Whether they return or not depends on how far they were taken and where they are dropped off. Small populations in some of our tidal rivers can be wiped out if fish are being taken from the same area over and over again. Stocking can help prevent small populations from being wiped out.

For the second summer in a row, some tournament-caught fish were monitored for survivorship in a net pen secured to a protected dock. This study was not as successful as hoped. We learned that: 1) the majority of fish added to the net pen escaped; 2) the net pen reduces survivorship of fish; 3) if bass were going to die, they tended to die between 24 – 36 hours after catch-and-release; 4) fish died mainly in late June and July; and 5) while angling adds additional stress, the relationship was too complex to draw any reliable conclusions regarding the sole influence of catch-and-release angling on delayed mortality.

RECREATIONAL FISHING

Recreational anglers are the backbone to the tidal bass fishery in the Chesapeake Bay. A map of fishing sites has been developed and posted to the tidal bass website. Anglers can use this map to post their opinions of fishing on the rivers. Those comments are an easy way for recreational anglers to express their concerns over fisheries to each other and to the tidal bass manager.

More big bass (> 15 inches) were caught in the upper Chesapeake Bay than other tidal rivers targeted by the MDDNR survey in fall 2010. However, the largest bass caught this year came from the Potomac River. Catch rates were higher on the Potomac River too. Largemouth bass were plentiful at the edges of submerged grass and woody structure. In the upper Bay, several large bass were found in the Northeast River, especially near old piers.

The recreational fishery for tidal bass in the upper Chesapeake Bay has become more popular since one of the first creel surveys conducted in 1958, when channel catfish dominated anglers' catches. Commercial harvest of largemouth bass from 1947 to 1960 in the upper Chesapeake Bay possibly competed with recreational angling activity. Catch rates have steadily increased in the upper Bay. In

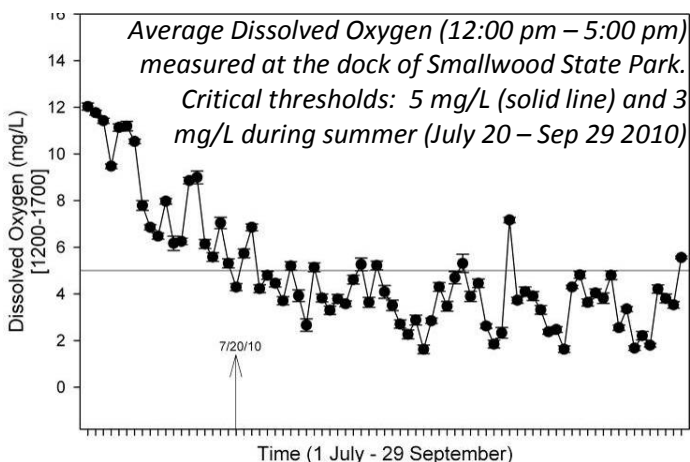
1997, a survey of recreational anglers from the upper Chesapeake Bay showed that black bass was the major recreational fishery. In 1997, the level of harvest by recreational anglers was estimated as 2% of that caught. Current levels of harvest, 13 years later, are not yet known.

WHAT'S OUT THERE?

Fall Survey Results	Total		Weight	
	Length (in)		(lbs)	
Drainage	Min	Max	Min	Max
Marshyhope Creek	2.4	17.7	0.01	3.16
Pocomoke River	4	18.5	0.03	3.56
Potomac River	2.6	28.3	0.01	8.61
upper Ches. Bay	1.1	20.7	0.01	5.79
Wicomico River	2.79	19.3	0.04	4.21

HYPOXIA IN MATTAWOMAN CREEK: ALERT TO ANGLERS RELEASING FISH AT DOCK

Recent data analysis from MDDNR Biologists (Jim Uphoff and Margaret McGinty) has noted a decrease in oxygen concentration at the dock of Smallwood State Park (Mattawoman Creek, Potomac River). Oxygen concentrations are lowest between late July and through September. From July 20, 2010 – 29 September, oxygen concentrations (12 pm – 5 pm) often dropped below the threshold often noted to cause stress for fish (see Figure). Average conditions occasionally reached 2 mg/L, which is often a threshold that causes fish to evacuate areas or die. Because many largemouth bass are released at the docks of Smallwood State Park following black bass tournaments, the Southern Regional Office with the Maryland Department of Natural Resources will be evaluating methods to improve escape of largemouth bass from the docks to the open water of Mattawoman Creek, where oxygen concentrations are higher.



DO NEST BOXES WORK?

This project addresses the effectiveness of supplying artificial spawning habitat for tidal populations of largemouth bass. In hatchery ponds, a male was observed near the edge of one box on one day. Boxes with smaller walls, approximately 4 inches high, had bass moving within the box. Largemouth bass worked the rocks within these boxes. Generally, though, largemouth bass did not prefer to use boxes and built nests in the soil.

The presence of boxes in the ponds did not appear to improve fry production. Fry production differed tremendously among ponds because of differences in available food, water temperature, and the onset of spawning. None of the boxes that were placed within the Choptank River drifted downstream. Most remained stationary, which indicates they will be stable habitats in the river.

Nesting boxes may be effective for providing artificial habitat for largemouth bass during the spawning season. Box walls should be low for at least 2 sides to facilitate movement into the box. Largemouth bass may build nests along side of the nesting box even if they do not use the inside of the box.

SANCTUARIES FOR SPAWNING BASS

Sanctuaries have been established in two streams of the Potomac River since 2001. These areas are restricted from fishing and boating from 1 March – 15 June, except by permit. They were established in Nanjemoy River (area = 0.34 km²) and Chicamuxen Creek (0.11 km²) to help protect spawning habitat and spawning adults.

The Chicamuxen Creek Sanctuary was similar to other habitats within Chicamuxen Creek, but differed in: 1) distance from mouth of Chicamuxen Creek; and 2) whether the habitat was a cove or not. Of 20 tagged bass, 15 were detected. The length of time a habitat was used tended to be high within the sanctuary, as well as a site further upstream. However, the catch of bass (≥ 12 in) was lowest in the sanctuary among 4 sites sampled within Chicamuxen Creek. The highest proportion of 15 inch or larger bass was caught at sites near the mouth of Chicamuxen Creek. Only 8% of the catch in the sanctuary was 15 inches or larger. Bass with eggs or sperm were caught in April and May from all sites, except the sanctuary.

While the sanctuary appears to provide good habitat for young-of-year largemouth bass, the number of adult bass using the habitat appears to be low.

NORTHERN SNAKEHEAD IMPACTS LARGEMOUTH BASS

Biologists of the US Fish and Wildlife Service or USFWS (Maryland Fishery Resources Office) have been working with those from the Maryland Department of Natural Resources or MDDNR (Division of Inland Fisheries) to evaluate the relative impact of northern snakehead on largemouth bass. Over the past decade, the population of northern snakehead has increased in size and distribution in the Potomac River. Thanks in part to tag-recapture reports from anglers to the USFWS, biologists have learned that the population of northern snakehead continues to grow within the Potomac River drainage. The species has spread to the mouth of the Potomac River. There are also some reports by Delaware Natural Resources and Conservation of northern snakehead from the Nanticoke River.

Northern snakehead and largemouth bass live in similar areas throughout the year; both associate with submerged structure. Northern snakehead has been caught by anglers fishing in the same habitats they catch largemouth bass. Tracking surveys by USFWS and MDDNR have noted the simultaneous occurrence of both species. It is clear that they occupy similar habitats and possibly compete for space.

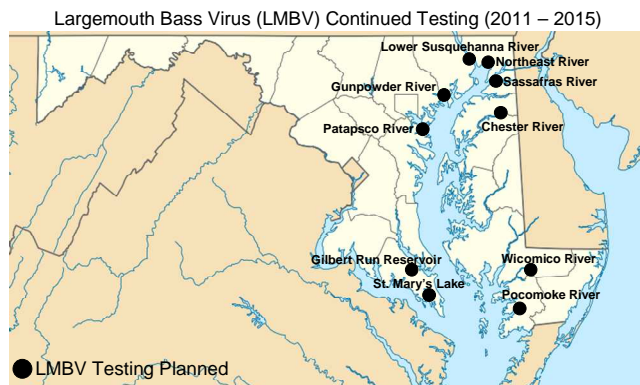
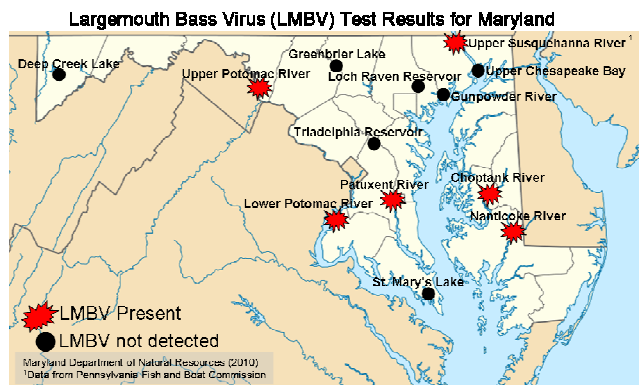
Northern snakehead and largemouth bass both ate juveniles of each others' species, but not primarily. The adults may not be significant predators of one another. However, northern snakehead and largemouth bass are expected to be moderate competitors. Northern snakehead ate mainly soft-rayed fish, but also white perch and other spiny-rayed fish.

Largemouth bass eat mainly spiny-rayed fish and crayfish. Due to the moderate level of competition, northern snakehead may depress the biomass of largemouth bass in the Potomac River. Population models indicated that the biomass of largemouth bass increased when modest numbers of northern snakehead were harvested. The continued removal of northern snakehead from the Potomac River drainage is encouraged by USFWS and MDDNR.

BASS VIRUS TESTING

Largemouth bass virus (LMBV) has not been linked to fish kills in Maryland, but can threaten fisheries. Since 1991, the virus has been identified as either a leading cause or contributing factor in large scale (often > 2,000) deaths of largemouth bass throughout the southeastern United States. After a decade of no such incidences, fish kills at Kerr Reservoir and Briery Lake in Virginia have been linked to LMBV by Virginia Department of Game and Inland Fisheries biologists. The virus is carried by other species of fish, but is only virulent and damaging to populations of largemouth bass. Largemouth bass can build a tolerance to the virus.

No largemouth bass fish kills have been reported in Maryland. None-the-less, MDDNR took a pre-emptive step in 1999 to test Potomac River largemouth bass for LMBV. Since then, testing has been conducted throughout many waterways of Maryland. The populations tested were those that were heavily fished by anglers. The MDDNR inland fisheries biologists are continuing their testing of LMBV in Maryland waters.



HOW CAN YOU PREVENT SPREADING LMBV?

Maryland Department of Natural Resources Fisheries Service (DNR) biologists have provided the following guidelines to reduce the spread of this and other invasive or pathogenic organisms:

1. Never transfer live fish from one body of water to another
2. Never discard fish parts or unused bait to any body of water
3. Drain water from live wells, bilges, engines, bait buckets, and hoses and pumps before leaving the launch area and clear mud, vegetation and debris from trailers.
4. Disinfect your live well daily and particularly when moving between bodies of water.
5. Spray or wipe all surfaces with a chlorine solution; let sit for 5 minutes; then rinse with clean water and flush through lines and pumps. An effective chlorine solution can be prepared by placing 3 tablespoons of household bleach in one gallon of water. **Bleach is very toxic to aquatic organisms** so discharge the solution to a grassy area where it will not immediately drain into streams or ponds.
6. Anglers should immediately report dying or dead bass, or bass that are swimming poorly in circles near the surface of the water by calling the Maryland Department of the Environment at 800-285-8195 M-F from 8 a.m. to 4:30 p.m. or 877-224-7229 after hours. Anglers may also report dying or dead largemouth bass to DNR Tidal Bass Manager Dr. Joe Love at 410-260-8257.

LOOK OUT FOR TAGGED BASS IN MIDDLE RIVER

Many anglers have indicated that Middle River largemouth bass fishing has become sluggish over the past few years. In response to that, members of the Maryland Bass Federation Nation are helping to improve the fishery by working with fishery biologists from Maryland Department of Natural Resources (MDDNR) and staff from Wheelabrator Technologies, Inc. Since 2003, MDDNR hatcheries have worked with staff from Wheelabrator to raise young largemouth bass that were then released to Middle River. Over the past two years, sponsors from Domino Sugar have donated money to purchase adult largemouth bass that were also released to Middle River. These adult largemouth bass were tagged using Floy tags. Several anglers reported catching fish with these tags in 2009-2010. All

tagged fish were re-caught in Middle River. In times of environmental stress, largemouth bass may leave Middle River, leading to sluggish fishing. Some largemouth bass may also be caught by anglers and moved to nearby rivers. To date, no Middle River tagged fish were caught outside of Middle River, which is good news for the fishery.

On October 29th, over 1 thousand juvenile and 165 adult largemouth bass were released to Middle River. Volunteers from the Maryland Bass Federation Nation worked with MDDNR fishery biologists to release largemouth bass in quality locations within Middle River. Once released, largemouth bass adults are likely to remain on site for a few days before exploring other parts of the river. As winter approaches, they're likely to enter deeper water around docks and harbors. Juvenile bass should be sufficiently fat to survive the winter, a major source of death for juveniles. Both the release of adults and juveniles should improve chances of a sustainable fishery. However, environmental conditions affect whether largemouth bass stay in Middle River or not.

The MDDNR fishery biologists will be monitoring where tagged fish are recaptured. For this Middle River black bass initiative to work, bass anglers are strongly encouraged to report tagged fish to Joe Love (Tidal Bass Manager, 410-260-8257) or Mary Groves (Southern Regional Manager, 410-260-8320). By reporting these tags, anglers let MDDNR know where there are potential problems and help to protect their bass fisheries. Other questions regarding this initiative can be directed to Joe Love or Scott Sewell (Conservation Director, Maryland Bass Federation Nation).



All comments regarding this nontechnical document can be submitted to *Joe Love* at jllove@dnr.state.md.us. Data presented here are abbreviated from a more thorough and technical research report generated in 2011.