Black Bass Annual Review

MARYLAND DEPARTMENT OF NATURAL RESOURCES — Fisheries Service, Inland Fisheries

AFTER 41 YEARS, CHIEF OF INLAND FISHERIES DON COSDEN RETIRES. WE DEDICATE THIS VOLUME OF BBAR TO HIM, WHO INSPIRED AND CRITICALLY EVALUATED MUCH OF THE WORK DESCRIBED HERE.

HIGHLIGHTED CONTENTS

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ANGLER CONCERNS 2014 BASS ROUNDTABLE

There were 20 anglers and biologists at the roundtable held in February 2014.

Illegal harvest at the docks of Smallwood State Park was a major concern of anglers. At the Park, the Natural Resources Police continue to issue fines for anglers who illegally possess more than 5 bass per day. The concern was discussed with Park staff. Park staff noted that Natural Resources Police routinely patrol the docks at Smallwood State Park and that they aptly recognize illegal activity. Please Report suspected illegal activity at: 1-800-628-9944.

The fishing piers at Smallwood State Park can be crowded with anglers with lots of lines in the water. As boats moor to the docks, the **lines may be damaged or tangled by boats**. The staff of Smallwood State Park support the use of the docks as fishing piers for their patrons. It was recommended to alert patrons about days with heavy bass fishing and to alert tournament anglers about the fishing piers from which fishing lines may be cast. Anglers fishing from piers are notified of large tournaments at the park by signs placed at the entrance to the park and the on-line MD DNR listing of tournaments. The signs on fishing piers have been evaluated for clarity to ensure that tournament anglers can clearly distinguish the fishing piers from others at Smallwood State Park.

SOLVING PROBLEMS IN TIDAL BASS FISHERY MANAGEMENT IS POSSIBLE BECAUSE ANGLERS BUY A FISHING LICENSE. THANK YOU.

Live possession of largemouth bass is a responsibility that anglers accept when fishing tournaments. While advances in design and engineering have generated often superb containment systems for largemouth bass, systems occasionally fail or are not operated as intended. The recommendations for live well operation are provided by B.A.S.S. in *Keeping Bass Alive* and those recommendations have been reviewed and studied by MD DNR, and added to the *2015 Fishing Guide*.

Most black bass anglers want to protect largemouth bass populations, and MD DNR shares those interests by collaboratively working with Mississippi State University, state agencies across the United States, and B.A.S.S. on a livewell study. **This work will lead to better recommendations for anyone practicing catch-and-release of largemouth bass.** Once caught, bass need to recover from exercise and handling, especially in a warm season such as summer. Recommendations on how to handle bass before releasing them will improve post-release survival and will be available in 2017. Please read current recommendations regarding live well operation when containing largemouth bass in the 2015 MD DNR Fishing Guide or in B.A.S.S.' "Keeping Fish Alive."

http://www.bassmaster.com/sites/default/files/imce/KeepingBassAlive_guidebook%20comp.pdf

Icing northern snakehead is not a legal way to kill the fish. If anglers possess snakehead, it is required that anglers: 1) remove the head of the snakehead; 2) gut the body; 3) remove the gill arches from both sides of the fish; or 4) fillet the fish. If anglers wish to keep snakeheads, which is strongly encouraged, then they must be dead. Before killing the fish, anglers may immobilize the fish using a blunt instrument or place the fish on ice to slow its movements. But the snakehead must then be processed in a way consistent with regulation in order to protect the angler from a fine.

The effects of **commercial haul seines** on spawning activity by largemouth bass was also discussed. Commercial haul seines can stir sediment temporarily, reduce water clarity, and disrupt nest guarding behavior of largemouth bass. However, this type of disturbance is generally less influential and less widespread than storms and high stream flow, which can be significant during spring. Some anglers have also expressed concerns about illegal harvest of largemouth bass from **pound nets**. For information about permitted pound net locations in the Potomac River, please call the Potomac River Fisheries Commission at 1-800-266-3904. Locations in Maryland are at:

http://dnr2.maryland.gov/fisheries/pages/poundnets/index.aspx

No one is allowed to possess largemouth bass if it is caught with a net. In 2014, an angler voiced concern regarding a specific area where illegal possession was suspected and law enforcement was notified. Report suspected illegal activity to: 1-800-628-9944 or VHS Channel 16, Hail Maryland Natural Resources Police.

Submerged aquatic vegetation (SAV) has disappeared in some areas in the Potomac River and the Upper Chesapeake Bay. This decline began in 2011 and occurred because of tropical storms that disturbed sediment and deposited sediment in streams.

The levels of SAV cover have fluctuated in the Potomac River for decades. In addition to cover, the types of SAV have changed and now include the native water celery, and non-natives *Hydrilla* and Milfoil. As noted by Captain Steve Chaconas, the different types of SAV can affect fishing differently. The Tidal Bass Program noted greater use of deeper areas rather than vegetated areas when SAV is generally lacking in

the river. Dick Berich, a recreational angler and member of the roundtable also noted that bass are occupying different areas. In addition to affecting angling, the lack and different types of SAV may reduce the survival of young bass because of more limited refugia from predators. It has also affected growth rates of young fish.

Guiding for largemouth bass can be frustrating if guides do not know the credentials they need for guiding. Additionally, some individuals may be guiding illegally. Captain Steve Chaconas noted the need for clarity in the process and better enforcement by Natural Resources Police. A letter to clarify the licenses required was issued by MD DNR to charter boat captains and bass guides in 2014. Natural Resources Police were alerted to illegal guiding activity. A list of some, legally licensed guides can be found at:

http://dnr2.maryland.gov/fisheries/Pages/charters/map.aspx

The continued harvest of northern snakehead was encouraged, particularly for the upper Wicomico River near Salisbury (MD). In Salisbury, northern snakehead have been observed reproducing in the city park pond and several have been caught in the upper Wicomico River. To help promote the fishery for snakehead, MD DNR staffed a booth during Earth Day at a specialized event held at Salisbury Zoological Garden. The MD DNR also provided a seminar for the zoo volunteers and addressed questions related to snakeheads.

An information booth was established at the Salisbury Zoo to promote the protection of biodiversity by harvesting invasive species. Based on catch records for the upper Wicomico River, the rate of spread has been much lower than on the Potomac River, which may be due to angler harvest and awareness.

2014 Work in Response to Angler Concerns

Are Bass being Outcompeted for Food?

In the Potomac River, largemouth bass eat goldfish, golden shiners, and crayfish. Stomach contents from 141 fish that had died during tournaments in 2014 were analyzed. The results were: 95 fish had nothing in their guts and 25 fish had a hook or soft plastic lure in the gut. There were 10 fish with a minnow or minnow species in their gut; the most common minnow was goldfish. Golden shiners, catfish and white perch were also identified. An additional 7 fish had fish parts in the gut. There were 10 fish that had consumed crayfish. It was noted in 2014 lab experiments that both largemouth bass and northern snakehead had preference for goldfish and golden shiners.

Soft plastic lures and hooks pulled from the stomachs of fish caught and weighed during tournaments. Gut hooking injuries can be fatal to bass.

Recycle container inspired by Maryland Bass Nation's Conservation Director, Captain Scott Sewell. The recycle container is for soft plastic lures. It is located at Smallwood State Park

During the 2014 black bass roundtable, Captain Scott Sewell noted that prey resources in the Potomac River may have changed or declined. After analyzing over 30 years of Striped Bass Seine Survey data (1981 - 2014), it was determined that at Indian Head and Liverpool Point on the Potomac River, there has been an increase in catches for bluegill and spotfin shiner, but decreases in catch for inland silversides and yellow perch. The Tidal Bass Program analyzed its dataset since 2009 and learned that there have been some changes in the distributions of some species. There were declines in the distribution of goldfish and golden shiner into 2012, but increases in distribution thereafter. Other minnows and tessellated darters have also had increased distributions since 2012. The forage base changes in tidal freshwater from year to year, and differs among streams within a year. Those differences in forage availability could impact growth rates and fattiness of largemouth bass.

As resources become more limiting, problems with growth and survival can occur. Since 1999, annual growth rates for young fish (ages 1 - 3) have *usually* varied between 2.50 and 2.75 inches per year in the Potomac River and in the Upper Chesapeake Bay watershed. Growth rates peaked at three inches per year in Upper Chesapeake Bay in 2009 and 2010. Fluctuations in prey resources and SAV cover account for differences in annual growth rates.

In addition to growth rates, fattiness was measured in partnership with the Cooperative Oxford Laboratory (Oxford, MD). While this work is in its early stages, it is clear that fattiness can differ among tributaries of the Potomac River. Largemouth bass collected from Piscataway Creek and Pomonkey Creek had greater fattiness and body condition than those collected from Mattawoman Creek.

More work is being planned in 2015, but it does not appear that largemouth bass are being outcompeted for food. There are certainly times when food is more scarce and growth rates reflect that. **Ways to keep bass growing the way they should include protecting grasses, watershed integrity, and keeping possible competitors (like northern snakehead) from being a problem and spreading.**

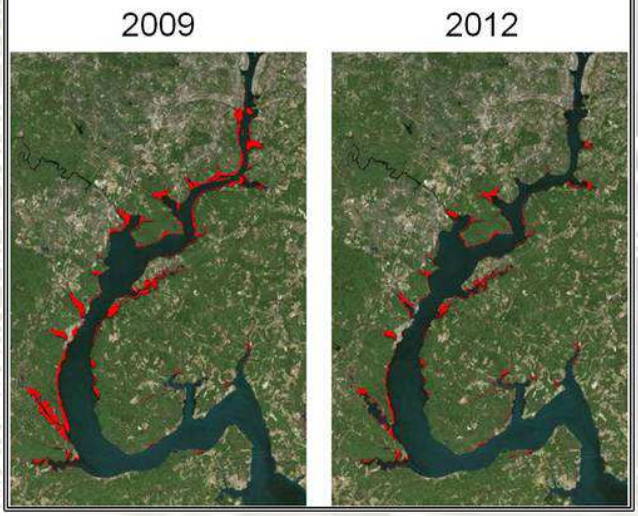
Bass Grow Better with Grass

Bass grow better with grass, at least in the Potomac River and Upper Chesapeake Bay where they are accustomed to living with lots of grass. Annual differences in growth rates for young largemouth bass (ages 1 - 3) in the Potomac River and Upper Chesapeake Bay can be explained, in part, by how much underwater grass or submerged aquatic vegetation (SAV) is available. Each year, the distribution of SAV is measured using aerial surveys by the Virginia Institute of Marine Science. Prior to 2006, the distribution of SAV in tidal freshwater of the Potomac River was between 1000 ha and 2000 ha. During this same time, growth rates for subadult largemouth bass (ages 1 - 3) were ~ 2.5 inches/yr. Growth rates of largemouth bass in the Potomac River have been measured by MD DNR Tidal Bass Program for 13 years.

Later in the decade, cover of SAV was expansive in the Potomac River and Upper Chesapeake Bay, possibly helping anglers catch fish in both

locations. In the Potomac River, SAV increased to between 3000 ha and 3500 ha in tidal freshwater habitats; it increased from 4000 ha to 6000 ha in Upper Chesapeake Bay. During this time, growth rates of largemouth bass increased to 2.75 inches/yr in the Potomac River and 3 inches/yr in upper Chesapeake Bay. Once SAV diminished in 2011 to levels observed in the early 2000's, growth rates also declined to levels observed in the early 2000's. **It appears that growth rates vary according to the distribution of resources, such as SAV and the prey or safety it provides.** Those resources become more limiting at times.

Distribution of Submerged Aquatic Vegetation (SAV) in tidal freshwater areas of Potomac River (in red) as measured by Virginia Institute of Marine Science for 2009 and 2012. The SAV was greatly diminished after 2011 when tropical storms stirred sediment in the watershed.



How Many Snakeheads in the Potomac?

Invasive aquatic species initially impact ecosystems in unknown ways and can cause ecological and/or economic harm. Once a non-native species is introduced and becomes a permanent resident, it is necessary to determine its effect on the ecosystem. At the 2014 roundtable, Dennis Schanberger suggested studies aimed at determining the population size of northern snakehead relative to largemouth bass. It was thought that both species could be competing for the same resources and that competition could cause problems for largemouth bass.

To learn more about the negative impacts by northern snakehead, MD DNR has partnered with USFWS (Maryland Fishery Resources Office), VA Department of Game and Inland Fish, DE Department of Natural Resources and Conservation, and DC District Department of the Environment. These agencies have worked together on strategies aimed at learning negative impacts and emphasizing control of the invasive species via agency, commercial and angler harvest.

Population sizes of northern snakehead in Nanjemoy Creek (91 adults) and Chopawamsic Creek (92 adults) yielded a density of 3 adults/ha for both streams. In 44 major tidal freshwater streams of the Potomac River, it was determined that 7,093 ha was suitable habitat for snakehead. **Assuming a density of 3 adults/ha in suitable habitat, an estimated adult population size for the Potomac River was 21,279 snakeheads.** By comparison, estimated density of largemouth bass in Maryland's streams in the tidal Potomac River in 1996, was predicted to be 12.1 adults/ha. Based on a large scale effort to estimate population size in 2001 to 2005, it was determined that density of largemouth bass is actually lower than predicted. Density estimates should not be expected for all streams and there may be more snakeheads in some areas.

Northern snakehead with American eel in its gut

STOP AQUATIC HITCHHIKERS!

Has Harvest Helped Control Snakeheads?

The increased harvest levels on snakeheads appear to be helping to lower both numbers and biomass of snakeheads in the Chesapeake Bay watershed. Abundance indices for snakeheads in the Potomac River and Patuxent River have declined since 2012. The rate of spread in upper Wicomico River is now less than that observed for the Potomac River, though the species had initially spread quickly from the Nanticoke River into Blackwater River and Wicomico River.

Because of their ability to quickly establish themselves in an ecosystem and affect the food web, live possession of snakeheads is illegal and harvest of the species is strongly encouraged.

Fried snakehead from Alex Hrycak (2013). (Left) Tom Dembeck harvests a snakehead from the Blackwater National Wildlife Refuge (2014)

This publication is supported by efforts of the Tidal Bass Program, MD DNR Inland Fisheries' regional managers and their biologists, anglers, and tournament directors. Thanks to all of them. Funding for this work provided was by the U.S. Fish and Wildlife Service Sport Fish Restoration Federal Aid and Maryland Department of Natural Resources.

Stocking Rivers

In 2014, 30,381 largemouth bass juveniles were raised and released from hatcheries. This equated to an investment of at least $45,500 (~$1.50 per stocked fish by MD DNR). In tidal waters, juveniles were released to Patuxent River, Gunpowder River, and Middle River. The cost effectiveness and improvement to the bass fishery by stocking was assessed using studies spanning over a decade from the Patuxent and Choptank rivers.

Since 1982, over 2 million largemouth bass have been stocked into the Choptank and Patuxent rivers. Of those stocked, 25.9% were marked and available to assess hatchery contributions.

Stocking fry (1 inch fish) did not improve the population, which has also been noted by other state agencies. Stocking fingerlings (2 inch fish) and advanced fingerlings (4 - 8 inch fish) led to slight improvement in catch by MD DNR for at least ages 1 – 3. The level of improvement in the fishery depends on environment and size of stocked fish. More stocked fish does not necessarily mean a better fishery. There is an optimum stocking density.

Stocking bass led to significant, but small improvements in the fishery. Managing other factors, such as habitat quality, angling effort, post-release mortality, and illegal harvest are at least as important.

Health of Largemouth Bass

In 2014, the Tidal Bass Program widened its data collection to include any abrasion or hooking injury for any captured largemouth bass during the survey. In the largest tidewater fisheries, the percentages of captured fish with injuries was 11% and 6% for Upper Chesapeake Bay and the Potomac River, respectively.

Abrasions were the most common injuries, as well as physical damage related to angling. Very few fish exhibited more severe signs of tumors and spinal damage or injury.

Of 30 fish tested for largemouth bass Virus (LMBV) in the Potomac River, only 4 tested positive, similar to testing done in 2009 and 2011. **There was no relationship between skinniness and LMBV infection.** All fish that were tested for LMBV were in good visible health and did not show signs of disease.

RECREATIONAL FISHING

In 2014, 107 volunteer angler surveys were submitted, and some trips included more than one angler. This is 1/3 of the participation in 2013. Most reports were submitted during April and May (60%)

http://dnr.maryland.gov/fisheries/survey/index.asp

The average number of recreational anglers per angler survey was 1.39, which was less than the 1.8 reported in 2013. The average number of hours per trip was 4.6 hours, similar to 2013, with a total of 489 hours reported. Of these anglers, 55.1% reported targeting largemouth bass and were not tournament anglers.

What Recreational Anglers Caught

Largemouth bass was the most targeted by anglers who submitted reports. There were 18 volunteer angler reports (16.8%) where northern snakehead was targeted and 19 reports (17.7%) had trout as the target.

Similar to 2013, most recreational anglers targeting bass reported fishing impoundments (52.5%). The tidal Potomac River was the second most well-reported location (10.3% of reports) and the Upper Chesapeake Bay was third (3.7%). Data reported to MD DNR Angler's Log (of 118 reports) also highlighted the importance of non-tidal habitats, the tidal Potomac River, and Upper Chesapeake Bay to recreational anglers targeting largemouth bass. For recreational anglers who did not target largemouth bass, only 7 of the 45 reported reportedly fished at impoundments or lakes; other locations included: the Potomac River, Patuxent River, Patapsco River, and Otter Creek.

In the survey, 1401 fish were reportedly caught. Most were white perch (25.4%), catfish (18.2%), and bluegill (15.3%). These types of fish are among the most common in Maryland's waterways. Anglers also caught largemouth bass, trout, and crappie. The least reported fishes were yellow perch (2.6%), pumpkinseed (2.2%), and northern snakehead (0.4%). Other species that were caught and reported were: weakfish, smallmouth bass, Atlantic croaker (hardhead), blue catfish, gizzard shad, rock bass, walleye, and American eel.

What Recreational Anglers Ate

Only a small percentage of caught largemouth bass were eaten (2 of 126 reported). The fishes that were eaten most by anglers were trout (90% of reported catch), snakeheads (83% of reported catch), catfish (53% of reported catch), and white perch (30% of reported catch).

What Recreational Anglers Spent

The average trip expenses estimated from the Volunteer Angler Survey were $52.00/day for residents and non-residents. Average spent by anglers targeting largemouth bass was $57.00/day for residents and non-residents. The greatest expense was that for gasoline, which averaged $19.22. The estimates from the Volunteer Angler Survey were slightly greater than the $42/angler-trip/day, which was reported in 2011 for residents and non-residents (combined) by the U.S. Fish and Wildlife Service's National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for Maryland.

CURRENT STATUS OF POPULATIONS

The Potomac River: Inter-jurisdictional Fishery Assessment

For the Potomac River, the last three fall surveys of largemouth bass (2012 – 2014) provided the lowest catch indices of the MD DNR 15-year time series and were below reference points noted in Maryland's Tidal Bass Fishery Management Plan (FMP), which compels an investigation and possible management actions. The need for an investigation was also requested by many anglers who experienced poor fishing. From the MD DNR Tidal Black Bass Questionnaire a slight majority of anglers, including 40% of tournament anglers, favored more restrictive regulations. Other jurisdictions that share management of largemouth bass in the Potomac River have not instituted more restrictive regulations and have not reported declines in either fishing or their survey indices.

Based on all available data, MD DNR has concluded that recently poor fishing and catch indices partially reflect a unique period of high fishing pressure in Maryland waters (2008–09) and greater than normal fishing mortality followed by poor **recruitment** because of habitat loss due to tropical storms in 2011. Poor angling may have also been influenced by natural redistribution of largemouth bass because of SAV cover. Spring surveys conducted in 2014 resulted in similar catch to surveys conducted between 1987 and 1990. Therefore, MD DNR has concluded that there is sufficient reproductive effort available to rebuild the fishery. Spring surveys by VA Department of Game and Inland Fish also suggest reproductive effort during the spring has not changed.

> ***Recruitment*** *can be defined as survival of juveniles to later (usually sexually mature) ages within the same population.*

Potomac River: Regulation Changes

In December 2014, fishery managers from jurisdictions that jointly manage the largemouth bass fishery of the Potomac River have decided not to change existing regulations for spring 2015. They have agreed: 1) on annual information exchanges; 2) to improve monitoring of the number and size of tournaments; 3) to encourage a policy of 1 large tournament (> 150 boats) per month using direct communication. In addition, **MD DNR has clarified permitting requirements of black bass tournaments to help improve survivorship prior to and during weigh-in. The MD DNR will continue to monitor the fishery and tournaments and consider other regulation changes for 2016.**

Richard Norris and son caught 17-inch large-mouth and 18-inch small- mouth on buzz baits in upper Potomac (2014)

Patuxent River

Catch by MD DNR has not appreciably changed on the Patuxent River since 2011. However, total catch and catch of age 1+ fish is lower than between 2000 and 2008. Other population indices indicate consistent recruitment and growth. The distribution of juveniles has not appreciably changed since 1999, further suggesting consistent levels of recruitment for over a decade. Indices also indicate that the number of juveniles produced has been slightly increasing across recent years. Patuxent River offers a small, stable largemouth bass fishery.

Marshyhope Creek

The population in Marshyhope Creek is an actively fished one. Total catch is similar to previous years, though the relative abundance of age 1+ fish and older fish (> 15 inches) was slightly lower than expected based on previous years of work and available reference points in the Tidal Bass Fishery Management Plan. Indices reflect a good population with natural and effective reproduction. The population has not changed appreciably since annual surveys began in 2008.

Upper Chesapeake Bay

The catch estimates for 2014 were greater than in recent years, largely due to catching a relatively high number of offspring. The catch of 1+ fish has been similar since 2009, though it was slightly lower (on average) in 2014. Fewer age 1+ fish may be attributed to poor recruitment in the previous two years. Poor reproduction in the Upper Chesapeake Bay in 2012 and 2013 has been followed by strong reproduction in 2014. If SAV continues to improve in distribution and acreage, then anglers may be successful in 2015 and 2016 if they target SAV habitats that aggregate adults, even if recruitment is poor.

Wicomico River

Catch of largemouth bass by MD DNR has been steady in the Wicomico River since 2010. Catch and other indices indicate that the Wicomico River largemouth bass fishery is relatively stable. Reproduction in Wicomico River may be naturally restricted to the most upstream areas. Reproductive effort appears to have been steady for Wicomico River and is relatively unchanged since 2002. The Wicomico River bass fishery is naturally small and would be negatively influenced by high levels of harvest or moving fish from the river. Stocking conducted in 2012 may help bolster young age classes in this population, thereby contributing to a larger population. It is anticipated that older largemouth bass collected during this survey will spawn and contribute to natural reproduction.

Pocomoke River

The Pocomoke River population has naturally fewer older largemouth bass than other river populations. However, the catch index and tournament statistics are similar to that for Marshyhope Creek, suggesting similar fisheries for both systems. In the Pocomoke River, many more fish were caught in 2014 than 2013 because of the numerous catches of juveniles and young adults. Fish exhibited normal levels of body growth and condition. Juvenile survivorship may have been exceptional in 2014 relative to prior years. A strong year-class in 2014 may yield stronger fishing in 2016 or 2017 for recreational anglers.

Lisa Hopps hooked this 2 lb bass on a spinner bait while fishing Pocomoke River (2014)

TOURNAMENT FISHING

Data were collected for 111 tournaments in the Potomac River and Upper Chesapeake Bay. During these tournaments, 4,472 anglers each fished approximately eight hours from March to November on the Potomac River and the Upper Chesapeake Bay. The number of tournament activity reports from the Potomac River was 39, which is the lowest on record since 1994. The number of angler-days was also lowest on record since 1994. In stark contrast, the number of tournaments and number of angler-days in the Upper Chesapeake Bay were the second highest of the time series.

Data were also collected for a small number tournaments held in other tidal waters of the state: Gunpowder River, Choptank River, Nanticoke River, Pocomoke River, Wicomico River. None of these had a sufficient dataset for evaluating trends.

In total, anglers reported data for 3,216.62 lbs and 19,678 fish with 96.5% survival during the weigh-in. There were 674 reported mortalities. This is much lower than the mortalities reported from just Northeast River in 1958 when 2,800 largemouth bass were harvested from that population![1] More fish were caught and weighed in the Potomac River (10,950) than the upper Chesapeake Bay (3,332).

The number of bass weighed per angler-day for the Potomac River during the 12-inch season (~ 3 bass/angler-day) was similar to past years since 2008. The number of bass weighed per angler-day in the upper Chesapeake Bay (~ 1 bass/angler-day) was its lowest since 2001.

The reported numbers of bass weighed per angler-day for the Pocomoke River, Wicomico River, and Marshyhope Creek were similar to that for the Potomac River. The reported number of bass weighed per angler-day for Gunpowder River was the lowest reported for any tidal river. There were no data reported by tournament directors fishing the Choptank River in 2014.

For a list of upcoming tournaments and their locations, please go to:

http://dnr.maryland.gov/fisheries/bass/ta.asp

ROUNDTABLE AGENDA

The Black Bass Roundtable will be held on February 18, 10 am – 1:30 pm at the Philip Merril Environmental Education Center (Chesapeake Bay Foundation) in Annapolis (MD). Some of the agenda items are:

I. PRFC Meeting Summary
II. Dyke Marsh Restoration Progress
III. Black Bass Guide Website
IV. Cormorant Impacts on Fishery Resources
V. License Legislation
VI. Rehabilitate Dundee Release Site
VII. Stocking Strategy 2015
VIII. SAV Information (2013/2014)
IX. Elk Neck State Park, ramp issues
X. Boat Washing Station - Deep Creek Lake
XI. Federal Off-limits Areas
XII. Speed Limits near Spawning Areas
XIII. Artificial Habitat Deployment and Permitting
XIV. Catch-and-Return Areas
    a. The Potomac River and Upper Bay?
    b. Supportive studies in closed areas?
XV. Black Bass Stamp
    a. Enumerates black bass anglers
    b. Targets black bass anglers for notification on threats to fishery
    c. Targets black bass anglers for delivering conservation materials from B.A.S.S. (such as videos)
    d. Timeline/Process

[1] Elser, H.J. 1960. Creel census results on the Northeast River, Maryland, 1958. Chesapeake Science 1:41-47.