

# Fishing and Boating Services Fiscal Year 2017 Budget Report to the Sport Fisheries Advisory Commission



*Larry Hogan, Governor  
Boyd K. Rutherford, Lt. Governor  
Mark J. Belton, Secretary  
Joanne Throwe, Deputy Secretary*

# INTRODUCTION

## Background

In a September 2016 reorganization within the Department of Natural Resources, fisheries and boating related activities were merged into a single unit called Fishing and Boating Services. Therefore, beginning with fiscal year 2017, the focus of this report has been broadened to include revenues and expenditures of both fisheries and boating related funding sources and activities. Fisheries-related revenues, expenditures and activities are described in Part I and boating information is described in Part II.

## Part I - Fishing

Fishing and Boating Services' fisheries-related responsibilities include assessing, protecting, conserving, fairly allocating and promoting the sustainable utilization of wild and farm-raised fish resources of Maryland for balanced ecological and socioeconomic benefits. This is accomplished through scientific investigation, application of data and proactive involvement with an informed citizenry. Fishing and Boating Services' fisheries-related responsibilities fall into four core functions:

- 1) Protect, conserve and enhance fisheries resources.
- 2) Provide and enhance fishing opportunities, including access.
- 3) Provide sustainable economic opportunities.
- 4) Promote and protect fisheries resources through public outreach and education.

Revenue from sport fishermen provides funding for almost half of all fisheries programs in Maryland. This is from the sales of fishing licenses, gasoline sales surcharges and a federal excise tax on sport fishing tackle and related equipment. Other fund sources include general funds from state taxpayer dollars, commercial license sales, reimbursable funds such as from Maryland Department of Transportation and grants from federal taxpayer dollars.

Natural Resources Article § 4-745 requires the Maryland Department of Natural Resources to publicly report annually the amount of sport fishing license revenues credited to and expended from the Fisheries Research and Development Fund. In the annual preparation of plans to expend sport fishing revenues credited to Fisheries Research and Development Fund, the department is also required to solicit the advice and opinions from the Sport Fisheries Advisory Commission, representative fishing and boating associations and other interested parties. The reporting requirement is different for nontidal sport fishing license fees. For sport fishing fees associated with the nontidal fund known as the Fisheries Management and Protection Fund, the department is required to "publicly report annually the amounts collected and the expenditures."

Because the department would not be able to manage the State's diverse and high quality fishery resources without revenue from fishing licenses, it is vital that anglers understand the importance of their contribution and how their license dollars are used. The department is committed to informing sport fishermen and providing a comprehensive report on all sport fishing license fees and other revenue sources. This report meets statutory reporting requirements, but more importantly, it is intended to provide information which helps anglers and the public understand the magnitude of their contributions and the importance of these contributions to funding programs which benefit both fisheries resources and the sport fishermen who use those resources.



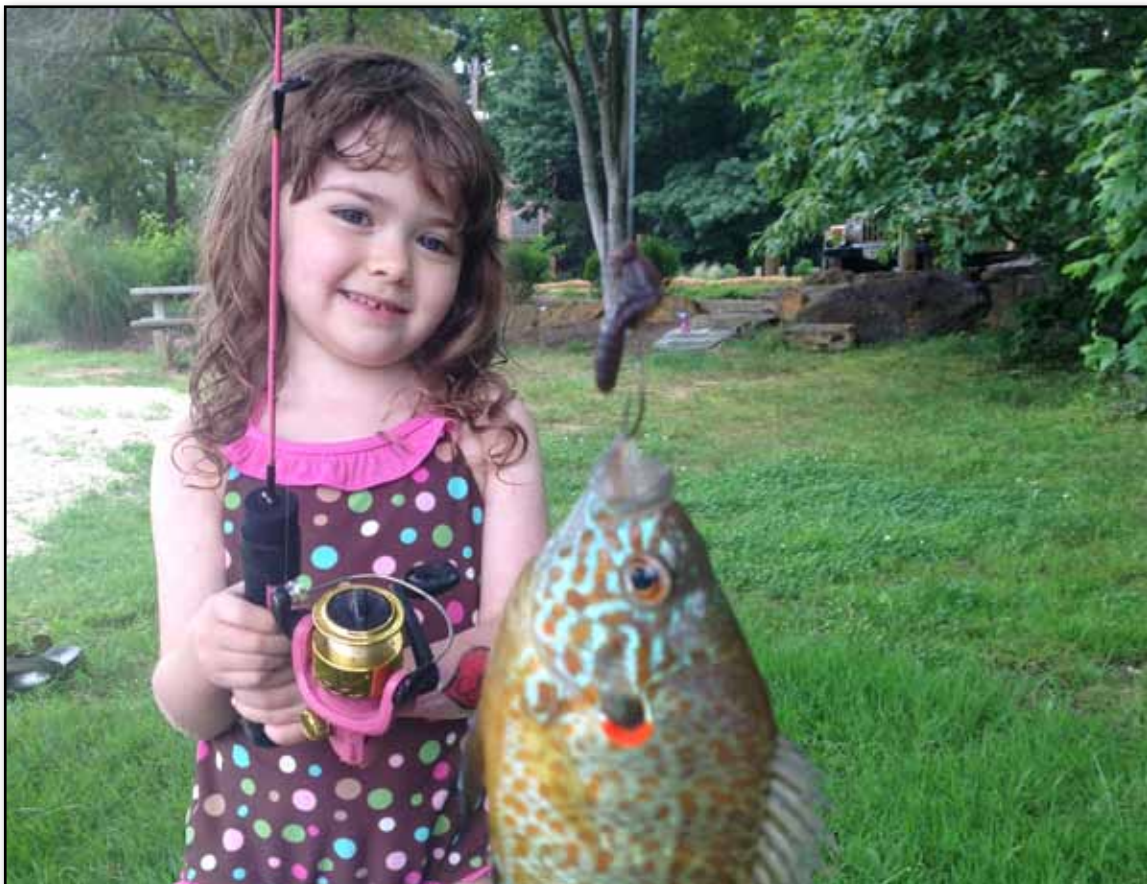


# BUDGET

## Reporting Period and Budget Terminology

This report provides budget information for revenues and expenditures during fiscal year 2017, the most recently completed fiscal year. Fiscal year 2017 was July 1, 2016 through June 30, 2017. In order to understand the information in this report, here are a few terms you will need to know:

- **SPECIAL FUNDS** – revenue from recreational fishing license sales, commercial fishing license sales and oyster bushel tax, aquaculture fees, gasoline sales surcharges (see explanation under Revenues) and agreements with non-state organizations (i.e. private company’s donation for Atlantic sturgeon restoration). Recreational tidal license sale and fee revenues are deposited into the Fisheries Research and Development Fund. Nontidal license sale revenues are deposited into the Fisheries Management and Protection Fund.
- **FEDERAL FUNDS** – revenue from a tax on sport fishing tackle purchases (Wallop-Breaux) and federal partner grant awards from federal taxes.
- **GENERAL FUNDS** – revenue from state taxes.
- **REIMBURSABLE FUNDS** – revenue from Maryland state agencies such as Maryland Department of Transportation.



# Fishing License Sales, Revenues and Expenditures

## A. License Sales

Maryland recreational fishing and crabbing licenses were sold by calendar year until September 30, 2015, when we transitioned to a 365 day license. Calendar year recreational license sales from 2011 to 2015 are shown in Table 1. License changes, including the comprehensive Coastal and Bay fishing license, short term licenses expanded to seven days, creation of separate trout stamp for nonresidents and Maryland Saltwater registration, were added in 2011.

**Table 1. Maryland recreational license sales by calendar year**

FISHING STATISTICS BY LICENSE YEAR	2011	2012	2013	2014	2015	%Change from calendar 2014
RESIDENT NONTIDAL	105,893	108,600	112,919	115,525	119,993	3.9%
NON RESIDENT NONTIDAL	11,259	11,289	10,907	11,379	12,459	9.5%
3 DAY NONTIDAL	6,623	6,344	6,885	6,810	7,290	7.0%
7 DAY NONTIDAL (5 Day prior to 2011)	8,175	8,094	8,695	9,190	8,993	-2.1%
TROUT STAMP						
RESIDENT TROUT STAMP (New 2011)	44,187	46,744	48,319	48,266	49,354	2.3%
NON RESIDENT TROUT STAMP (New 2011)	6,827	6,986	6,724	6,541	7,112	8.7%
NONTIDAL BLIND	104	101	82	87	82	-5.7%
SENIOR CONSOLIDATED LICENSE	23,224	24,675	25,985	26,216	26,940	2.8%
RESIDENT BAY (and Coastal) SPORT	93,074	94,291	101,077	105,901	108,360	2.3%
NON RESIDENT BAY (and Coastal) SPORT	21,011	20,937	21,045	20,155	21,179	5.1%
5 DAY BAY SPORT						
RESIDENT 7 DAY BAY AND COASTAL SPORT (New 2011)	7,032	6,410	7,227	7,395	6,377	-13.8%
NON RESIDENT 7 DAY BAY AND COASTAL SPORT (New 2011)	17,274	16,880	17,289	17,126	16,915	-1.2%
PLEASURE BOAT DECAL	48,584	49,350	47,086	47,708	46,740	-2.0%
BAY (and Coastal) SPORT BLIND	160	122	70	76	74	-2.6%
BAY AND COASTAL SPORT REGISTRATION (New 2011)	58,683*	34,296	43,160	27,365	20,025	-26.8%
RECREATIONAL CRABBING	44,478	44,981	39,737	45,599	49,334	8.2%
NON RESIDENT RECREATIONAL CRABBING	6,745	6,359	5,272	4,649	6,263	34.7%
RECREATIONAL CRABBING BOAT	4,645	5,078	5,985	5,305	5,202	-1.9%
* Includes Potomac registrations.						
NOTE – Beginning October 1, 2015, Maryland ceased selling recreational fishing and crabbing licenses by calendar year. As of October 1, 2015, these licenses are valid for 365 days from date of purchase.						

Recreational fishing and crabbing licenses are now valid for 365 days from date of purchase (excluding three day and seven day licenses) and therefore, license sales are now reported by fiscal year. Sport fishing and crabbing license sales for fiscal year 2017 are provided in Tables 2 and 3.

There were 285,184 unique anglers in Maryland that purchased a tidal or nontidal fishing license in fiscal year 2017. This figure does not include anglers that fished with a free registration, anglers less than 16 years of age, or individuals who fish on free fishing days. The number of unique anglers is calculated consistent with reporting requirements for Wallop-Breaux federal funding (see box insert).

Wallop-Breaux calculations do not include unique crabbers. In addition, a crabbing license is not required for all recreational crabbers (depends on gear). In Maryland in fiscal year 2017, 63,553 individuals were licensed or registered for recreational crabbing.

The Wallop-Breaux Act, also commonly called the Dingell-Johnson Act, provides federal aid to the states for management and restoration of fish. Funds are derived from a 10 percent excise tax on certain items of sport fishing tackle (Internal Revenue Code of 1954, sec. 4161), a three percent excise tax on fish finders and electric trolling motors, import duties on fishing tackle, yachts and pleasure craft, interest on the account, and a portion of motorboat fuel tax revenues and small engine fuel taxes authorized under the Internal Revenue Code (Sec. 9503). Funds are distributed to states based on a formula that includes the number of unique paying anglers. An angler has to have spent at least a dollar on a license in order to be counted, and the angler will only be counted once regardless of the number of license products purchased. Wallop-Breaux only reports on anglers and for the restoration of finfish. Therefore, individuals that only purchased a crabbing license are not included. The number of unique anglers in this report is based on these criteria.

**Table 2. Maryland recreational license sales by fiscal year (July 1, 2016– June 30, 2017)**

	Fiscal Year		% change
	2016	2017	
<b>FISHING AND CRABBING STATISTICS</b>			
RESIDENT NON TIDAL	115531	105513	-9%
NONRESIDENT NON TIDAL	12480	12429	0%
3 DAY NON TIDAL	7925	7276	-8%
RESIDENT 7 DAY NON TIDAL	6251	5251	-16%
NONRESIDENT 7 DAY NON TIDAL	3140	2537	-19%
RESIDENT TROUT STAMP	48017	42615	-11%
NONRESIDENT TROUT STAMP	7407	6757	-9%
NONTIDAL BLIND	86	74	-14%
SENIOR CONSOLIDATED LICENSE	27774	26432	-5%
DAV or POW LIFETIME FISHING	212	234	10%
COMMERCIAL FISHING PIER LICENSE	3	3	0%
RESIDENT BAY AND COASTAL SPORT	106102	97981	-8%
NONRESIDENT BAY AND COASTAL SPORT	21915	21813	0%
RESIDENT 7 DAY BAY AND COASTAL SPORT	6327	5271	-17%
NONRESIDENT 7 DAY BAY AND COASTAL SPORT (New 2011)	17077	16109	-6%
RESIDENT BAY AND COASTAL SPORT BOAT	40439	34598	-14%
NONRESIDENT BAY AND COASTAL SPORT BOAT	11055	9919	-10%
BAY AND COASTAL SPORT BLIND	85	72	-15%
RESIDENT BAY AND COASTAL SPORT REGISTRATION	10362	9037	-13%
NONRESIDENT BAY AND COASTAL SPORT REGISTRATION	8752	12429	42%
RESIDENT RECREATIONAL CRABBING	52317	48951	-6%
NONRESIDENT RECREATIONAL CRABBING	7009	7114	1%
RESIDENT RECREATIONAL CRABBING BOAT	3869	5037	30%
NONRESIDENT RECREATIONAL CRABBING BOAT	2729	2871	5%
PVT PROPERTY CRAB POT REGISTRATION	2691	2826	5%

The following licenses are issued by the department for recreational fishing businesses and contribute to the recreational license revenue.

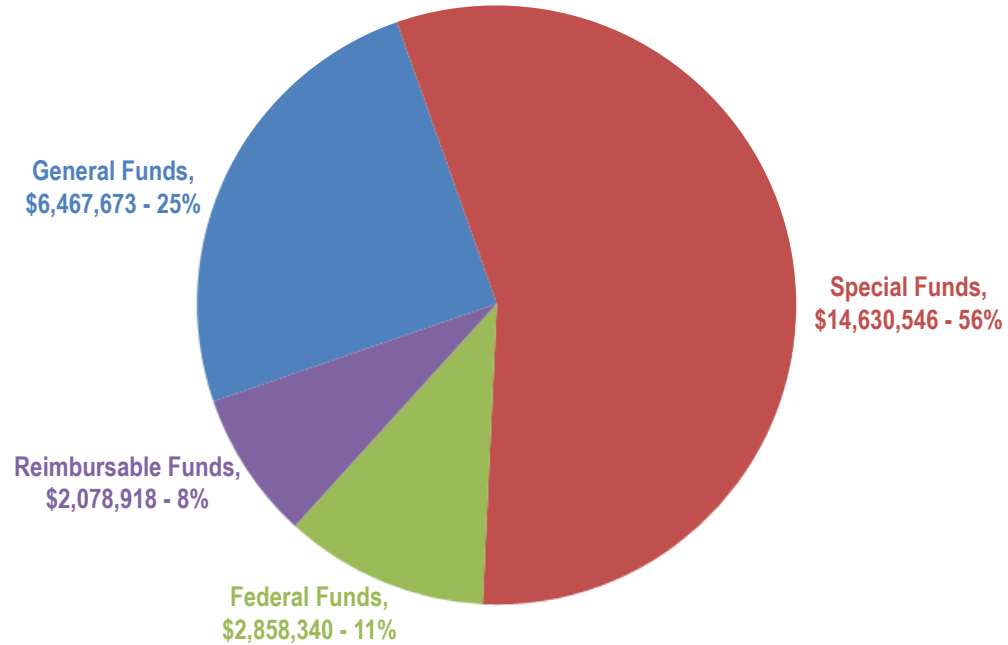
**Table 3. Fiscal year 2017 Maryland recreational fishing business license sales**

	Fiscal Year		Percent Change
	2016	2017	
<b>CHARTER STATISTICS</b>			
Resident Bay& Coastal Charter Boat 6 Plus	138	147	7%
Nonresident Bay & Coastal Charter Boat 6 Plus	2	2	----
Resident Bay& Coastal Charter Boat Up to 6	242	261	8%
Nonresident Bay & Coastal Charter Boat Up to 6	9	6	-33%
Resident Fishing Guide with Tidal	10	14	40%
Nonresident Fishing Guide with Tidal	8	8	----
Resident Freshwater Fishing Guide	30	29	-3%
Nonresident Freshwater Fishing Guide	8	25	>100%
Resident Limited Fishing Guide	5	4	-20%
Nonresident Limited Fishing Guide	0	1	>100%
Crab Charters	3	57	>100%

## B. Revenues

Total fiscal year 2017 fisheries revenues (all fund sources) were \$26,035,477 and are broken down as follows: 56 percent special fund revenue; 11 percent federal fund revenue; 25 percent general fund revenue; and 8 percent reimbursable fund revenue (Figures 1 and 2).

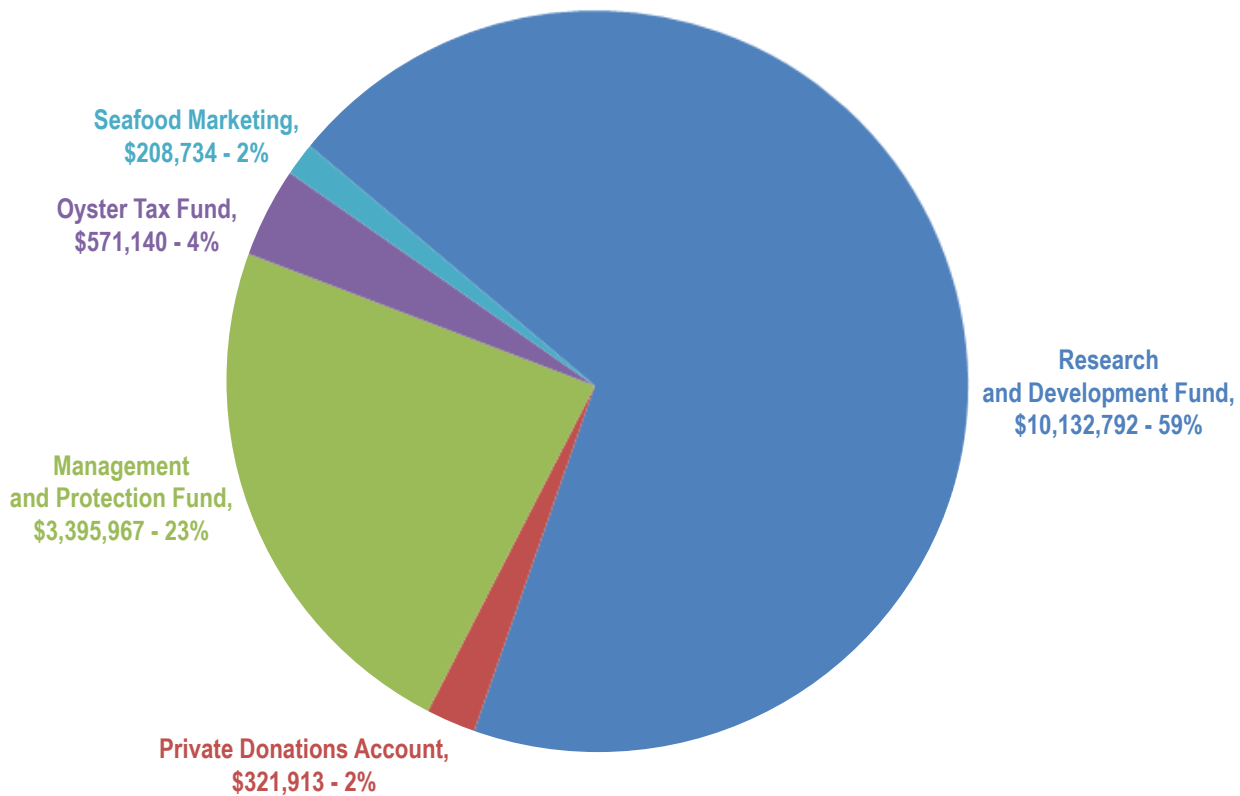
**Figure 1. Fiscal Year 2017 Fisheries Revenue**





The breakdown of special fund revenues (\$14,630,546) shown above into the component sources is shown in Figure 2. Recreational tidal license sale and fee revenues are deposited into the Fisheries Research and Development Fund.

**Figure 2. Fiscal Year 2017 Fisheries Special Fund Revenue**



Fishing and Boating Services began Fiscal year 2017 with a balance of \$1,268,312\* and \$59,450\* in the Fisheries Research and Development and Fisheries Management and Protection funds respectively. Total Fiscal year 2017 revenue credited to these funds included \$10,142,943 to Fisheries Research and Development and \$3,395,564 to Fisheries Management and Protection (Table 4).

**Table 4. Fishing and Boating Services - Special Funds - Fiscal Year 2017**

	Fisheries Research and Development Fund	Fisheries Management and Protection Fund	Total
Beginning Balance	\$1,268,312*	\$59,450*	\$1,327,762
<b>Revenues</b>	<b>\$10,142,943</b>	<b>\$3,395,564</b>	<b>\$13,538,507</b>
Adjustments	(10,152)	403	(9,749)
<b>Total Funds Available</b>	<b>\$11,401,103</b>	<b>\$3,455,417</b>	<b>\$14,856,520</b>
Summary of Expenditures			
Fishing and Boating Services	\$6,186,981	\$2,000,000	\$8,186,981
Non-Fishing and Boating Services:			
NRRD – Field Operations	\$2,428,730	\$450,000	\$2,878,730
Natural Resources Police			
Licensing	\$474,800	\$354,200	\$829,000
Finance and Administrative Service	\$498,900	\$167,100	\$666,000
Information Technology Service	\$338,300	\$113,300	\$451,600
Office of Secretary	\$250,200	\$83,800	\$334,000
Office of Attorney General	\$173,500	\$58,100	\$231,600
Human Resource Service	\$108,500	\$36,300	\$144,800
Office of Communications	\$107,400	\$35,900	\$143,300
<b>Total Expenditures</b>	<b>\$10,567,311</b>	<b>\$3,298,700</b>	<b>\$13,866,011</b>
<b>Ending Balance (Total Funds Available – Total Expenditures)</b>	<b>\$833,792</b>	<b>\$156,717</b>	<b>\$990,509</b>

\*Close out was not finalized when fiscal year 2016 figures were issued resulting in a discrepancy between fiscal year 2016 report ending balances and fiscal year 2017 report beginning balances.



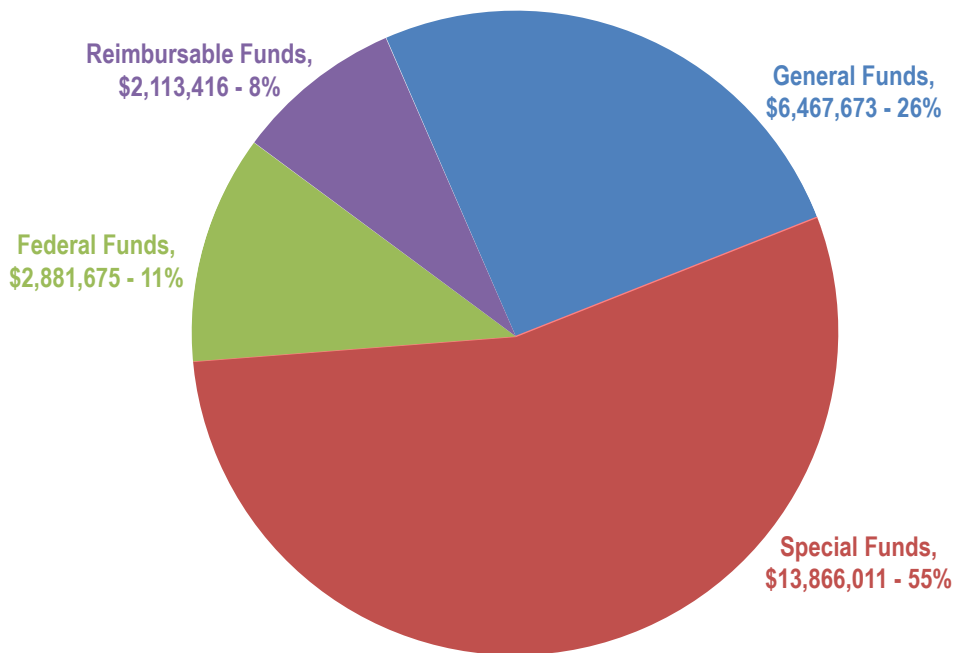


## C. Expenditures

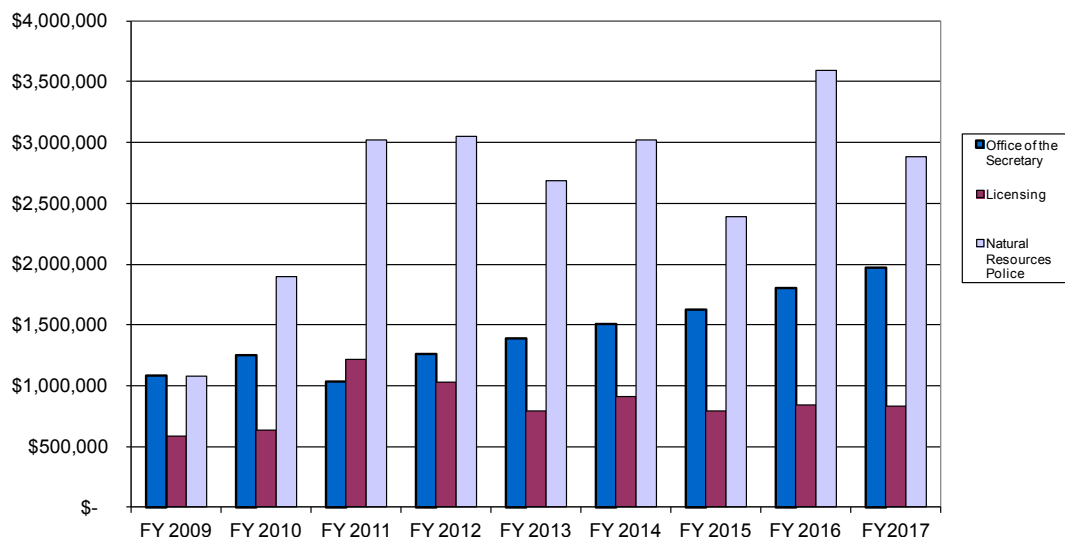
In Fiscal year 2017, Fishing and Boating Services expended (all fund sources) a total of \$ 25,328,775 (Figure 3). Included in this total is \$5,679,030 of Fishing and Boating Services Fisheries Research and Development Fund and Fisheries Management and Protection Fund funds that were provided to other units within the department in support of Fishing and Boating Services' fisheries-related mission (Figure 4), consistent with many of the priorities identified in the 2008 report of the Task Force on Fisheries Management. This includes but is not limited to: enforcement of fisheries management rules (i.e. Natural Resources Police); habitat preservation and restoration (i.e. water quality monitoring, benthic habitat surveys, prioritization of critical habitats, environmental review), legal issues and licensing services. It is important to note that the Office of the Secretary sector includes several departmental units: the Office of Attorney General; Finance and Administration Service; Human Resources Service; Information Technology Service; and Office of Communication.

The department expended a total of \$10,567,311 and \$3,298,700 of Fisheries Research and Development Fund and Fisheries Management and Protection Fund funds, respectively, in Fiscal year 2017. Fiscal year 2017 expenditures of Fisheries Research and Development Fund and Fisheries Management and Protection Fund funds exceeded Fiscal year 2017 revenues credited into these funds by \$327,504. The Fiscal year 2017 end of year balance of Fisheries Research and Development Fund and the Fisheries Management and Protection Fund is \$990,509.

**Figure 3. Fiscal Year 2017 Fisheries Expenditures**



**Figure 4. Special Fund Transfers to Other Department of Natural Resources Units in Support of Fisheries**

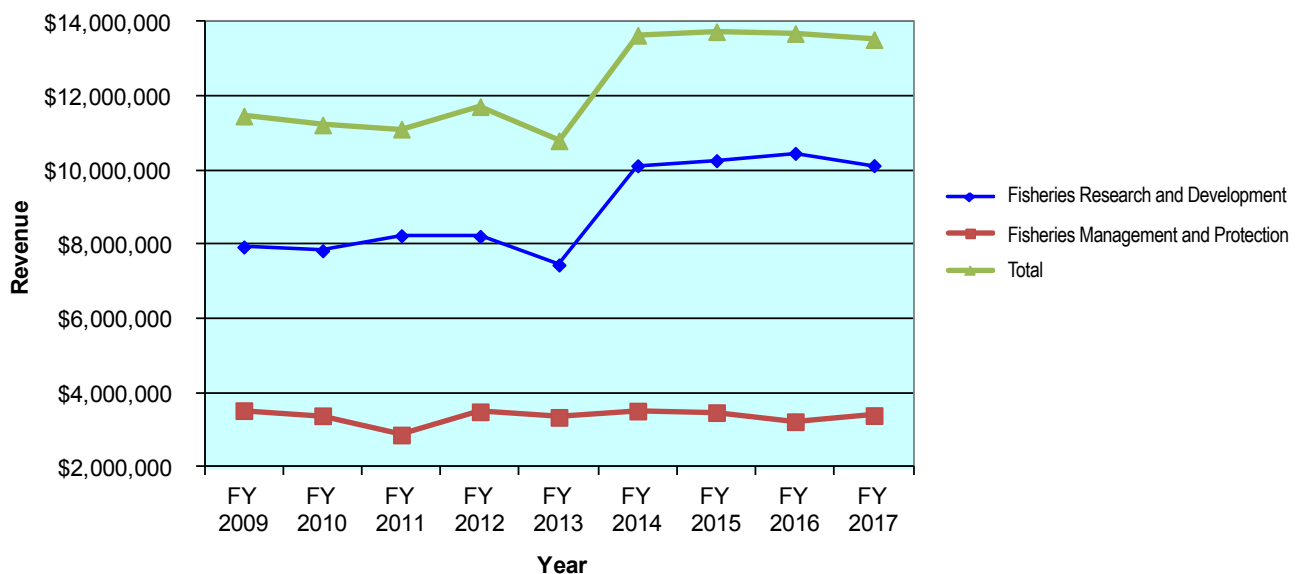


# SUMMARY

As this report demonstrates, the department's ability to fund programs to assess, protect, conserve, fairly allocate and promote the sustainable utilization of wild and farm-raised fish resources of the State for balanced ecological and socioeconomic benefits is not possible without anglers who support this work by paying for fishing licenses, fees and excise taxes. These revenues pay for an extensive and diverse suite of activities which meet four core fisheries functions of Fishing and Boating Services:

Fisheries revenues were stable between fiscal year 2009 and fiscal year 2013 (Figure 5). Following passage of a bill that increased commercial license fees, Fisheries Research and Development Fund revenues increased in fiscal year 2014. Since that time, revenues have been relatively steady.

**Figure 5. Fisheries Special Fund Revenue by Fiscal Year**  
(Fisheries Research and Development and Fisheries Management and Protection funds)



The cost of managing and protecting Maryland's diverse and high quality fishery resources continues to exceed revenues. In fiscal year 2017 expenditures of Fisheries Research and Development and Fisheries Management and Protection funds exceeded revenues credited into these funds by \$327,504. A portion of the Fiscal year 2017 beginning balance of Fisheries Research and Development Fund and Fisheries Management and Protection special funds were used to cover these expenses. Fishing and Boating Services is maintaining its strong focus on reducing costs and has made significant progress in aligning annual expenditures with annual revenues. However, the current level of services the department provides to fulfill the fisheries-related mission of Fishing and Boating Services will only be sustainable in the long term if there is an increase in revenue and/or implementation of more cost efficient operations. Increased revenues may be realized with additional outreach and marketing to those not currently enjoying fishing opportunities in Maryland.

With a fiscal year 2018 beginning balance of \$990,509 in Fisheries Research and Development and Fisheries Management and Protection funds, the department will have sufficient funds to maintain the current level of fisheries-related services in Fiscal year 2018.

The next budget report for Fishing and Boating Services is scheduled for October 2018 and will focus on fiscal year 2018 which will close on June 30, 2018.

Fishing and Boating Services is committed to providing a comprehensive annual report on sport fishing revenues and expenditures. We are always interested in hearing from anglers and the general public about issues of concern or new project ideas that you believe we should consider pursuing as we work to ensure Maryland's fisheries resources are sustainably managed for the benefit of those who enjoy them today as well as future generations.

If you have any questions or input regarding this budget report, please contact Karen Knotts, Maryland Department of Natural Resources, Fishing and Boating Services, Stakeholder Outreach and Services Division Manager at karen.knotts@maryland.gov or 410-260-8294.

# Membership

## Sport Fisheries Advisory Commission Members

The Sport Fisheries Advisory Commission advises the department on recreational fishing issues and is comprised of individuals from across the State that represent recreational fishing interests. Public participation is vital to the department's ability to successfully conserve, manage and restore Maryland's fisheries resources. Members of our advisory bodies serve as your representatives and we invite you to contact them with questions, concerns and/or suggestions about fisheries issues. Following is the list of Commissioners who currently advise the department on behalf of anglers:

Mr. Micah Dammeyer  
Nontidal/Tidal Fisheries - DC Region,  
Freshwater Guide  
Micah@kneedeepff.com

Captain Edward O'Brien  
Tidal/Marine Fisheries,  
Maryland Charter Boat Association  
captedob@aol.com

Ms. Beverly Fleming  
Marine Fisheries,  
Assateague Mobile Sportsfishing Association  
btf25@aol.com

Mr. David Sikorski  
Tidal Fisheries,  
Coastal Conservation Association  
davidsikorski@mac.com

Mr. James Gracie (Jim)  
Nontidal Fisheries,  
Mid-Atlantic Council of Trout Unlimited  
jgracie@brightwaterinc.com

Mr. David J. Smith  
Maryland Saltwater Sportfishing Association  
djsmith@mssa.net

Captain Phil Langley  
Maryland Charter Boat Association  
langley@olg.com

Mr. David M. Sutherland  
Marine Conservation and Economics  
David@MatriculatedServices.com

Mr. Scott Lenox  
Coastal / Marine Fisheries  
fishinoc@hotmail.com

Mr. Roger Trageser  
Black Bass Fisheries,  
Maryland Bass Nation  
teamroger@aol.com

Mr. Valentine Lynch (Val)  
Marine Fisheries, Ocean City Marlin Club  
val@ifsMd.com

Mr. James Wommack (Mack)  
Tidal/Marine Fisheries  
twinpower6@netzero.net

Dr. Raymond P. Morgan II  
Nontidal Fisheries - Western MD  
rmorgan@umces.edu

Vacant  
Aquaculture Industry

Mr. John Neely  
Nontidal Coldwater/Tidal Fisheries  
jneely@eaglestrategies.com

Mr. Charles Nemphos  
Tidal Fisheries, Outdoors Retail  
cnemphos@yahoo.com

Visit [dnr.maryland.gov/fisheries/Pages/mgmt-committees/sfac-index.aspx](http://dnr.maryland.gov/fisheries/Pages/mgmt-committees/sfac-index.aspx) to keep up with Commission activities.



# INTRODUCTION

## Part II - Recreational Boating

Recreational boating is an extremely popular activity throughout Maryland. There are over 185,000 registered and documented boats in the state. In addition, Maryland is a popular destination for thousands of transient boaters. In-state spending by boat owners is estimated by the University of Maryland to be over \$1.9 billion annually, making boating a major economic factor. It is a priority of the Department to support boating safety, improve upon and increase boating access opportunities, enhance the quality of the recreational boating experience and support the economic viability of the recreational boating industry.

As a result of the high popularity of recreational boating in Maryland, there has been a continued demand to maintain, develop and improve the infrastructure that supports boating. This includes dredging channels and harbors, maintaining and developing public boat access facilities (boat ramps, piers, landings and parking), installing marine sewage pump out facilities to improve water quality, acquiring boating safety equipment (fire rescue boats) and completing boating-related shore erosion projects. In addition to developing new boating facilities, there is an increasing demand to replace and expand existing facilities to accommodate larger boats and address aging infrastructure.

The 1960 Maryland State Boating Act was enacted to work in harmony with the United States Coast Guard regulatory process and to provide that revenue generated through regulating boating activity would support boating and maritime purposes. Perhaps the most important idea was that in Maryland, a committee comprised of boaters (the Boat Act Advisory Committee) would review and make recommendations regarding boating regulations to the department with the participation of the boating community.

Fishing and Boating Services works to foster the sustainable development use and enjoyment of all Maryland waterways in cooperation with federal, state and local government agencies for the benefit of the general boating public. The unit's boating-related responsibilities include boating regulations and the Maryland State Boat Act, regulatory buoys/signs, hydrographic operations and Somer's Cove Marina.



# BUDGET

## Reporting Period

This report provides budget information for revenues and expenditures during fiscal year 2017, the most recently completed fiscal year. Fiscal year 2017 was July 1, 2016 through June 30, 2017.

## Funding

In 1966, Natural Resources Article 8-701 established the Waterway Improvement Fund for the purpose of financing projects that improve and promote recreational and commercial capabilities, conditions and safety of Maryland's waterways for the benefit of the general boating public. The Waterway Improvement Fund provides grants and loans to local governments and state or federal agencies to support a variety of projects. Examples include ice breaking, dredging channels and harbors, construction of marine facilities and installing pump out stations.

Vessel Excise Tax revenues have historically been the principal source of support for the Waterway Improvement Fund. The Vessel Excise Tax is a one-time five percent excise tax paid when motorized vessels are purchased and titled within the state of Maryland. Beginning in 2013, the fund also began receiving additional revenue from the motor fuel tax. During the 2013 legislative session, the General Assembly passed SB 90 which required that 0.5 percent of the motor fuel tax be distributed to the Waterway Improvement Fund beginning July 1, 2013. The bill also capped the vessel excise tax at \$15,000 for boats purchased and titled in the state of Maryland.



# Boating Registrations, Revenues and Expenditures

## A. Registrations

New vessel registrations in Maryland by fiscal year are shown in Table 5. From 2001 through 2005, Maryland registered more than 30,000 vessels each year; however in recent years, registrations have stabilized at around 24,000 per year.

**Table 5. Maryland Boat Titles Issued by Fiscal Year**

Fiscal Year (July 1 – June 30)	Titles Issued
2001	32,415
2002	32,209
2003	30,701
2004	32,973
2005	30,880
2006	31,438
2007	28,453
2008	26,733
2009	23,445
2010	24,027
2011	23,961
2012	23,218
2013	22,558
2014	23,040
2015	23,641
2016	24,170
2017	24,548

## B. Revenues

Total Fiscal year 2017 Waterway Improvement revenues were \$22,696,710.





The Waterway Improvement fund began fiscal year 2017 with a balance of \$11,850,752. Total fiscal year 2017 revenue credited to this fund included \$ 22,427,070 (Table 6).

**Table 6. Waterway Improvement Funds – Fiscal Year 2017**

	Total
Beginning Balance	\$11,850,752
<b>Revenues</b>	<b>\$22,427,070</b>
Adjustments	\$100,364
<b>Total Funds Available</b>	<b>\$34,378,186</b>
Summary of Expenditures	
Fishing and Boating Services	\$4,275,609
Non-Fishing and Boating Services:	
Natural Resources Police – General Direction	\$2,560,476
Natural Resources Police – Field Operations	\$2,100,000
Licensing	\$1,878,600
Finance and Administrative Service	\$67,291
Information Technology Service	\$185,225
Office of Attorney General	\$63,871
Office of Secretary	\$219,874
Human Resource Service	\$175,418
Office of Communications	\$38,321
Statewide Operations (04)	\$121,973
Watershed Services	\$1,280,393
Boating Capital	10,500,000
<b>Total Expenditures</b>	<b>\$23,467,051</b>
<b>Ending Balance (Total Funds Available – Total Expenditures)</b>	<b>\$10,911,135</b>



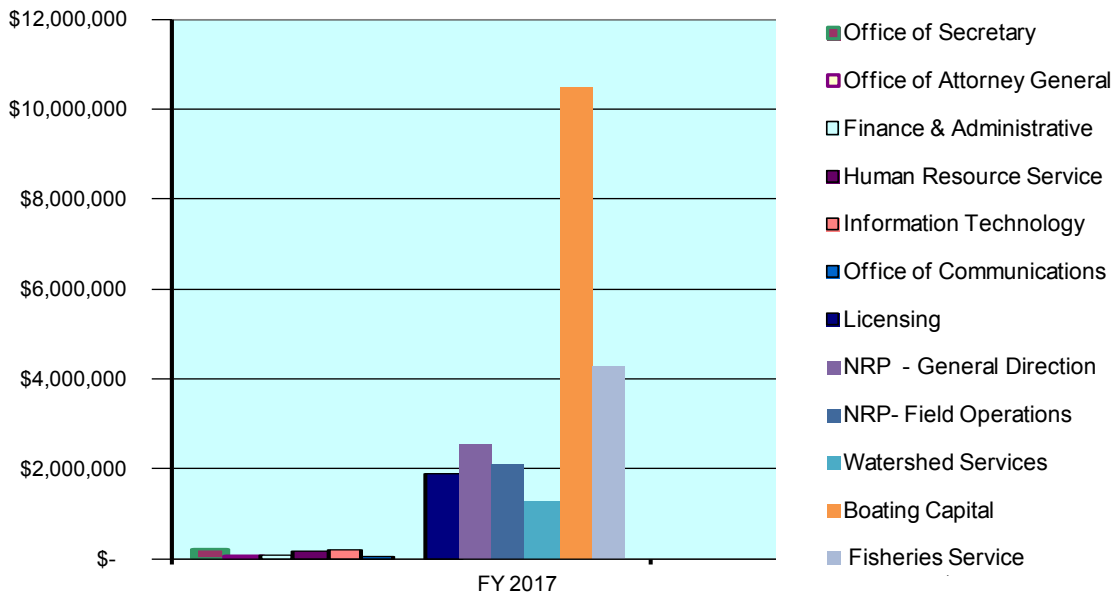
# C. Expenditures

In Fiscal year 2017, Waterway Improvement expenditures totaled \$23,636,327



Figure 8 shows Waterway Improvement fund expenditures by unit. Fishing and Boating Services expenditures from the fund totaled \$4,275,609 in support of the unit’s boating related mission. This includes, but is not limited to activities and projects related to navigation channels, navigation and regulatory buoys/signs.

**Figure 8. Waterway Improvement Fund Expenditures**



The department expended \$23,467,051 in Waterway Improvement funds in Fiscal year 2017. Expenditures from the fund exceeded revenues credited into the fund by \$1,039,981. A portion of the Fiscal year 2017 beginning balance of Waterway Improvement funds were used to cover these expenses. The Fiscal year 2017 end of year balance for the Waterway Improvement fund was \$10,911,135.

# SUMMARY

In fiscal year 2018, Fishing and Boating Services will focus on maintaining boating operations performed in fiscal year 2017 as well as the priorities listed in Appendix 3. Appendix 4 highlights some of the boating related activities Fishing and Boating Services accomplished during fiscal year 2017.

Fishing and Boating Services is committed to providing a comprehensive annual report on boating revenues and expenditures. We are always interested in hearing from boaters and the general public about issues of concern or new project ideas that you believe we should consider pursuing as we work to support boating safety, improve upon and increase boating access opportunities and enhance the quality of the recreational boating experience and support the economic viability of the recreational boating industry ensure Maryland's waterways are sustainably managed for the benefit of those who enjoy them today as well as future generations.

If you have any questions or input regarding this budget report, please contact Karen Knotts, Maryland Department of Natural Resources, Fishing and Boating Services, Stakeholder Outreach and Services Division Manager at [karen.knotts@maryland.gov](mailto:karen.knotts@maryland.gov) or 410-260-8294.





# Membership

## Boat Act Advisory Committee

The Maryland Boat Act Advisory Committee, was established as part of the 1960 Boating Act. The purpose of the Committee is to make recommendations to the Secretary of the Department of Natural Resources on boating regulation requests. Members of the Committee include boaters and representatives from different water use organizations. The members, appointed by the Secretary of the Department of Natural Resources, have a variety of experience and expertise in boating related matters. The Committee meets on a regular basis to review regulatory requests. Meetings are open to the public and public input is encouraged by the Committee members.

Following is the list of Boat Act Advisory Committee members:

Mr. Christopher Parlin, Chairman  
Ms. Amy Craig, Vice Chairman  
Mr. Thornell Jones, Officer at Large  
Ms. Robin Allison  
Mr. Bob Lunsford  
Mr. John Bush  
Mr. Coles Marsh  
Mr. Russ Dwyer  
Mr. Robert Nickel  
Mr. Joe Hellner

Mr. John Pepe  
Ms. Deborah Henninger  
Mr. Jon Sheller  
Mr. Steve Kling  
Mr. Alvin L. Simon  
Mr. Frederick Levitan  
Ms. Ramona Trovato  
Mr. Mike Grant, State Committee Liaison  
Ms. Jeannine Moaney, Staff Contact

Visit [dnr.maryland.gov/boating/Pages/regulations/baac.aspx](http://dnr.maryland.gov/boating/Pages/regulations/baac.aspx) for information on the Boat Act Advisory Committee, including meeting dates and public hearings, archives and meeting transcripts and information on boating regulation requests.



# APPENDIX

## Appendix 1. Fishing and Boating Services Fiscal year 2018 fisheries-related priorities

The Unit's primary fisheries-related focus over the coming year will be on continuing operations. In addition, we prioritize significant issues and activities to maximize the impact of assigned staff and budget. A list of priorities by Fishing and Boating Services' four core fisheries-related functions is included below. These are not the Unit's only priorities, but are the ones that focus on sport or charter fishing in some way.

### **PROTECT, CONSERVE AND ENHANCE FISHERIES RESOURCES**

**a. Priority Task** – Utilize the completed Five Year Review Report on oyster restoration and management to inform and guide the Oyster Advisory Commission as it develops recommendations to the department on future actions for oyster restoration and management. The Department completed the report on schedule in July 2016 according to the legislative mandate to produce a report that reviews the effectiveness of the locations of sanctuaries, public shellfish fishery areas and aquaculture areas every five years and to propose changes where needed (COMAR 08.02.01). Additionally, utilize the results of the five Year Review Report and the Oyster Advisory Commission recommendations that are ultimately approved by the department to review and update the Oyster Management Plan. [dnr.maryland.gov/fisheries/Pages/oysters/5-Year-Oyster-Review-Report.aspx](http://dnr.maryland.gov/fisheries/Pages/oysters/5-Year-Oyster-Review-Report.aspx)

**Desired Task Achievement Date** – Ongoing

**b. Priority Task** – Continue to support and assist state and federal partners to implement state management of the National Marine Fisheries Service's Marine Recreational Information Program's Access Point Angler Intercept Survey. This program provides state and federal managers with estimates of recreational catch data for estuarine and marine fisheries. In order to supplement fishery information on Chesapeake Bay striped bass (*Morone saxatilis*), the department also conducts a specific study to characterize the size, age and sex composition of striped bass harvested during the spring recreational trophy season and to develop a time-series of catch per unit effort of the spring trophy fishery. This dockside creel survey also collects information to characterize the recreational angler population. Data collected includes catch and demographic information.

**Desired Task Achievement Date** – Ongoing

**c. Priority Task** – Continue to advocate for the development of Chesapeake Bay specific biological reference points for striped bass. The Atlantic States Marine Fisheries Commission Striped Bass Management Board is expected to review the status of the stock as well as reference points for the Chesapeake Bay proposed by the Atlantic States Marine Fisheries Commission Striped Bass Technical Committee and make recommendations.

**Desired Task Achievement Date** – Ongoing

**d. Priority Task** – Streamline fisheries penalty system. In partnership with Natural Resources Police, integrate enforcement, court and departmental databases. This will enhance the department's ability to effectively suspend individuals who do not answer to citations for fisheries violations if they fail to appear in court for their scheduled hearing.

**Desired Task Achievement Date** – Ongoing

**e. Priority Task** – Finalize and implement July 2014 draft comprehensive Fish Health Management Policy to ensure health of Maryland fish and protect against potential disease introductions from all sources (e.g. bait, pet trade, hatcheries, stocking). Improve in-house aquatic animal health management and testing capability. Develop and implement baseline fish health survey for Chesapeake Bay and ultimately all state waters to understand current status, provide early warning of potential impacts and inform proactive land use decisions sustaining fishable waters.

**Desired Task Achievement Date** – Ongoing, dependent on authority

**f. Priority Task** – Continue work towards meeting the Chesapeake Bay Agreement's oyster restoration goal of 10 restored oyster tributaries (five in Maryland and five in Virginia) by 2025.

**Desired Task Achievement Date** – 2025

**g. Priority Task** – Maintain coordinated baywide sustainable blue crab fishery management program. Future efforts include implementing procedures that increase accountability and accuracy of commercial and recreational harvest.

**Desired Task Achievement Date** – Ongoing



**h. Priority Task** – Remove high priority fish blockages. Provide for fish passage at dams and remove stream blockages to restore passage for migratory and resident fish. Restore and enhance river/stream connectivity.

**Desired Task Achievement Date** – Ongoing. Continue to work towards the fish passage outcome in the 2014 Chesapeake Watershed Agreement. Work with Patapsco River Restoration Project partners to coordinate the removal of Bloede Dam by 2018. Work with The Nature Conservancy and Chesapeake Bay Program partners to update the database for the Chesapeake Fish Passage Prioritization tool with expected completion by the end of 2017.

**i. Priority Task** – Reduce mortality in catch and release black bass tournaments.

**Desired Task Achievement Date** – The cooperative livewell study work has been completed. Annual summaries of work were finished by early 2017 and made available in Fiscal year 2017. Recommendations generated from the results will be drafted and submitted to state agencies. This information will be included in outreach material for Maryland’s anglers. Infrastructure to deliver material to black bass anglers has been developed and will continue in Fiscal year 2018. Conservation videos developed by major bass fishing organizations and the department were placed online and will be continually updated. Outreach materials guiding tournament anglers will remain an ongoing task as new techniques and procedures are developed to improve the survival of bass. Work to improve infrastructure at existing weigh-in locations will be completed by Fiscal year 2018.

**j. Priority Task** – Implement measures to stabilize and enhance tidal water largemouth bass fishery. Gather public input on catch-and-return angling for black bass. Conduct habitat improvement to help reestablish lost spawning habitat by installing reef balls in Smoots Bay on the Potomac River. Stock bass in impaired areas or areas that lack production sufficient for maintaining quality fisheries.

**Desired Task Achievement Date** – Survey of angler input - Fiscal year 2018. Habitat improvement will be ongoing. Stocking bass in impaired areas that lack natural reproduction - ongoing. Smoot’s Bay project – reef balls installed Fiscal year 2017, evaluation of the effectiveness of the devices - ongoing.

**k. Priority Task** – Expand research efforts to investigate occurrence/extent of fluvial brook trout populations statewide. Efforts will be expanded initially from the Savage River watershed in Garrett County to the Gunpowder Falls in Baltimore and Carroll Counties.

**Desired Task Achievement Date** – Radio tag study will end December 2017; tracking using injected elastomer tags will be ongoing in the upper Gunpowder Falls watershed.

**l. Priority Task** – Initiate restoration projects which will include submitting proposals for funding to reconnect lower Bear Pen Run, Elk Lick and Black Lick to maintain summer flow connectivity with the mainstem Upper Savage River and preparing plan for post-restoration population monitoring.

**Desired Task Achievement Date** – ongoing

**m. Priority Task** - Initiate work with Canaan Valley Institute to start field work component of the Big Run woody debris enhancement and streambank restoration project.

**Desired Task Achievement Date** – Ongoing

**n. Priority Task** – Continue to focus on water quality and habitat issues negatively affecting important freshwater fisheries.

**Desired Task Achievement Date** – Ongoing

**o. Priority Task** – Develop Freshwater Temperature and Water Quality Database for Freshwater Fisheries

**Desired Task Achievement Date** – Initiated January 2015: data input is ongoing

**p. Priority Task** – Continue Patapsco River shad and herring restoration project and seek funding to extend the work for five years subsequent to Bloede Dam removal.

**Desired Task Achievement Date** – No obstacle to continue assessment work through 2017. Dam removal should occur in 2018 and project extension will ideally extend five years post-removal (~2023).

**q. Priority Task** – Continue to maintain Atlantic sturgeon captive brood population. Expand and maintain acoustic telemetry arrays in Maryland. Evaluate Marshyhope Creek spawning habitat and assess early life history presence subsequent to discovery of mature brood fish in putative spawning areas.

**Desired Task Achievement Date** – Ongoing, Marshyhope Creek work determined by funding.

**r. Priority Task** – Advise department leadership and other Maryland representatives on management actions under consideration by Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fisheries Management Council. Work with the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fisheries Management Council on the Comprehensive Summer Flounder Amendment. The amendment will involve a comprehensive review of all aspects of the Summer Flounder, Scup and Black Sea Bass Fishery Management Plan related to summer flounder. Specifically, the Council and Commission will consider whether modifications to the Fishery Management Plan’s goals, objectives and management strategies for summer flounder are needed.

**Desired Task Achievement Date** – 2018

**s. Priority Task** – Develop reference points for marine and estuarine forage species, such as menhaden, that reflect their importance for supporting predators that are both gamefish and important food fish.

**Desired Task Achievement Date** –2017

**t. Priority Task** – Cooperative tasking with National Ocean Service / National Oceanic and Atmospheric Administration’s Chesapeake Bay Office

**Desired Task Achievement Date** – ongoing

**u. Priority Task** – Deep Creek Lake power plant relicensing. The relicensing process has begun. It will establish the water release schedule, lake levels and duration of any releases. The process begins roughly three years ahead of the expiration of the existing license to allow stakeholders the time necessary to submit their comments and concerns.

**Desired Task Achievement Date** – 2019

**v. Priority Task** – Staff will work with stakeholders and the Garrett County Watershed Coordinator to implement the goals, strategies and objectives of the Deep Creek Watershed Management Plan (Plan) approved October 2014. Specific strategies currently being discussed include addressing the aquatic vegetation problems and a proposal to dredge select coves to improve navigation and decrease nutrient loading.

**Desired Task Achievement Date** – Ongoing, deadlines are established for each goal, objective and strategy in the Plan.

**w. Priority Task** - Determine catch-and-release mortality in the Potomac River from recreational angling of largemouth bass.

**Desired Task Achievement Date** – December 2018

**x. Priority Task** - Research northern pike population and angling preferences in Deep Creek Lake to provide information for possible regulation change to enhance the trophy fishery.

**Desired Task Achievement Date** – Ongoing

**y. Priority Task** – Continue outreach and training on FACTS™ electronic harvest reporting and accountability system that is now available to all commercial fin fisheries and to the blue crab fishery. Expand to include charter reporting.

**Desired Task Achievement Date** – Ongoing.

**z. Priority Task** – Monitor nuisance cyanobacteria blooms in the upper Potomac River basin and research and document the deleterious effects on aquatic biota and potential risks to human health caused by toxins produced by the blue green algae *Planktothrix isothrix*.

**Desired Task Achievement Date** – Fiscal year 2018

**aa. Priority Task** – Expand baseline life history data for flathead catfish in the nontidal Potomac River and the Susquehanna River; blue catfish in the tidal waters of the state; and northern snakehead where they occur.

**Desired Task Achievement Date** – Ongoing

**bb. Priority Task** – Develop and expand a Freshwater Fisheries Screening Tool to provide an efficient, effective way for user groups to access freshwater fisheries data from 1985 to present day. The main users of these data are the Freshwater Fisheries Program and the Environmental Review Program within the department. The future goal is to make this information more widely available through Maryland iMAP – Maryland’s Mapping and GIS Data Portal.

**Desired Task Achievement Date** - Ongoing

**cc. Priority Task** – Hoyes Run Flow Protection and Riparian Zone Improvement Project. Continue to improve riparian habitat and stream flow protection in Hoyes Run to restore trout populations to former levels. Following the decline of trout populations in Hoyes Run, the Freshwater Fisheries Program partnered with several other governmental agencies, non-profit groups, private industries and private landowners in a cooperative effort to correct water quality problems and restore trout populations to former levels. Total restoration funding is more than \$300,000.

**Desired Task Achievement Date** – Ongoing

**dd. Priority Task** – Complete population sampling for final year of statewide brook trout five year monitoring effort, compile data from 2014 through 2018 and analyze these data and then develop the next five year statewide brook trout sampling schedule.

**Desired Achievement Date** – Final year sampling will be completed in August 2018. The five year sampling results will be completed December 2018. Desired target date for the new five year sampling schedule is December of 2018.

**ee. Priority Task** – Use telemetry to determine dependency of Potomac River muskellunge population and summer thermal refugia; determine angler catch, exploitation and mortality of muskellunge angled from thermal refugia.

**Desired Task Achievement Date** – Fiscal year 2020.

**PROVIDE AND ENHANCE FISHING OPPORTUNITIES, INCLUDING ACCESS**

**a. Priority Task** – In coordination with state and federal partners, work to maintain and increase the number of publicly accessible areas for sport fishing consistent with the goals of the 2014 Chesapeake Bay Watershed Agreement. Fishing and Boating Services staff lead for public access issues will work cooperatively with the department’s Public Access Matrix Team and Maryland departments of Transportation and Commerce, as well as Maryland Historical Trust and National Park Service. This work supports state initiatives requiring coordinated and improved statewide public access information from Maryland in order to achieve success and meet established goals.

**Desired Task Achievement Date** – Ongoing

**b. Priority Task** - Develop coldwater production capacity to levels needed to meet the full trout stocking schedule and eliminate commercial fish purchases. Mettiki Coal LLC hatchery Phase I production is underway and indicates success. Development of Phase II production facility could meet remaining state needs.

**Desired Task Achievement Date** – Phase I in regular production since 2016. Phase II development is ongoing. Initial design plans are being created to estimate necessary funding and provide Mettiki Coal LLC with detailed plans to develop a memorandum of understanding.

**c. Priority Task** – Maintain focus on quality and geographic distribution of License Free Fishing Areas. Continue working toward long term goal – that most Maryland residents live within a one hour drive of a site where they have the opportunity to fish recreationally without purchasing a license.

**Desired Task Achievement Date** – Ongoing

**d. Priority Task** - Maintain and update the online Angler Access Map on the department’s webpage

**Desired Task Achievement Date** – Ongoing

**e. Priority Task** - Enhance Chesapeake Bay fishing opportunities through development of artificial reefs on permitted fish havens.

**Desired Task Achievement Date** - Ongoing

**Obstacle** – None

**Solution** – N/A



## **PROVIDE SUSTAINABLE ECONOMIC OPPORTUNITIES**

**a. Priority Task** - Maintain and update the Charter/Guide map on the department's webpage and increase awareness of this tool. (dnr.maryland.gov/fisheries/Pages/charters/map.aspx)

**Desired Task Achievement Date** – Ongoing

**b. Priority Task** – Continue collaboration with Maryland's Department of Commerce and the tourism industry to promote Maryland as a premier destination to fish and hunt.

**Desired Task Achievement Date** – Ongoing

**c. Priority Task** – Assemble representatives from the American Eel Industry to form a workgroup to identify some management alternative recommendations for when state quota management is implemented through the Atlantic States Marine Fisheries Commission. First year of a two-consecutive-year trigger has been hit for state quota management.

**Desired Task Achievement Date** – Ongoing

## **PROMOTE AND PROTECT FISHERIES RESOURCES THROUGH PUBLIC OUTREACH AND EDUCATION.**

**a. Priority Task** – Provide information to state and local planners on watershed impacts that diminish fisheries and aquatic resources.

**Desired Task Achievement Date** – Ongoing

**b. Priority Task** – Develop a roving creel survey for tidal black bass management to measure angler usage and preferences for black bass fishing opportunities in tidal waters.

**Desired Task Achievement Date** - The roving survey will be conducted in Fiscal year 2017 and Fiscal year 2018 with results due by June 30, 2018.

**c. Priority Task** – Promote recreational fishing opportunities and continue to focus on developing innovative outreach, communication and public engagement tools which reach the broadest possible audience.

**Desired Task Achievement Date** – Ongoing

**d. Priority Task** – Promote nontidal Potomac River recreational fishing opportunities for channel and flathead catfish and improve survivorship of fish during catch and release tournaments. Recreational anglers and tournament anglers have expressed concern that the number of large channel catfish has declined.

**Desired Task Achievement Date** – Ongoing

**e. Priority Task** – Provide and enhance fishing opportunities and waterway access, as mandated under the Waterway Access Bill (Chapter 140 of the Laws of Maryland, 2013)

**Desired Achievement Date** – Ongoing; currently one to five projects are reviewed monthly.





## Appendix 2. Fishing and Boating Services Fiscal Year 2017 Fisheries Related Accomplishments

Following is a list of some of the fisheries related activities Fishing and Boating Services accomplished that benefit sport fishermen during Fiscal year 2017. These activities may use Fisheries Research and Development Fund and Fisheries Management and Protection Fund special funds or other Fishing and Boating Services funding sources.

### **PROTECT, CONSERVE AND ENHANCE FISHERIES RESOURCES**

**Oysters** – Considered a keystone species of Chesapeake Bay providing numerous benefits to the ecosystem benthic habitat, filtration of algae and silt, ecosystem diversity, etc.), such that benefits of oysters extend beyond just their own population. Oysters are at historically low levels. The amount and quality of oyster habitat is also greatly reduced compared to historic amounts.

- Based upon recommendations from the Environmental Impact Statement for oysters and in accordance with the Chesapeake Bay Watershed Agreement to restore 10 (five in Maryland and five in Virginia) tributaries by 2025, Maryland has completed major restoration efforts in one tributary: Harris Creek. The Little Choptank River and Tred Avon River projects are now underway.
- Conducted annual dredge-based surveys of oyster bars. These assessments have provided biologists and managers with information on oyster spatfall intensity, observed mortality and more recently on parasitic infection status in Maryland's Chesapeake Bay. The long-term nature of the data set is a unique and valuable aspect of the survey that gives a historical perspective and allows the discernment of trends in the oyster population
- Performed the following GIS and database activities to support the Shellfish and Aquaculture divisions:
  - Performed quarterly updates to aquaculture lease database
  - Maintained and updated aquaculture lease database and Aquaculture Siting Tool to include accurate restoration and planting site data.
  - Created Submerged Aquatic Vegetation survey maps and assisted with Submerged Aquatic Vegetation field surveys and conflict mapping exercise
  - Computed oyster habitat acreage and percentage of seed and shell plantings in oyster sanctuaries
  - Assisted production of shellfish closure publication
  - Digitized commercial oyster gear areas
  - Supported production of “Oyster Management Review: 2010 to 2015”
- Processed and issued 35 new shellfish aquaculture leases on 518 acres and 15 permits for shellfish nursery facilities. Leaseholders plant oyster shell and seed on these leases in compliance with the State's active use requirements. These activities will serve to expand existing and/or create new marine habitat and augment oyster populations.

**Electronic Reporting (Finfish and Blue Crabs)** - Continued outreach and training on FACTS™ electronic harvest reporting and accountability system that is available to all commercial fin fisheries and to the blue crab fishery.

**Striped Bass** – Chesapeake Bay's marquee sport and charter fisheries. Staff worked in concert with the Atlantic States Marine Fisheries Commission's Atlantic Striped Bass Management Board to finalize Addendum IV to Amendment 6 of the Interstate Fishery Management Plan for Atlantic striped bass. The new Addendum establishes new fishing mortality reference points, as recommended by the 2013 benchmark stock assessment and associated management measures to reduce fishing mortality to a level at or below the proposed target within two years in the Chesapeake Bay and one year along the coast. Management measures were modified to account for these reductions – the first significant management actions in the recreational striped bass fishery in 20 years. Staff completed striped bass stock assessment update in cooperation with the commission's technical committee. The assessment results will be delivered to the commission at its annual meeting in late October.

Staff continued to conduct multiple surveys in order to provide up to date stock assessment information. These assessments have provided managers with information on age structure, length frequency, relative year-class strength and overall striped bass stock status in the Chesapeake Bay.

**Brook Trout** – The only native trout to Maryland. These are considered to be the “canary in the coal mine” for being among the first aquatic resources to respond to degradation in a stream or watershed. A highly sought after sportfish by Marylanders and tourists. Brook trout are economically important to western Maryland counties.

- Completed the final report of the statewide Wild Trout Angler Preference Survey that focused on brook trout.
- Completed the Annual Maryland Department of Natural Resources Brook Trout Fishery Management Plan review and update.
- Participated with the multi-state Brook Trout Action Team in completing a review and summary of work done on the initial two-year work plan for the Chesapeake Bay Agreement Brook Trout Outcome goal.
- Continued benthic macroinvertebrate and brook trout population monitoring at the Metz property streambank restoration site on the Upper Savage mainstem river. Instream work is completed and post-construction monitoring will continue for at least two years.
- Conducted sampling for the fourth round of the five-year (2014 – 2018) annual statewide brook trout monitoring plan.

- Continued work on two State Wildlife Grant funded research projects that are focused on water temperature and flow budgets, genetic relationships of fluvial populations and invasive parasites.
- Continued annual intensive population monitoring efforts in the Upper Savage River special brook trout management area to assess the impact of the no harvest and no bait fishing regulation implemented on January 1, 2007. This sample season marked the 10th year of monitoring since the regulation was adopted.
- Updated the “Brook Trout homepage” for the department’s website, providing information and updates to the public on brook trout research, management and angling ([dnr.maryland.gov/fisheries/Pages/brook-trout/index.aspx](http://dnr.maryland.gov/fisheries/Pages/brook-trout/index.aspx)).
- Presented information on brook trout resources, management, the Upper Savage River special brook trout management area and brook trout angling to various cold water conservation groups and angling groups.
- Assisted Central Region staff with radio telemetry and visible implant tagging projects of mainstem upper Gunpowder Falls brook trout and assisted in ongoing work efforts of the Upper Gunpowder Falls watershed restoration partnership.
- Transitioned the ‘stand-alone’ version of the statewide brook trout database to a more user-friendly online version. This step will make it easier for staff to update data each year and ensure that end users have the most up-to-date information available.
- Hosted the 2nd Annual Big Run Youth Trout fishing clinic at Big Run State Park in Garrett County. Over 30 anglers between the ages of eight and 14 attended the event where they were instructed in techniques to catch and release brook trout. Participants were given a lanyard with forceps, a tackle pack and a fishing rod/reel of choice (fly or spinning rod) to take home thanks to the sponsors of the event. The event taught the youth how to fish without the use of live bait. These skills are important in areas where fishing is allowed but harvest is not.
- Attended an open public meeting hosted by the Pennsylvania Fish and Boat Commission on the status of wild trout management in Pennsylvania including lessons learned, research results and future initiatives.
- Assisted researchers with the United States Geological Survey with a project aimed at determining whether local temperature adaptations exist in two Maryland brook trout populations. Twenty adult brook trout were taken from both Crabtree Creek in Garrett County and Walker Run in Carroll County. These fish will be held in a controlled setting and strip-spawned to determine whether their progeny exhibit temperature adaptations at a relatively fine spatial scale.
- Conducted the annual monitoring of the Frostburg Pond stream restoration project. Beginning in 2008 staff initiated and lead a project to remove an instream pond in the headwaters of the upper Savage River that was adversely impacting the native brook trout population by warming the water downstream and creating a fish passage blockage. Staff partnered with the City of Frostburg, Canaan Valley Institute, Savage River Watershed Association, U.S. Fish and Wildlife Service, National Fish and Wildlife Foundation, Nemaquin Chapter of Trout Unlimited and the Chesapeake Bay Trust to have the pond removed and recreate a natural stream channel. The restoration work was completed in 2010 and staff has been annually monitoring brook trout presence. A single brook trout was first found in the stream in 2011 and numbers collected have slowly increased over the years. In 2017 sample showed an all-time high of 23 trout. There were multiple year classes including young-of-year, ranging in size from two to 9 inches. The warmwater pond was effectively replaced with a viable trout stream with over 1,000 feet of restored brook trout stream habitat. The new habitat supports a quality, fishable native brook trout population.

**Black Bass** – The most sought after sportfish in Maryland providing significant socioeconomic value.

- Completed Fishery Management Plan review and update for tidal largemouth bass.
- Sought integration of the Fishery Management Plan for largemouth bass into regulation.
- Stocked over 325,000 bass in response to stakeholder concerns and ecological need.
- Completed the cooperative agreement to fund a study to improve the survival of largemouth bass held in livewells. An annual summary of work completed by Mississippi State University on livewell work was completed in 2017. Current results are being used to refine guidelines in the 2018 Fishing Guide.
- A series of bass conservation videos were created using talents from Bass Anglers Sportsmen Society, Maryland Bass Nation and National Guide Service, along with the department.
- The Black Bass Advisory Subcommittee met several times during Fiscal year 2017 to cooperate with the department in the management of black bass species.
- Worked with numerous tournament directors to provide assistance in organizing and developing tournaments, as well as provide assistance in keeping bass alive aboard release boats.
- The permit for tournament directors was amended with special conditions that require many directors and participants to adhere to recommendations from “Keeping Bass Alive” and nationally recognized bass best handling strategies. This will be an ever changing topic as new techniques are developed to protect and improve black bass populations.
- A number of indices and spatial layers were developed and made available on-line to help identify essential components for black bass in Maryland, with a goal to protect the stability and integrity of the fisheries.
- The Potomac River fishery has improved, owed in part to habitat improvements, stocking, invasive species management and reduced fishing pressure.

## **Yellow Perch –**

- Developed a technique for creating biological reference points that take into account the impact of development on sustainable harvest.
- Developed the draft Amendment 1 to the 2002 Maryland Tidewater Yellow Perch Management plan that revises the management plan objectives, incorporates the status of the stock and presents the current management approach. Incorporate the final draft by reference into Maryland regulations in 2017.

**Shad** – A historically valuable sport fishery that also serves an important ecological role as a forage fish. A harvest moratorium has been in place since 1980 given its low abundance.

- Continued restoration stocking and assessment project for Patapsco River shad and herring species and documented survival of hatchery-origin larvae and juveniles in putative nursery areas.
- Documented many adult American shad returning to spawn in the Choptank River restoration tributary. Determining the progression of the American Shad restoration program through time has been difficult due to low numbers of returning adult American Shad captures and the annual variability of wild juvenile abundance estimates. Even though the wild juvenile abundance has been variable, wild juveniles are captured in the summer seine survey suggesting that wild recruitment is occurring. In 2015, the department changed the spring adult sampling method and survey area for American Shad. Anchored gill nets were deployed downstream of current electro-fishing areas. In 2015 only three American Shad were captured. The target survey area was moved further downstream in 2016 and 46 American shad were captured during the spring spawning run. Spring 2017 captures totaled 40 adult American shad. Otolith and scale aging analyses will help to determine the contribution of hatchery produced fish to the adult spawning population and estimate the age and frequency of virgin and repeat-spawning.

**Rare, threatened and endangered species** - Various rare, threatened and endangered species are managed under the jurisdiction of the department's Wildlife and Heritage Service. Fish Health and Hatcheries Program staff collaborated with Wildlife and Heritage Service and Resource Assessment Service to produce aquatic organisms to meet management needs. Manning Hatchery spawned Alewife Floater mussels for the first time with a new host fish (alewife herring). Culture staff also received juvenile mussels (*Lampsilis cariosa*, *Lampsilis nasuta*, *Anodonta imbecilis*) from a cooperative mussel conservation facility operated by U.S. Fish and Wildlife Service and Virginia Department of Game and Inland Fisheries at Harrison Lake National Fish Hatchery to experiment with different culture techniques. A newly constructed brood and juvenile rearing system at Manning Hatchery was successful, allowing staff to hold brood long term and rear thousands of juvenile mussels.

**Invasive Species** – The introduction and spread of invasive species such as blue and flathead catfish and Northern snakehead threaten ecologically and socio-economically important native fish species due to their predatory impacts and competition for habitat and food.

- Maintained Invasive Species Component within the Md Fishing Challenge award program, recognizing anglers who 'catch and keep' blue catfish, flathead catfish or Northern snakehead.
- Conducted outreach and education on invasive species including social media, special tournaments/derbies and public events such as the State Fair.
- Continued research into invasive blue catfish and snakeheads in coordination with the multiagency, Invasive Catfish Task Force.
- Completed an Aquatic Nuisance Species Action Plan that was internally reviewed by the department, other state agencies and the general public. The plan was approved by the Secretary of Natural Resources Mark Belton, Governor Larry Hogan and the National Aquatic Nuisance Species Task Force. The effective date for the plan was December 2016. This plan allows the department to compete for federal funding and provides a roadmap for addressing invasive species cooperatively with other agencies and the general public.
- Collaborated with the U.S. Fish and Wildlife Service and the National Park Service to provide signage, outreach material and the second "Stop the Snakehead" fishing derby on the Chesapeake and Ohio Canal to raise public awareness and encourage angling harvest of Northern snakehead.
- Collected baseline life history data for nontidal Potomac River flathead catfish to include current distribution, relative abundance, size distribution, length-at-age and stomach contents. Initial survey efforts and angler feedback indicates that the Potomac flathead population is expanding rapidly. Gaining a better understanding of this population will be crucial in determining the potential implications for the ecosystem and popular existing sport fisheries.
- Provided presentations to various groups to highlight invasive catfish population trends and to provide updates on department activities such as surveys, diet studies and life history data. Provided information to several publications on the status of invasive catfish populations in Maryland.
- Briefed fishery managers and the Sport Fisheries Advisory Commission on current blue catfish populations and relevant data that led to the informed decision not to tighten regulations on trophy blue catfish possession and restricting the transport of live fish across state lines, despite encouragement from select angling constituents.
- Collected blue catfish for the second time for the Maryland Department of Environment in order to assess the polychlorinated biphenyls and mercury levels of fish filets minus the lateral line meat. Results from these samples may pave the way for increasing the monthly meal allowance recommended by the Maryland Department of the Environment.
- Continued a diet study on blue catfish in the tidal Patuxent River. Biological data collected included length, weight, sex, otoliths, maturity and stomach contents. Data will be used as part of the region wide Invasive Catfish Management Plan that is being crafted by the Invasive Catfish Task Force at the request of the Sustainable Fisheries Goal Implementation Team.

**Fish Habitat** – Utilization of state of the art tools to integrate the valuation of important fish habitat supports informed decision making at the local, state and federal levels.

- Developed maps that depict where anadromous fish spawning habitat is located in Maryland and its conservation priority status (high, mid and low) based on relationships of spawning success indicators, salinity and development (impervious surface).
- Continued annual monitoring on nontidal Potomac River (initiated 2013) to evaluate spatial and seasonal distribution of benthic cyanobacteria, primarily Planktothrix isothrix and, in far lesser amounts, Lyngbya majuscula, the potential impacts of noxious benthic cyanobacteria blooms on macroinvertebrate communities, water quality and smallmouth bass health. Analyzed and presented data at annual Harmful Algal Bloom Matrix Team conference. Partnered with Hood College and University of Maryland Baltimore Campus' Institute of Marine and Environmental Technology to identify toxins produced from benthic mats and accumulations of toxins present in aquatic organisms. Additional efforts were made in attempts to quantifiscal year dispersion and biomass.
- Collaborated with Hood College, Center for Coastal and Watershed Studies to expand investigation to include estimates of algal coverage and toxin production. Algal toxins have been linked to lowered immune function in some fish and may compound the deleterious effects of other endocrine disrupting compounds.

**Fish Health** – Understanding fish health in wild stocks, aquaculture, bait fish, the pet industry and hatchery stocking is the most fundamental need for protection, conservation and wise use to ensure healthy fish stocks.

- Continued investigation of mycobacteriosis in striped bass. Collaborated with the National Oceanic and Atmospheric Administration's Chesapeake Bay Office and environmental consultants to investigate mycobacteriosis in Chesapeake Bay Striped Bass. This work was funded by a Chesapeake Bay Program Goal Implementation Team Sustainable Fisheries grant. The goal was to learn more about disease dynamics and environmental factors that may exacerbate mycobacteriosis and to recommend a useful fish health indicator for the Bay Program. An effective Chesapeake Bay fish health indicator does not currently exist. Initial work indicated a link between water quality, mycobacterium density and disease prevalence in Striped Bass. Prevalence of mycobacteriosis in age-1 striped bass could be an appropriate health indicator for the Bay. This initial work would benefit from additional research and collaboration among all Chesapeake Bay fish health researchers.
- Continued an experimental finfish health survey in a single tributary. This multi-year experimental work will serve to fine-tune the techniques and processes that are needed to fully implement a fish health index for Maryland's Chesapeake Bay waters.

**Fish Passage** – Targeted removal of stream blockages allows ecologically and socioeconomically important fish species to once again utilize historical upstream habitat that serves an important role for spawning and other life history needs.

- Permits have been received for the removal of Bloede Dam and work is expected to begin in September 2017 with phase one of the project - relocation of the sewer line. Phase one is expected to be completed in summer of 2018 with phase 2, removal of the Bloede Dam, occurring in fall of 2018.

**Regulations and Fishing Penalties** - During Fiscal year 2017, a total of 295 recreational fishing licenses and 27 commercial fishing licenses were suspended. Twelve commercial fishing authorizations were revoked. Additionally, 112 fishing authorizations were suspended due to a failure to appear in court to answer to the charges filed against the individuals. These continued actions to suspend and revoke fishing licenses have provided increased deterrence to illegal activities.

**Fisheries Management Plans** – Completed the 2016 Fishery Management Annual Report to the Legislative Committees. The report updates the status and management actions of 22 plans that address 32 species. Developed a Fisheries Management Plan focus document for members of the Sport Fisheries Advisory Commission and Tidal Fisheries Advisory Commission that summarizes the current management for each Fisheries Management Plan species and highlights important up-coming management issues.

**Atlantic Sturgeon** - Deployed and continue to maintain an acoustic receiver array that covers the main stem Chesapeake Bay and major historic Atlantic Sturgeon spawning tributaries such as the Pocomoke, Nanticoke, Choptank, Potomac and Patuxent rivers. This array is targeted to monitor endangered Atlantic sturgeon populations, but will also detect any similarly tagged animals such as striped bass, sharks, sea turtles and marine mammals. It will effectively monitor tagged blue catfish to assess the migratory behavior and distribution of this invasive species. National Oceanic and Atmospheric Administration funding was obtained to conduct Atlantic sturgeon habitat and early life history research in Marshhope Creek. This tributary recently indicated the only known Atlantic sturgeon spawning population in Maryland's Chesapeake Bay. It is evident that mature fish occur in putative spawning habitats, but it is unknown whether these animals successfully spawn and produce fertilized eggs, larvae and juvenile sturgeon. Partners from the National Oceanic and Atmospheric Administration's Chesapeake Bay Office, the University of Maryland Center for Environmental Science and Delaware Fish and Wildlife worked to assess spawning habitat and to evaluate whether successful spawning and recruitment occurs. Hard bottom areas were identified by the National Oceanic and Atmospheric Administration's Chesapeake Bay Office habitat surveys as potential suitable spawning habitat. Staff continued to collect mature Atlantic sturgeon, which were surgically implanted with acoustic transmitters to enable tracking through existing telemetry arrays in the Chesapeake Bay and along the entire Atlantic Coast.

**Forage Fish** – Information from existing monitoring programs was integrated into five indicators of forage fish status for resident striped bass in Maryland's portion of Chesapeake Bay. This prototype indicator could be used to meet both Atlantic States Marine Fisheries Commission and Bay Program requirements.

**GIS** - Created limited access web map of fish forage index for fisheries managers.



**American Eel Workgroup** – Assembled representatives from the American eel industry to form a workgroup to identify some management alternative recommendations for when state quota management is implemented through the Atlantic States Marine Fisheries Commission. Two-consecutive year trigger has not been hit for state quota management, but that is expected in the near future.

**North Branch of the Potomac River watershed** – Identified key problems facing the North Branch of the Potomac River and took the following actions:

- Maintained recording temperature monitors to provide temperature data to US Army Corps of Engineers. The Corps used these data to evaluate impacts of the discharge from Jennings Randolph Reservoir on the Zero Creel for all trout species (catch and return for all trout species with no tackle restrictions) section of the North Branch Potomac River (from the Upper Potomac River Commission wastewater treatment plant discharge downstream to the Route 956 bridge at Pinto). The temperature data were used by the US Army Corps of Engineers to evaluate the effectiveness of increased flows from Jennings Randolph Lake during excessively hot (> 90 degrees F) days. It was determined that increased flow > 250 cubic feet per second measured at Luke could maintain river temperatures measured at Keyser at 77° F as the maximum thermal limit for trout species present. The US Army Corps of Engineers provided increased flows in 2016 during a critically hot spell and temperatures generally remained at 77° F or less in the North Branch Potomac River measured at Keyser.
- The Freshwater Fisheries Program continues to participate in the North Branch Potomac River Advisory Committee to discuss refining the temperature enhancement releases from Jennings Randolph Lake to support trout populations at least as far downstream at the McCoole Fisheries Management Area. Staff has prepared a draft temperature /flow model to predict the amount of cold water release in cubic feet per second needed to maintain temperatures in the North Branch Potomac River at < 25degrees C measured at the Keyser Bridge, just downstream of the McCoole Fisheries Management Area. The Freshwater Fisheries Program has installed and maintains a temperature probe in the North Branch Potomac River at the Keyser Bridge location and these data are available in real-time to all North Branch Potomac River Advisory Committee members and government entities.

**Freshwater Temperature and Water Quality Database** – Imported all 2016 temperature and water quality data collected statewide by Freshwater Fisheries staff into database. Converted and imported 50 percent of all temperature and water quality data collected in Central Region from 2003 to 2010. Converted and imported all temperature data collected in Eastern Region from 2003 to 2013.

**Northern Pike** - Designed and conducted a northern pike-specific electrofishing survey in Deep Creek Lake. Twenty fixed sample sites in spawning habitat were surveyed during the spring. By targeting spawning habitat, a greater number of fish were captured to obtain life history data. Preliminary results suggest that the new protocol may also be used to monitor the trend in relative abundance. Catch per unit effort improved from five fish per hour to nine fish per hour. Sampling will be ongoing.

**Freshwater Fisheries Screening Tool** – This is a new tool is under development to make freshwater fisheries data and information more readily available for use by other departmental programs.

- To date, 4415 surveys have been inspected and entered into the database:
  - Surveys with no trout – 434
  - Surveys where trout were observed – 1769
  - Temperature logger deployments - 208
  - Tidal bass sites – 1540
  - Impoundment surveys – 111
  - Potomac River Surveys - 353
- Shape files were established for the following:
  - Cold water trout surveys
  - Stream surveys
  - Impoundments
  - Tidal bass surveys
  - Temperature logger locations and data
  - Potomac River surveys
  - Invasive species locations



**Deep Creek Lake Relicensing** –

- The Freshwater Fisheries Program staff continues to deploy continuous temperature loggers within ten stations in the Youghiogheny River during the critical summer period from June 1 to August 31. These temperature data are delivered to Versar, Inc. to analyze the effectiveness of the temperature enhancement releases under Condition 19 of the Deep Creek Lake Hydroelectric Station Water Appropriation Permit. Versar, Inc. prepares an annual report that is submitted to the Department of Natural Resources and the Department of the Environment.

- The current operating license for the Deep Creek Hydroelectric Station requires temperature control (maintenance of < 25 degrees Celsius in the Youghiogheny River measured at Sang Run during June, July and August), minimum flow maintenance (40 cfs in the Youghiogheny River measured at the station's tailrace outflow) and dissolved oxygen augmentation to meet State standards (> six ppm average, five ppm minimum in the hydroelectric station discharge) for downstream coldwater fisheries enhancement.
- These combined measures were implemented beginning in 1995 as part of an operating license renewal agreement with the Maryland Department of the Environment, Water Resource Administration -Deep Creek Lake Project - Water Appropriation Permit No. GA92S009(01) and re-issued in 2011 with Water Appropriation Permit No. GA1992S009(08) and will expire on April 1, 2019.
- The Freshwater Fisheries Program continues to conduct annual trout population surveys in the Youghiogheny River Catch and Return Trout Fishing Area within the Hoyes and Sang Run areas of the river. The most recent sample (fall 2016) found that the mean trout density was less than the management objective of 621 trout/km. The mean standing crop was also less than the management objective of 25 kg/ha. The 2016 trout densities and standing crops were similar to those levels observed in years prior to 1993 when the catch and return regulations were enacted. However, the long-term mean trout densities and standing crops since 1988 to 2016 show a positive trend line since the adoption of catch and return regulations and temperature enhancement protocols.
- The Maryland Department of the Environment will be scheduling stakeholder meetings regarding this license renewal in the near future.

**Deep Creek Watershed Management Plan** – In April 2017, the initial meeting of Garrett County Conservation Projects Incentives Program was held and included representatives from Garrett County Land Use and Planning, Maryland Department of Natural Resources Freshwater Fisheries Program, Garrett Soil Conservation District and Garrett College's Natural Resources and Technology Program. Attendees discussed potential conservation/restoration projects that may be partially funded by Garrett County government. Projects were prioritized to provide the greatest environmental and community benefits. The group will strive to involve a meaningful environmental learning opportunity for students Kindergarten through 12 as well as Garrett College students as part of these projects.

**Casselman River Watershed Brook Trout Restoration Project** - The long-term goal is to remove the Casselman River Watershed from the Maryland 303(d) list for pH impairment and restore the population of native brook trout to the affected areas of the watershed.

- Water quality improvements with respect to increased pH and alkalinity in the Casselman River Watershed have been documented by the Maryland Department of the Environment's Abandoned Mine Lands Division. As a result of these water quality improvements, surveys conducted by the Freshwater Fisheries Program illustrate that brook trout populations responded favorably by showing a significant increase in total numbers of adult trout, standing crops and reproductive success. The installation of the limestone leech beds and limestone sand sites in the headwaters of these streams appear to have strengthened existing brook trout populations, as well as increased the total stream miles suitable for brook trout survival. Additionally, an improvement in the Casselman River watershed brook trout population will create additional recreational opportunities for anglers.
- The Freshwater Fisheries Program partnered with the Natural Resource Conservation Service, private landowners, non-profit conservation organizations and other state and federal conservation agencies to improve riparian habitats within the Casselman River watershed. One such project has been realized on Little Laurel Run where more than 1,600 linear feet of stream and 2.23 acres have had livestock exclusion fencing installed and planted with 1,100 tree and shrub species. Staff documented a reproducing brook trout population in this section of the stream during 2016 and long-term water temperature monitoring will take place to document the effect of this project with water quality enhancement. Other landowners in the Casselman River watershed were approached during fiscal year 2017 to conduct similar riparian zone restoration.

**Hoyes Run and Fork Run Trout Population Monitoring** - Hoyes Run, a Use-III trout stream in the Youghiogheny River Watershed, is unique due to it being one of the few streams in Maryland that supports wild, naturally reproducing populations of brook trout, brown trout and rainbow trout. Hoyes Run is also designated by the state as a Tier II stream under Code of Maryland Regulations (COMAR) 26.08.02.04-1. Tier II waters are high quality waters that must be conserved and protected from degradation. Trout population estimates were determined in fiscal year 2017 at two stations in Hoyes Run and one station in tributary Fork Run.

- The 2016 adult trout population density estimated at the long-term sample station in Hoyes Run (HR1 – upstream location), consisted of 58 percent brook trout, 32 percent brown trout and 10 percent rainbow trout. The adult trout density was the highest level observed during the last five-year study period. Young of year trout densities in 2016 were the highest observed during the last five-year study period.
- The adult trout density below the confluence of Fork Run was more than double the density found at the long-term sample station. The population shifted to a greater percentage of brown trout (54 percent) and rainbow trout (37 percent), with lesser numbers of brook trout (7 percent). young of year densities were lower compared to Hoyes Run and young of year rainbow trout and young of year brook trout were more abundant than young of year brown trout.
- Fork Run continues to support a viable naturally reproducing brook trout population. Adult and young of year densities have remained relatively stable during the last five-year study period.

**Savage River Trophy Trout Fishing Area** – Trout Population Monitoring - The Savage River tailwater has been regulated under trophy trout regulations since January 1987. The current regulation strategy includes a trophy trout – artificial flies only fishing area and a trophy trout – artificial flies and lures only fishing area. Regulations on these areas include a year-round open season, a 12-inch minimum size limit for brook trout, an 18-inch minimum size limit for brown trout, no minimum size limit for rainbow trout and a two-trout daily creel limit. On these areas, artificial flies and lures are limited to one hook only; no treble hooks are allowed on artificial lures.

- The combined adult trout densities met the management objective of 1,000 adult trout per mile during fiscal year 2017. Adult brown trout continue to be the dominant salmonid species in the Savage River tailwater comprising about 86 percent of the estimated adult density. Adult brook trout estimated densities continue to be low, accounting for only 12 percent of the estimated combined adult trout densities in fiscal year 2017. Rainbow trout are generally found in low densities in the Savage River tailwater and are emigrants from the North Branch Potomac River or from the Savage River Reservoir, where they are stocked as part of the Put and Take trout stocking program.
- The combined species 2016 year-class more than 800 YOY/mile, indicating a strong combined species year-class.
- The mean number of quality sized brown trout (> 12 inches) per mile showed a record high as the strong 2012 year-class has reached quality size at age four +. The mean number of quality-size brook trout (> 9 inches) per mile continued to be low in fiscal year 2017.
- Condition factors were in the optimal range (0.90-1.10) for brook, brown and rainbow trout. This is an indication that habitat and forage availability is sufficient to support current trout numbers.

#### **Cyanobacteria study on the Nontidal Potomac River -**

- Nuisance blooms of algae, particularly the blue-green algae *Planktothrix isothrix* are resulting in unsightly and odorous mats that discourage recreational use in the nontidal Potomac River and may be having negative impacts on aquatic life.
- This study was designed to collect baseline data on the spatial and temporal growth of *Planktothrix isothrix*, document how algal blooms may respond to and affect water quality and benthic macroinvertebrates and determine the presence/concentration of algal toxins.
- This study was initiated in 2013 in an effort to gather water chemistry and benthic macroinvertebrate community data in sections of the upper Potomac River where blue-green algae blooms had been observed. The objectives of the 2015 sampling were to: 1) determine if chlorophyll a and phycocyanin concentrations differ among sites and between seasons and among sites and seasons between years (2013-2015) 2) determine if changes in the macroinvertebrate community assemblage could be directly attributed to the proliferation of *Planktothrix isothrix*.
- During years when nuisance levels of cyanobacteria are present, significant differences in chlorophyll-a, phycocyanin and benthic algal coverage across transects were documented.
- Macroinvertebrate communities showed greater variation at River Center and the Maryland shoreline than the Virginia shoreline, implying that benthic cyanobacteria are impacting macroinvertebrates.
- Toxins were not detected from *Planktothrix isothrix* algal samples collected during 2016.
- Benthic macroinvertebrates (stonefly *Anthopotamus* sp and Isopod *Gammarus* sp) and fish (spotfin shiner, banded killifish, smallmouth bass) samples were collected in August 2016 and June 2017 for toxicity testing by Hood College
- Results from initial water chemistry study (2013-2015) were presented at regional meeting in December 2016 (Maryland Water Monitoring Council conference).

#### **Muskellunge –**

- A total of 14 adult, sexually mature muskellunge (seven male, seven female) from the nontidal Potomac River were successfully implanted with radio tags in March, 2017 within the 11.7 km study area near Williamsport, Md.
- Temperature recorders were deployed in the Potomac mainstem and tributaries in spring 2017 to identify thermal refugia during the summer months.
- Two concentrations of fish were identified during conditions suitable for spawning.
- All tagged muskellunge used thermal refugia once river temperatures reached 26.6 degrees Celsius (80 degrees Fahrenheit).
- Anglers effectively exploited muskellunge occupying thermal refugia habitat.

### **PROVIDE AND ENHANCE FISHING OPPORTUNITIES, INCLUDING ACCESS**

**Angler Access Map** – Maintained on Fishing and Boating Services website. This interactive map helps anglers find new fishing opportunities and provides information on location, parking, ease of access (including Americans with Disabilities Act regulated facilities), available fish species, regulations, stocking, managing agency contacts, fees and other.

#### **Hatcheries –**

- The new Mettiki Hatchery continued to demonstrate excellent trout production capabilities in the Phase I facility. Growth rates at the facility are nearly double those at other state production facilities. Staff is seeking funding opportunities in order to expand production into Phase II, which would provide sufficient production to meet all western Maryland trout stocking needs.
- Albert Powell Hatchery staff faced record low water supply spring flow levels in the winter of 2016-17. Low water causes problems with fish growth and fish health, including creating conditions for serious disease outbreaks due to overcrowding. In response, many routine production strategies were manipulated to result in a successful production cycle. Although annual production size was slightly reduced, fish mortalities were kept to a minimum and no stocking locations were excluded from the schedule.

- Albert Powell Hatchery and Bear Creek Hatchery received an “A” classification for fish health. This rating is granted only after a facility tests pathogen-free for three consecutive years. This is an important milestone for the program, which has committed to strict biosecurity and fish health protocols over the past five years.
- Continued cutthroat trout culture trials to provide a unique angling opportunity in western Maryland.
- Produced more than two million striped bass larvae to support recreational fishing in impoundments such as Triadelphia Reservoir, Rocky Gorge Reservoir and Liberty Reservoir. Manning Hatchery also produced 2,000 hybrid striped bass juveniles for stocking into western Maryland reservoirs.
- Unicorn Lake Hatchery conducted a successful grow out trial of walleye larvae. Walleye larvae were transferred from Manning Hatchery to Unicorn Lake Hatchery in early April. The fish were grown to juvenile size by mid-May and stocked into the Susquehanna River at the Perryville boat ramp. Approximately 13,700 walleye juveniles (2-3”) were released. Future Unicorn Lake Hatchery walleye culture may occur, depending on fry availability. Manning Hatchery continued to demonstrate excellent walleye production that resulted in 175,000 juveniles for statewide stocking.



**GIS -**

- Updated data pertaining to angler access locations across Maryland.
- Assisted University of Maryland partners with GIS tasks related to the Oyster Futures project.

**License Free Fishing Areas** – Inspected License Free Fishing Areas and installed new signs where needed.

**Artificial Reefs** –

- Placed a total of 4,000 tons of secondary use concrete materials at the Love Point artificial reef site over the course of six deployments.
- Placed 600 tons of concrete rubble at the Cedar Point artificial reef site over the course of four deployments in a partnership between Maryland Artificial Reef Initiative and Dominion Energy.
- Deployed 400 tons of concrete culvert pipe at the Tangier Sound artificial reef site in a partnership between Maryland Artificial Reef Initiative, Coastal Conservation Association Maryland, the Building Conservation Trust and Rinker Materials of Frederick, Md.
- Deployed 210 reef balls at the Tilghman Island artificial reef site in two deployments. This project was a partnership between Maryland Artificial Reef Initiative, Coastal Conservation Association Maryland, Chesapeake Bay Foundation, Lehigh Cement Company, Carroll County Public Schools and Anne Arundel County Public Schools.
- Placed 300 tons of corrugated steel baffle wall panels and concrete blocks at the Plum Point artificial reef site in partnership with Exelon Corporation.
- Carried out a total of 15 deployments of artificial reef material at five artificial reef sites in Chesapeake Bay.
- Performed side scan surveys at Plum Point and Cedar Point artificial reef sites
- Dive surveys of Cedar Point and Tilghman Island artificial reefs performed by Greg’s Marine and Keith Johnson of Stevenson University, respectively.
- Gave outreach talks at the Kent Narrows Yacht Club and the Coastal Conservation Association Maryland Mid-Atlantic Fisheries Symposium. Staffed a Maryland Artificial Reef Initiative booth at the Westminster Oyster Stroll and the Pasadena Sportfishing Group Expo/ Flea Market. Gave radio interview on the Allan Ellis Outdoorsman Show.
- Attended the Joint Atlantic/Gulf States Marine Fisheries Commission Artificial Reef Committee Meeting.
- Met with representatives from Department of Transportation and Potomac River Fisheries Commission to discuss using material from the “old” Governor Harry W. Nice Memorial Bridge as artificial reef substrate when it is replaced in 2023.

**Freshwater Fishing Access** – A new fishery management area was created when the Jackson property was acquired by the department on Beaver Creek in Washington County to provide fishing access. The area is comprised of roughly 6.7 acres that includes nearly half of the access to the special trout management area. This fishery management area provides the only public land access to Beaver Creek.



## **PROVIDE SUSTAINABLE ECONOMIC OPPORTUNITIES**

**Oyster Aquaculture** - Growth of this industry should benefit the bay ecosystem through reduced fishing pressure on the wild fishery, increased oyster biomass and new and improved habitat throughout Maryland waters.

- Provided products and services from Piney Point Aquaculture Center to support development of the aquaculture industry in Maryland, including spat on shell and cultchless oyster seed.
- Continued working with the Maryland Agricultural and Resource-Based Industry Development Corporation to provide funding to existing and prospective shellfish growers that is used to purchase shell, seed and capital equipment.
- Held one on one consultations with prospective growers to help them locate suitable production sites and develop lease and permit application materials required for state and federal project reviews.

### **GIS-**

- Updated charter boat data for online web map
- Updated data for the True Blue program to support Maryland's blue crab industry
- Formed a team to design and develop a mapping application that will share location information on oyster aquaculture leases. Application launch date is anticipated to be September 18, 2017.

**Charter/Guide Map** – Continued to maintain list of Charter boats/Guides included on the Charter/Guide map on the department's Web-page. Performed comprehensive assessment and update of map. Established process for twice yearly update of map to assure that all those listed have current license or decal.

## **PROMOTE AND PROTECT FISHERIES RESOURCES THROUGH PUBLIC OUTREACH AND EDUCATION.**

### **Black Bass –**

- Held or participated in stakeholder meetings throughout the year to convey information and to gain feedback from user groups and Virginia and District of Columbia fisheries agencies on tidal water black bass fisheries in Maryland. These meetings included ones with Potomac River Fisheries Commission and the Black Bass Advisory Subcommittee.
- Continued mark and recapture project on Potomac River that fostered communication with hundreds of black bass anglers and the Freshwater Fisheries Program's southern region office.
- Promoted bass conservation videos with members of the general public to facilitate better handling of black bass. Refined black bass website to improve communication with black bass anglers.
- Promoted the black bass fishery using social media and the department's Anglers Log.
- Initiated angler-intercept creel surveys to record details on anglers' fishing experiences, address their concerns and provide service information about fishing regulations and fish identification.
- Continued volunteer angler survey to determine satisfaction with tidal water black bass management. Staff is still assessing the input and survey is ongoing.
- Promoted the Smoot's Bay reef project using television program Aqua Kids.

### **Striped Bass –**

- Continued striped bass volunteer angler survey. The survey provides the department with supplemental recreational catch data and enables recreational anglers to assist the department and participate directly in fisheries management. This survey is ongoing; staff annually assesses input.

### **Invasive Species –**

- Continued work on a department-wide educational campaign to raise awareness about zebra mussels.
- Conducted a fishing derby to raise awareness of northern snakeheads in the Chesapeake and Ohio (C&O) Canal; the derby was a cooperative event with the department, National Park Service, U.S. Fish and Wildlife Service and Senator Lee of the General Assembly in Montgomery County.
- Provided material for display at the Maryland State Fair in Timonium Maryland concerning invasive fish species in Maryland.
- Worked with media outlets (Aqua Kids, film production studios) along with graduate students to promote invasive species management.

**Marylanders Grow Oysters** – Expanded this citizen-based stewardship program that engages thousands of Maryland residents and school students to enhance the bay's oyster population. This is the largest oyster gardening program in the state, active in 30 tributaries, offering a hands-on connection to oysters and the bay as the participants grow oysters at their piers in cages made by inmates, who are also active as bay stewards.

## Recreational Fishing Promotion –

- Completed the 12th annual Maryland Fishing Challenge contest and issued 872 angler awards in three categories. There were four individuals who received the Governor’s Catch and Release Award in Fiscal year 2017 and six new state record fish were recognized.
- Collaborated with Maryland Park Service to host an outreach angling event for active duty military, wounded warriors and veterans. This event supported Project Healing Waters Fly Fishing and was held at Lost Lake in Patapsco Valley State Park.
- Staff continued giving weekly (Wednesdays) fishing reports on radio station WNAV. A total of 57 reports ran in Fiscal year 2017. Additionally, nine staff participated in the Outdoorsman Radio Show hosted by Allan Ellis.
- The “16 in ‘16” fishing license discount promotion developed and rolled out at the Harrisburg Outdoors Show in February 2016 concluded during fiscal year 2017. The “16 in ‘16” promotion targeted 16 year olds purchasing their first fishing license by giving them a 50 percent discount on the purchase price. The promotion ran through calendar year 2016. It was promoted at the Pasadena Fishing Flea market show, online including social media and mentioned during radio interviews. Additionally, two “16 in ‘16” ads were placed in the Coastal Fisherman magazine. There was a 10 percent increase in 16 year olds who bought a recreational fishing license during calendar year 2016.
- Staff attended a variety of shows and events in Fiscal year 2017 including: Great American Outdoor Show (Harrisburg, PA), Pasadena Fishing Show, National Fishing and Hunting Day, Bass Pro Shops Seminars, Maryland State Fair and Hispanic Outreach events at Sandy Point, Greenbrier and Point Lookout State Parks.
- Staff wrote and distributed 41 statewide weekly fishing reports during Fiscal year 2017. (The reports take a hiatus during the typically low fishing activity winter period.)
- As a cost cutting measure, Fishing and Boating Services transitioned to GovDelivery for its email subscription service in Fiscal year 2017. Subscriber total at the end of Fiscal year 2017 stood at 34,997. Subscribers can choose to receive emails from up to five separate lists; they include Weekly Fishing Report, Maryland Youth Fishing Club, Nontidal Recreational Fishing, Tidal Recreational Fishing and Crabbing and Commercial Fisheries. Additionally, individuals can choose to supply an email address when they purchase a recreational fishing license online.
- Staff conducted outreach by personally visiting 31 tackle shops. Visits included distributing information on the Maryland Fishing Challenge and talking with shop owners about the upcoming season.
- Maintained the Freshwater Fisheries web page which promotes freshwater fishing opportunities, shares relevant news items and provides anglers with up-to-date resources information.



## Youth Fishing

- Provided support to organized youth fishing events. Stocked trout or hybrid sunfish for rodeo events and provided angling education and guidance (knot tying, casting, habitat, proper tackle selection) at several fishing rodeos and other community events, which included summer day camps and National Hunting and Fishing day.
- Provided 10,000 rainbow trout eggs for Trout Unlimited’s “Trout in the Classroom” project to support 91 classroom programs.
- Supported the department’s “Sunfish in Schools” program by providing fish, food and technical support. This program expanded to more than 155 classrooms for fall 2016.
- Maryland Youth Fishing Club membership reached 2,693 in fiscal year 2016. Continued partnership with Bass Pro Shops to hold quarterly random drawings to select winners from among members of the club who posted entries to the youth angler’s log. Quarterly winners were awarded \$50 Bass Pro Shops gift cards.
- Freshwater Fisheries staff conducted the second Youth Brook Trout Fishing Clinic on the Upper Savage River in June. In cooperation with local fishing groups and guides, Bass Pro Shops, Bill’s Outdoor Center, Trout Unlimited and the Bassin’ Box, local youth were treated to a fun day of learning how to fish with artificial flies and lures and how to successfully catch and release wild brook trout. Each young person received a fishing rod (choice of fly or spinning rod), a box of lures or flies, empty tackle holder, lanyard, line cutter and hemostat. Classes during the day showed casting, knot tying, stream bugs, electrofishing demonstration and fish identification, how to safely unhook and release a fish, brook trout life history and how to fish for them. Lunch was provided for young anglers and their parents or guardians. At the end of the day, each had the opportunity to go fishing on Big Run or Savage River Reservoir. Over 30 youth participated and the event was deemed a success and will be repeated next year. Costs were minimal due to generous donations from sponsors.

## GIS

- Updated a black bass spatial data layer for the tidal bass fishery. This included layers related to catch surveys, submerged structure, a fish forage index, sanctuaries, catch and return areas, six knot speed zones and nursery habitats.
- Updated a web map of black bass release locations for distribution to tournament directors.
- Conducted a series of internal training sessions on proper use of projections, geocoding data and use of GPS to collect field data.

## Angler Preference Surveys

- The statewide angler preference survey for the Freshwater Fisheries Program is completed and the final report will be available in the federal aid report for Fiscal year 2017. The survey used the database of nontidal anglers and consisted of two options – an online version and a mail-in option for those without access to the internet. Freshwater Fisheries contracted Morgan State University staff to conduct the survey and analyze the resulting data. Data analysis is complete and the final report is being finalized.
- Wild Trout Angler Preference Survey – the survey was completed in early 2016 and has provided valuable information to the Freshwater Fisheries Program. A final report is being drafted for inclusion in the Fiscal year 2017 federal aid report. The survey investigated usage of special management areas meant to protect wild trout populations. These data will provide insight on how anglers interpret existing protective regulations, on anglers' opinions of the regulations and will help guide future management.





## Appendix 3. Fishing and Boating Services Fiscal Year 2018 Boating-Related Priorities

### PROTECT MARYLAND'S WATERS FOR THE ENJOYMENT OF ALL BOATERS

**a. Priority Task** - Continue to respond to requests (both internal and external) for review of current boating regulations and the implementation of new regulations. Regulation requests are received between January 1 and April 15 each year and are studied during the boating season, April 15 – October 15. A public meeting is held in the fall to hear testimony for and against the regulation request. The Boat Act Advisory Committee deliberates in open session and votes on a recommendation, which is delivered to the Secretary for final approval. The timeframe from the initial request to the implementation of a request is approximately one year.

**Desired Task Achievement Date** – Ongoing

**b. Priority Task** – In preparation for the 2018 ice breaking season, attend and give a presentation to the Delmarva Waterway Transportation Committee's Ice Conference in November. This so far has been an active weather year and our ice breaking vessels must be ready to clear ice obstructing watermen oystering and netting, marine construction and vessel repair activities. All these often coincide with ice on the Chesapeake Bay and its tributaries.

**Desired Task Achievement Date** – Ongoing

**c. Priority Task** - Abandoned boats and debris continue to pose a danger to the boating public and the environment. Hydrographic Operations will strive to support the Natural Resource Police in their efforts to prevent and deter vessel abandonment.

**Desired Task Achievement Date** – Ongoing





## Appendix 4. Fishing and Boating Services Fiscal Year 2017

### Boating Related Accomplishments

Following is a list of some of the boating related activities Fishing and Boating Services accomplished during Fiscal year 2017.

#### **Buoys and Markers**

- Maintained 3218 buoys, markers and signs which promote the boating public's safety and enjoyment of 322 river and navigation channel networks.
- Maintained 1789 Living resource related buoys and markers which protect our natural resources on the water. Marking No Shellfish areas protects consumers of shellfish and the underlying industry.

**Events** - Notable events included the Baltimore Fleet Week Air Show. The State vessel A. V. Sandusky placed safety buoys for the air show and then acted as a center guide during the air show. Additionally, safety buoys were placed for the Fourth of July celebration in Annapolis Harbor.

**Aquaculture Leases** - Reviewed 46 aquaculture lease applications for boating comments and performed 30 field surveys to assist in the lease process and protect navigation interests.

**Boating Speed Zone Regulation Mobile App** – Created an app which provides real time information to boaters in regards to boat speed regulations on the water.

**Abandoned Boat and Debris** - Removed 26 vessels abandoned on the waters of the state, by use of marine contractors, local government grants and hydrographic personnel.

