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Maryland Tidewater Yellow Perch Fishery Management Plan Review
July 2013

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Summary

The 2002 Maryland Tidewater Yellow Perch Fishery Management Plan (YP FMP) was reviewed by Fisheries Service staff that serve on the Plan Review Team (PRT) in July 2013. The draft YP FMP review will be presented to the Sport and Tidal Fisheries Advisory Commissions, which are part of the Plan Review Team for review at their July 23 and 25th meetings. Input and recommendations from the PRT will then be forwarded to the Director of Fisheries Service for final approval.

Fisheries Service staff of the PRT (FS PRT) assessed the goals, objectives, strategies, and actions in the 2002 FMP and discussed their application to current practices and future needs of tidewater yellow perch management. The FS PRT concluded that the goal is still appropriate to the overall tidewater yellow perch management framework but that some of the objectives need to be revised. The FS PRT determined that many of the strategies and actions have changed significantly based upon yellow perch management changes that occurred in 2008 and 2009. Therefore, the FS PRT recommends the development of an amendment to the YP FMP to incorporate current stock status and management.

As part of the YP FMP review process, the FS PRT considered the Fisheries Allocation Policy (2012). Since 2009, the yellow perch management objective has been to allocate the harvest quota between commercial and recreational fishermen 50%:50%. The FS PRT does not recommend any changes to the yellow perch allocation.

Background

The 2002 Maryland Tidewater Yellow Perch Fishery Management Plan (YP FMP) created a framework for managing the yellow perch resource. The YP FMP provides the authority to implement regulations for yellow perch under Natural Resources Article, Section 4-215. The Sport Fisheries Advisory Commission (SFAC) and the Tidal Fisheries Advisory Commission (TFAC) provided input during the development of the plan. The FMP is updated annually and the update is posted on the FS website. The development of an amendment to the 2002 YP FMP should be based on the biological reference points and stock assessment procedures currently in practice and on the objectives developed by the recreational and commercial stakeholders.

2002 FMP Goal and Objectives

The goal of the 2002 Maryland Tidewater Yellow Perch Fishery Management Plan is to:

"Restore and maintain a viable spawning population that supports the ecological role of yellow perch in the Chesapeake Bay while generating optimum long-term social and economic benefits for their recreational and commercial utilization over time."

The FS PRT concluded that the goal of this FMP remains applicable.

The objectives to achieve the goal are:

1. Develop an ecosystem-based framework for assessing, protecting, enhancing and restoring the yellow perch resource throughout the Maryland tributaries and upper Chesapeake Bay.

2. Develop institutional pathways that ensure yellow perch are considered in Chesapeake Bay restoration efforts such as nutrient reductions, best agricultural management practices, restoration of stream buffers, restoration of submerged aquatic vegetation (SAV), and initiatives to reduce the impact of development in watersheds that contain yellow perch spawning and nursery areas.

3. Determine habitat requirements for yellow perch and work with institutions, associations, communities, and individual landowners to restore riverine habitat for yellow perch.

4. Develop criteria for implementing yellow perch restoration efforts and restore/enhance yellow perch stocks in selected areas.

5. Define the role of stocking in the yellow perch restoration effort and develop a 5 year plan to implement it.

6. Establish biological reference points for the yellow perch resource and

determine appropriate targets and thresholds. Use the thresholds and targets to guide fishery management decisions.

7. Categorize areas of the Chesapeake Bay according to stock status and fishing effort, and implement management strategies to meet the target fishing rate objective.

8. Increase access to the yellow perch resource for fishermen and non-consumptive users within the boundaries established by the target fishing rate objective.

9. Determine stakeholder preferences for yellow perch management.

10. Coordinate the development of tidal and non-tidal yellow perch regulations to insure compatibility and enforcement.

11. Monitor stock status and develop additional indicators of stock status.

The FS PRT concluded that many of the objectives are still appropriate but some, like Objective #4 and 5, have changed. Large-scale stocking of yellow perch is no longer considered an overall objective for management. Strategic stocking may be considered for special circumstances – such as catastrophic fish kill events or as a tool for assessments. Other objectives (eg. #6, 9 and 11) have been completed or are ongoing. Both recreational and commercial stakeholders engaged in numerous discussions and meetings to develop fishing objectives (2008-2009). Biological reference points were developed and implemented by Fisheries Service (2008-2009). The FS PRT recommends revising the list of FMP objectives during the development of an amendment.

FMP Strategies and Actions

1. Ecosystem-based Management

The FS PRT concluded that the most important strategies and actions should advance the objective of Ecosystem Based Management (Objective #1). The ecosystem approach can be divided into two main categories: land/habitat conservation and multi-species interactions. The FS PRT concluded that land conservation within the watershed should be considered the primary ecosystem-based management tool. Habitat for yellow perch spawning, as well as larval and juvenile survival needs to be conserved. Restoration of degraded yellow perch habitats will be a difficult challenge to overcome. Due to technical difficulties unique to each watershed, high cost, lack of political will, and uncertain outcome, more emphasis should be placed on conservation and protection of existing high quality habitat. For utility in the Environmental Review process, the use of impervious surface (IS) indices is recommended. The FS PRT recommends that IS targets and thresholds (limits) be used in watershed planning. The FS PRT recommends that the use of IS be included in the development of an amendment and used as part of the county planning process. The FS PRT recommends exploring how to provide useful information to county commissions. The spawning areas are mapped and would be a useful tool for land planners. The FS management team will ultimately decide the level of participation in this process.

Biotic interactions or "multi-species" considerations especially trophic dynamics is another important ecosystem management approach. The availability of prey items, especially zooplankton, is essential for larval and early juvenile survival. The FS PRT notes that zooplankton monitoring was discontinued in 2002 due to budget cuts. The FS PRT recommends supporting the resumption of zooplankton monitoring. In some areas, important prey items, such as *Gammarus* amphipods have become scarce or have disappeared. This may be a result of increased or new insecticide spraying for mosquito control and merits further study. If prey items are not available in an area, this would help to explain the lack of yellow perch abundance and possibly suggest solutions. Competition and predation by invasive species is another multi-species concern. Although it is not currently clear how invasive catfish species or snakeheads directly or indirectly impact yellow perch, their potential impacts are a concern given overlapping habitat use.

2. Control Fishing Mortality

The yellow perch fisheries management actions implemented in 2008-2009 closed large areas to commercial fishing. All areas were closed to commercial fishing except for the Upper Bay, Chester River and Patuxent River. A quota has been calculated annually for the Upper Bay that is the result of a quantitative analysis of stock assessment parameters. A small quota (2500 lbs) was established for the Patuxent River by a direct proportion method, rather than a stock assessment. Commercial harvests in the Patuxent River have been well below the established quota and the FS PRT has seen no evidence that this population is significantly reduced by this level of harvest.

The FS PRT concluded that yellow perch are not overfished and overfishing is not occurring. The FS PRT agreed that controlling fishing mortality with a target is an appropriate management strategy. The overall fishing target is divided in half to determine fishing levels for each of the fishing sectors and achieves a 50%:50% allocation. The commercial fishery is managed under a total allowable catch (TAC) and any overage is subtracted from the following year's calculated quota. The quota and correction factors replace the decision rules described in the 2002 YP FMP. Commercial harvest accountability has been achieved with the daily call-in system and individual fish-tagging requirements. However, the FS PRT understands that tagging of individual fish is both expensive and time-consuming. The cost of tags is currently a high percentage of the dockside value. In addition, current yellow perch tagging requirements have eliminated the industry's mid-west market because of costs associated with removing tags prior to processing fish in fillet machines. While the industry continues to market their fish locally, the local demand is not sufficient when daily harvest levels are peaking. As such, the industry still relies on this mid-west market. The FS PRT supports a pilot program to allow box tagging and to assess accountability before making any recommendations. The FS PRT is confident that annual adjustments to the TAC will achieve the target fishing mortality.

While commercial harvest data is obtained from finfish harvest reports, recreational harvest data is obtained from the NOAA Fisheries Service, Marine Recreational Information Program (MRIP). The development of recreational and commercial fishing objectives (2008 &2009) by the stakeholders led to lines delineating where commercial fishing is allowed and has been successful at decreasing user conflicts.

The MRIP harvest estimates could be used to compare the recreational harvest to the annual recreational quota and to the commercial harvest. However, the MRIP estimates have been very imprecise (Table 1) and they should not be used to assess harvest at this time.

Other discussions by the Fisheries Service Plan ReviewTeam and future concerns

Climate change effects are unknown for yellow perch. The species in tidewater Maryland habitats may be vulnerable. Yellow perch have relatively narrow temperature, salinity, dissolved oxygen, and sediment tolerances during spawning and egg development stages. Juveniles are also sensitive to temperature increases. Yellow perch have some adaptive capacity given their life span and broad occurrence within Maryland rivers but spawning and juvenile habitat may be compromised due to climate change. The FS PRT recommends that some climate change consideration be included in an amendment.

In the near term, the FS PRT discussed that tidewater yellow perch stocks are decreasing. This decrease is the result of recruitment changes. Recruitment in yellow perch is typically highly variable. The FS PRT believes that the current practice of annual TAC calculation is an appropriate management strategy that takes recruitment variation into consideration on a timely basis.

Fisheries Allocation Policy

The Department of Natural Resources Fisheries Allocation Policy went into effect on September 1, 2012. This policy provides guidelines for reviewing allocation; provides the basis/background for allocation; and outlines procedures for review and stakeholder input. The overarching factors in allocation decisions are linked to FMP goals and objectives and should be addressed to the extent supported by available information. The overarching factors include:

- Conservation;
- Management goal for the species;
- Social and cultural importance of maintaining fisheries and dependent industries;
- Environmental impact;
- Economic value of dependent fisheries;
- Economic viability of activity supported by the fisheries;
- Management resources;
- Historical trends and values; and
- Potential for new fisheries to develop.

Among the Allocation Policy procedures are triggers for an allocation review. In accordance with policy, allocation is considered during the FMP review process. The draft pre-assessment summary is as follows:

- Initial development or revision of a FMP;

Pre-assessment: The current allocation is an acceptable framework for managing the tidewater yellow perch resources. Management strategies implemented in 2008-2009 have successfully reduced user conflicts between the commercial and recreational sectors, and stakeholders did not submit any new allocation recommendations. The FS PRT recommends no changes to the 50%:50% allocation.

- Significant shift in fisheries harvest;

Pre-assessment: The commercial fishery is managed under a quota system and harvest is constrained according to biological targets and thresholds. Shifts in harvest have tracked annual changes to the TAC established each year.

- Population shifts of target or non-target species;

Pre-assessment: There is no evidence that populations of yellow perch have shifted. Age structure within the stock has improved (more age classes observed) beginning in the late 1990s and continuing till present. Shifts in plankton production are unknown. Yellow perch larvae and juveniles rely on zooplankton in sufficient quantities for survival. Zooplankton abundance is naturally variable and sensitive to environmental conditions. During warm, wet years, the extent of phytoplankton blooms are generally larger and biomass is higher. However, since zooplankton monitoring was discontinued in 2002, there is no data to indicate the status of plankton in the Bay and tributaries. Similarly, larger and older yellow perch feed on fish such as anchovies, killifish, silversides, minnows and small crabs (mud & blue crabs). There may be competition with introduced species such as snakeheads that are found to consume killifish.

- Threatened and endangered species issues;

Fisheries Service is actively engaged in managing threatened and endangered species. Any finfish or shellfish species that is determined to be endangered by the federal Endangered Species Act are protected under Maryland law. The Endangered Species Act prohibits the unauthorized taking, possession, sale and transport of endangered species. In accordance with the Endangered Species Act, Maryland recognizes and works to conserve species listed as threatened or endangered by the federal government. DNR also works in cooperation with its partners to protect habitat valuable to the listed species. Endangered fish species include the Shortnose Sturgeon, Stripeback Darter, Blackbanded Sunfish, Bridle Shiner, Ironcolor Shiner, Stonecat, Longnose Sucker, Cheat Minnow, and Trout Perch. Yellow perch interactions with these species have not been studied. The FS PRT did not discuss possible interactions because they seem unlikely.

- Changing social patterns & values;

The commercial fishery is limited by a TAC. The permitted commercial yellow perch fishery since 2009 is relatively stable with active participants averaging 39 in number and ranging from a low of 29 in 2010 to a high of 45 in 2011. Increased marketing efforts for

yellow perch have been successful and have resulted in more local markets, increasing the value to watermen, restaurants and retailers, and seafood consumers. Yellow perch provide one of the first spring fishing opportunities in the Bay region and fishermen find them highly desirable. As the yellow perch population remains at healthy levels, it is anticipated that recreational fishermen will continue to target them in the spring. There is evidence that social patterns and values for yellow perch have changed. Streams in some areas that formerly supported quality runs of spawning yellow perch no longer support spawning runs nor fishing activity. In other areas, a resurgence in yellow perch numbers since 2008 has supported a quality recreational fishery with increased effort and harvest. Although recreational harvest has increased, the FS PRT does not believe that it has increased to the level at which allocation changes should be discussed.

- Ecosystem needs;

Land use planning and conservation of priority aquatic habitat have been identified as primary components of ecosystem-based management for fisheries. Adult yellow perch spawn in the upper reaches of tidal streams. These habitats are vulnerable to contamination and sedimentation from stormwater runoff. Use of watershed impervious surface (IS) measurements will be included in the draft amendment.

- Market dynamics;

The seafood marketing division of FS has promoted yellow perch as a local seafood resource. This has increased the local wholesale price of yellow perch and created a restaurant demand for the species. * (More value information will be added) The quota system limits harvest and prevents overharvest driven by high market prices.

- Management resources;

Fisheries Service continues to monitor and conduct a stock assessment for yellow perch in the Upper Bay. Limited resources prevent FS from conducting formal stock assessments in other systems where limited commercial fishing is allowed. FS administers a commercial permitting system to track the yellow perch quota.

- New data;

No new data have been presented to suggest a change in allocation. There is a need for socioeconomic data and analysis.

Acknowledgements

The FS Yellow Perch PRT members include Nancy Butowski, Margaret McGinty, Rick Morin, Paul Piavis, Jim Uphoff and Butch Webb. Their draft report was improved by comments by Sarah Widman, Tom O’Connell and Steve Early.

Figure 1.

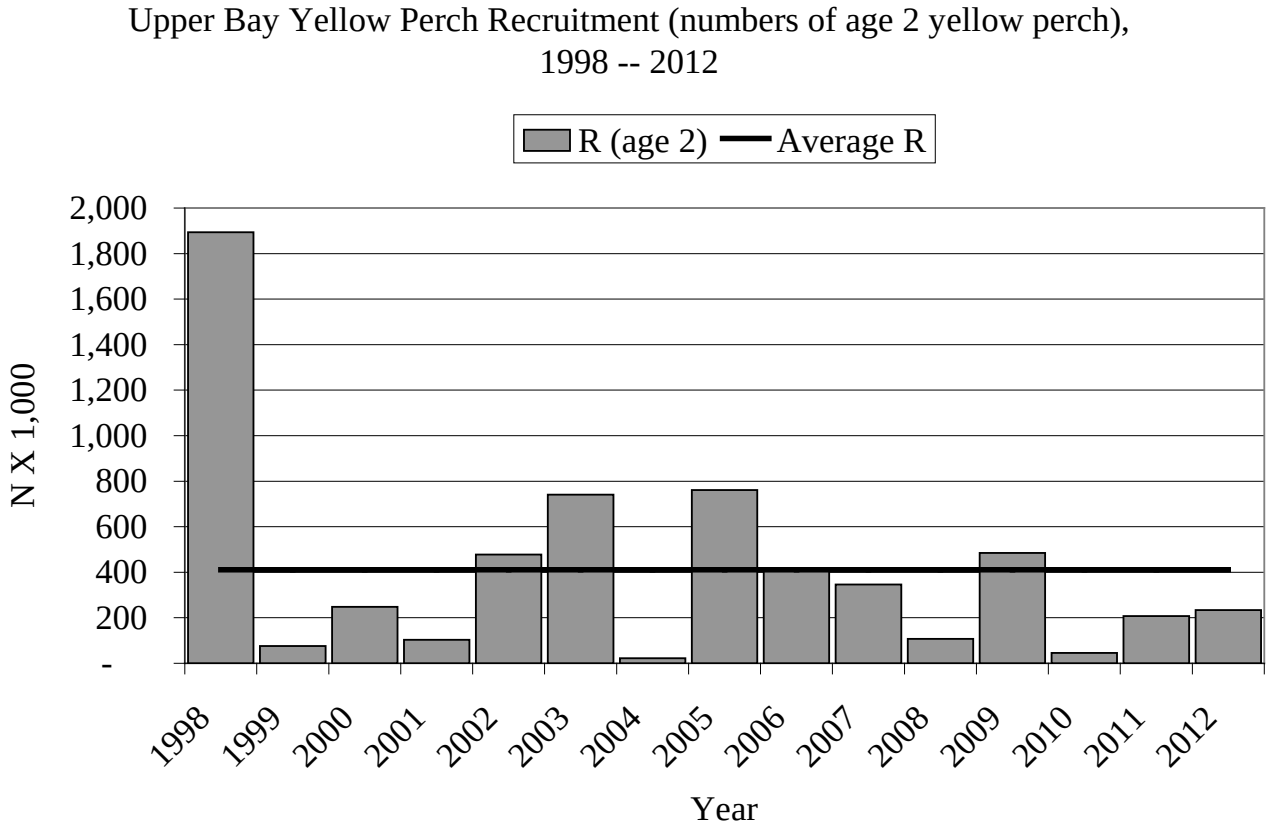
Upper Bay Yellow Perch Recruitment (numbers of age 2 yellow perch), 1998 -- 2012
R (age 2)
Average R
N X 1,000
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
-
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Year

Table 1. Recreational Yellow Perch Harvest (number of fish) in Maryland 1981-2012 and Proportional Standard Errors (PSE).

Year	Total Harvest (A+B1)	PSE
1981	1,839	76.8
1982	4,195	85.6
1983	42,290	33.0
1984	16,380	56.9
1985	208,135	39.1
1986	28,268	46.1
1987	25,909	100.0
1988	20,566	45.8
1989	107,754	51.3
1990	42,289	25.6
1991	70,890	30.6
1992	28,437	30.5
1993	54,994	35.1
1994	44,375	31.2
1995	34,154	42.8
1996	56,139	47.2
1997	113,315	25.8
1998	64,074	29.5
1999	36,278	37.4
2000	4,770	86.6
2001	3,047	58.3
2002	11,163	60.0
2003	978	100.0
2004	49,825	38.4
2005	811	101.2
2006	23,932	31.6
2007	319	108.7
2008	2,727	108.4
2009	6,259	76.1
2010	44,458	63.5
2011	36,282	67.7
2012	22,780	54.7

A PSE value greater than 50 indicates a very imprecise estimate.
Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division July 3, 2013

Figure 2.

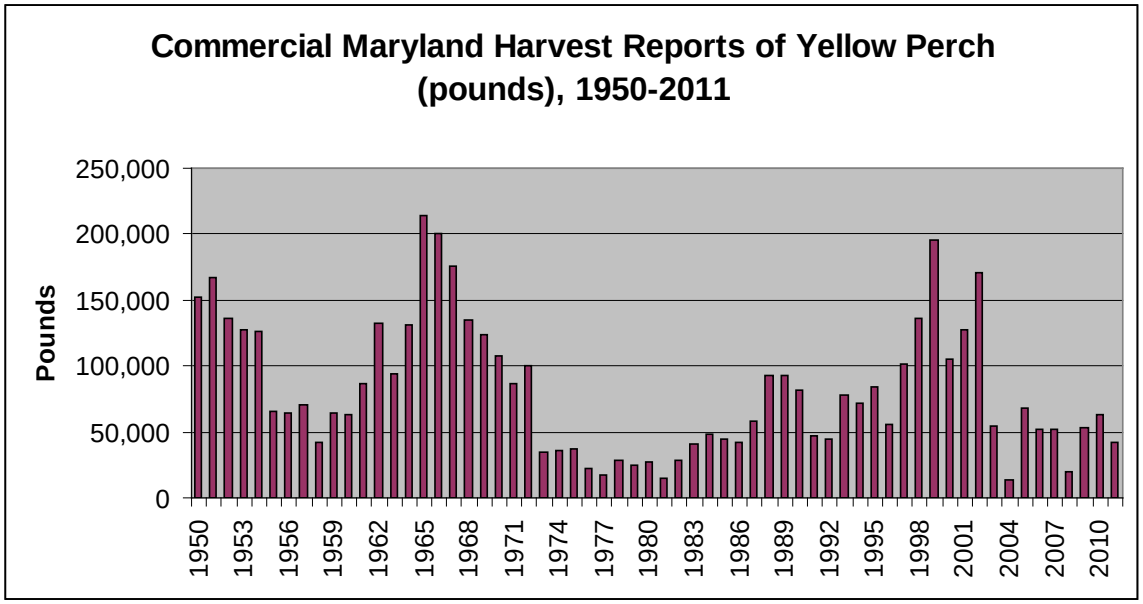

Figure 3. Maryland Commercial Yellow Perch Harvest by Region, 2012