

Recreational Yellow Perch Management Options: Opening Currently Closed Systems

Fisheries Service has proposed opening all river systems to recreational yellow perch harvest that have been closed to recreational harvest since 1988. These watersheds include the Patapsco, Magothy, Severn, South, West, and Nanticoke rivers. They would be open under the same regulations as systems currently open for recreational harvest (9" minimum size limit and a proposed 10 fish creel limit). The systems proposed for reopening can be grouped into 2 broad categories: 1) those that are impacted by degraded habitat (Severn, South, West), and 2) those with less severe habitat concerns (Magothy, and Patapsco). In addition, the Nanticoke River possesses one of the most pristine aquatic habitats within the Maryland portion of the Chesapeake Bay. The rural nature of this watershed has mitigated habitat damage due to encroaching population centers and development.

General comments on re-opening

River systems within the categories described above have been closed to all yellow perch harvest for 20 years. Federal guidelines for restoration of depleted fish stocks generally call for reduced fishing mortality over a relatively short time-frame, 5 to 10 years depending on the life history characteristics of the stock.¹

Since 1993, MD DNR surveys have measured consistently healthy reproduction in watersheds adjacent to closed systems. This observed healthy reproduction, taken in combination with the general life-history characteristics of yellow perch, indicates that populations within those systems should have increased to the highest levels that the habitat can support.

Fisheries service is proposing to open areas based on evidence compiled from survey work done within these systems, as well as work conducted in adjacent watersheds. A comparison of age structures across watersheds indicates that annual yellow perch reproduction rises and falls consistently over systems, so that if a year of healthy reproduction is measured in one system, healthy reproduction will be observed in other systems around the Maryland portion of the Bay. For example, analysis of the age structure of yellow perch in the Nanticoke River confirms the existence of strong year-classes in 1996, 2000, 2001, and 2003. These strong year-classes (representing very healthy levels of reproduction) were also evident in the Choptank River and upper Chesapeake Bay. In addition, the extremely poor 2002 year-class measured in the Nanticoke River also occurred in the upper Chesapeake Bay and in the Choptank River. The concurrent fluctuations indicate that spring weather conditions in the Bay region are important in determining levels of annual reproduction.

Reopening these systems to recreational harvest is unlikely to negatively impact yellow perch populations. This is based on the fact that fishing mortality in the Choptank River, which is opened to recreational fishing only, has averaged only about 2% annually. A 2008 tagging study in Chester River produced a recreational tag return rate of about the

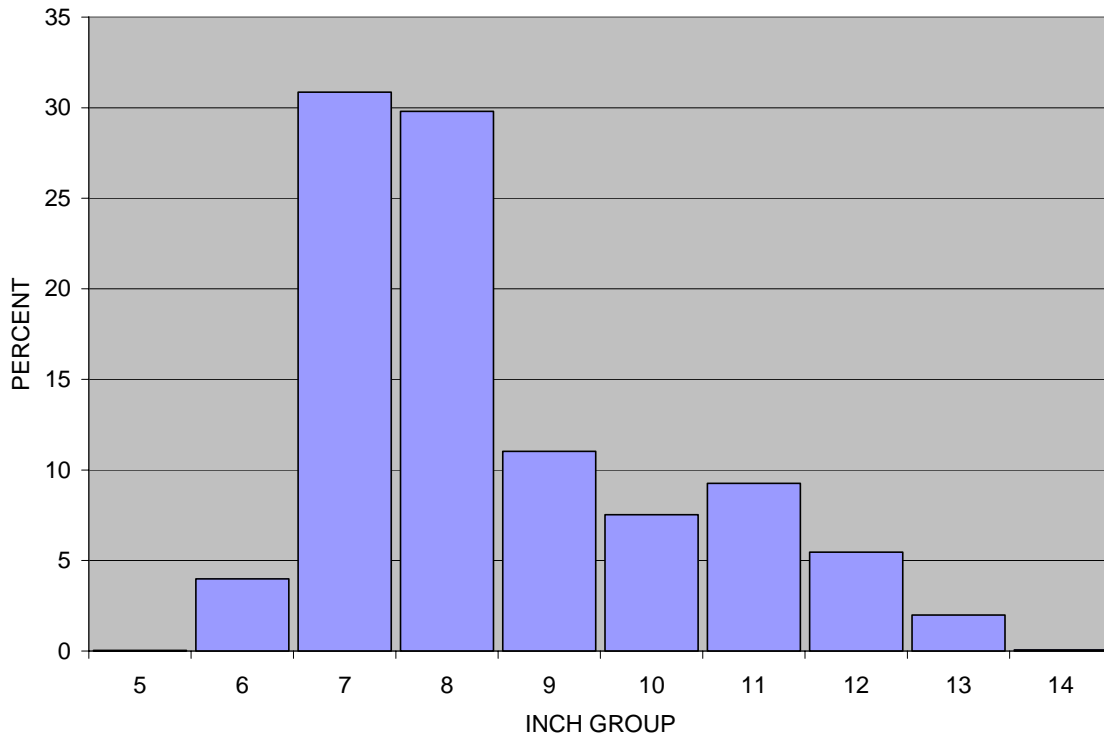
¹ Restrepo, VR. 1998. Technical guidance on the use of precautionary approaches to implementing National Standard 1 of the Magnuson-Stevens Fishery Conservation and Management Act. NOAA Technical Memorandum. NMFS-F/SPO-78.

same. The tagging study was not designed to precisely estimate recreational fishing mortality, but the low tag return rate suggests that the recreational fishing mortality in the Chester River is similar to recreational fishing mortality in the Choptank River

Severn, South, and West Rivers

These watersheds fall into the first category of extremely degraded habitat. Areas around these river systems have undergone surges of development over the last 4 decades. Each of these watersheds is relatively small and the cumulative impacts of development are substantial. Reproductive output of yellow perch in these river systems appears to be low. Studies in the Severn River indicate that current salinity levels are much higher now than they were in the 1960's. Yellow perch reproductive and developmental success can be impaired by high salinities. Apparently, development in the Severn River watershed has changed the hydrology such that areas that were previously able to support yellow perch fertilization and development are now incapable of producing young yellow perch. Abundance of larval yellow perch tows in the Severn River during 2004 – 2007 was below a historic minimum for all areas of the Chesapeake Bay (1965 – 1991). In addition, a hatchery operation in the early 2000's failed to produce yellow perch hatchlings from Severn River broodstock. The same hatchery operation was successful using broodstock from other areas of Maryland's Chesapeake Bay. Despite overwhelming evidence of reproductive failures in the Severn River, surveys of adult yellow perch indicate a broad age structure (contribution of 2 year old through 10+ year old fish), a broad length structure (approximately 36% of the population was > 10"), and stable relative abundance levels (CPUE).

Yellow perch length distribution from Severn River, 2005.



Yellow perch catch per fyke net day from Severn River, 2001 – 2005.

	AGE										sum CPE	total effort
	1	2	3	4	5	6	7	8	9	10+		
2001	0.00	0.00	1.83	0.55	5.72	0.19	0.45	0.00	0.00	0.00	8.73	172
2002	0.02	0.31	0.28	1.29	0.32	4.86	0.06	0.11	0.00	0.00	7.25	319
2003	0.00	0.39	0.15	0.00	1.39	0.23	2.58	0.08	0.00	0.63	4.40	142
2004	0.00	1.16	0.90	0.27	0.03	2.80	0.39	2.43	0.07	0.06	8.11	176
2005	0.00	9.70	1.54	0.49	0.18	0.00	1.02	0.31	0.60	0.00	13.83	226

Yellow perch investigations on the Severn River have, to a degree, produced confounding results. On one hand, the habitat appears to be degraded to the point that yellow perch reproduction no longer occurs in this system. On the other hand, the adult population appears healthy and stable. Mid-western shore rivers may be periodically repopulated by yellow perch immigration from the upper Chesapeake Bay system. This was supported by a genetic analysis that indicated Severn River yellow perch are very closely related to Bush River yellow perch. As such, the weight of evidence suggests that yellow perch populations in these heavily degraded habitats are not sources for yellow perch reproduction. Therefore, increasing harvest in the currently closed systems would not impact the total reproductive capacity.

The Magothy, and Patapsco Rivers

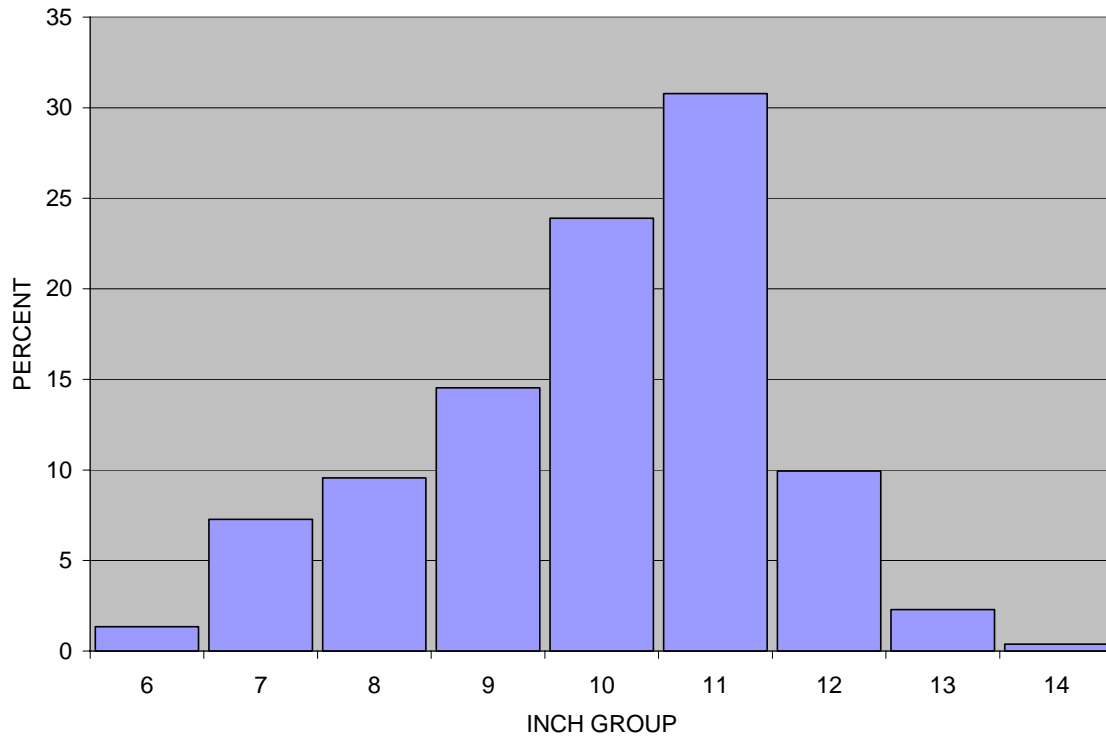
The case for opening the Patapsco and Magothy Rivers to recreational fishing resides in the proximity of these systems to the productive Upper Bay. The Patapsco River and the Magothy River, with their proximity to fertile yellow perch areas such as the Gunpowder River and Bush River, are more likely a part of the upper Chesapeake Bay stock. The 2008 upper Chesapeake Bay yellow perch assessment would have included these systems, but commercial and recreational fishing has been prohibited since 1988. Although large portions of the Patapsco watershed are developed commercial and industrial areas, the problem of elevated salinity seen in the Severn River is not evident in the Patapsco River. Reopening the Patapsco River could prove beneficial to the recreational angling community, given the amount of public access (Belle Grove Ponds, Patapsco Valley State Park). In addition, the Fisheries Service web-based angler survey indicated that catch rates in the Patapsco River watershed were similar to all areas combined (1.3/hr v 1.4/hr), and the Magothy River catch rates were greater than all areas combined (1.9/hr v. 1.4/hr).

The Nanticoke River

Survey work conducted in the Nanticoke River indicates that this population of yellow perch is robust. The wide length distribution of yellow perch in the Nanticoke River is indicative of a healthy population. The modal length interval was 10" – 11". Yellow perch growth rates in the Nanticoke River also suggest a productive stock. Growth rates were slightly higher for Nanticoke River yellow perch than for upper Chesapeake Bay yellow perch.

The case for opening the Nanticoke River to recreational fishing is strengthened when the observed level of current reproduction is compared to historical levels. To address this, Fisheries Service repeated larval fish collections that originally took place in the Nanticoke River during the mid 1960's. In general, the collections during 2004 – 2007 represented larval yellow perch abundance that compared favorably to the baseline 1996 – 1970 time period.

Length frequency distribution of yellow perch from Nanticoke River, 2007.



Female yellow perch growth rates from the Nanticoke River and upper Chesapeake Bay, 2007.

