

# The Fishery of West Branch Susquehanna River

## *Historical Fishery*

This historical degraded water quality of the West Branch Susquehanna River had a predictable effect on its fishery. For many years, much of the river was thought to be devoid of any biological life. The 1972 Scarlift report for the West Branch Susquehanna River denotes that the water quality in the river was so detrimental that the costs for complete abatement of the pollution could not be economically justified (Commonwealth of Pennsylvania 1972). The report states that “conditions in the study area are such that no more than 30 miles of stream between Barnesboro and Bower could possibly be restored to fishing and recreational use under the most ideal abatement treatment costs for which could easily range from \$20 to \$30 million. This is completely unrealistic in terms of the Federal Water Pollution Control Act benefit values for this reach” (Commonwealth of Pennsylvania 1972). In fact, the Scarlift report identifies that the essential abatement benefit was not for the recovery of the biota in the river itself, but for the protection of the recreational waters of the Curwensville reservoir. In addition the report indicates that since “recreation, aesthetics, and fishing are the main benefits desired in the West Branch headwater area, these benefits might be made available within the watershed at a justifiable cost by converting one of the tributaries into an improved fishing stream” (Commonwealth of Pennsylvania 1972).

Despite the inhospitable conditions of the river in the 1970s, as well as the expected longevity of those conditions, anecdotal reports of an improving fishery became commonplace in the late 1990s. The last comprehensive evaluation of the fishery of the river from its headwaters to Lock Haven by the PFBC was in 1998 and 1999 (Hollender and Kristine 1998). This evaluation resulted in 30 fish species in the river and indicated that the reach of the river between the headwaters and Clearfield supported only low to moderate densities of fish. The limiting factors were identified to be acid mine drainage and siltation (Hollender and Kristine 1998). Additionally, the section of the river between Clearfield to Bald Eagle Creek in Lock Haven was deemed essentially sterile due to acid mine drainage and heated water discharge from the power plant near Shawville, with only sparse concentrations of fish found near the base of dams and mouths of unpolluted tributaries (Hollender and Kristine 1998).



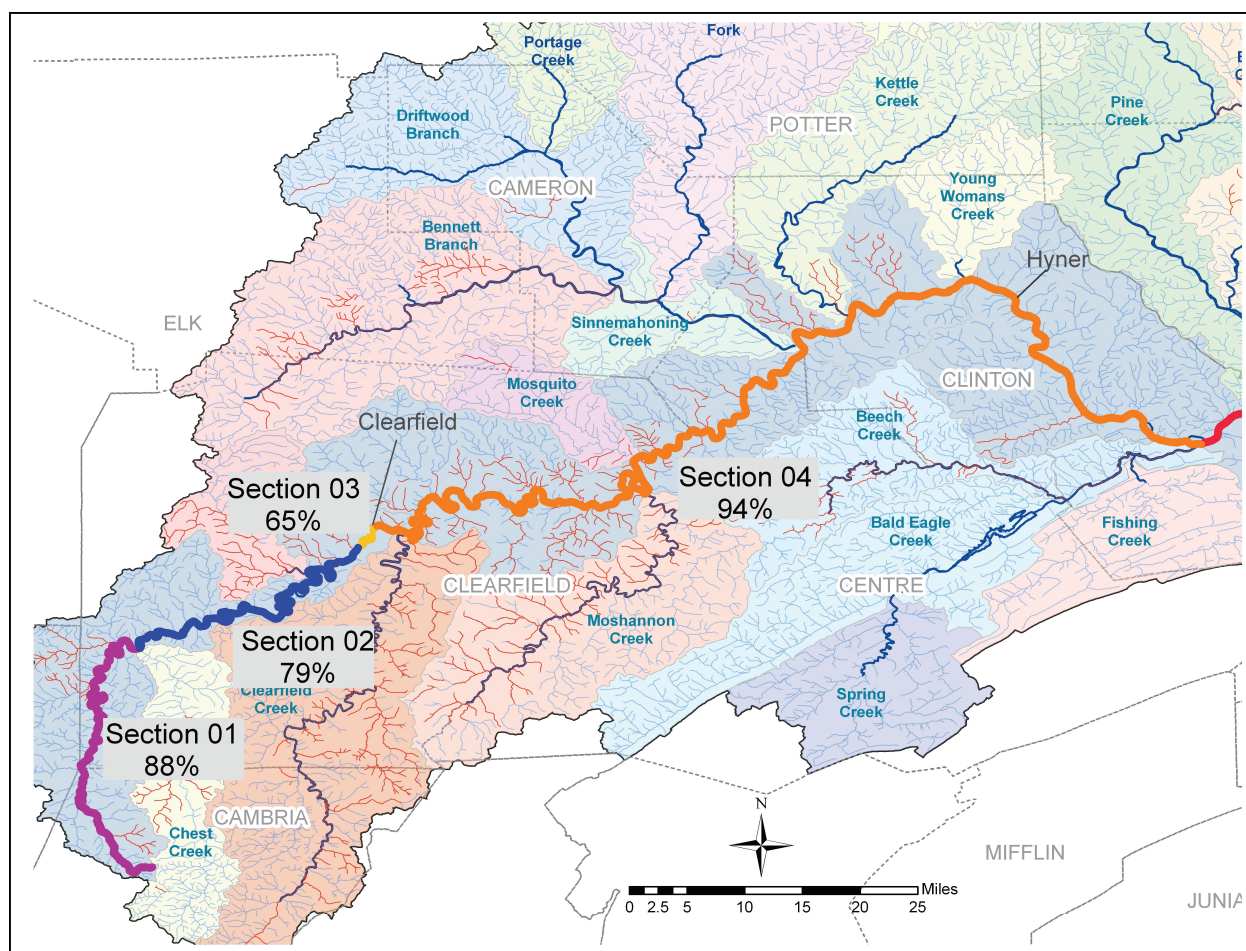
Photo provided by PFBC

*Andrew Leakey and Dave Kristine survey the West Branch Susquehanna near Hyner.*

## Present Day Fishery

A total of 35 fish species were collected in the river during the 2009 survey including two species of hatchery trout. In addition, five species were collected which were not detected during the previous surveys including mimic shiner, central stoneroller, shorthead redhorse, green sunfish, and greenside darter. In general, fish diversity increased or was similar during 2009 compared to previous surveys in the sections of the river from the headwaters to Clearfield. Surveys of the sections from Clearfield downstream to Hyner showed a two-fold to five-fold increase with the largest improvement at the Hyner site (Figure 8, Table 3). In addition to the stable or increased diversity of the fishery, multiple age classes were collected for most species including many juveniles suggesting that successful reproduction is occurring.

Besides an increase in fish species diversity in the upper and middle portions of the river, there has also been a change in the distribution of some species. Bluntnose minnow, a pollution tolerant species, was only found at three sites in the headwaters during the 1999 survey but was collected at nine sites in 2009. Similarly, other tolerant species including white sucker and green sunfish as well as the pollution intolerant species northern hog sucker, river chub, and longnose dace were found to occur at a greater number of sites in 2009, especially those between Clearfield and Hyner (Figures 9 and 10).



**Figure 8** — Total catch increases in the four PFBC river management sections evaluated as part of the Project.

These data provide further evidence of improved and sustained water quality which has allowed more species to occur in reaches of river once considered “dead” and even intolerant species to occur in some abundance.

Total fish catches followed a pattern similar to species occurrence and indicated a substantial increase in relative abundance at all sites. However, when compared to other area waters or in downstream sections of the West Branch Susquehanna River, fish catches are relatively low (Hollender and Kristine 1999) and while current abundances reflect an improved condition they have still not reached their full potential.

In summary, results from this evaluation indicate an improving and sustaining fishery. Especially significant are the presence and abundance of fish in the section of river between Clearfield and Hyner, which has long been considered mostly inhospitable to fish. However, while results indicate that substantial improvements have been made, the river is still being impacted by AMD, siltation, thermal impacts from the power plant near Shawville, and fish passage barriers at Lock Haven, Shawville, and Clearfield, and is not yet functioning at its full potential.



Photo provided by PFBC

*Pumpkinseed from the West Branch Susquehanna River near Hogback Run.*

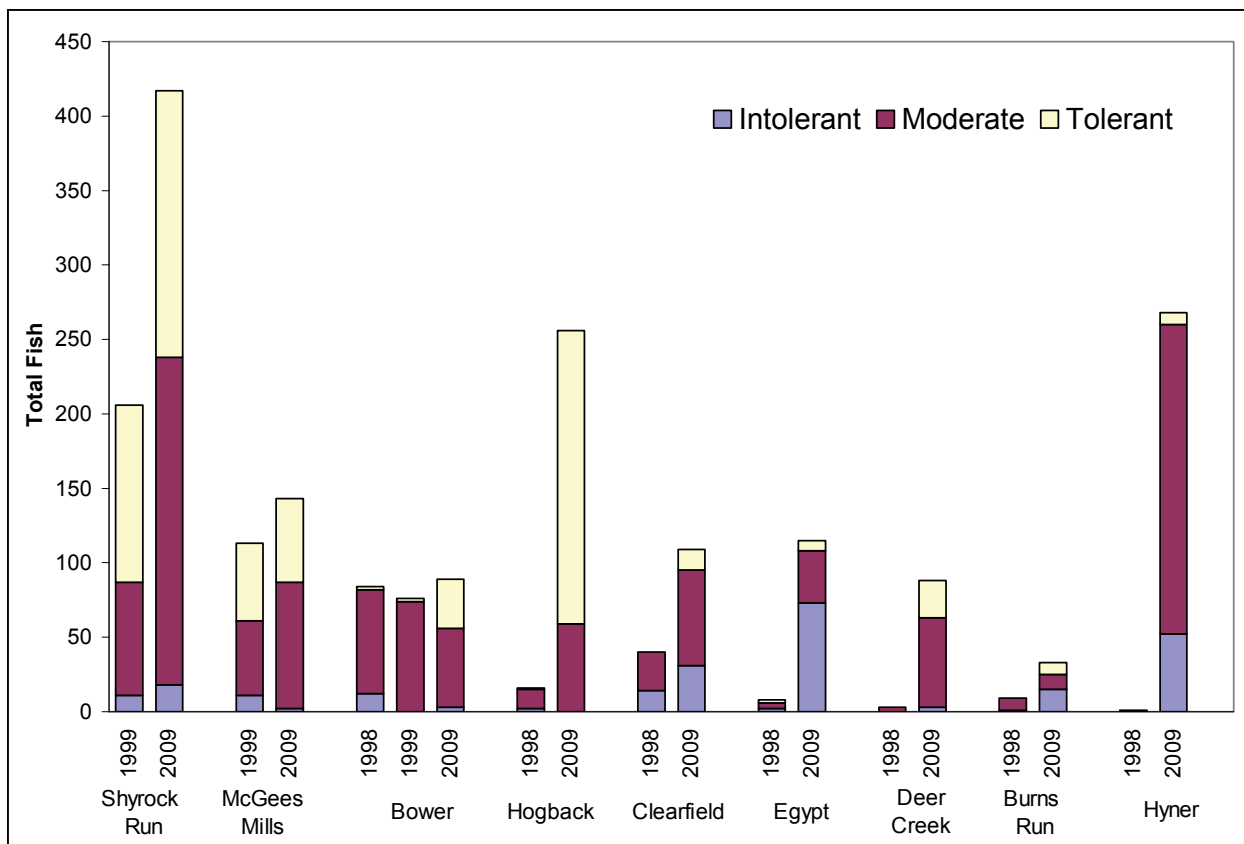


Photo provided by PFBC

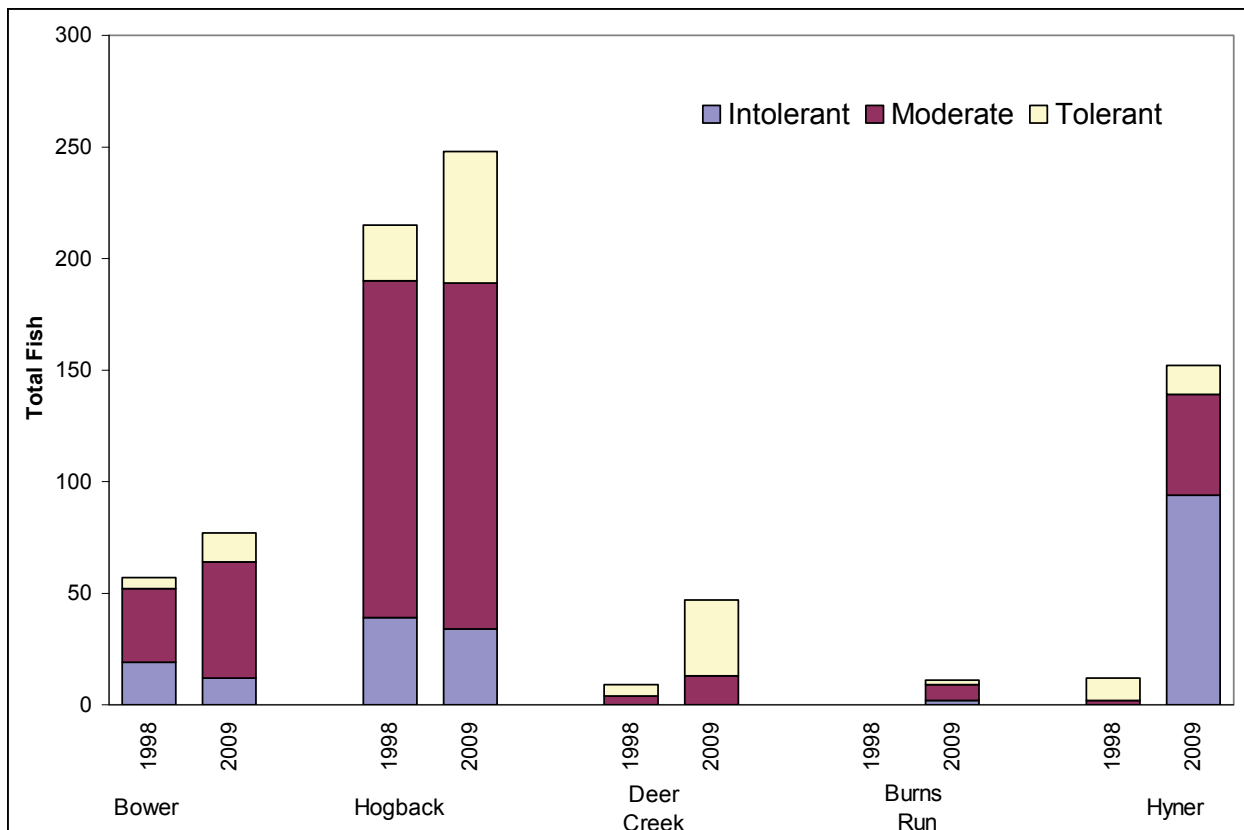
*Smallmouth bass from the West Branch Susquehanna River at Hyner.*

**Table 3** — Total catch and species captured at PFBC sampling locations in 1998/1999 and 2009.

Site	Total Catch			Species	
	1998	2009	% Increase	1998	2009
Shyrock Run	57	150	163%	6	10
McGees Mills	113	143	26%	14	14
Bower	141	167	18%	11	13
Hogback	234	504	115%	19	20
Clearfield	40	113	182%	6	10
Egypt	8	115	134%	5	11
Deer Creek	12	135	1025%	6	14
Burns Run	9	45	400%	5	12
Hyner	13	420	3130%	3	16



**Figure 9** — Total fish captured and fish tolerance at backpack electrofishing sites in 1998 / 1999 and 2009.



**Figure 10** — Total fish captured and fish tolerance at mini-boom electrofishing sites in 1998 / 1999 and 2009.



## *The Fishery of Selected AMD Impaired Tributaries*

In addition to the improved fishery in the river, numerous tributaries have also experienced enhanced fisheries as a result of improved water quality. For instance, the Babb Creek Watershed Association and its partners have been treating AMD in Tioga County's Babb Creek watershed since 1991 and have been successful in removing 14 miles of Babb Creek and 5 miles of Pine Creek from the Commonwealth's list of impaired waters. The PFBC conducted evaluations of Babb Creek in 1999 and again in 2005 and determined that the number of brook trout, brown trout, and small-mouth bass captured during survey efforts increased by 83%, 35%, and 69% respectively at ten sites in the creek (Detar and Hollender 2005).

Similar fishery improvements have been noted in Centre County's Sterling Run watershed. Remediation of the Boake Run headwaters via passive treatment resulted in the delisting of just over 12 stream miles from the DEP's impaired streams list. Accordingly, the number of brook trout collected at the mouth of Boake Run substantially increased subsequent to treatment (Spotts 2009). Fishery surveys in both 2006 and 2008 in Sterling Run approximately one mile downstream of its confluence with Boake Run, a section of stream containing very few or no brook trout previously, produced several year classes of brook trout as well as pumpkinseed sunfish (Spotts 2009).

The aforementioned projects are just a few examples of fishery improvements that are becoming more commonplace across the West Branch Susquehanna in tributary watersheds where water quality conditions are improving and fish are returning to historically degraded or lifeless sections of streams.



Photo provided by DEP

*Brook trout from below the Pine Glen East passive treatment system.*



Photo provided by DEP

*Pine Glen East passive treatment system in the Boake Run watershed.*



Photo provided by W. Beacom

*Josh McCormick, Jason Detar, and Bruce Hollendar survey Babb Creek post AMD-remediation efforts.*