

Three Rivers Smallmouth Bass, Walleye, and Sauger Southwestern Pennsylvania

June 2011 Dams Tailwaters Surveys

The Three Rivers are a greatly altered ecosystem, impounded for navigation purposes since 1841 when the first navigation locks and dams (L/D) were constructed on the lower Monongahela River in Pittsburgh. Changing the Three Rivers from a free-flowing system to an impounded system has had a profound effect on its fisheries. However, tailwater habitats located immediately downstream of L/Ds function more like a free-flowing river than impounded reaches. Turbulent water created below dams tends to remain highly oxygenated, attracting and holding both forage fish and game fish; especially the most sought-after species of the Three Rivers – smallmouth bass, walleye, and sauger. The fast currents of tailwaters create rocky shoals, fast runs, slow eddies, and deep scour pools. Because game fish are known to congregate there, tailwaters attract many anglers and provide some of the best year-round fishing opportunities on the Three Rivers. Over the past 20 years, L/D tailwaters of the Three Rivers have served as “fixed-sites” (*i.e.*, locations visited on a regular basis, although not each and every year) where PFBC biologists have sampled game fish to assess trends in abundance, evaluate harvest regulations directed to these species, and to update management plans on river sections below these dams.

In June 2011, PFBC biologists and scientists from California University of Pennsylvania surveyed the tailwaters of three L/Ds of the Three Rivers – one each on the Monongahela, Allegheny, and Ohio Rivers. Tailwaters of Maxwell L/D (rivermile 61.2) on the Monongahela near Fredericktown, Dashields L/D (rivermile 13.3) on the Ohio near Leetsdale, and L/D 5 (rivermile 30.4) on the Allegheny near Freeport were surveyed (Figure 1). Using nighttime boat electrofishing (NTBEF) gear, the objectives of these surveys included collecting all fish, both game and nongame species, as well as collecting stock assessment information on smallmouth bass, walleye, and sauger. This *Biologist Report* summarizes findings for smallmouth bass, walleye, and sauger collected during the 2011 tailwaters surveys.

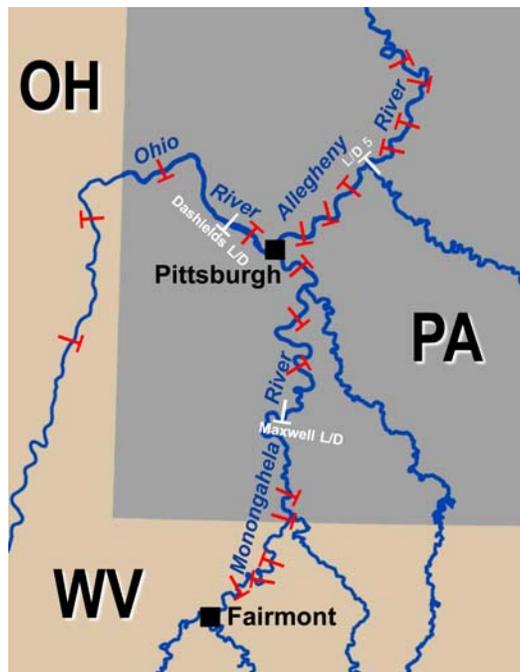


Figure 1. Locations of the three L/D tailwaters (depicted in white) surveyed for this investigation.

During the 2011 surveys, PFBC’s Three Rivers electrofishing boat was operated by a five-person crew of one boat operator, two netters that collected fish from the bow platform, and two fish processors/data recorders working midship. Similar sampling effort took place at each tailwater. All fish collected were identified to species, and game fish were measured for total length. Scale samples for age and growth determinations and weights were taken on all smallmouth bass, walleye, and sauger.

We previously surveyed the same three L/D tailwaters in 2008. That year, we were assisted by our Delaware River biologist Daryl Pierce and biologists from the Pennsylvania Department of Environmental Protection (PADEP) Southwest Regional Office in Pittsburgh. Maxwell L/D was also surveyed in 2003 and 2009 as part of an ongoing [Monongahela River Biological Monitoring Study](#). Mean catch-per-unit-effort (CPUE; expressed as number of fish collected per hour) values for each of the Three Rivers were computed from 20 years of sampling data, and are used in this report as evaluation benchmarks.

Smallmouth Bass

At Dashields L/D tailwaters, 100 smallmouth bass were collected, the most among the three tailwaters in 2011 (Table 1). Maxwell L/D was next with 83 bass, and also produced the largest fish at 19 inches. In 2011, catch rates of total and legal-sized (≥ 12 inches and ≥ 15 inches) bass were greater at Dashields than at L/D 5 and Maxwell (Figure 2). What’s more, Dashields’ 2011 catch rates surpassed 20-year CPUE means for the entire Ohio River. Maxwell’s catch rates also surpassed 20-year CPUE means for the entire Monongahela, but L/D 5 did not for the impounded Allegheny, where the catch rate for all smallmouth bass was relatively low.

Table 1. Numbers and size ranges (total length in inches) of smallmouth bass, sauger, and walleye collected from the Three Rivers in 2011.

	Ohio River Dashields L/D	Allegheny River L/D 5	Monongahela River Maxwell L/D
Smallmouth bass	100 (5-18 in)	40 (3-14 in)	83 (3-19 in)
Sauger	62 (9-15 in)	13 (9-14 in)	13 (12-15 in)
Walleye	4 (9-13 in)	85 (6-16 in)	10 (7-13 in)

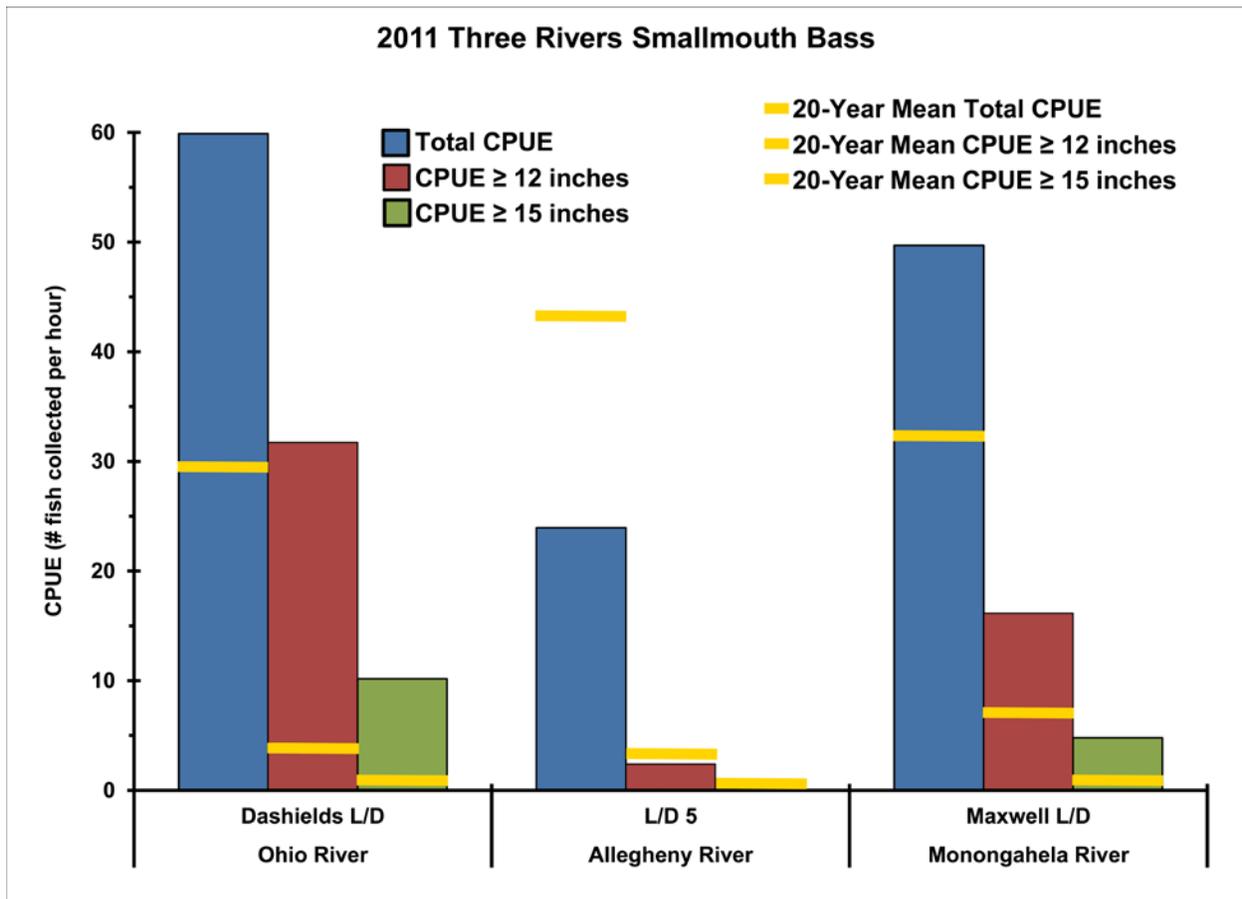


Figure 2. Smallmouth bass 2011 CPUE values (blue, red, and green columns) for the three L/D tailwaters. Yellow bars depict 20-year mean CPUE values for each of the Three Rivers.



Area 8 Fisheries Biologist Mike Depew with a couple of nice smallmouth bass collected from Dashields L/D tailwaters on the Ohio River in 2011.

Sauger

At Dashields L/D tailwaters, 62 sauger were collected, the most among the tailwaters in 2011 (Table 1). Maxwell L/D and L/D 5 were tied with only 13 sauger each. Dashields and Maxwell produced the largest fish at 15 inches. In 2011, catch rates of total and legal-sized (≥ 12 inches) sauger were greater at Dashields than at L/D 5 and Maxwell (Figure 3). As with smallmouth bass, Dashields' 2011 sauger catch rates surpassed 20-year CPUE means for the entire Ohio River. At L/D 5, catch rates were slightly greater than 20-year CPUE means for the Allegheny, and Maxwell's total sauger catch rate was depressed compared to the 20-year CPUE mean.

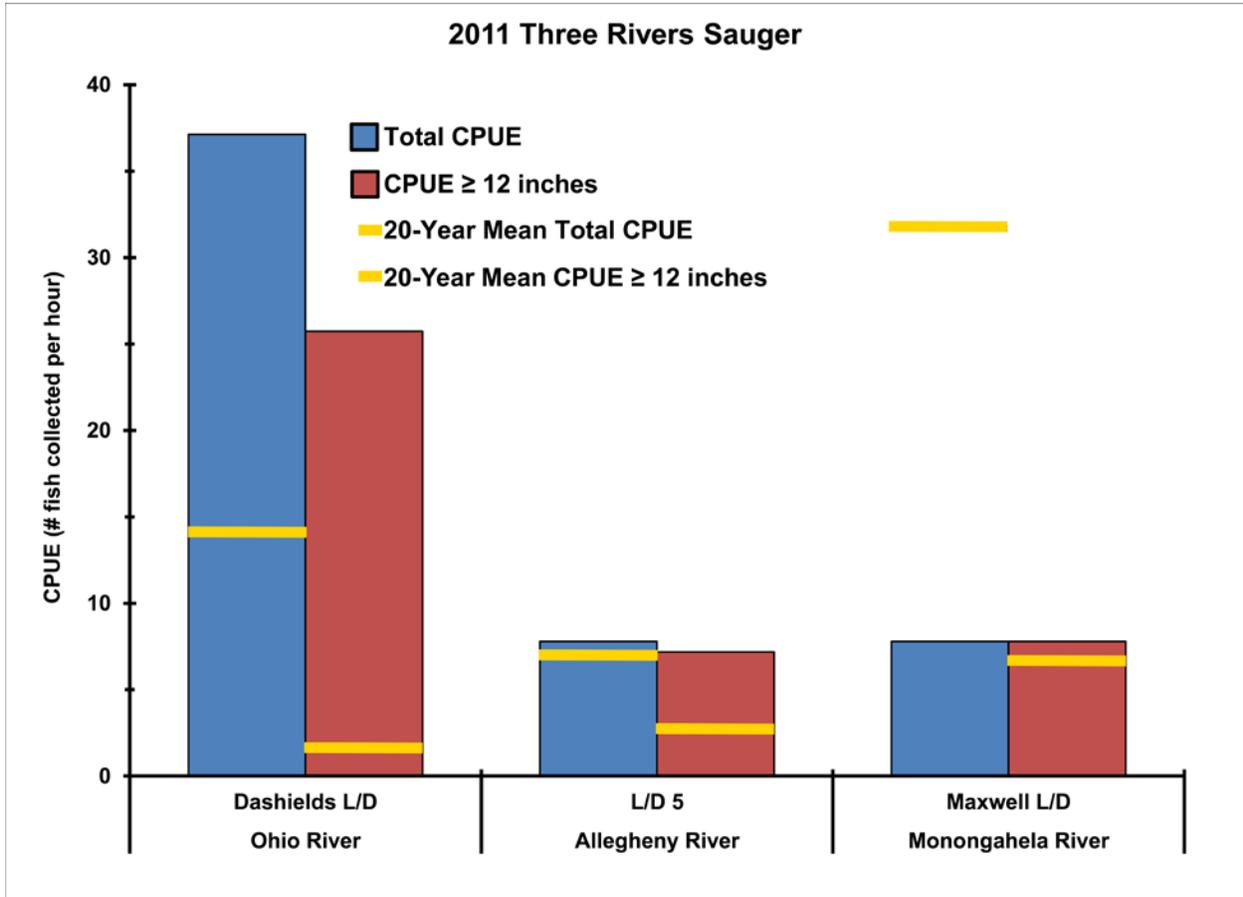


Figure 3. Sauger 2011 CPUE values (blue and red columns) for the three L/D tailwaters. Yellow bars depict 20-year mean CPUE values for each of the Three Rivers.



PADEP Biologist Dan Counahan with a 15-inch sauger collected from Dashields L/D tailwaters on the Ohio River in 2008.

Walleye

At Allegheny L/D 5 tailwaters, 85 walleye were collected, the most among the tailwaters in 2011 (Table 1). Only a few walleye were collected at Maxwell (10) and Dashields (4). L/D 5 produced the largest and only legal-sized walleye at 16 inches. In 2011, the catch rate of all walleye at L/D 5 surpassed Dashields' and Maxwell's catch rates, as well as the 20-year CPUE mean for the impounded Allegheny River. Most (54%) of the walleye collected at L/D 5 were only in the 7-inch and 8-inch size classes. However, these fish are most likely from last year's (2010) cohort, which was a strong year class, and should result in a very productive fishery for the Allegheny in about three or four years (when walleye reach legal-size).

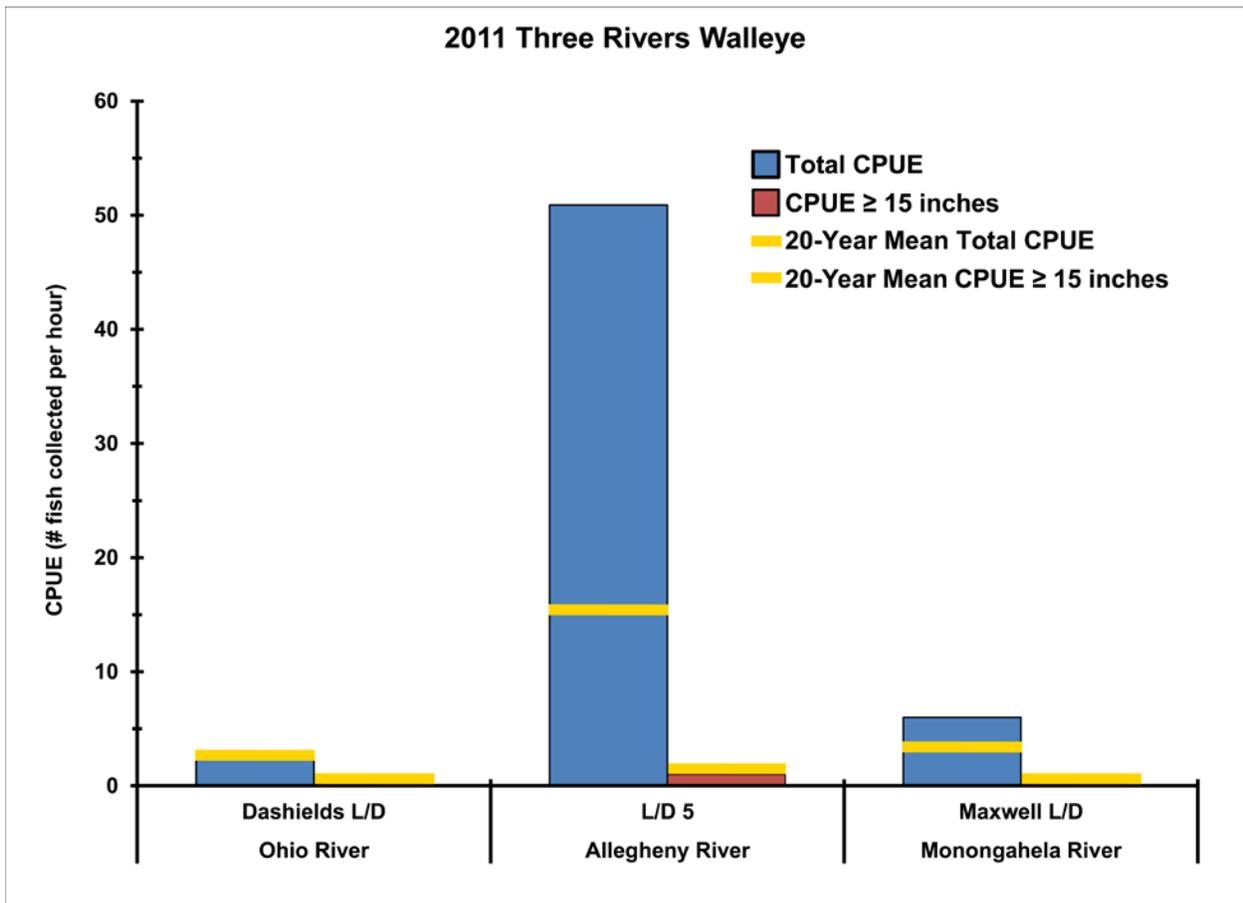
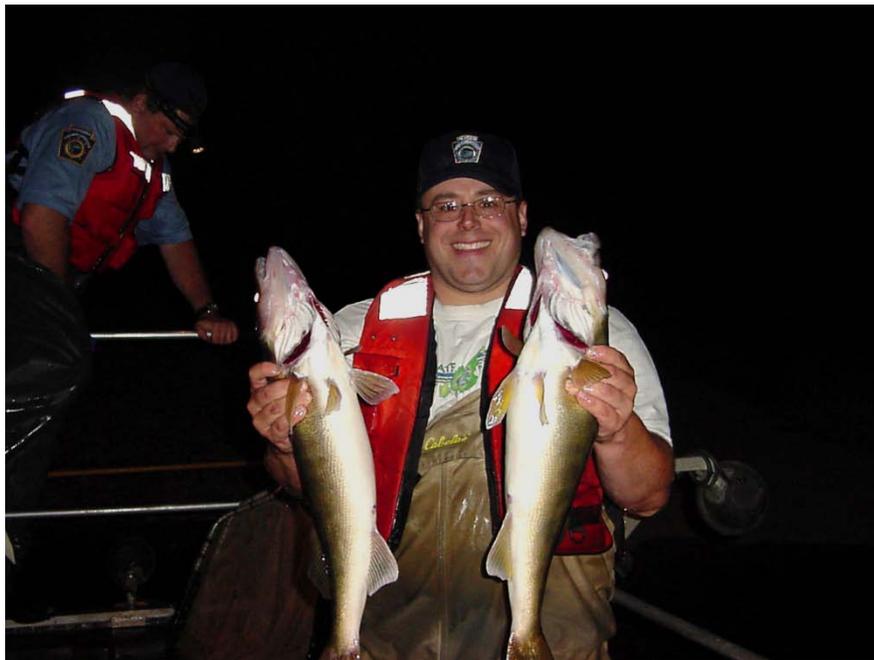


Figure 4. Walleye 2011 CPUE values (blue and red columns) for the three L/D tailwaters. Yellow bars depict 20-year mean CPUE values for each of the Three Rivers.



Area 8 Fisheries Biologist Aide Joe Cocco with a pair of quality walleye collected from L/D 5 tailwaters on the Allegheny River in 2008.

Comparison of 2008 and 2011 Surveys

Catch rates from the 2008 and 2011 surveys at the three L/D tailwaters are summarized in Table 2 for comparison purposes.

Smallmouth bass catches at Dashields L/D remained similar between years. At Allegheny L/D 5, smallmouth bass catches decreased for all three size categories (total, ≥ 12 inches, and ≥ 15 inches). Conversely, these values all increased at Maxwell L/D.

Sauger total CPUE values decreased at all sites. Catch rates for legal-sized sauger increased at Dashields L/D as well as L/D 5. While CPUE of legal-sized sauger was slightly higher in 2008, all sauger collected in 2011 at Maxwell L/D were of legal-size (≥ 12 inches).

Walleye catches remained relatively constant at both L/D 5 and Maxwell L/D. Catch rates for both total and legal-sized walleye decreased at Dashields L/D.

Table 2. 2008 and 2011 CPUE values for smallmouth bass, sauger, and walleye at three L/D tailwaters on the Three Rivers.

		Ohio River		Allegheny River		Monongahela River	
		Dashields L/D		L/D 5		Maxwell L/D	
		2008	2011	2008	2011	2008	2011
Smallmouth bass	Total CPUE	67	60	60	24	19	50
	CPUE ≥ 12 in	31	32	7	2	7	16
	CPUE ≥ 15 in	8	10	2	0	0	5
Sauger	Total CPUE	89	37	12	8	43	8
	CPUE ≥ 12 in	4	26	4	7	12	8
Walleye	Total CPUE	25	2	56	51	5	6
	CPUE ≥ 15 in	4	0	0	1	1	0

Our observations made in 2008 and 2011 provide evidence that game fish populations fluctuate over time. Regardless, the Three Rivers support productive fisheries for smallmouth bass, walleye, and sauger, with legal-sized fish at large. Aside from the three L/Ds surveyed for this investigation, anglers will also have success if they target these species at the tailwaters of other navigation L/Ds on the Three Rivers. Montgomery L/D on the Ohio (rivermile 31.7 near Industry), Braddock L/D on the Monongahela (rivermile 11.3 in Braddock), and L/D 3 on the Allegheny (rivermile 14.5 near Harmarville) come to mind. These tailwater locations also provide good fishing opportunities for white bass, channel and flathead catfish, freshwater drum, and carp.

In the near future, all fisheries data collected during the 2011 tailwaters surveys will be evaluated using the Modified Ohio River Fish Index (or MORFIn; developed by the Ohio River Valley Water Sanitation Commission – ORSANCO). MORFIn is a multimetric index comprised of 15 individual biological metrics, and scores range from 0 (worst) to 100 (best). ORSANCO has found that MORFIn scores generally respond predictably to perturbations caused by man (e.g., pollution). Using MORFIn scores as a barometer, we continue to assess the condition of fish assemblages and general health of the Three Rivers.

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