



Angler Survey Lake Moomaw Alleghany and Bath Counties, VA April – October 2006

Paul E. Bugas, Jr.
Fisheries Biologist
Virginia Department of Game and Inland Fisheries



Background The purpose of this creel survey is an attempt to quantify angler effort, success, and attitudes at Lake Moomaw, Alleghany and Bath Counties, Virginia between March 19 through September 30, 2006. Past creel surveys at the lake were conducted in 1983, 1986, and 1992.

Lake Moomaw is a 2,530 acre impoundment located in the Ridge and Valley physiographic province of western Virginia. Gathright Dam impounds 12 miles of the

Jackson River with a drainage area of 345 square miles above the lake. The shoreline distance is 43 miles. Over 13,420 acres of the Gathright Wildlife Management Area and hundreds of acres of George Washington National Forest land surround Lake Moomaw. Very little residential development has occurred around the lake.

Gathright Dam was authorized in 1946, but was constructed by the U. S. Army Corps of Engineers between 1970 and 1981. It reached recreational level in January, 1982. Its primary functions, in order of importance, are downstream water quality mitigation, flood control, and recreation. The dam backs up water to 1,582 feet above sea level (conservation pool) and flow out of the lake is controlled by an intake tower with ten water control portals. Water can be selectively withdrawn from different elevations in the impoundment, mixed in the intake tower, and released downstream for trout management. Gathright Dam also includes two large sluice gates on the bottom of the intake tower for flood control releases.

Lake Moomaw has an average depth of 79 feet, with a maximum depth of 150 feet near Gathright Dam. During summer, much of the lake undergoes thermal stratification, creating an ideal environment for a two-story fishery. When the Jackson River was impounded, native or naturalized fish species such as smallmouth bass, rock bass, chain pickerel, redbreast sunfish, white sucker, creek chubsucker, and yellow bullhead populated the rising waters. The Virginia Department of Game and Inland Fisheries (VDGIF) developed a stocking strategy that added largemouth bass, bluegill, redear sunfish, channel catfish, alewife, blueback herring, and black crappie to the warmwater fisheries component. These species were released in the early 1980's and have not been stocked since. All of these stockings were successful, except for the blueback herring introduction. Mirror carp were introduced via bait bucket in the 1990's and have developed a considerable population throughout the lake. A strong metalimnion exists during summer and VDGIF made a decision before 1981 to use trout as the pelagic predator. Advanced fingerling brown trout and McConaughy strain rainbow trout are stocked annually into Lake Moomaw to support the coldwater component. During the developing years of the lake, McConaughy rainbow trout fingerlings were introduced into the upper Jackson River and a few coldwater tributaries in order to establish a lake-run salmonid. This was moderately successful in the early 1990's, but did not develop a consistent run of rainbows upriver.

Three public boat landings are available to watercraft under 25 feet in length. One primitive boat launch exists at the north end of the lake. Two developed campgrounds are available to the public, as well as two primitive camping areas.

Methods An access point creel survey was chosen to replicate past access surveys at Lake Moomaw, to take advantage of heavily-used boat landings, and to obtain as much completed trip data as possible. One creel clerk was hired to conduct interviews following a randomized survey schedule. A stratified, multi-stage sampling design was used to capture time periods (AM or PM), sampling days (weekday or weekend), seasons (daylight savings or regular time), and boat landings (four). Non-uniform probabilities were assigned to each of the above variables to help develop monthly schedules that covered the entire lake, with appropriate weight given to more heavily used locations. The number of sample days for the entire survey period (March – September) was 112.

Results

Effort

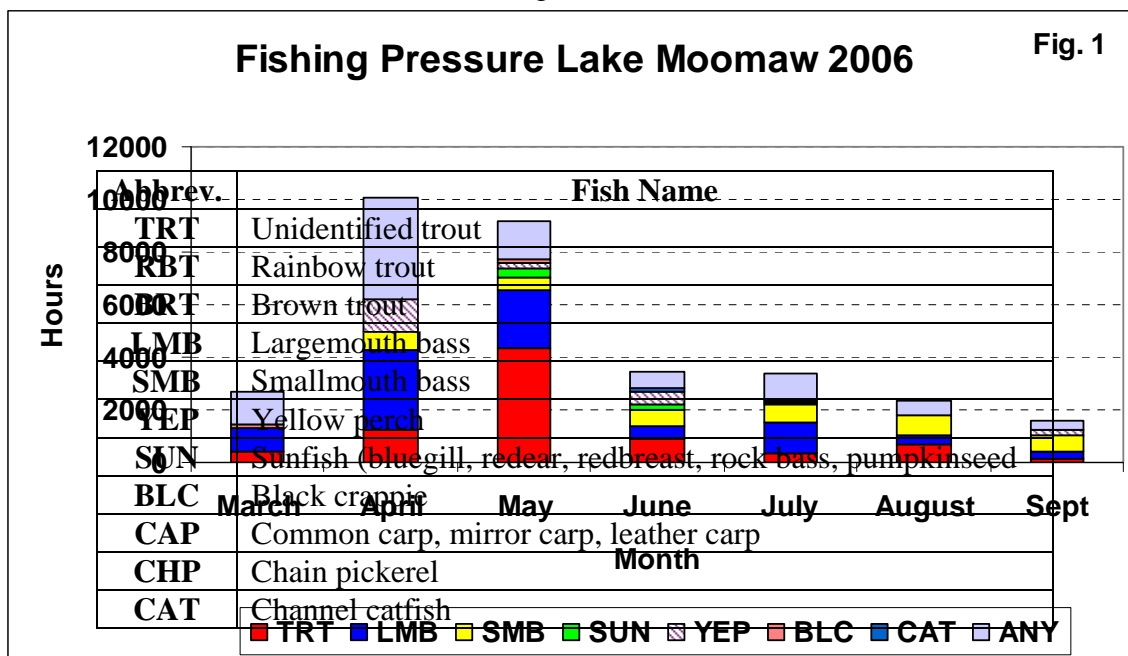
A total of 32,751 hours of angling pressure was expended at Lake Moomaw in 2006 (Figure 1). Peak effort was in April (10,090 hrs.) and May (9,161 hrs.). Angling from a boat made up 89% of the effort, with the remaining 11% coming from bank fishermen.

Most of the fishing pressure at Lake Moomaw in 2006 was not directed at any particular species (28%), closely followed by largemouth bass (25%) and both species of trout (25%). Smallmouth bass accounted for 12% of effort and yellow perch 7%. The remaining 3% focused on sunfish, crappie, and catfish.

Bank fishermen focused on both bass species, sunfish, trout, but most (70%) were generalists. No bank fishermen targeted yellow perch, crappie, or catfish. A full 86% of the effort expended by bank anglers took place in March, April, and May. A handful of bank hours were recorded in August and September, but most of those who preferred to fish from the bank did so in spring and early summer.

Fishing from a boat in the months of April and May comprised the bulk (57%) of non-shoreline effort, followed by June and July (22%). Boat pressure for trout was heaviest in May, followed by April and June. Effort directed at trout declined in July, but surprisingly spiked again in August. Largemouth bass effort was highest in April and May, dropped off in June, and then rebounded in July. Smallmouth bass effort remains consistent from April through September, with the highest month being August. Generalists were busiest in April, then in March and July. Yellow perch anglers predictably favored the spring months, with some interest in September.

Table 1. Abbreviations for fish caught at Lake Moomaw in 2006



Catch and Harvest

Close to 21,000 fish were estimated caught at Lake Moomaw during the 2006 survey. The most frequently caught species was smallmouth bass, followed by yellow perch, largemouth bass, brown trout, and sunfish. To a lesser degree, rainbow trout, chain pickerel, black crappie, unidentified trout, channel catfish, and mirror carp were caught, in that order (Fig. 2). Of these, only 26% were removed from its waters; the remainder was released. The most heavily creeled fish species was yellow perch, followed by brown trout, smallmouth bass, sunfish, largemouth bass, black crappie, chain pickerel, rainbow trout, and channel catfish.

A comparison of angling effort and number of fish caught in large western Virginia impoundments can be seen in Table 2. In 2006, Lake Moomaw was not fished as heavily as Claytor Lake and Flannagan Reservoir. Claytor Lake, in 2007, was a much better black bass, channel catfish, and black crappie destination than Moomaw or Flannagan. Moomaw was a much better yellow perch fishery than Flannagan and Claytor. Moomaw produced more smallmouth bass in recent years than Flannagan, but is a distant third as a largemouth bass fishery.

Table 2. Angling statistics history for mountain reservoirs in Virginia.

Unit	Moomaw 2006	Claytor 2007	Flannagan 2003
Total Fishing Effort (hrs)	33,299	198,114	46,553
Hours per acre effort	13.2	44.3	40.7
Largemouth bass (caught)	3,619	16,247	8,611
Smallmouth bass (caught)	4,597	13,665	1,490
Yellow Perch (caught)	4,109	608	0
Black Crappie (caught)	238	668	200
Channel Catfish (caught)	67	1,197	232

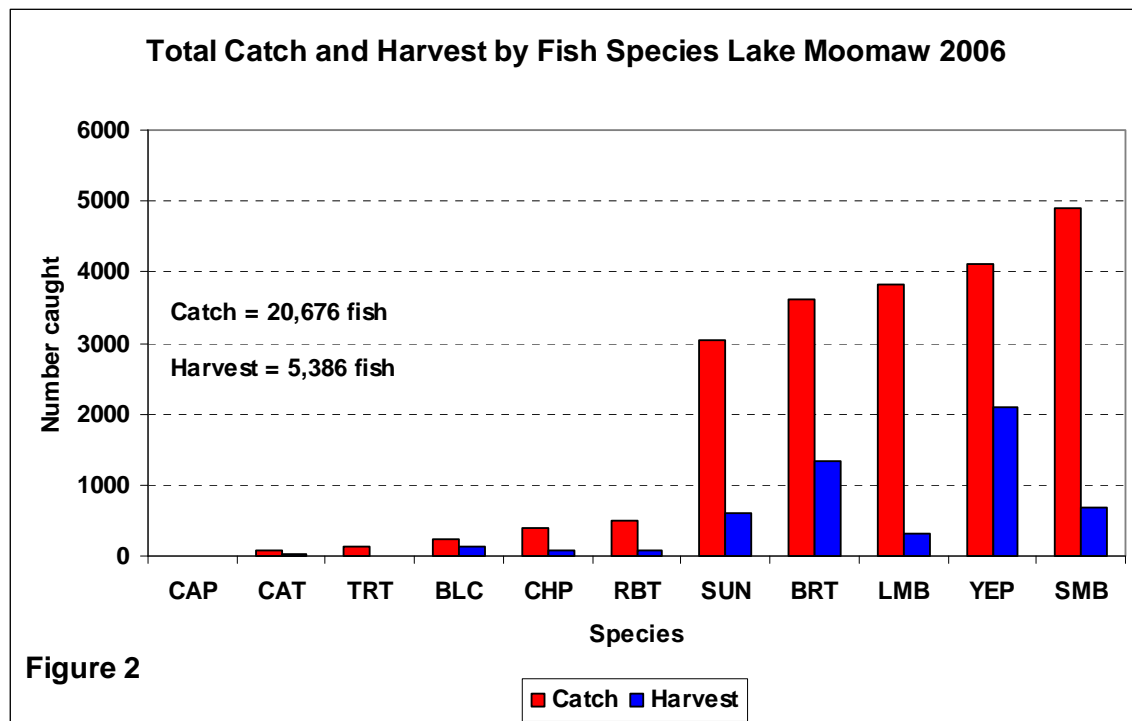
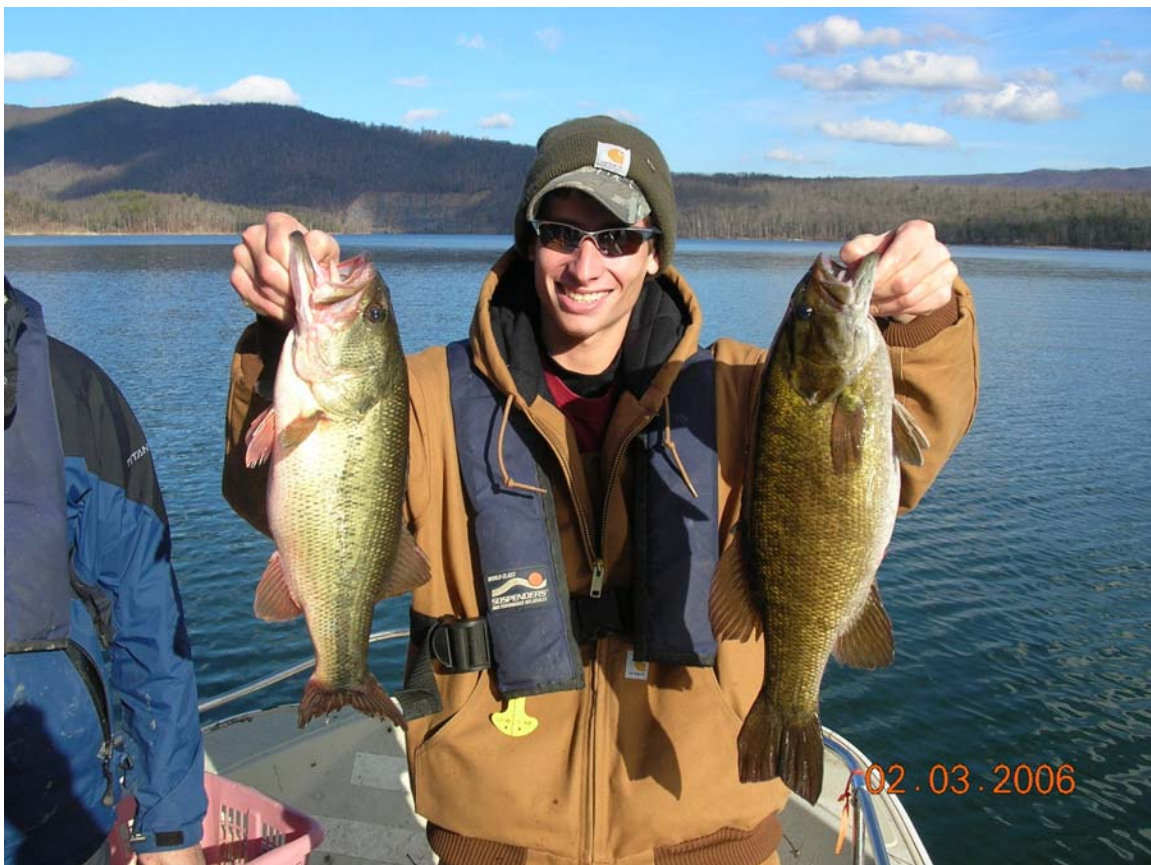


Figure 2

Trout: Approximately 3,614 brown trout were caught in Lake Moomaw in 2006. Over 60% of these were released; 70% of these fish were between 12 and 16 inches long. Very few browns over 16 inches were released, characterizing Lake Moomaw as a “catch-and-keep” fishery for large brown trout (Figure 4). Brown trout were the third most popular fish to keep after yellow perch and channel catfish. The catch rate per hour for RBT and BRT combined was 0.66 fish per hour. Compared to the robust number of brown trout caught in 2006, only 486 rainbow trout were caught during the same time period. Eighty six percent were released, the majority of which were less than 12 inches long. The strain of rainbow trout (McConaughy) stocked in the lake migrates up the Jackson River and Back Creek, so they are less available to lake anglers during parts of the year.

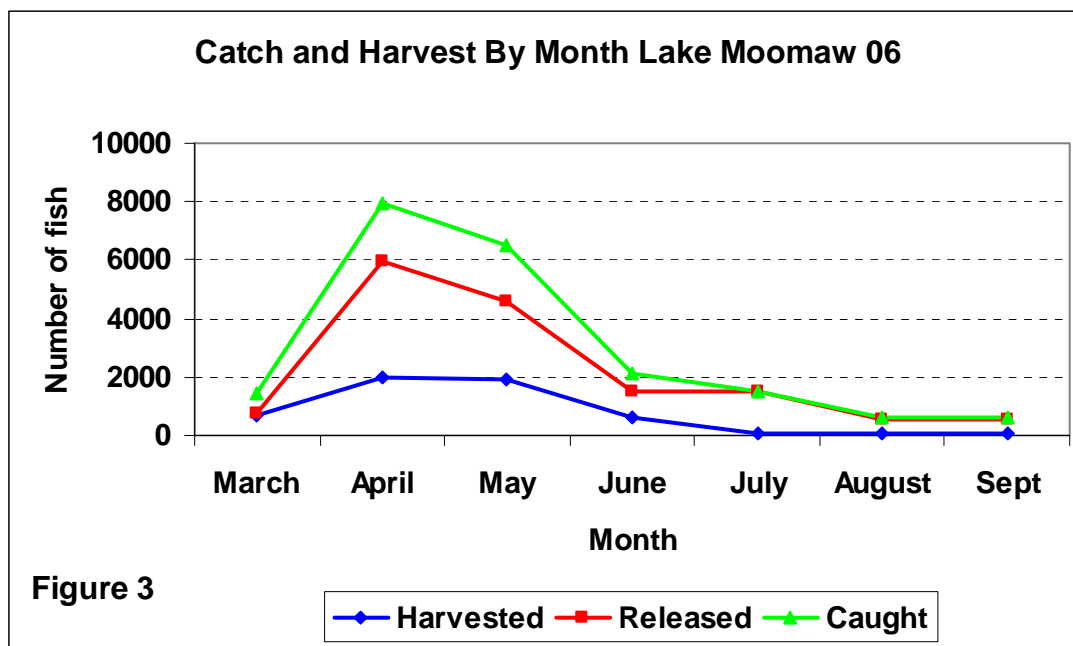
Black Bass: The black bass fishery was largely catch-and-release, with 92% of largemouth bass and 86% of smallmouth bass returned to the lake. The overwhelming majority of both largemouth and smallmouth bass released were between 12 and 20 inches. Close to 3,800 largemouth bass were caught in 2006, compared to 4,900 smallmouth bass. Although twice as much fishing effort was expended on largemouth bass, 1,100 more smallies were caught. The largemouth bass catch rate was 0.6 fish per hour and the smallmouth catch rate was 0.49 fish per hour. Catch rates for both species exceeded the largemouth bass catch rate at Kerr Reservoir in 2001, which was 0.43 fish per hour. This is also a vast improvement over the catch rate in Lake Moomaw in 1992 (0.08 fish per hour).

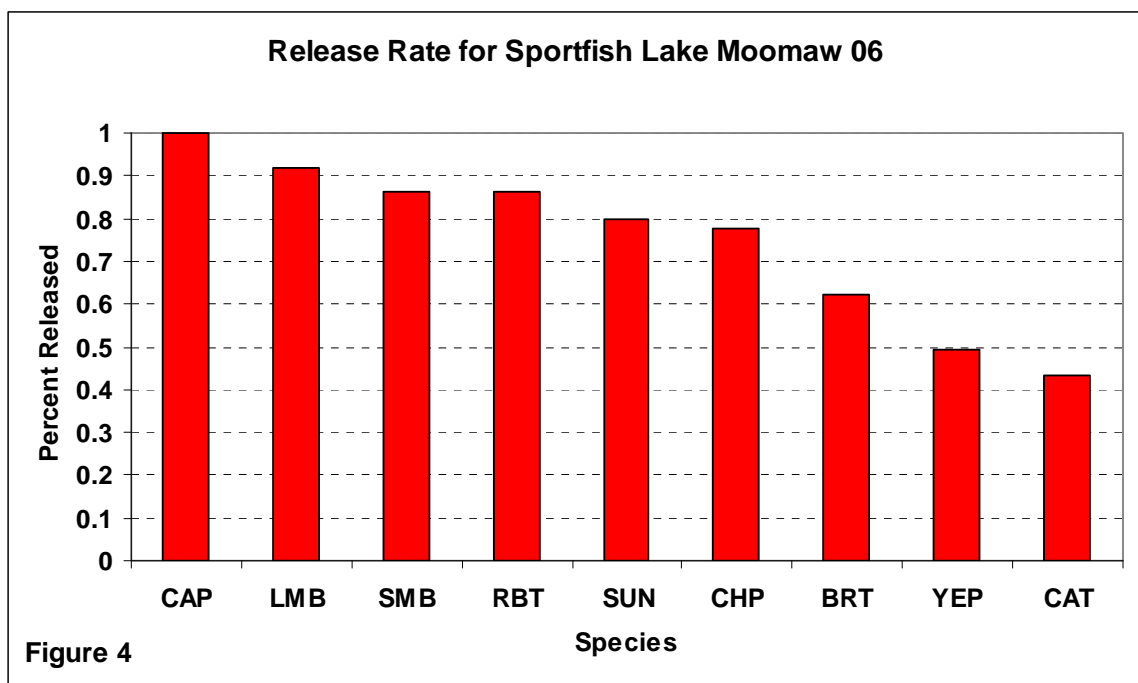


Yellow Perch: Yellow perch are one of the most sought after food fish in Lake Moomaw. Around 4,100 were caught in 2006, compared to 31 in 1992. The yellow perch catch rate was 0.65 fish per hour. Quality size yellow perch have transformed Lake Moomaw into a destination for consumption of this species. When compared to Claytor Lake in 2007, anglers caught 608 yellow perch and harvested only 73. One out of every two yellow perch caught was harvested in Lake Moomaw in 2006. Most of the fish released were young perch under eight inches in length. Anglers have reported that avian predators, such as double crested cormorants and common loons, are negatively impacting the yellow perch population, though this remains unsubstantiated by DGIF staff.

Sunfish: Sunfish were released at a high rate (80%), but all of these were small fish. Other fish species caught-and-released were chain pickerel and mirror carp. An estimated 397 chain pickerel were caught, with only 88 harvested. Five carp were caught and released.

Figure 3 depicts the total number of fish caught, released, and harvested by month. April and May were the best months to catch fish at Lake Moomaw, followed by June, July, and March.





Black Crappie: Only 238 black crappie were caught in 2006. Lake Moomaw has the ability to produce trophy black crappie, but their presence in the lake is small compared to trout, bass, and perch. Forty percent of the black crappie caught was harvested.



Expenditures: Anglers were asked how much they spent on their fishing trips to Lake Moomaw in 2006. Figure 5 characterizes the breakdown of spending by month and by item. April was the busiest month, with the bulk of spend going toward gas and food. March, May, and July ranked about the same. Approximately a quarter million dollars were spent on angling related items with Lake Moomaw as a destination.

Night Survey: Fishermen were not surveyed at night, but after completing the standard survey questions, anglers were asked if they fished at night. Approximately 24% of those interviewed indicated that they fished after dark. Black bass were most sought after (50%), followed by trout (27%), and catfish (15%). The remaining percent fished for black crappie, yellow perch, or were generalists (Figure 6). Warm weather months, particularly June and July, were the most heavily fished at night (Figure 7). Almost 60% of those that fished at night liked it because fishing was better (Figure 8). Others liked night hours because crowds were lighter and weather conditions were more appealing. Although nighttime effort was high for black bass, they were only harvested at a rate of 7% (Figure 9). Approximately every other catfish that was caught was creel, and around one in three trout caught were taken. All black crappie and yellow perch caught at night were harvested, according to the survey.

Historic Comparisons: Tables 3 -6 summarize some of the metrics from past creel surveys at Lake Moomaw. Before comparing these numbers with too much scrutiny, consider that survey methodology has changed over time. Regardless, it appears that fishing pressure has declined since the early days of the lake. Perhaps some of the “newness” has worn off over the decades. Anglers are still focused on trout and bass, and

less so on sunfish and chain pickerel. Much fewer black bass are being creeled these days, primarily as a function of a strong catch-and-release ethic. Yellow perch were not part of the fishery in 1983, but composed 38% of the total fish removed from Lake Moomaw in 2006. The number of overall fish caught per hour has remained good over time, with excellent catch rates posted for trout, bass, crappie, perch, catfish, and sunfish. Finally, there has been a shift from “generalist” fishing to a more “targeted” approach.

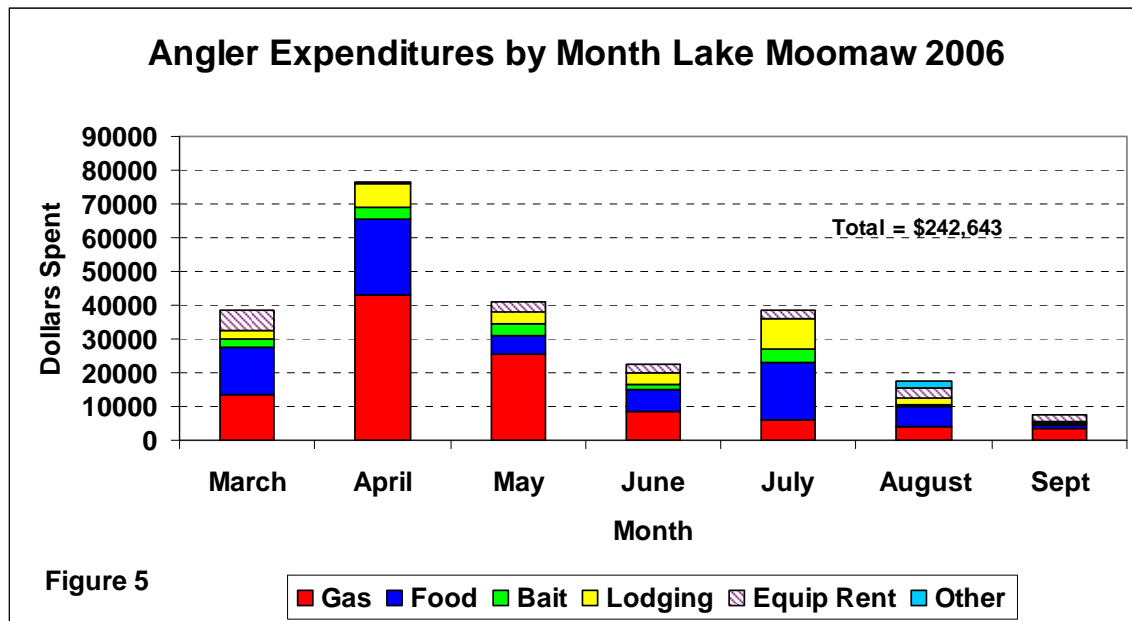
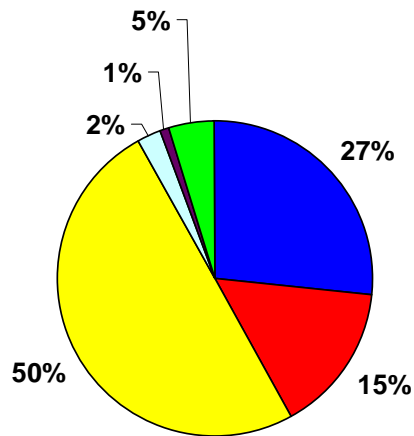


Figure 6

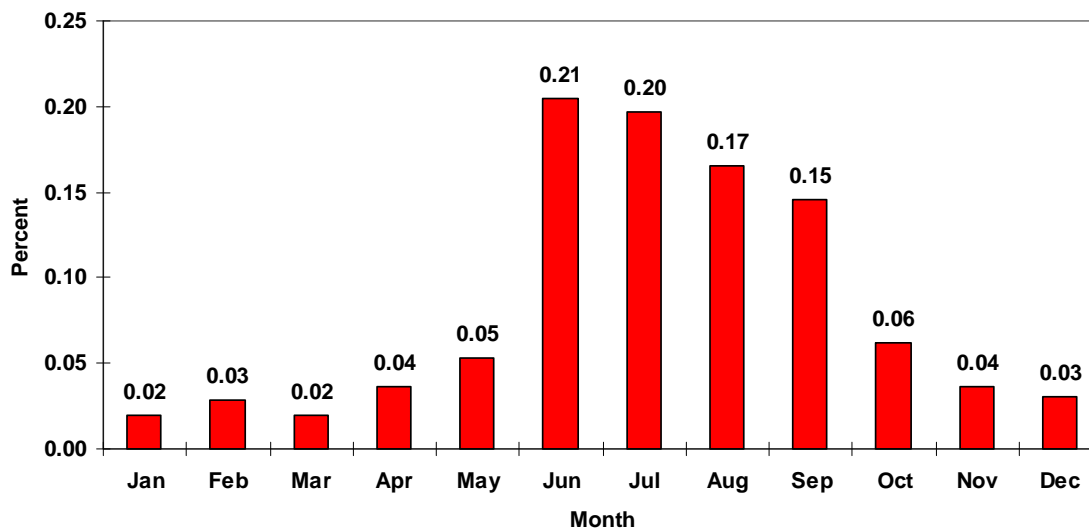
Species Preference



■ Trout ■ Catfish ■ Black bass ■ Crappie ■ Yellow Perch ■ Anything

Figure 7

Nights Fished per Month



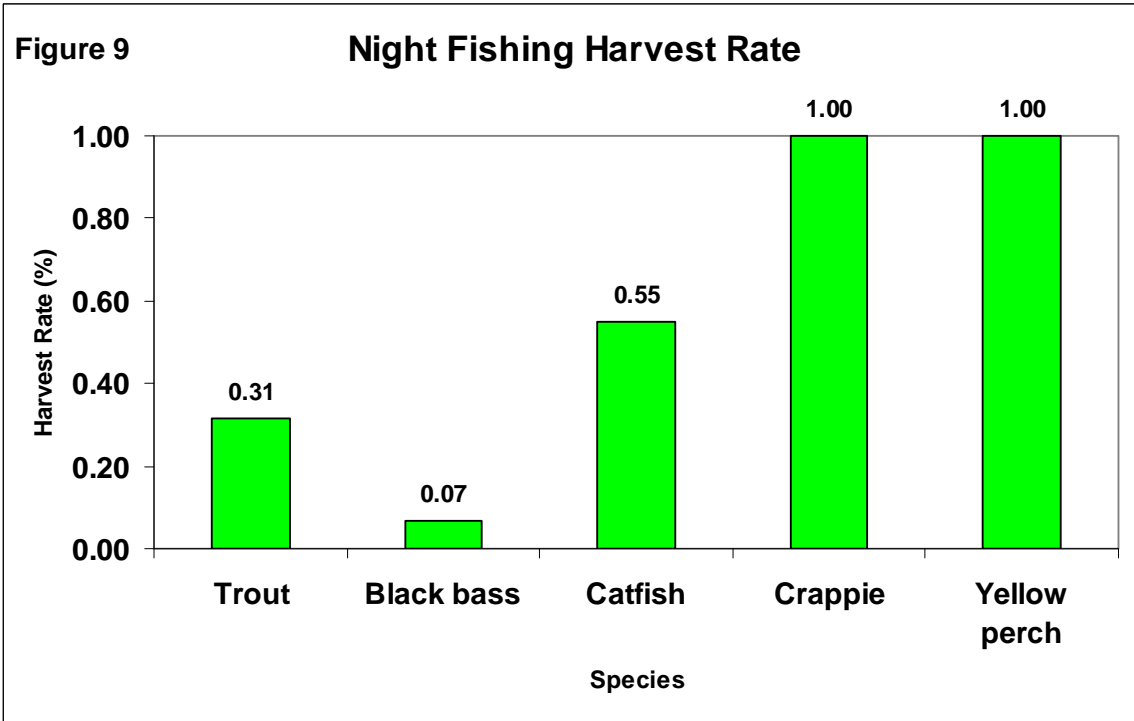
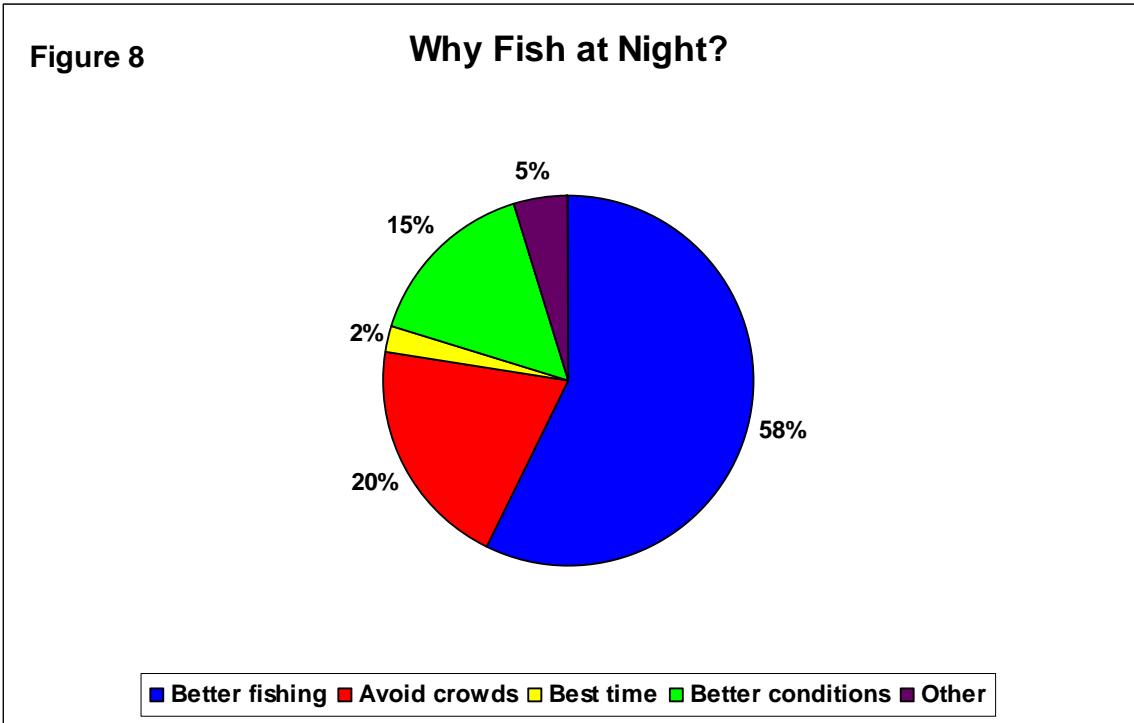


Table 3. Historic comparison of angling effort at Lake Moomaw

Angling effort (hours)	1983	1992	2006
Total	141,438	85,503	33,299
Black bass	37,528	29,071	12,204
Crappie	0	1,026	279
Catfish	12	1,710	206
Yellow perch	0	0	2,221
Trout	2,703		8,144
Sunfish	8,446		537
Chain pickerel	500		0
Rock bass	0		0
General	92,249		9,160

Table 4. Historic comparison of fish harvest from Lake Moomaw

Harvest (no. of fish)	1983	1992	2006
Total	89,166	6,532	5,386
Black bass	11,284	2,296	979
Crappie	122	517	140
Catfish	3,499	215	39
Yellow perch	0	31	2,088
Trout	1,747	2,012	1,439
Sunfish	64,186	1,338	613
Chain pickerel	1,845	69	88
Rock bass	2,130	54	0

Table 5. Historic comparison of catch rates from Lake Moomaw

Catch rate (no/hour)	1983	1992	2006
Total	0.57	0.08	0.41
Black bass	0.08	0.16	1.10
Black crappie	0.00	0.01	1.18
Channel catfish	0.03	0.01	0.25
Yellow perch	0.00	0.00	0.65
Trout	0.01	0.03	0.66
Sunfish	0.44	0.01	0.85
Chain pickerel	0.01	0.01	0.00
Rock bass	0.00	0.00	0.00

Table 6. Historic comparison of directed effort from Lake Moomaw

Percent Effort	1983	1992	2006
General fishing	65.0	46.5	28.0
Black bass	26.5	34.0	37.3

Black crappie	0.0	1.2	0.9
Channel catfish	0.1	0.2	0.6
Yellow perch	0.0	0.0	6.8
Trout	2.0	16.8	24.9
Sunfish	6.0	0.0	1.6
Chain pickerel	0.4	0.6	0.0
Rock bass	0.0	0.0	0.0

Summary

- Lake Moomaw is an angling destination for brown trout, smallmouth bass and yellow perch.
- Largemouth bass, channel catfish, rainbow trout, and black crappie are also important components of the sport fishery; chain pickerel, sunfish, and carp less so.
- Approximately 30% of trout caught are harvested and approximately 50% of yellow perch are creel.
- Black bass anglers primarily practice catch-and-release. Largemouth bass and smallmouth bass are released at rates of 92% and 86%, respectively.
- Seven brown trout were caught for every one rainbow trout caught. Anglers creel close to four of every ten brown trout caught. Rainbows were harvested at a much lower rate, due to size of the fish. Efforts are underway to improve the rainbow fishery by replacing the McConaughy strain with the Chambers Creek strain.
- Catch rates for black bass, black crappie, yellow perch and trout have improved over time (Table 5).
- Anglers spent \$242,643 dollars on non-tackle items associated with the Lake Moomaw sport fishery (gas, food, bait, lodging, equipment rental).
- One of four anglers like to fish at night. Black bass and trout represent 75% of their effort at night. Fishing is better at night due to better conditions and fewer people on the lake. June – September are most heavily fished at night.
- Crappie and channel catfish harvest has declined. Harvest for black crappie was high in the 1990's and the population has possibly not recovered. Recent stocking efforts are underway to try and bolster flagging crappie numbers.
- Natural predators such as eagles, cormorants, loons, and otters have established themselves (at least seasonally) into Lake Moomaw since 2000, impacting the sport fishery in ways that are difficult to measure.
- Common carp were introduced via bait-bucket in the mid 1990's and have established themselves in the mud flats around Mill Hill, the Bolar Mountain campgrounds, and the islands at the north end. They are disruptive to other sport fish in the lake's shallows during their spawn and when actively feeding.
- The two-story fishery at Lake Moomaw remains healthy after 28 years of existence. Large brown trout, quality smallmouth bass, and numerous yellow perch attract modest numbers of regional anglers. With improvements to the black crappie and rainbow trout fishery, diverse angling opportunities should continue to draw people to this beautiful mountain reservoir.

References:

Malvestuto, S. P. 1996. Sampling the Recreational Fishery. Pages 591-623 *in* B. R. Murphy and D. W. Wills, editors. Fisheries Techniques, Second Edition. American Fisheries Society, Bethesda, Maryland.

Acknowledgements:

Thanks to creel clerk extraordinaire Joe Herrmann. Vic Dicenzo of the Department of Game and Inland Fisheries gave outstanding organizational and statistical support. Jason Hallacher and Matt Henderson of DGIF helped out with field surveys. This project was underwritten by the Federal Sportfish Restoration Project F-111-R-14.