



## Beaverdam Swamp Reservoir 2012 Fisheries Management Report Virginia Department of Game and Inland Fisheries

Beaverdam Swamp Reservoir is a 635-acre water supply reservoir for Gloucester County. It was constructed in 1989 and reached full pool level during the winter of 1989-1990. The reservoir and park provide a variety of opportunities for the outdoor enthusiast. There are trails for hiking, biking, and horse riding. You may see deer, turkey, bald eagles as well as a variety of waterfowl. The reservoir serves as an attractive place for anglers to try their luck. The reservoir has plenty of interesting contour and structure. Several creek arms, numerous large points, and an abundance of flooded timber all add to the extreme variability of topography and fish habitat. The use of outboard engines is prohibited on Beaverdam Swamp Reservoir. The use of trolling motors is permitted. There are two boat ramps on Beaverdam Swamp Reservoir. The main ramp is located at the park off Route 616 and the other ramp is off Route 606. The Route 606 ramp offers easier access to the northern areas of the reservoir, but has been specifically designated for annual launch pass holders. Boat and equipment rental, bait, and snacks can be obtained at the main entrance. There is also a fishing pier, picnic facilities, and play areas for children. The park is open 7 days a week and every day of the year except for Christmas and New Year's Day. The concession and main boat ramp can be reached by taking Route 616 from Route 17 (Business), just to the west of Gloucester. For further details, please call the concessionaire at (804) 693-2107.

The Virginia Department of Game and Inland Fisheries conducted an electrofishing survey of Beaverdam Swamp Reservoir on April 25th, 2011. The reservoir was last sampled on April 26<sup>th</sup> and May 6<sup>th</sup>, 2010. The 2011 survey consisted of sampling along 4 shoreline sections. Each electrofishing run was a complete community survey of 20 minutes of effort for a combined time of 1.33 hours. The 2011 survey was shorter in total effort when compared to the 7 sample sites covered during the 2010 survey. The water temperatures varied from 20.8°C along the southern end of the reservoir to 22.8°C along the upper reaches of the reservoir. Electrofishing efforts consisted of shocking along the shoreline habitat as close as possible, with the majority of the effort concentrated in the 2 to 4 foot depth range. The sample collected 11 fish species. This report will concentrate primarily upon the five game fish species of largemouth bass, bluegill, black crappie, redear sunfish and chain pickerel.

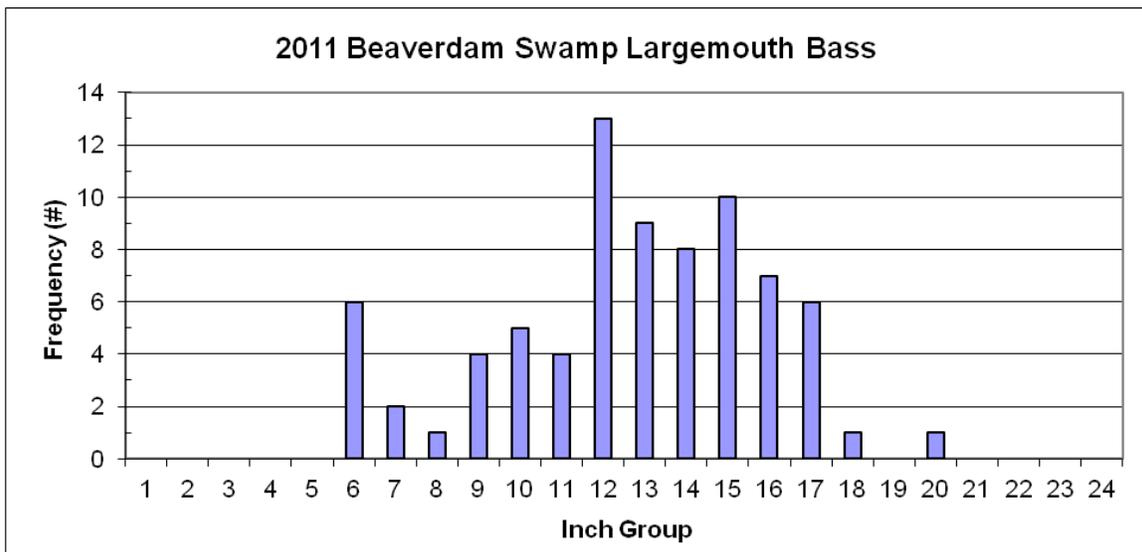
Table 1. Summary of primary game fish species collected from Beaverdam Swamp Reservoir on April 25th, 2011.

Species	# Collected	CPUE (#/hr)	Largest Length	Average Length
Largemouth Bass	77	57.8	20"	13.1"
Black Crappie	3	2.3	10.2"	9.9"
Bluegill	203	152.3	7.52"	3.85"
Redear Sunfish	47	35.3	10.95"	6.59"
Chain Pickerel	22	16.5	17.4"	11.9"

## Largemouth Bass

The largemouth bass population within Beaverdam Swamp Reservoir appears to be in fair shape. A total of 77 largemouth bass were collected. The CPUE (Catch Per Unit of Effort) for largemouth bass was 57.8 f/hr. This catch rate showed a decrease from the 2010 survey (CPUE: 80.6 f/hr). The 2011 catch rate continues to show a decline in catch rate from the record high found during the 2008 survey (CPUE: 135 f/hr). The overall size structure is similar to past years with a large proportion of bass in the 12 to 15 inch range. Based on percentage only, there was a higher percentage of bass greater than 15 inches when compared to past surveys. The decreased abundance of bass less than 12 inches in size is a reflection of several poor year classes making their way through the fishery. The collection of only two bass greater than 18 inches in length is a major area of concern. Anglers that fish the reservoir on a regular basis are still able to catch a larger bass every once in a while. Beaverdam Swamp Reservoir receives an excessive amount of fishing pressure. Anglers are encouraged to try different fishing techniques that might trigger some of the larger bass into biting. The 2011 sample revealed a decreased presence of juvenile bass. The catch rate of young bass was only 6 bass/hr. The 2010 catch rate of young bass was 18.9/hr. These catch rates fell well below the favorable catch rate of 2009 (37 bass/hr).

Figure 1. Length frequency distribution of largemouth bass collected from Beaverdam Swamp Reservoir on April 25<sup>th</sup>, 2011. (N: 77, CPUE: 57.8 f/hr)



Fisheries biologists of the past established certain size classifications to describe the fish they collected. It is through these size classifications that population dynamics are analyzed. The size designations are stock, quality, preferred, memorable, and trophy. The PSD (Proportional Stock Density) is the proportion of stock-sized bass (8 inches or larger) that are also equal to or greater than 12 inches (quality size). A balanced bass/bluegill fishery has a bass PSD value within the 40 – 70 range. With largemouth bass being the most popular game fish in this country, it has been considered that a “preferred” bass is one that is over 15 inches in length. The RSD-P (Relative Stock Density of Preferred bass) is the proportion of stock-sized bass that are also equal to or greater than 15 inches in length. The PSD and RSD-P values represent the distribution of

collected fish, but one must take into account the total number of bass collected along with the total of stock-sized bass in the sample.

The 2011 survey showed a PSD value of 81, which is a direct reflection of the 56 bass that were 30 centimeters (12 inches) or longer. The sample had a total of 69 bass that were stock size (20 cm/8 inches) or larger. This PSD value is well above the high end of a balanced bass/bluegill fishery and far higher than the 2010 sample (PSD: 60). The 2011 RSD-P value of 36 is a direct reflection of the 25 preferred-sized bass collected. The RSD-P value showed a major increase from the 2010 sample (RSD-P: 17).

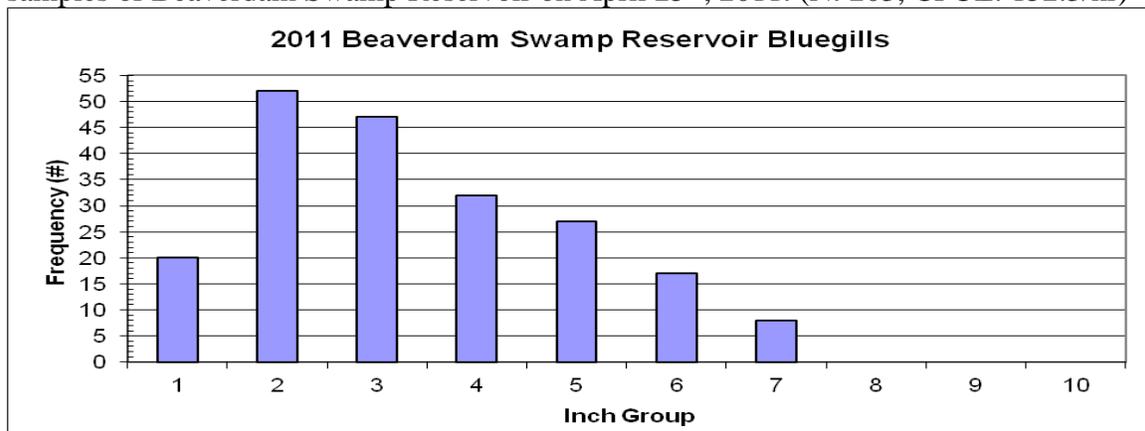
Weights were taken on largemouth bass to calculate relative weight values. Relative weight values are an indication of body condition. A value from 95 to 100 represents a fish that is in the healthy range and finding a decent amount of food. A higher relative weight value indicates fish with a better body condition. The relative weight values for stock, quality and preferred bass (>8", >12", >15") were 95, 96, 99 respectfully. These values showed a favorable increase from the 2010 sample (93, 92 and 91 respectfully). The 2011 bass relative weights fell within the desired 95 to 100 range and indicate that the bass are finding available forage fish that they can prey upon.

## Bluegills

The sample once again revealed the bluegill fishery to be dominated by fish less than 6 inches in length (15 centimeters). The electrofishing survey was able to collect a total of 203 bluegills during the four sample runs. The CPUE of 152.3 bluegills/hr showed a major decline from the 2010 sample (CPUE: 562 f/hr). All collected bluegills were measured to the millimeter in length and then converted over to inch groups for length frequency display. The majority of collected bluegills were in the 2 to 4 inch range. A limited number of bluegills greater than 6 inches in size were collected.

The PSD for the bluegill population is the proportion of quality size bluegills (5.9 inches or greater) in relation to the total number of stock size bluegills (3.15 inches and greater). The bluegill PSD value of 20 showed an increase from the 2010 sample (PSD: 14). The 2011 sample consisted of 26 quality-sized bluegills greater than 5.9 inches in length. The PSD value showed some improvement and managed to reach the low end of the desired 20 to 40 range that would represent a balanced fishery. A total of 129 stock-sized bluegills were collected. The largest bluegill measured on 191 millimeters (7.52 inches) in length.

Figure 2. Length frequency distribution of bluegills collected from the electrofishing samples of Beaverdam Swamp Reservoir on April 25<sup>th</sup>, 2011. (N: 203, CPUE: 152.3/hr)



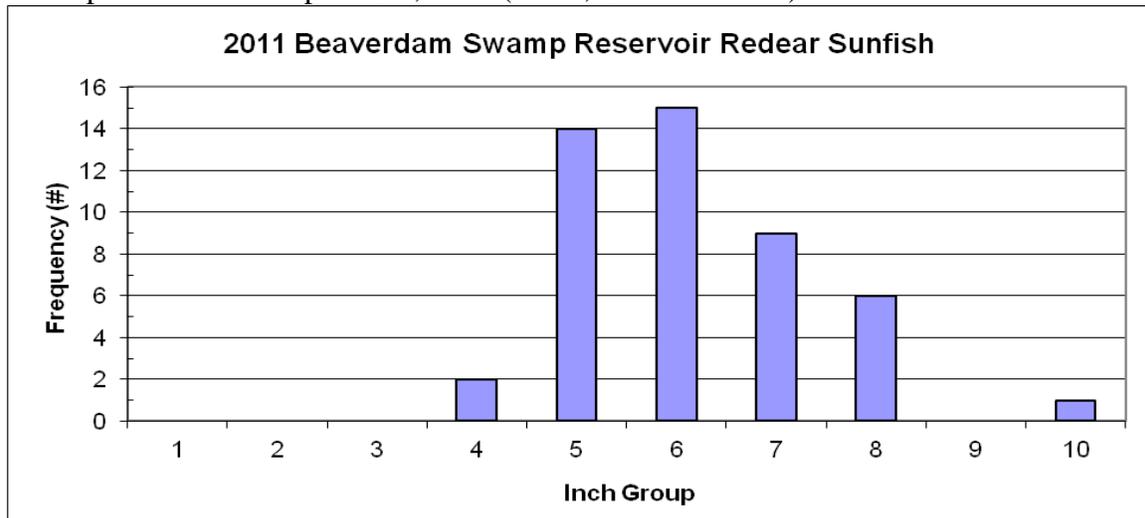
## Black Crappies

Based on the past electrofishing and trap net surveys, the black crappie population appears to be in decent shape. The 2011 electrofishing survey was only able to collect 3 black crappies (CPUE: 2.3 f/hr). This small sample size is a prime example of the hit or miss success when finding schooling fish. A limited abundance of only 26 black crappies were collected during the 2010 survey. The 2010 CPUE of 11.1 f/hr is much less than the 2009 survey (CPUE: 58 f/hr) and the 2008 survey (CPUE: 57.5/hr). This difference could be associated to the variable distribution of black crappies. The numbers of any given sample can become elevated if schools of crappies are encountered during sampling. Locations of large schools of crappies depend on pre-spawn movements in and around selected spawning flats. It is quite possible that the majority of the crappie spawn had been completed before the survey date of April 25<sup>th</sup>. Past electrofishing surveys revealed limited numbers of crappies in the 5 – 6 inch range. The largest black crappie collected during the 2011 survey measured in at 10.2 inches. Beaverdam Swamp Reservoir has been producing a fair number of citation-sized black crappies over the last few years. A trophy 3 lb. 4 oz. crappie was caught by an angler on March 16, 2011.

## Redear Sunfish

The redear sunfish population appears to be in fair shape. A total of 47 redear sunfish were collected during the 4 sample runs for a CPUE of 35.3/hr. This catch rate was less than the 2010 sample (CPUE: 43/hr). The 2011 size distribution had the majority of fish in the 5 to 8 inch range. The average size redear sunfish measured 6.59 inches in length. The largest redear sunfish measured an impressive 10.95 inches. Redear sunfish tend to congregate along the banks for the spawning season during the early to mid-May time period. Past surveys have collected limited numbers of redear sunfish in the 10 to 12 inch range. Anglers willing to try something other than bass fishing may be surprised if they target these schools of redear sunfish in and around the mitigation areas along the western shoreline. The survey revealed the continued poor representation of juvenile redear sunfish with no juvenile fish less than 4 inches collected.

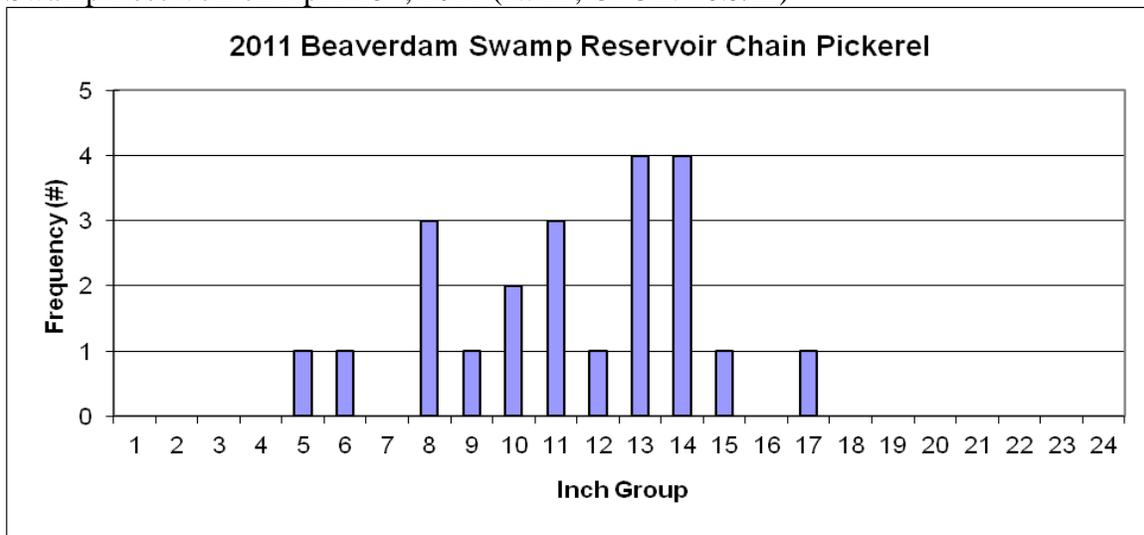
Figure 3. Length frequency distribution of redear sunfish collected from Beaverdam Swamp Reservoir on April 25<sup>th</sup>, 2011 (N: 47, CPUE: 35.3/hr)



### Chain Pickerel

The chain pickerel population within Beaverdam Swamp Reservoir appeared to have expanded over the last few years, but recent surveys have shown declines in catch rates. The 2011 survey yielded a total of 22 chain pickerel for a CPUE of 16.5 f/hr. This catch rate is below the 2010 CPUE of 21.9 f/hr and well below the record catch rate of the 2009 survey (CPUE: 27 f/hr). The 2008 survey had a catch rate of 18.5 f/hr. The 2011 collection of chain pickerel was centered on young fish in the 8 to 14 inch range with the largest pickerel measured at 17.4 inches. Chain pickerel will take advantage of the bluegill forage base that is present along with hopefully controlling the numbers of juvenile yellow perch. Beaverdam Swamp Reservoir has produced a few citation-sized pickerel over the last few years. Citation-sized fish will continue to excite anglers if given the chance by anglers that release them unharmed.

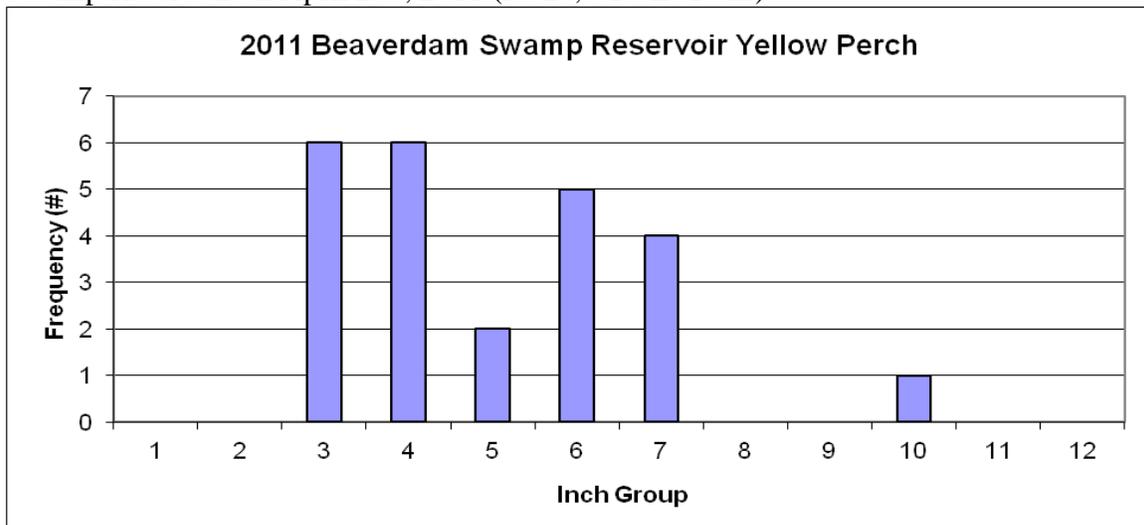
Figure 4. Length frequency distribution of chain pickerel collected from Beaverdam Swamp Reservoir on April 25<sup>th</sup>, 2011 (N: 22, CPUE: 16.5/hr)



### Yellow Perch

The 2011 survey showed a yellow perch population centered on small fish in the 3 to 7 inch range. The collection of 24 yellow perch yielded a CPUE of 18 f/hr. This catch rate is well below the 2010 survey (CPUE: 37.3 f/hr). The perch ranged in size from 3 to 10 inches with only one fish larger than 8 inches in size. Anglers had been catching an increased number of larger perch over the last few years. A total of 19 citation-sized yellow perch were reported during 2010. This follows up a total of 13 citation perch reported during 2009. The wave of larger yellow perch has declined with only one citation-sized perch reported during 2011.

Figure 5. Length frequency distribution of yellow perch collected from Beaverdam Swamp Reservoir on April 25<sup>th</sup>, 2011 (N: 24, CPUE: 18/hr)



### Remaining Species

The remaining 5 species of fish collected in low abundance during the electrofishing survey were: golden shiner (13), brown bullhead (2), American eel (2), creek chubsucker (7) and gizzard shad (1). These fish species provide some diversity to the fishery and the possibility of exciting an angler from time to time. Although not collected during any of the recent surveys, channel catfish are present within the reservoir and offer anglers another fishing opportunity worth exploring. Some anglers have been able to catch some respectable catfish over the years.

### Summary:

The electrofishing survey of Beaverdam Swamp Reservoir showed a fishery consisting of 11 species of fish. The primary fish species are the largemouth bass, bluegill, black crappie, redear sunfish and chain pickerel. These species comprised the majority of the fishery's biomass. The reservoir still provides some decent bass fishing even though the numbers of citation-sized bass has dropped over the last few years. The majority of the bass sample consisted of bass in the 12 to 15 inch range. An earlier sample in the beginning of April may have allowed for the collection of some larger female bass to show a better distribution of larger fish. The overall catch rate of largemouth bass has shown a serious decline when compared to past surveys. The collected bass showed higher relative weight values when compared to past surveys.

The bluegill fishery is primarily based on small fish less than 6 inches in length. The catch rate of bluegill (152.3 f/hr) showed a major decline when compared to the high CPUE of 2010 (562 f/hr). The electrofishing total of only 3 black crappies showed the spotty nature of finding these schooling fish. The catch rate of redear sunfish showed a slight decline, but an average size that was much better than the bluegills. The reservoir has a decent yellow perch population that has created excitement for a number of anglers that target them. The citation data from 2010 showed a total of 39 citation-sized fish reported. This total is represented by 19 citation yellow perch, 15 black crappies, 3 largemouth bass and 2 chain pickerel. The citation data from 2011 was not as impressive as 2010 with only 7 citations reported. Anglers reported 4 citation crappies, 1 largemouth bass, 1 chain pickerel and 1 yellow perch.