



## LAKE CHESDIN 2011

Lake Chesdin is a 3,100-acre water supply reservoir on the Chesterfield-Dinwiddie County line administered by the Appomattox River Water Authority. Chesdin is a productive lake that, for many years, has offered excellent largemouth bass fishing, good crappie fishing in spring and fall, and a great channel catfish fishery. It contains a diverse community of fish as evidenced by the 26 species that were collected in the electrofishing and gill net samples during 2010.

Historically, Lake Chesdin has been considered an excellent bass fishing lake. According to some anglers, the bass fishing has gotten tougher in recent years. This doesn't appear to be due to lower abundance. Our sampling results indicate that bass abundance, particularly that of fish > 12 inches, is at historical highs. So, what's going on? Two factors may be at play here. First, fishing pressure has increased over the last twenty years. Although a very high proportion of caught bass are released, they can become more wary of artificial lures and become stressed and less likely to bite for awhile after release. Secondly, it appears that gizzard shad in the 5-8-inch range have become much more abundant in the 2000's. These fish provide an excellent source of food for bass, particularly because of their size. In most reservoirs, larger gizzard shad are much more common, and many are too large to be eaten by most bass. As a result, Chesdin bass appear to have an unusually abundant, highly desirable source of food that keeps them well fed and may make them more difficult to catch.

Largemouth bass year class strength appears to be variable in Lake Chesdin, and we think we know why. We've discovered a high correlation between year class strength and mean July flow in the Appomattox River during the fishes' first summer of life. Higher flows produced bigger year classes, and summer droughts reduce year class strength. This may be a function of food supply, which can be affected by the amount of nutrients brought to the lake by the River. But, it's just as likely that this is a function of low lake water levels, which push young bass away from vegetated shorelines (water willow is typically common in Chesdin) and into normally off-shore areas without much cover. This makes them more susceptible to predation and can reduce the number of young bass that survive during years of summer drought. Periodic good year classes appear sufficient to maintain a good supply of adult bass in Lake Chesdin. Unfortunately, our fall sampling for young-of-the-year bass in 2010 indicated that the historically low precipitation that occurred during the June-July period resulted in a very poor year class. Hopefully, recent and future strong year classes will continue to support the high quality adult bass population that existed in the lake during 2010.

The size structure of the bass population continued to be highly desirable in 2010. The number of 8-12-inch fish was relatively low, but bass larger than 12 inches were quite abundant. Most were between 12 and 18 inches, but 13 fish longer than 20 inches were collected, which is outstanding. No bass were aged in 2010. Based on data collected in 2009, growth rates were well above statewide averages through age 5, but were relatively slow after that. This may be attributed to the relatively high abundance of large bass, which increases competition for food. However, it could be genetically linked as well. This population does contain a fair proportion of Florida bass alleles (genes), but not at the levels observed in many other lakes in Virginia. All adult bass were very plump and appeared to be very healthy. We will continue to monitor this population annually for signs that Largemouth Bass Virus may have affected the abundance of large fish. This is suspected to have already occurred in other Virginia impoundments.

Lake Chesdin was known in the past for its crappie fishery. But, the average size of crappie has been declining for years, probably due in large part to the establishment of white perch in Chesdin. They first showed up in our samples in 1992, and the population began exploding shortly thereafter. Age data collected in 2009 indicated that growth rates were very anemic after age 4. It was not unusual to find 8-12-year-old crappie measuring only 8 or 9 inches. This is due to excessive numbers of fish in the adult population as well as the high abundance of white perch (we collected 434 white perch in the gill nets), both of which result in relatively high competition for food. Gill net sampling in 2010 confirmed that this situation still exists. A total of 319 black crappie were collected in only X net-nights of sampling effort, and only 4 of these fish exceeded 10 inches. Anglers are encouraged to harvest all crappie and white perch caught in order to reduce population size and competition for food.

As has always been the case, bluegill were very abundant in Lake Chesdin in 2010. They were far and away the most abundant species in the electrofishing sample. Unfortunately, their average size remained relatively small. Just as in previous years, we did not collect any over 7 inches. Growth was fair, but this species is not long-lived in this lake. Given the abundance of potentially competitive species such as gizzard shad, pumpkinseed sunfish, redear sunfish, warmouth, white perch, yellow perch, and others in this lake, very little improvement in growth and size is expected in the future.

The existing walleye population in Lake Chesdin is relatively low due to inconsistent stocking as a surplus-only water. Walleye stocking in Lake Chesdin was elevated to a higher priority beginning in 2006 because walleye growth has been excellent, though the population size was small. The stocking rate was doubled in 2007 in an effort to increase population size. Unfortunately, there have not been nearly enough healthy fingerlings available to fulfill this request. Gill net samples were collected during October, 2010, and sampling effort was relatively low (12 net-nights), but we still had hoped to catch more than four walleye. Additional sampling typically done during November and December was not attempted due to the fact that no walleye were stocked during either 2009 or 2010. This population will continue to remain low until stockings become more consistent at high levels.

Because of poor gill net catches over the years, the stocking rate for striped bass was reduced to the trophy fishery rate (10/ac) beginning in 2007. Only two were collected during the 12 net-nights of gill net sampling in 2010. Although Chesdin does not appear capable of producing a substantial striped bass fishery, there is a group of anglers that know how to find them in the lake and in the upper-Appomattox River during the spring spawning run. Therefore, for the time being, we will continue to stock them.

Channel catfish were again abundant in the gill net samples in 2010. Good numbers of eating-size fish from 2-4 pounds were common, and several in the 4-6-pound range were also collected. These fish were typically very fat and healthy looking. Anglers are encouraged to take advantage of this under-utilized resource.

A variety of other species were collected with the electrofisher including yellow perch, chain pickerel, redear sunfish, pumpkinseed, green sunfish, and warmouth. Of these, the only one that occurred at decent sizes in fair numbers was the redear sunfish. We collected 73 and a number of them were in the 8-9-inch range. Decent size pickerel can be expected to be caught on occasion, but the population numbers are not high.

The water level of Lake Chesdin reached record lows (down approximately 12 feet) during the late summer of 2010. This was due to a combination of record drought, record heat which increased evaporation, growing water withdrawals for human uses, and the minimum flow-by requirement to maintain adequate flows for riverine resources in the Appomattox River downstream of Brasfield Dam. The frequency of low water levels has increased in recent years due to the increasing frequency of drought, increasing water demand for human uses in the surrounding counties, and the increased flow-by requirement instituted in 2002 when the water treatment plant capacity was expanded. Up to this point, we have no evidence to suggest that this has had any significant effect on the fish populations of the lake. However, the increased frequency of low flows in the Appomattox River downstream of the lake may very well have had an impact on its living resources. Low water levels in the lake have, at an increasing frequency, impaired access to it by recreational users. In addition, reductions in flow into the lake have increased the frequency of implementing the minimum flow-by requirement and the need for conservation measures by human users. A meeting of relevant state agencies and stakeholders took place during fall, 2010 to discuss these issues. There was a consensus that the model used for calculating inflows to the lake was providing over-estimates, particularly during periods of drought. Correcting this error would have reduced the flow-by requirement for times when outflows were supposed to be equal to inflows, which would have helped sustain a higher lake level. In addition, some of the stakeholders feel that the minimum flow-by requirement of XXX cubic feet per second is too high and not justified. As a result of this and increasing human demand, the Appomattox River Water Authority is seeking a variance to have its permit revised to include a lower flow-by requirement. The Virginia Department of Environmental Quality will be reviewing this application, and they have already indicated that they will be requiring an Instream Flow Incremental Methodology study to re-evaluate the resource flow needs within the Appomattox River downstream of Lake Chesdin Dam

(also known as Brasfield Dam). This is expected to take a period of years, and VDGIF will be intimately involved in this process as it attempts to fulfill its mission to protect living resources and recreational uses within Lake Chesdin and the River downstream, and aesthetic values associated with the River.