

CLAYTOR LAKE FACTS

March 30

2015

Claytor Lake Facts is a document of assorted facts that should be used for making informed decisions about events that impact the future of this body of water. This document should be studied and/or challenged by all interested lake users and will be adjusted periodically to reflect the latest and most correct information.

A guide to being
informed



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- **The Claytor Project** was completed in 1939 to produce electrical power for the region.
 - The project has four generating units capable of producing 75 megawatts of electricity.
 - The project reservoir has a surface area of 4,633 acres at normal full pond elevation of 1846 feet
 - The reservoir is 21 miles in length and has over 100 miles of shoreline.
 - Lake water retention time is 30 to 60 days depending on inflow. Minimum daily flows through the dam are 486 million gallons in a 24 hour period.
- **Recreation use** of Claytor Lake; according to the Recreation and Angler Use Assessment conducted as part of the relicensing process for the Claytor Project, was from most to least:
 - 1. Boat fishing
 - 2. Pleasure boating
 - 3. Visiting the beach
 - 4. Water ski/tubing
 - 5. Bank/pier/dock fishing
 - 6. Picnic/family gatherings
 - 7. Jet skiing
 - 8. Canoeing/kayaking
 - 9. Public park
 - 10. Walking/hiking
- **Recreation days** , according to the Recreation and Angler Use Assessment were as follows:
 - 450,000 recreation days (a day is a 24 hour period) were recorded at public recreation sites and commercial marinas using an intercept marketing technique.
 - 490,000 recreation days were contributed to the study by property owners responding to a mail questionnaire.
- **Recreation expenditures**, according to the Recreation and Angler Use Assessment, were as follows:
 - Expenditures by site users were \$58 per visit with 59% of these expenditures occurring in Pulaski County. Expenses were for gasoline, food, drink, overnight fees, camping, and bait.
 - Recreation expenditures by lake property owners were \$212.78 per visit. Expenses were primarily gasoline and food.

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- Recreation expenditures by regional lake visitors were \$25.80 per day. Expenses were gasoline, food, lodging, boat rental, and tackle.
- Recreation expenses expanded by recreation days times per visit dollars spent yields the following total dollars per user group:
 - Marina/public access users-----\$26,202,718 per year.
 - Property owners-----\$95,532,049 per year.
- **Recreation expenditures by anglers**, according to the Recreation and Angler Assessment, were as follows:
 - Recreation expenditures by anglers were a separate but inclusive part of AEPCo's user study and yielded the following:
 - Angler expenditures were \$575,000 per year with 51.5% of the expenditures outside of the Claytor Lake area, indicating that expenditures were made closer to anglers' homes.
- **The economic impact of Claytor Lake** is rather significant to the region.
 - According to Claytor Lake State Park documents, the influx of 275,000 visitors in 2013 to the state park yielded an economic impact of \$8,149,296.
 - The New River Valley Planning Commission (Region 4), which is comprised of the counties of Floyd, Giles, Montgomery, Pulaski, and the city of Radford, stated that trails and outdoor recreation, of which Claytor Lake is a major attractor, generated more than \$231,000,000 of economic impact to the region. According to the Virginia Travel Corporation, this number represents approximately 1.4% of statewide travel expenditures
 - Lake property owners, according to the county of Pulaski, generated 16% of the total real estate revenues in 2014 (\$2,561,589/\$15,717,210).
 - It should be noted that per acreage evaluations of lake property versus non lake property is 12 times greater per acre due to different land use calculation reductions of lake property, but for lake front property owners, this number can exceed a ratio of 80 to 1.
- **Actual users** of the physical body of water is as follows during the recreational season:
 - 36.47% of the lake is used for boat fishing.
 - 63.53% of the lake is used for water sports and pleasure boating.
- **The number of watercraft** on the water from June through August are:
 - Angler boats are estimated at 5,192.
 - Pleasure boats are estimated at 6,044.

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- Jet skis are estimated at 1,604.
- **Possible fish catches** from Claytor Lake range from bass to carp. Recently released statistics from the Virginia Department of Game and Inland Fisheries indicate the following:
 - Largemouth Bass
 - 71% over 8 inches are also over 12 inches.
 - 35% over 8 inches are also over 15 inches.
 - Smallmouth Bass
 - In 2014, Claytor Lake produced 5 smallmouth bass trophy award certificates (more than 5 pounds or over 20 inches), ranking Claytor Lake as the second-best Virginia reservoir for trophy smallmouth bass.
 - Walleye
 - The walleye population is maintained through annual stockings of a unique strain of New River walleye.
 - In 2014 anglers reported 9 trophy award certificate size walleyes (more than 5 pounds or 25 inches) caught in Claytor Lake.
 - Spotted Bass
 - 59% over 7 inches are also over 11 inches.
 - 16% over 7 inches are also over 14 inches.
 - The state record spotted bass of 4 pounds, 7 ounces was caught from Claytor Lake by Rod Kegley in March 2012.
 - Carp and Catfish
 - Flathead and channel catfish up to 20 pounds can be caught in Claytor Lake.
 - With catches of 20 to 30 pound carp possible, anglers from as far away as England come to fish for them at Claytor Lake.
 - Bluegill
 - 39% over 3 inches are also over 6 inches.
 - Bluegill are the most frequently harvested fish at Claytor Lake.
 - Black Crappie
 - Black Crappie are not numerous, but a good day's catch yields fish that average $\frac{3}{4}$ pound.
 - Yellow Perch
 - In 2014 anglers reported 12 trophy award certificate size perch (more than 1 pound 4 ounces, or 12 inches).

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- Striped Bass and Hybrid Striped Bass
 - This population depends on the preferred temperature and oxygen habitat being renewed by fresh water entering the lake from New River, which does not happen in dry years.
 - Claytor Lake produced 8 trophy award certificate size stripers (more than 20 pounds or over 37 inches) in 2014 ranking second in the state only to Smith Mountain Lake.
 - Claytor Lake is the top destination in the state for hybrid striped bass, producing 8 trophy award certificate size hybrids (more than 8 pounds or 20 inches) in 2014.
- Alewife
 - The 2014 alewife spawn was the largest since 2011, perhaps as a result of nutrient availability from high inflows from the New River in 2013.
- Gizzard Shad
 - One of the largest spawns of this species occurred in 2010.
- **Facts about Hydrilla**
 - Hydrilla is a submerged aquatic plant that is sometimes called the perfect invasive non- native plant. No other plants can compete with it as it forms nearly an impenetrable mat of stems and leaves at the surface of the water. This plant causes many problems in ponds, lakes, and rivers. Hydrilla was introduced to North America in 1951 or 1952, when an aquarium plant dealer discarded 6 bundles of hydrilla in a canal near his business.
 - This species of plant was determined to be an aquatic problem in the canals and rivers in Florida in the 1990's and, since then, this plant has become the number one aquatic nuisance in the United States because:
 - The harvesting of hydrilla is not a viable endeavor for applications such as cattle feed as hydrilla is 90% water and has low nutrient value.
 - Because hydrilla is 90% water it needs fewer nutrients than other plants to survive.
 - Hydrilla competes with beneficial native vegetation and replaces it because of its reproductive mechanisms and tolerance of low light.
 - Hydrilla contributes to sedimentation by slowing down water flow.
 - Hydrilla interferes with public water supplies.
 - Pulaski County water intakes above the Lighthouse Bridge are almost under the sedimentation level of the lake bed.

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Pulaski County officials have been working on this problem for over a year and to date have not found an economical solution to this problem.

- Hydrilla harbors the presence of human and animal diseases as it entraps and drowns animals.
- Hydrilla stops lake navigation of boats by clogging their water intake systems and can lock up a propeller shaft.
- Hydrilla causes jet skis to grind to a halt within 10 feet of mat penetration, due to the tight tolerances of the jet ski drive systems.
- Hydrilla impedes shallow water habitat and eventually disrupts the ecosystem to the point of non-existence.
- Hydrilla precludes shore anglers from fishing as lures cannot move through mat mass.
- Hydrilla makes recreational activities such as swimming, boating, skiing, and sport fishing difficult if not impossible.
- Hydrilla is a drowning hazard.
- Hydrilla had consumed 10% of Claytor Lake(394 acres) prior to the introduction of sterile grass carp in 2011, and was projected to consume 25% of the lake within two years. It was considered possible the Little Wytheville area would become non-navigable.
- Small populations of hydrilla may temporarily have a desirable effect on sport fishing as the mats effectively concentrate game fish in an easily accessible area. Unfortunately, this perfect storm plant expands to large mats that make them unsuitable for the growth and survival of sport fishes and other aquatic animals due to low oxygen levels. Heavy hydrilla infestations (ones that cover 25% to 30% of an impoundment) eliminate fish habitat, cause stunting, and reduce the number of harvestable fish.

○ **The lake use impacts of hydrilla**

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- Visual impact of hydrilla at Wakulla Springs, Florida (notice the lack of people and boaters).



- **Mats** are so dense that water related activities come to a halt.



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- **Boats** cannot move through these mats



- **Controlling hydrilla**

- Hydrilla easily reproduces, as it produces tubers that lie in the silt and can produce hydrilla for about ten years. In addition turions (seed pods) are released in the fall from the plant and travel in the water to create new infestations the following year, and finally stems less than one inch can break off of the plant to produce a new plant. The location specific chemical control of hydrilla is not a one-time thing in Claytor Lake but rather has to be done annually due to our lake turnover rate (Claytor Lake turns over through the dam every thirty days) which prevents the appropriate application chemicals from staying on the plant long enough to eradicate it. Komeen is the chemical used for annual kill back of hydrilla. This chemical is fish and water consumption safe.
- The cost of killing back hydrilla every season chemically is about \$1,000 per acre which equates to about \$394,000 at the 10% hydrilla infestation rate, and \$1,158,250 at the 25% hydrilla infestation rate.

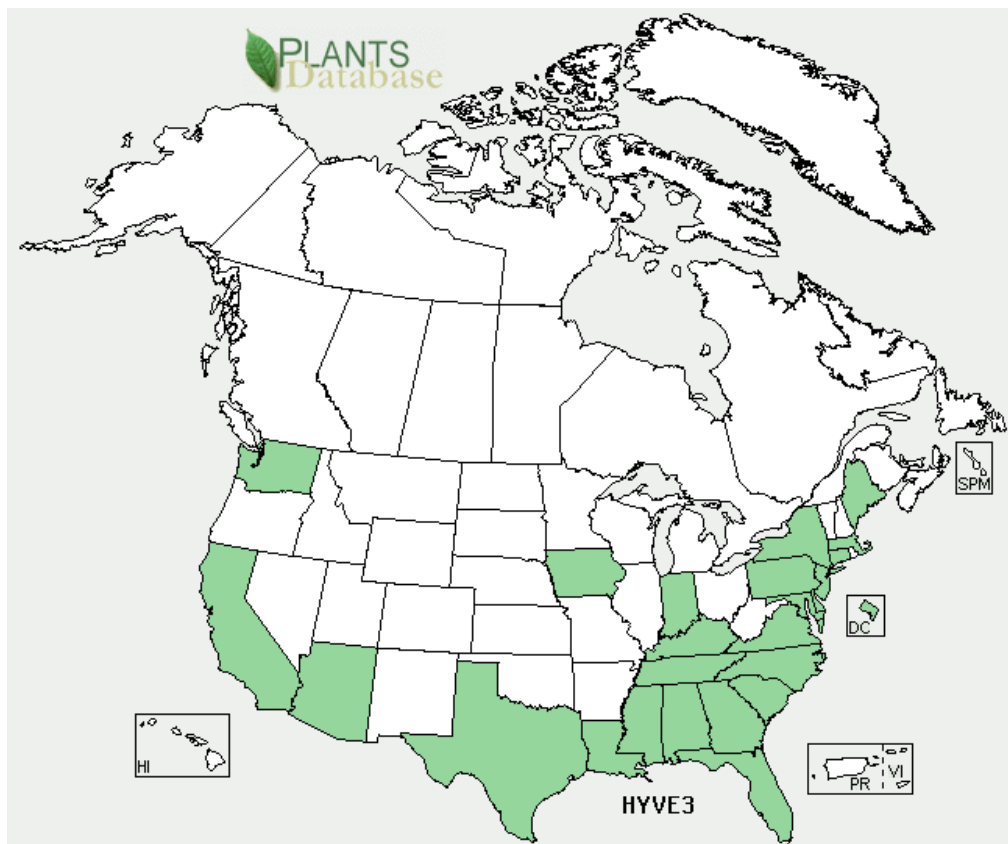
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- Mechanical harvesting is not practical for Claytor Lake, as the water is turbid, the lake bottom depth varies extensively, and the machinery is expensive and costly to repair. In addition, the very process spreads hydrilla by breaking stems off and releasing turions to the water column. In addition the disposal of the harvested product is costly as it has no value.
- Triploid Grass Carp appeared to be the only economically and practically feasible alternative for Claytor Lake after exhaustive studies were done in the best interest of all lake users.
- **The economic impact of hydrilla**
 - California considers hydrilla to be the most serious threat to its water resources and has spent \$15,000,000 on hydrilla control since 1976.
 - Hydrilla blocked the intakes of the St. Steven hydroelectric facility on Lake Moultrie, S.C. The power generation loss was \$4,000,000 in revenues, and \$1,200,000 in emergency treatment to get rid of the hydrilla.
 - In one analysis, hydrilla coverage increased 400% between 1983 and 1992 on Lake Seminole, leading to reduced tourism and causing an estimated loss of about \$13,000,000 to the local economy.
 - Florida is now spending \$90,000,000 per year to combat hydrilla.
 - Hydrilla mats (we saw these floating mats during the flood of 2013 as they travelled down the lake like small islands) clogged the intake screens and shutdown two turbines at the Guntersville Dam.
 - Hydrilla mats floated over the spillway and blocked water intakes downstream at Wheeler Dam (this resulted in a \$170,000 loss in revenues)
 - When hydrilla took over Orange Lake in North Central Florida, the economic impact was \$11,000,000 annually to the lake, surrounding properties, and businesses.
- **North Carolina's economic impact analysis**
 - The State of North Carolina's Division of Water Resources issued a document noting the seriousness of the threat of hydrilla to the state and stated.
 - The State of North Carolina has approximately 550,000 acres of inland waters (that is, fresh water bodies), including ponds, lakes, and streams. The Division believes that hydrilla could be established in 75% of these water bodies. Both Falls and Jordan Lakes (near Raleigh) are shallow enough to support hydrilla populations on 30-40% of their acreage, and are close to already infested lakes.
 - Hydrilla is capable of infesting 3,000 acres of Lake Gaston and the battle to control this species is ongoing. Lake Gaston lake front

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property real estate revenue supports one third of Warren County's tax base.

- The appearance of a hydrilla infestation on Lake Norman would have a devastating impact on property values, lake usage, and the local economy.
 - White Lake (1,000 acres), Lake Waccamaw (about 9,000 acres), and Lake Mattamussett (30,000 acres) could be totally overrun by hydrilla.
 - North Carolina believes that any decrease in lake usage will cause serious economic losses to communities, and counties, surrounding these water resources.
- **The Scope of hydrilla control** is becoming a national problem.



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- **Hydrilla control is viewed differently**
 - Supporters of hydrilla control include:
 - Almost every DEQ Agency in the United States
 - VDGIF
 - FOCL
 - Shoreline property owners
 - The Claytor Lake State Park
 - The Claytor Lake marinas
 - The Virginia Bass Federation(virginiafederationnation.com)
 - The National Bass Federation.
 - Boat U.S. Angler.
 - And Skinnymoose.com to name a few
 - Duck hunters do like hydrilla because it increases the feeding habitat for ducks.
 - Some anglers believe that hydrilla is good for the fishing habitat, but may not realize the detriment of uncontrolled hydrilla growth to aquatic life and fishing. Managing hydrilla growth and promoting the growth of beneficial native aquatic vegetation has been shown to be a better option for fish populations and fishing.
 - According to the University of Florida (which is considered by many to possess the greatest knowledge base in the United States concerning the impact of hydrilla on water bodies) “The detrimental impacts caused by hydrilla far outweigh any beneficial impacts, and is far harder to manage than native populations, which it displaces”.
- **The ecosystem in Laymans’s Terms**
 - As with all ecosystems, Claytor Lake’s ecology is very complex and like all ecosystems it is based on available minerals, sunlight, and temperature. Plants use the minerals and energy from the sun, in a process called photosynthesis to reproduce. The small plants, most microscopic, are the base of the food chain for most of the lake’s animals. The animal food chain starts with zooplankton, which eat phytoplankton. Larger zooplankton eat the smaller zooplankton which in turn become food for small fish, that become food for larger fish. All fish species depend on larger zooplankton, at least during their early life. Some fish of particular importance in Claytor Lake, alewives and gizzard shad, swim about filtering zooplankton from the water with their gills. These fish are consumed by most of the larger fish in the lake, such as striped bass and hybrid striped bass.

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- Fresh water mussels are another important part of the food chain. They sit on the lake bottom filtering plankton from the water. Mussels are eaten by muskrats and muskrats by eagles and coyotes.
- Another food chain, still based on minerals and sunlight, is visible plants. These plants become food for grazing animals like crayfish and insects. These in turn become food for fish. Some fish use the larger plants as cover, hiding from their predators, and in turn lay in wait for smaller fish. Ducks are part of the large plant food chain and become food for eagles and other large predators. The story does not end here.
- During the summer heat, plant production increases and another food chain becomes important. Plants, particularly phytoplankton, reproduce more rapidly in warm weather. With more phytoplankton, comes more zooplankton. When plankton die, they begin to sink and bacteria and fungi attack their corpses. The process of decomposition consumes oxygen from the water. Since warm water holds less oxygen than cold water, the amount of oxygen drops to levels that fish cannot survive. Some particularly warm years, large striped bass die in high numbers as they are particularly susceptible to warm temperatures and low oxygen. They then become food for other bacteria and fungi.
- Many more food chains occur in the lake and therefore food chains are more correctly known as the lake's food web.
- **A simplified Lake Food Web**

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