

Chickens in the Watershed

A changing watershed – what does it mean for our Treasured lake?

A lake's watershed is the total land area above the lake that, during a rainfall/runoff event, drains into the lake. For Lake Martin, that area begins below Lake Wedowee Dam (also known as Lake Harris Dam) and extends downstream on the Tallapoosa River to the Lake Martin Dam and includes all of the tributary streams that flow into the Tallapoosa River and the lake along the way. This area, known as the Middle Tallapoosa Basin, covers 1,530 square miles and includes part, or all, of the communities of Lineville, Ashland, Roanoke, Daviston, New Site, Lafayette, Alexander City, Dadeville and Camp Hill.

It is true that the waters of the Lake Wedowee Watershed also flow into our lake through the dam. Fortunately, Lake Wedowee processes the majority of pollutants it receives from the Upper Tallapoosa Basin through settling of particulates and biological processes, so for this article, I am focusing on the Middle Tallapoosa Basin. The significance of this land area to our lake is that all pollutants generated/released within this area have the potential to flow into our lake; thus, to be a good steward of Lake Martin, one must be a good steward of its watershed, as well.

In the past several decades, poultry production has become an increasingly important agricultural commodity in Alabama and has spread across the state in response to the rising demand in the American diet. Poultry production has been positive for farmers and has become Alabama's No. 1 agricultural industry. Poultry has a \$15.1 billion impact on the state's economy and employs more than 86,000 people, according to the Alabama Poultry and Egg Association. Most Alabama farm families grow broiler chickens (for meat versus egg production), pushing the state to its No. 2 ranking among all states in U.S. broiler production.

Shifts in poultry production have been toward fewer, larger, more concentrated production facilities, and that has brought about the need for more efficient and environmentally sound waste management. In fact, virtually all poultry farms in Alabama have shifted to 'factory farms,' displacing the family farms of the past. Today's chicken farmers raise day-old chicks to about 5 to 6 pounds in just six weeks.

The farmers are required to contract with one of only a few corporate entities – Koch Foods, Inc., Tyson Farms, Inc., or Pilgrim's Pride Corporation – to receive chicks and feed. Profit margins tend to be tight. Factory farms, called concentrated animal feeding operations or CAFOs, typically have anywhere from

two to more than a dozen large chicken houses that contain as many as 44,000 birds per house. The largest of these – called mega-houses – are 66 feet wide by 600 feet long.

Recently, Lake Watch of Lake Martin members reported newly-constructed chicken houses along state Route 49 north of Horseshoe Bend National Military Park, which is in the heart of our lake's watershed.

This news prompted us to do a survey of poultry production in the Middle Tallapoosa Basin. A scan of this area in Google Maps yielded a total of around 120 chicken houses on approximately 26 farms, all of which looked very new, as they had shiny metal roofs versus old rusty roofs. Actually, this estimate is probably low, due to ongoing construction of new houses.

Based on an estimate of approximately 400 tons of litter produced per chicken farm per year, a rough estimate of chicken litter production in our lake's watershed equals about 10,000 tons per year. A rough conversion of this amount to a 'human equivalent' would represent the waste generated by a city of more than 200,000 people. That's a lot of waste. So, let's examine the impacts of this new enterprise on our watershed and our lake.

On the positive side, poultry litter contains high nitrogen and phosphorus, making it a very good organic fertilizer for crops, hay, gardens and landscapes; however, nutrients, such as phosphorus and nitrogen, build up in the soil if application rates are higher than the crop can absorb. Following a nutrient management plan and proven best management practices would improve manure nutrient use efficiency and reduce the impact of the land application of manure on water quality of nearby streams, rivers and lakes.

Chicken manure is especially degrading to waterways because it contains two to four times more nutrients, particularly nitrogen and phosphorus, than the manure of other types of livestock. While this makes chicken manure a useful fertilizer, it can also have detrimental effects on water quality and soil quality. When manure washes into streams, rivers and lakes, the added nutrient load could lead to rapid algal growth, turning lakes into green soups of algae. An influx of chicken manure also contributes disease-causing bacteria, parasites and viruses, as well as oxygen-demanding organic matter that, upon decomposition, can create oxygen-depleted aquatic dead zones where little-to-no life can exist.

You may be thinking 'is this all hypothetical, or for real?' It's been very real in the Chesapeake Bay and its watershed where agriculture, primarily poultry production, has been the largest polluter. In the 1990s, vast



LAKE WATCH

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stretches of the bay became dead zones, contaminated with manure, pathogens and other pollutants. In 1997, an outbreak of the toxic marine algae *Pfiesteria* killed thousands of fish and sickened several people. Since then, through government, agency and farmer efforts, waste management and water quality conditions in the Chesapeake Bay have improved.

This toxic algal bloom phenomenon also happens in freshwater lakes when they receive too many nutrients, as described in my *Lake* magazine article in October 2019.

Closer to home, earlier this year, the Mulberry Fork of the Black Warrior River suffered a major wastewater spill from a chicken processing plant, River Valley Ingredients, owned by Tyson Farms, Inc. The spill killed an estimated 175,000 fish. The Alabama Department of Environmental Management reported the incident was so large that direct counts

of dead fish were not possible. This incident highlights the industry's environmental perils beyond the chicken farm.

So what can we do to protect our lake from becoming another Chesapeake Bay or Mulberry Fork? Fortunately, there are regulations and guidelines in place for environmentally sound management of poultry farms. ADEM requires annual permitting for farms of 125,000 chickens or more raised in an enclosed environment. The permit requires a detailed waste management plan to minimize runoff of manure/litter to local waterways. The farmers have to file inspection reports every year, showing soil test results and how the farms are meeting standards.

The question remains, is our Treasured lake adequately protected from an influx of nutrients, pathogens and dissolved oxygen-depleting organic matter from the 10,000 tons of poultry waste generated each year above our lake?

Follow-up questions include: Where is all that chicken litter being spread? Are the current management practices adequate to prevent runoff from chick-

en waste into local waterways? Is our lake currently being impacted by these recent changes in our watershed? Should there be a limit to the number of poultry farms, other animal CAFOs and other major sources of nonpoint source pollution in our Treasured Alabama Lake's watershed?

As stewards of the lake and its watershed, Lake Watch has initiated several steps to answer these ques-

tions. The first step was to get an estimate of the magnitude of the changes (amount of chicken production) in our watershed, which was described above. We are planning a more advanced approach to locate and quantify these changes, involving a more accurate GIS analysis of the watershed.

The second step we are taking is to identify streams that now have significant poultry production farms near them and to monitor their water quality. We have established three stream sample sites and con-

ducted a 'dry weather' sample. This sample indicated low levels of *E. coli*, none of which were above state standards.

'Wet weather' sampling throughout the year is needed at the three sites, and additional sites, to see if runoff events are transporting contaminants to streams, the river and the lake. We are also investigating other water testing techniques to test for additional pathogens, such as *Salmonella*, and for nutrients.

In closing, I want to say that I love chicken (especially fried), and I love farmers, since they produce our food. We are hoping that test results confirm clean streams and a clean lake. We'll keep you posted. If you are concerned about this evolving change in the watershed of our Treasured lake, join us in our stewardship efforts – we need your help! For more information on Lake Watch, go to www.lakewatch.org.

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