

## Arkansas Pond Bulletin

July 2023

### Quick Hit: Blue-Green Algae in Livestock and Fish Ponds



The worst of summer is nigh. For livestock and fishing ponds this means water quality degradation as baseline stresses from heat increase. One of the most dangerous developments in ponds during the peak of summer is blue-green algae blooms. These “cyanobacteria” are photosynthetic bacteria that can out-compete beneficial green algae and dominate the algal community during the hottest parts of the year. Of the few thousand species of blue-green algae, several are capable of producing neuro- or hepatotoxins that can cause sickness to mortality in animals hours to days after ingestion. Fish are also vulnerable to these toxins and significant mortalities can occur during excessive blue-green algae blooms.

Many blue-green algae surface scums resemble spilled paint in hues of bright to deep green, bright blue, brown, red, and grey. Dipping an object into a blue-green surface scum usually leaves the object coated in the scum when removed. A pint to quart-sized clear jar one-half full of affected water and left in a refrigerator overnight can help

identify blue-green algae. If by morning the green in the water has settled to the bottom, green algae are likely the dominant variety. If the green in the water is congregated near the water's surface, blue-green algae are likely present.

Potentially toxic blue-green algae species are not always producing toxin. The only way to confirm the presence of toxin is laboratory testing. The Arkansas Water Resources Center Water Quality Lab (479-502-9843) and several private labs can identify algae and test for the presence of algal toxins. For a list of additional capable labs, contact the Arkansas Department of Environmental Quality (501-682-0744). The analysis can take several days so avoid exposure and keep animals from the affected water until results are returned.

Signs of acute cyanotoxin poisoning in livestock include weakness, lethargy, staggering, difficulty breathing, convulsions, bloody diarrhea, pale-colored mucous membranes and death in severe cases. Survivors of acute exposure, and likely those exposed to chronic lower-concentrations of cyanotoxins, can experience weight loss and photosensitivity (sunburns to exposed skin). Human external exposure to cyanotoxin can result in skin, eye, nose, mouth, and throat irritation. Ingestion can cause headache, lethargy, abdominal pain, vomiting, and diarrhea. Death is possible with high levels of consumption.

Blue-green algae blooms can be treated with copper sulfate or sodium carbonate peroxyhydrate. Animals should be excluded from the pond for at least one week after herbicide treatment because toxin concentration will likely temporarily increase as the blue-green algae is dying from herbicide. For long-term control, a nutrient binder is recommended to strip phosphorous from the water to slow the return of the bloom. Apply either aluminum sulfate or a commercially-available flocculant (like Phoslock or Phosclear, brand name examples) about one week after herbicide application (See Control of Clay Turbidity in Ponds, linked below, for more details). It may take a few cycles of this treatment (herbicide/flocculant) during the year to slowly bring nutrients and algae blooms back under control. Aquatic dye, particularly those containing Acid Yellow 23 and that are EPA-registered, can help somewhat with suppressing algae blooms. There are no practical biological controls. The best solution is prevention by minimizing nutrient input from fertilizer runoff, poultry litter, livestock loafing/wading in the pond, and over feeding fish. Old, excessively shallow livestock ponds (less than 3 ft average depth) may be better off with a full renovation; draining and excavating accumulated sediment, restoring shoreline slopes, and deepening the pond back to at least 4 ft average depth with up to 10-12 ft max depth. If renovation is deemed the best route, strongly consider installing external watering systems and fencing the pond off from animal contact (More information available in FSA3128 linked below).

Cattle can require 15 to 20 gallons of water per day per animal during summer. Temperature and taste of the water can significantly impact the consumption rate of

water. Much like us drinking from a water bottle that has been in direct sun on the truck hood all day, animals will drink the hot, skunky pond water to survive but only just enough. For optimum performance, the animals need a cooler, cleaner, better tasting water supply. This is why external watering structures gravity-fed from the deeper parts of a fenced-off pond are recommended. While more inconvenient to install and maintain, these external watering systems result in cooler, healthier water for livestock, and cleaner more productive water for fish.

### **Sources and Additional Resources:**

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## **What to Watch Out for in July:**

Aquatic weeds are now fully mature and more resistant to herbicides. Contact herbicide applications during summer must be carefully carried out as killing too much plant mass at one time will cause oxygen depletion in the water and can kill fish. The general rule of thumb is treat no more than 1/3 of the pond at one time, wait two weeks before treating the next section, and so on until the entire pond is treated. In severe infestations, 1/4 sections at a time may be needed. The MP556, SRAC0360, and MP44 contain information on selecting herbicides. The easiest plant ID tool available now is Texas A&M's Aquaplant "Identify a Plant" directory <https://aquaplant.tamu.edu/>. The MP556 and MP360 contain photos of many of the common problematic weeds in Arkansas. You can also text or email me photos of the plant you're dealing with and I can advise. If you encounter an aquatic weed or fish you suspect to be non-native, please report it to me or the Arkansas Game and Fish Commission Aquatic Nuisance Species Program Coordinator, Matt Horton [Matthew.Horton@agfc.ar.gov](mailto:Matthew.Horton@agfc.ar.gov) 877-470-3309 ext. 1206. We will work together to develop a plan to contain and hopefully eliminate that invasive from their property without disrupting normal operation.

Fish kills will start increasing in frequency July-August. Environmental conditions to watch out for are 2-3 days of high heat, no wind, and heavy cloud cover. By the 3<sup>rd</sup> and 4<sup>th</sup> straight day, ponds with dense algae blooms and weed infestations will start losing fish from oxygen depletion. The largest fish of each species will be the first to go, often grass carp followed by the largest bluegills, crappie, largemouth bass, and then catfish. Once a low-dissolved oxygen kill has begun, the only thing that can provide relief is aeration or flushing the pond with fresh oxygenated well water. Unless the pond owner already has sufficiently-sized emergency aeration or pumping equipment in place for this possibility, they will likely take too long to acquire it after the fact to make much difference. Encourage clients who have invested greatly in their fisheries (trophy bass and crappie ponds, for example) to consider installing aeration systems to prevent this from occurring in the first place. All we can do in most cases is assess the extent of the kill and recommend a restocking plan.

## **Pond Management Tasks for July:**

Pond renovations should be underway for those who need it. Fertilization and feeding programs should be underway. Aquatic dye for weed/algae control will last longer now due to lower flushing rates from lack of rainfall. Continue herbicide applications for troublesome weeds. Fish stocking is not recommended from July to about September; mortalities increase significantly at high temperatures. Encourage clients to harvest largemouth bass (10-15 lbs/acre/yr for normal ponds, 25-35 lbs/acre/yr for bass-crowded or highly productive ponds). Harvest bluegill less than about 7 inches in length

up to about 25 lbs/acre/yr. Aggressive harvest of all crappie caught, especially from ponds smaller than about 25 acres is encouraged. Continue mowing grass on dams and levees to keep brush and saplings from developing. Periodically inspect drains and spillways to clear debris and clogs. Continue daily operation of aerators. For diffused aeration systems that have not yet been activated, follow the startup schedule of: Day 1, run 30 minutes then turn it off the rest of the day. Day 2, run 1 hour. Day 3, run 2 hours. Day 4, run 4 hours. Continue doubling the run time each day until you are running 24 hrs/day and keep it on for the rest of the summer.

Message me with any questions or workshop planning ideas. Most folks will start shifting their interest to the deer woods soon so we can start looking at dates for spring '24 for pond programs.

Take care,

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