

## Arkansas Pond Bulletin

November 2023

### Quick Hit: Winter Drawdowns

Deliberately reducing pond water levels during winter can provide benefits in aquatic weed, fishery, and shoreline management in certain situations. This practice involves draining 30-50% of the normal water volume from the pond in November and maintaining this lower level until about February. After then, natural rainfall and runoff can refill the pond back to full levels in time for spring fish spawning. For ponds with built-in and functional drainage piping, the process is as simple as opening the drain and closing it when the desired reduction is achieved. For ponds without functional drains, home-made siphon drains or rented trash pumps can be employed to reduce water levels.

The type of plant matters when considering a winter drawdown for aquatic plant control. Emergent plants are those who are rooted in, or at the edge of, water and most of the plant stands up above the surface of the water. Common examples include alligatorweed, water primrose, rushes and cattails. Many of these plants can actually spread more during a drawdown as they are no longer limited by water depth blocking sunlight. Though, during this time they are also more easily accessed for herbicide application, cutting, or removing with weed trimming tools/machines and excavation equipment. Submersed plants are those who are rooted, or quasi-rooted, in the water and almost all of the plant stays below the water surface. These plants tend to be more susceptible to desiccation and freezing during winter drawdowns leading to lower abundance the following warm season. Common examples include the milfoils, fanwort, coontail and hydrilla. Some species, like coontail and hydrilla, feature reproductive adaptations that help them endure exposure to desiccation and freezing that can help them persist and return healthy even after a drawdown. Other control measures, like grass carp, would be a more effective approach for these two species than a drawdown in most situations. Some rooted floating plants, like spatterdock and fragrant waterlilies (not to be confused with drawdown-resistant American lotus), are also susceptible to drawdowns. A more comprehensive list of plants and their response to winter drawdowns is available in [FSA9628 Winter Drawdowns for Aquatic Weed Control and Pond Management](#). Weather conditions during the drawdown have a significant impact on how well it controls aquatic plants. Ideally, the pond will experience 6 - 8 weeks of exposed drying with at least 2 weeks of sub-freezing temperatures. Moist soil from rainfall or groundwater seepage, or significant snowfall insulating the covered ground can reduce the efficacy of the drawdown.

Drawdowns can benefit the fishery in exposing small forage fish to predation. Often, especially in weedy ponds, forage fish can hide along the shallows among the weeds

indefinitely from predators. While seemingly good for the forage fish, it often results in very slow growth of the forage species and weaker performance of the predators as they cannot access the forage. Performing a drawdown achieves two fishery benefits; 1) the predators feed more efficiently going into winter which helps survival and can give them a nutritional boost for the following spawning season and 2) forage fish numbers can be thinned so that remaining forage grows larger faster from reduced competition which oddly can help forage spawning the following season too. Much like properly pruning a flower bush, cutting grass, or culling a herd, thinning fish from a pond often leads to growth and health benefits to those who remain. Bass-crowded ponds, those with very few forage fish and very abundant bass, may not see any fishery improvements from a drawdown. Bass harvest, forage stocking, and possibly habitat work would be necessary to correct this situation before drawdowns would become beneficial to the fishery.

Drawdowns provide opportunities to deepen shorelines, repair docks and piers, install habitat, and even do decorative shoreline-scaping (such as installing rock edges, flowering shoreline plants, bulkheads, etc). Shallow water is one of the primary factors promoting aquatic weed growth. While water is lowered, excavation equipment can be employed to deepen the pond edges to reach at least 3 feet deep quickly, and reshape shorelines to the generally-preferred 3:1 slope. Be sure to seed and protect freshly worked soil to reduce erosion and promote rapid regrowth of grass appropriate for the season. If you are in an area prone to leaky soils, it may be unwise to perform this type of excavation without subsequent soil compaction as it may compromise the sealing layers of the pond basin and lead to significant leaking.

Drawdowns are generally not recommended during summer in Arkansas. For one, we typically already have natural water level declines from increased evaporation and reduced rainfall/runoff during summer. We are also less certain when precipitation will return enough to refill depleted water supplies, compared to winter and spring rainfall patterns. Most importantly, water quality issues during summer often become more severe the shallower the pond gets. Higher water temperatures and less surface area to interact with air movement contributes to lower dissolved oxygen concentrations, elevated stress on fish, and conditions more suitable for potentially harmful algal blooms to thrive. While many submersed plants exposed to extremely hot and dry conditions from summer drawdowns are killed and their regrowth suppressed, the risk to fish often outweighs the reward.

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

Turnovers have started but many ponds have not yet done so. Severe turnovers can be triggered by a sudden and dramatic drop in temperature, usually associated with heavy

wind and rainfall. If a turnover/oxygen-related fish kill occurs, 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 November:**

Winter drawdowns, for the appropriate situations, should begin now. Fertilization programs should end this month, when water temperatures decrease below 60°F. Feeding activity will decrease with decreasing water temperature. Adjust feeding rates down to match activity and stop feeding when fish stop responding, usually by the mid to low 50's°F. Aquatic dye duration for weed/algae control will start to decline as rainfall increases. Suspend herbicide applications until spring. Fish stocking, especially forage fish like fathead minnow, golden shiner, and bluegill, can continue. 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. There is benefit to continuously operating aerators through winter, but those wanting to save a little on electricity and wear/tear can turn off their aerators for the winter once water temperature decreases into the mid to low 50's°F.

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