

## **Arkansas Pond Bulletin**

**January 2024**

### **Quick Hit: Winter Pond Aeration**

Aeration systems provide tremendous benefits to pond water quality, fish production capacity, fish kill prevention, suppression of some aquatic weed species, and even prolonging the life-span of the pond. A frequent topic of discussion with pond owners is whether or not to operate their aerators during winter.

Without diving too far down a potentially very deep rabbit hole, generally it is beneficial to operate aeration systems all year in Arkansas. That said, for Arkansas, winter is usually the season where aeration provides the least benefit. Electricity costs to run grid-powered motors or compressors, wear and tear on parts that need routine service or replacement, and super-cooling of deep water, particularly when using diffused aeration systems, are considerations owners should weigh. Diffused aeration systems are designed to push streams of bubbles from the bottom of the pond to the surface, creating circulation and injecting oxygen throughout. This circulation prevents thermal layers from developing. Water is most dense at about 39°F. Water warmer or cooler than that will rise to, or stay near, the surface. This is why we see layers of cooler water near bottom during summer, and “warmer” water near bottom during hard winters (especially if ice forms at the surface). The warm-water fish stocked in most Arkansas ponds use the slightly warmer bottom layer as refuge during the coldest parts of winter. If a diffuser keeps the pond fully mixed during winter, water can continue cooling below 39°F. While the risk of freezing a pond solid is not realistic, further reduction of temperatures can increase stress on our warm-water fish species, slightly increasing the risk of mortality and fungal infection especially in catfish. Pond owners with diffused aeration systems can move their diffuser pads to shallow water (25-50% of the max depth of the pond), or run only a portion of their shallower pads while deeper pads are turned off, or deactivate the system completely for the winter to mitigate or eliminate super-cooling deep water.

Most aeration systems (diffusers, fountains, surface pumps, paddle wheels, and circulators) will help prevent ponds from developing surface ice, or at least keep a small area near the aerator ice-free. In colder climates where ponds may have weeks to months of ice and snow cover, maintaining openings in the ice is an important management practice to prevent “Winter Kill” from low dissolved oxygen and harmful gas build-up below the ice. Arkansas rarely experiences prolonged, or thick, enough ice-cover to justify ice mitigation practices.

During periods of hard freezing temperatures, fountains and surface aerators should either be run continuously or removed from the pond completely. Operating these aerators occasionally, on timers, or leaving them in the pond deactivated, could allow them to freeze and sustain damage.

While you are moving, adjusting, or removing your aerators for winter, take time to perform scheduled maintenance according to manufacturer recommendations. Filters need regular inspection and replacement, and motors need periodic maintenance to keep them running at full efficiency.

To summarize winter aeration; it is beneficial to Arkansas ponds with some minor adjustments and considerations from your warm-weather setup, but you will not be missing much if you want to save some electricity and wear/tear by deactivating your system until spring.

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

Ponds stocked with threadfin shad will experience significant mortality from cold water. A portion of threadfin may overwinter, especially if deep enough water is available for them to take refuge from the coldest water near the surface. Annual restocking in spring may be necessary to keep threadfin numbers up in ponds trying to maintain them for forage. Fish kills from saprolegnia (water mold) infection and cold are possible now. Old and weak fish are susceptible, as are otherwise healthy fish living in ponds with poor water chemistry. A few mortalities is usually not cause for alarm, but dozens of dead fish warrant water chemistry investigation and documentation of the species and number of fish lost. There is nothing practical that can be done to save sick fish, so our goal is to diagnose the cause and prepare a treatment and restocking plan for spring.

### **Pond Management Tasks for January:**

Winter drawdowns, for the appropriate situations, should be underway. Application of agricultural lime for water chemistry adjustments can continue. Fertilization, feeding and herbicide applications should be suspended until spring. Aquatic dye can be applied for aquatic weed control, but it will need more frequent booster doses during the wet season to maintain effective shading. 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 if desired. 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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