

to the literature, this was another textbook case of bobwhite quail survival.

Prior to the storm, hunters on the Woodward County ranch I mentioned earlier were finding 12 to 18 coveys per day. On hunts since the ice storm, hunters have found 13, 18, and 22 coveys in the same areas with the same dogs and all harvested birds inspected have been in great condition. One important note I'd like to stress is that this ranch has excellent habitat and lots of it. As any biologist will tell you, the better the habitat, the better chance wildlife has to survive in times of stress (i.e. a three-day ice storm).

Unfortunately, critical winter weather is out of our control. So what can we control that can make a difference to our quail population? Although it may seem boring to many who have heard it multiple times before, the only thing a landowner or land manager can do to make a positive impact on his quail numbers is to try his best at creating quality habitat. Also keep in mind that he has to have enough quality habitat to buffer the "bumps in the road" such as ice storms or other weather calamities such as prolonged drought.

Over the years ODWC biologists have certainly preached habitat, but for some landowners and bird hunters it's like chewing a piece of gum when you're stomach is already growling for dinner - not very satisfying. Even us biologists would love to point to one single simple factor to change or alter to have abundant quail on a place, but unfortunately it's not that easy. But give this some consideration. Birds on marginal habitat may not escape the grip of winter storms nearly as successfully as birds with quality habitat. And, no matter how favorable the weather patterns might be in a given year or two (such as the weather we had in 2004), poor or marginal habitat won't support an abundance of quail for the long term. Quality habitat minimizes the effects of "everything" trying to nix lil' Bob.

For information on improving quail habitat, interesting tidbits on quail management, research and hunting, you can log on the ODWC Web site at wildlifedepartment.com. Also, check out OSU's Department of Forestry Web site at <http://www.okstate.edu/ag/asnr/fore/research.html> (see Research in Wildlife Ecology). Oh, and one more thing for you Oklahoma bird hunters, you can (and should) keep feeding those bird dogs for another year even despite the "Big Freeze" in January '05!

Is Your Pond Half Full or Half Empty?

By Bill Wentroth, northwest region fisheries biologist

Oklahomans enjoy many types of activities associated with ponds during the summertime. Kids and grandchildren are out of school and looking for outdoor adventures which include fishing, swimming, frog hunting or just skipping rocks. Unfortunately, many ponds in the state dry up during this period of time due to extended droughts and hot weather. Here are some steps you can take to keep water in your pond this year.

The first thing to do is evaluate the pond for sources of water loss. Trees that grow on the pond dam are a big "no-no" for a couple of reasons. One, they weaken the dam structure and when they die, the roots begin to rot, creating waterways and eventually leaks in the dam. Leaks in pond dams are expensive to repair. It's usually a good idea to repair small leaks before they become a problem. Secondly, trees can remove significant amounts of water from the pond through transpiration, a plant process that draws water up into the roots and out through the pores of the leaves into the air (*picture 1*). Willows and cottonwood trees are by far the largest consumers of water from a pond. All trees should be removed from the pond dam, and most from along the shore, however, some large trees may be left for the shade and beauty they provide.

Shallow ponds will dry up much faster than deeper ones. Water storage capacity of ponds with extensive areas of shallow water can be improved if they are drained and deepened. The shallowest area in a pond should be at least three feet deep. This depth of water will slow the growth of aquatic vegetation, which will also reduce the storage capacity of the pond. To put it in simple terms, dig it deeper!

Most ponds are filled by rainfall run-off from their watershed. If the watershed above your pond has been eroded, a lot of

sediment has and will continue to be "pumped" into your pond. Cow trails are "highways" for soil to travel into your pond. The silt accumulates, thereby decreasing the depth and storage capacity of the pond and increasing the likelihood of leaving your pond high and dry this summer (*picture 2*). The cure for an eroded watershed is seeding the bare spots. Grass covering your watershed will reduce the sediment load coming into the pond.

If you have a muddy pond due to sediments, there is another cure. By constructing a small sediment retaining pond above the main pond, much of the suspended soil particles settle out in this pond before the water enters the main pond. The two ponds are connected by a grass covered spillway or large 12-16 inch pipe. The pipe should be 2-3 feet below the top of the retention

pond dam.

Evaporation is a problem in the summer months. Oklahoma normally has an evaporation rate of 3-4 feet of water per year. This amount nearly equals, or in many parts of the state, exceeds annual precipitation. Wind breaks, planted perpendicular to the prevailing summer winds and placed far enough away from the pond to prevent roots from reaching the dam or water table,

will help conserve pond water. Believe it or not, wind is a big consumer of water in the summertime!

So there you have it, a checklist of steps that you can take to help prevent dry ponds this summer: stop leaks, remove trees, increase pond volume, reduce watershed erosion, build sedimentation ponds and plant wind-breaks. All these measures may not be practical for a particular pond. Use the management techniques that are most adaptable to local conditions to gain the maximum savings in water, energy expenditure and capital.



Should I Stock Fish?

By Greg Summers, supervisor ODWC Research Lab-Norman, OK

One of the most common questions we get as fisheries biologists from pond owners is related to whether or not they should stock fish. The perceived reasons for stocking are many and for the most part are unwarranted. Typically, pond owners believe that fish stocking is the cure-all of pond management. I'll try to break down these misconceptions into common categories and explain reasons for not recommending stocking. Conversely, there are certain situations when fish stocking may be warranted and I will cover these as well.

Stocking New or Reclaimed Ponds

If you build a new pond or have purposefully killed all the fish in your pond with a piscicide (e.g. Rotenone), it is obvious that you will need to give the pond a jump-start by stocking some fish. For the average Oklahoma pond we recommend stocking per surface acre, 100 fingerling largemouth bass (3"-4"), 100 fingerling channel catfish (3"-4"), and 500 fingerling bluegill (1"-2").

This ratio of fish has shown to work best for establishing and maintaining a well-balanced fish population. It is not necessary to stock channel catfish but you must stock bluegill if you are going to stock bass.

If you stock bigger fish you will need to cut back on the numbers, but fingerlings are the size of fish that are typically available from the Wildlife Department and from commercial fish producers and are the most economical way to go. Call your regional fisheries biologist for more details (see ODWC Fishing Guide/Regulations for numbers).

Don't expect to have much luck with your new pond if you stock larger fish that you have caught from a larger lake or even from another pond. Smaller fish acclimate faster to a new situation than do larger fish and the proper stocking rates are easier to calculate.

Introducing a New Species to Your Existing Pond

If you have a pond that's in pretty good shape and you want to stock another fish species, you have to understand that you are usually stocking another predator or another prey species and this will affect your pond's ability to maintain good fishing over a period of years. If you stock crappie, for example, into a balanced bass and bluegill pond, your bass growth will probably slow down and the crappie will have slow growth as well. You now have two predators competing for the same food source that was previously only supporting one.

The same is true for more than one prey species. If you stock shad on top of a balanced bass/ bluegill population, expect the numbers of small bluegill to increase substantially and the bluegill fishery to be dominated by smaller individuals.

Supplemental Stocking

Stocking fish on top of an existing fishery (supplemental stocking) is where many pond owners either waste money or upset the balance of a good pond. Many believe that if you want more fish in a pond all you have to do is stock more fish. Unfortunately, this

simplistic approach to pond management just doesn't work and may even create more problems down the road.

After initial stocking, your fish population will expand to "carrying capacity" rather quickly (usually within a couple of years). Carrying capacity is the maximum amount of biological material a pond can maintain and is governed by surface area, habitat



By following the ODWC's stocking guidelines, expect to have a healthy balance of fish and possibly trophy fish with patience and smart management.

and water chemistry. If you don't change any of these factors, you can't expect the pond to handle any more fish

than it already has. If you add a 10 lb. bass that you caught somewhere else, you may replace 10 pounds of smaller bass that were already there.

More commonly, pond owners will regularly stock fingerling bass thinking that they will have larger bass in the future. What usually happens in this scenario is that the newly stocked fish will either replace all or part of the native spawn or will not survive over the first winter. So ultimately, the pond won't have any more fish than it would have had before and the pond owner has simply wasted his money.

One supplemental stocking scenario that has shown to provide consistently good results is with hybrid bluegill. While many commercial fish producers will try to sell pond owners hybrid bluegill as the primary and/or only forage, it is not recommended. Hybrid sunfish typically have a highly skewed sex ratio of males to females (3:1) and eventually this will lead to lack of forage. However, if hybrid sunfish are stocked after a bluegill population has been established, the hybrids usually only replace some of the bluegill resulting in a fishery containing a few faster growing and ultimately larger sunfish.

The best approach to managing a pond by stocking is to keep it simple. Check with your area ODWC fishery biologist and let them help you make the correct stocking decisions.



For the average Oklahoma pond we recommend stocking per surface acre, 100 fingerling largemouth bass (3"-4"), 100 fingerling channel catfish (3"-4"), and 500 fingerling bluegill (1"-2"). This ratio of fish has shown to work best for establishing and maintaining a well-balanced fish population.