

# **Annual Report: The State of the Lake**

By David Kemper

*Reprinted from The Lakes Log August 2001*

I was asked to write this article regarding the current condition of the lake by the Lakes Log on behalf of the Fishing and Boating Committee.

Generally, lake conditions are defined by their trophic state, the measure of a water body's ability to support plant, fish and wildlife. Water characterized as eutrophic has the highest level of biological productivity and the lake was in a slightly eutrophic to eutrophic state until the end of 1997.

Since 1997, the lake condition has progressed toward an oligotrophic classification, which is a water body with the lowest level of biological productivity, having clear water, few aquatic plants, few fish, and not much wildlife. Clear water conditions the last several years have left the small fish most vulnerable to predators and, prior to the spring 2001 spawn, there did not appear to be significant small fish population.

The Fishing and Boating Committee and homeowners have been very concerned about the observations of loss of fish and fewer wildlife the last three to four years. The Fishing and Boating Committee set out to determine what had caused the lake changes that resulted in what was believed to be lower fish and wildlife populations. This began in early 2001 with Board support and funding of water and sediment quality evaluations and a fishery survey. Findings indicated a change of trophic state, as described.

In 1995, our lake suffered a significant growth of brittle naiad. Brittle naiad is a pest plant that grows in shallow water and has long, pointed leaves that easily break off and spread. It grows so rapidly and spreads so easily that, in the spring of 1995, areas of the lake had blooms of naiad growing from the bottom to the surface of the lake.

An aggressive reaction by management and the contractor, Lake Management Services, followed, using aquatic herbicides and sulfuric acid, and, by 1996, lake bottom sampling revealed no further evidence of brittle naiad. During the next year, the lake appeared to recover from the effects of the naiad and of the herbicides used to combat it.

Sadly, aesthetics and the fears of another naiad bloom dictated lake treatment policy to continue to be aggressive in the eradication of all flora in the lake. Treatments during the summer of 1999, particularly, were very aggressive, with large quantities of copper sulfate and chelated copper aquatic herbicides being used on a frequent basis. In addition, thousands of gallons of sulfuric acid were used on areas perceived to be naiad infected, beginning in the summer of 1999 and it continued on through the early months of 2001.

In addition to herbicides, another attempt at controlling the lake plants included the stocking of more than 600 White Amur beginning in 1997. White Amur are controversial in waterways containing other species of fish, according to Arizona Game and Fish, because there is no agreement as to the consequences of their stocking. While White Amur are incapable of reproducing, they do attain large size, up to 60 pounds.

Over the years, numerous scientific tests have been done to evaluate the water, sediment, and fish populations in the lake. In June of 1995, one week prior to the first aggressive naiad treatment, fish surveys showed a catch of 169 fish, with 15% bass, 10% catfish, 18% bluegill, and 52% threadfin shad. In 1997, Paul Marsh, PhD, a fisheries biologist, was contracted to do another fishery survey, during which 124 fish were netted. In Dr. Marsh's report he stated, "Relatively high proportions of common carp, bluegill, and largemouth bass were recorded in 1997, and relative abundance of channel catfish was the highest since 1988; however, threadfin shad catch was low..."

Before aggressive re-treatment began in August of 1999, another fishery survey was done in April of that year. At that time, 312 fish were netted with 5% bass, 9% catfish, 7% bluegill and 33% shad. The most recent survey of the fish population was done in April 2001, following 20 months of periodic sulfuric acid infusions into the lake in addition to aquatic herbicides, and 43 total fish were netted with 42% bass, 9% catfish, 2% bluegill and 0% shad. This was the lowest number of fish netted since fish surveys started in the mid 1980s. Due to the decreased fish population, and virtual lack of bluegills, the Fishing Frolic was postponed in 2001.

The Fishing and Boating Committee petitioned the Board and management to immediately discontinue the practice of infusing sulfuric acid into the lake and it further requested participation in the oversight of lake ecology management. Management instructed the contractor to discontinue the practice of sulfuric acid infusions, with the last one occurring in April 2001. Oversight, by the Fishing and Boating Committee, was approved in June 2001. In addition, management has agreed to try more biologically friendly treatment methods and this was implemented in June.

The Fishing and Boating Committee instituted a multi-year project to create artificial fish habitat to improve survivability of the smallest fish and assist in rebuilding the fishery. The first structures were placed in the lake in May 2011. It is hoped by the Fishing and Boating Committee members that more prudent and fish-friendly chemical use will decrease water clarity and allow repopulation of the lake by threadfin shad that enter with water through the canal system. As the lake recovers, bluegill could be restocked to improve their population.

The lake biology must be reestablished from the bottom of the food chain (algae and zooplankton) up to the forage fishes (threadfin shad and bluegills) and ultimately supporting the predatory fishes (bass, catfish and crappie) or we are in danger of losing our fishery.

Dr. Marsh, who has surveyed our lake over the past 16 years, has recommended a panel, consisting of a limnologist (lake specialist) and a fishery biologist, to explore sound recommendations and to assist in creating a multi-year plan for recovery of the lake. The Fishing and Boating Committee intends to recommend to the Board that this be done to continue the pursuit of a healthier lake.

The natural beauty of a green lake, teeming with fish and wildlife, is the magnet that drew many of us to the Lakes. Recovering our previously healthy lake and again establishing a healthy fishery is what will continue to make the lake our community's most valuable asset.