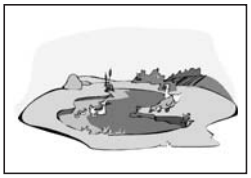

Stewardship of an Aquatic Habitat on the Campus of Oral Roberts University, Tulsa, Oklahoma

John Korstad

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Environmental stewardship means that we love our Creator and seek to obey him in caring for his magnificent creation.

Many colleges have natural areas such as forests, grasslands, streams, lakes, or ponds on or near their campus where people can relax and enjoy outdoor activities. These natural areas are often adversely affected by the impact of campus activities and development. However, these natural areas must be recognized as integral parts of God's creation. We should never take these natural areas for granted, but rather we should seek God's wisdom whenever we develop around these areas (see Ezek. 34:18–19).

Environmental stewardship means that we love our Creator and seek to obey him in caring for his magnificent creation. This may mean preserving and protecting natural areas or sometimes restoring them as much as possible to how they were before development.

Lake Evelyn, at the center of the Oral Roberts University (ORU) campus, is an example of the practical challenges of development and stewardship on a Christian college. In 1980, the lake had a surface area of about 1 hectare and a maximum depth of about 7 m. Blue-green algal blooms were visible over much of the surface water during every summer. The lake was in a classic eutrophic ("well-nourished") condition.

Every semester, students in the ecology class sampled the lake water for various physical, chemical, and biological parameters and wrote lab reports incorporating the data in graphs and discussing the status of the water body. In addition, at least one student conducted more thorough sampling along with a faculty member every year. This often culminated in the students presenting their results in written format as a senior paper and in oral format at professional meetings such as the Oklahoma Academy of Science and the Tri Beta Biological Honor Society.

In 1995, Lake Evelyn still had a surface area of about 1 hectare, but the maximum depth was only 1.5 m. This indicated that the lake was accumulating sediment at the rate of about 0.3 m per year. Prominent aquatic macrophyte beds were encroaching toward the middle of the lake (Fig. 1). In October

Figure 1

ASA member **John Korstad** *always wanted to be a teacher. His role models were his mother and father who dedicated much of their lives to teaching. He joined the Oral Roberts University faculty in 1980. Currently he is a professor of biology and also Honors Program Director. His family lived in Norway during two sabbatical years, the most recent funded by a Fulbright Fellowship in 1993–1994. He loves to go on field trips and marvel at God's beautiful creation. One of the highlights of the past eleven summers has been teaching the limnology course at the Au Sable Institute in northern Michigan. He and his wife are the proud parents of four daughters, all of whom graduated from ORU. They currently have four wonderful grandchildren.*

1995, following weather conditions with warm temperatures and no wind, there was a moderate "fish kill." It was determined that this was due to the low dissolved oxygen concentrations in the water caused not only by the weather, but also by high bacterial decomposition rates on the accumulated organic matter at the bottom of the lake.

In the summer of 1996, the ORU administration and faculty in the biology department agreed that Lake Evelyn needed restoration. During that summer, the lake was drained and then dredged to about 4 m depth (Fig. 2). Crushed rock ("rip rap") was placed around the shoreline to stabilize the edges. The lake was refilled and two fountains were added at both ends of the lake to adequately aerate the hypolimnetic ("bottom") water.

Figure 2

Since the summer of 1996, Lake Evelyn has shown obvious signs of restoration. There have been no more summer blue-green algal blooms, no more fish kills, and most campus residents would agree that the lake is "aesthetically pleasing" (Fig. 3). The university and Student Association worked together to purchase benches that were placed around the edges of the lake and picnic tables that were placed under trees near one area of the lake. It is a joy to see the increased activities around the lake that have subsequently occurred every year since 1996. Students routinely occupy the benches or other areas around the lake to do their studies or talk with friends. In addition, campus groups have regularly had picnics in this area.

Figure 3

The main message that we see in this story is that it is important for administrators, faculty, and students to work together to be better stewards of God's creation. Faculty and students collaborating in research is a positive factor in student learning. This fulfills the additional purpose of providing practical data for use in advising administrators on how to better manage this aquatic habitat. We still see further areas for improvement and look forward to enhancing this working relationship between students, faculty, and administrators. ▣