

Selected Aspects of Lake Economics

What is a Lake Worth?

Selected Aspects of Lake Economics

by Vince Williams¹

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Introduction

The Georgia Chapter of the North American Lake Management Society held its annual meeting on the campus of Georgia Southwestern College in Americus, Georgia, on March 10th and 11th, 1994. The theme of the Chapter's plenary session was lake economics, and four invited speakers provided information from different perspectives. These included the economic impacts of 1) lakes on surrounding residential properties in Texas, 2) waterfront properties on a county tax base in Georgia, 3) recreational use in Minnesota, and 4) sport fishing on lakes in Georgia. The results were significant enough that our current North American Lake Management Society president, Bruce Wilson (who was an invited speaker), requested that these be published in the next issue of *Lake Line*. Bruce can be very persuasive.

The goal of our annual meeting was to prepare an informative, unbiased white paper for local, legislative, and congressional candidates and office holders that would simply serve to identify lake economic values that are often overlooked, understated, or undocumented. This summary is not intended to be a "technical" publication. Its purpose is to share the information we obtained from our speakers with the readers of *Lake Line* and to stimulate additional discussion regarding the true economic values of lake systems.

Effects of Lakes on Surrounding Property Values²

This study by Lansford (1994) focused on Lakes Austin (1,830 acres) and Travis (29,000 acres), two of the lakes in the Highland Lakes chain located near Austin, Texas. Lake Travis, situated upstream from Lake Austin, is used for flood control purposes and experiences a much wider range of water level fluctuation (monthly levels varied over 50 feet from 1976 to 1990) than Lake Austin. Both lakes exert a significant economic impact on surrounding residential properties. These impacts were determined by examining sales prices of homes from January 1988 through December 1990, including 609 home sales in the Lake Austin area and 593 in the Lake Travis area.

In summary, Lansford concluded that:

- The sale prices for lakefront homes ranged from \$80,000 to \$100,000 more than the sale prices for comparable non-lakefront properties.
- The economic impact of lake proximity on property values extended landward by approximately 2000 feet from the lake shore.

The following tables provide predicted sale prices for "typical" homes of the size ranges indicated based on their distances from lakes Austin and Travis and the actual sale prices of comparable area homes.

¹Vince Williams was the program chairman for the 1994 Georgia Lake Management Society Meeting. He is a Certified Fisheries Scientist with over 20 years experience in lake restoration, and is currently manager of the Aquatic Sciences Department for Law Environmental, Inc., in Kennesaw, Georgia.

²This section was prepared and presented by Dr. Notie Lansford. Dr. Lansford is an assistant professor and extension economist with the Department of Agricultural Economics at Oklahoma State University. Copies of his presentation may be obtained by contacting him at (405) 744-6555.

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P. 2
P. 5

Table 1. Predicted sale prices of three different size residences at varying distances from Lake Austin.

House Square Feet	Distance From the Lake					
	Water Front	150 Feet	300 Feet	450 Feet	1,000 Feet	2,000 Feet
1,500	168.6*	119.5	116.9	115.0	110.6	105.9
2,550	246.8	176.8	173.0	170.4	164.0	157.2
3,600	326.9	235.9	231.0	227.5	219.2	210.3

* Values presented are given in thousands of dollars.

Table 2. Predicted sale prices of three different size residences at varying distances from Lake Travis when lake level was at the average for the study period.

House Square Feet	Distance from the Lake					
	Water Front	150 Feet	300 Feet	1,000 Feet	2,000 Feet	4,000 Feet
1,400	168.2*	108.6	107.1	101.6	95.6	85.9
2,200	218.8	145.0	143.1	136.3	128.6	116.4
3,000	275.2	186.2	183.9	175.6	166.3	151.3

* Values presented are given in thousands of dollars.

This study concluded that lakes have a substantial impact on riparian property values that is attributed to recreational and aesthetic amenities, and that this impact extends to properties located within approximately 2000 feet of the lake. Also, when water rights are appropriated among competing interests non-consumptive users such as lakefront property owners and recreational interests should be considered, since their use of lake systems can contribute significantly to local economies.

Effects of Lakefront Properties on a Local Tax Base³

Lake Blackshear, built by the Crisp County Power Authority in 1930, forms the western boundary of Crisp County, Georgia. Waterfront properties associated with Lake Blackshear exert a strong positive impact on the County's residential tax base, as the following facts uncovered in a 1994 review of the County's tax base attest.

There are a total of 6,619 residential properties on the County tax rolls.

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- Lakefront properties account for 820 (12.4 percent) of these residential parcels.
- The mean assessed evaluation for non-lakefront residential properties was \$28,332.
- The mean assessed evaluation for lakefront residential properties was \$72,904.
- Lakefront residential properties contributed \$646,680 (27.9 percent) of the County's \$2,320,430 residential tax base in 1993.
- In summary, the 12.4 percent of residential properties in Crisp County located on the lakefront paid 27.9 percent of the County's total residential property taxes in 1993.

Economic Impacts of Sport Fishing on Georgia's Lakes⁴

- Georgia contains 48 lakes and reservoirs greater than 500 acres in size and 11,528 smaller lakes; these water bodies cover nearly 422,000 acres within the State.
- In 1991, approximately 829,500 anglers 16 years of age or older fished on Georgia's lakes.
- Eighty-four percent of these anglers were Georgia residents, while 16 percent came from out-of-state to fish Georgia lakes.
- These anglers took 11,944,800 fishing trips, and spent approximately \$336,315,000 in pursuit of their sport.
- They contributed \$5,300,000 in fishing license revenues, as well as \$3,300,000 in federal excise taxes on fishing tackle that were returned to the state to fund fisheries-related programs.
- On the average, lakes in Georgia generated nearly \$800.00 per acre in fishing-related expenditures in 1991.

Economic Impacts of Selected Minnesota Lake Systems⁵

Three studies were cited in this presentation dealing with two Minnesota lakes, Big Sandy Lake and Lake Bemidji. The first study, Big Sandy Lake (Dziuk, 1992), concluded that:

- Nearly 80 percent of the real estate taxes collected from Aitkin County, Minnesota, were generated by properties surrounding lake shorelines.

⁴This section was prepared and presented by Mr. Tim Hess, Assistant Chief of Fisheries for the Georgia Department of Natural Resources. Combined references are listed at the end of the reference section for this article.

⁵This section was prepared and presented by Mr. Bruce Wilson, president of the North American Lake Management Society. Mr. Wilson is a research scientist with the Minnesota Pollution Control Agency, where he specializes in lake and reservoir systems.

- Travel and tourism on 9,400 acre Big Sandy Lake were estimated to generate direct consumer purchases of \$6,457,800 per year (\$687/acre/year).
- The total gross annual output for the lake was estimated to be \$10,528,000 (\$1,120/acre/year).
- The total annual value added for the lake was estimated to be \$4,709,000 (\$501/acre/year).
- The lake was responsible for creating an estimated 155 jobs within the local economy (1.65 jobs/100 lake acres)

The two Lake Bemidji studies (Larson, 1980; Holt et al., 1992) dealt with local economic impacts of lake-oriented recreation in a two-county area surrounding the lake, and the potential impacts of water pollution on these revenues. The initial study by Larson (1980) indicated:

- Lake Bemidji supported 535,300 visitor days of water-related recreation during the study period, which included the winter of 1977-78 and summer of 1978.
- These water-related recreational uses accounted for 81 percent of all outdoor recreational use in Beltrami and Cass Counties in 1980.
- The majority (76 percent) of recreational lake users were fishermen, 58 percent of whom were from other states.
- The low estimate for direct water-related tourist expenditures during the study period was \$4,298,000, while estimated values obtained by other methods ranged from \$7,945,000 to \$30,757,000.
- Application of a "responding multiplier" of 2.19 to the low estimate of direct expenses provided a conservative overall economic value estimate of \$9,245,000 for water-related tourist activities.
- Updating Larson's 1980 estimate for inflation indicated that water-related recreational activities on Lake Bemidji generated approximately \$17,435,000 to the local economy in 1992 (Holt et al., 1992)
- A 9.5 percent reduction in water-related recreational activities was estimated based on anticipated water quality degradation due to non-point source pollution; this reduction could result in a decrease of up to \$3,100,000 in tourist-related income each year (in 1992 dollars).

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Summary

Individuals responsible for lake management programs are more than likely professionals in a scientific or engineering-related field. They may be highly competent and well-read in the literature of their profession, but largely unaware of studies dealing with the economic values of lakes. This statement is not made to cast doubts on their abilities, but simply to recognize the fact that resource economics is a specialty that has largely been ignored. This must change if lake management is to continue to grow as a profession.

During the 1970's and early 1980's, lake management activities could often be justified and funded solely for environmental reasons. Funding has become more difficult to obtain in recent years, and lake management programs often compete for limited dollars with other types of projects that may have more substantial economic justification. The fact that much information regarding lake economic impacts may lie buried in agency files, local government reports, tax assessors offices, and other sources that are either unknown or unavailable to lake managers jeopardizes their efforts to secure funding for lake projects.

There was a lively discussion at our evening social concerning the need for a nationwide clearinghouse for lake economics information. The North American Lake Management Society LakeLine Electronic Bulletin Board could serve as the clearinghouse for electronic versions of this information. Information may be loaded directly by the authors [Tel: (612)-783-9064, default settings 2400, 8, N, 1]; instructions for using the LakeLine BBS can be found on page 3 of *Lake Line* magazine, Vol. 12(4). Disk and hard copy reports may be sent to Bruce Wilson, Minnesota Pollution Control Agency, 520 Lafayette Road, St. Paul, MN 55155.

If the response to this request is widespread, the North American Lake Management Society may wish to consider sponsoring an effort to consolidate the information provided into a single technical source document. Also, there is an immediate need for simplified lake economic assessment methods that could be used by lake associations, as well as standardized advanced methodologies that could be used in lake diagnostic/feasibility studies. These needs could provide an excellent opportunity for an economist or economics graduate student to pursue. Volunteers for these efforts can contact either Bruce Wilson at (612) 296-9210 or Vince Williams at (404) 421-3598.

Acknowledgements

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