Economic Effects of Lake-Level Variation on Waterfront Property Values

Climate change is increasing hydrologic variability and creating trade-offs for managing regulated freshwater systems. This study examined how seasonal deviations from expected lake levels were reflected in waterfront property values within a managed lake system in Wisconsin. Residential property transactions from 2013 to 2024 were linked with high-frequency hydrologic and water-quality data to estimate the economic consequences of lake-level fluctuations under existing management conditions.

The findings demonstrate that housing markets place measurable economic value on more stable lake conditions and highlight an important economic dimension of managing hydrologic variability under increasing climate risk.

Key Points

- On average, a one-inch increase in seasonal lake-level deviation was associated with about a 2% decrease in waterfront property sale prices.
- Simulations indicate that keeping seasonal lake-level deviations within ±3 inches could increase the aggregate value of lakefront housing by approximately $4.6 million in 2013 dollars, equivalent to an average gain of about $16,254 per property.
- Results were published online in Ecological Economics: https://doi.org/10.1016/j.ecolecon.2026.109173

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