



Scientists' Environmental Concerns and Recommendations for Bear Lake

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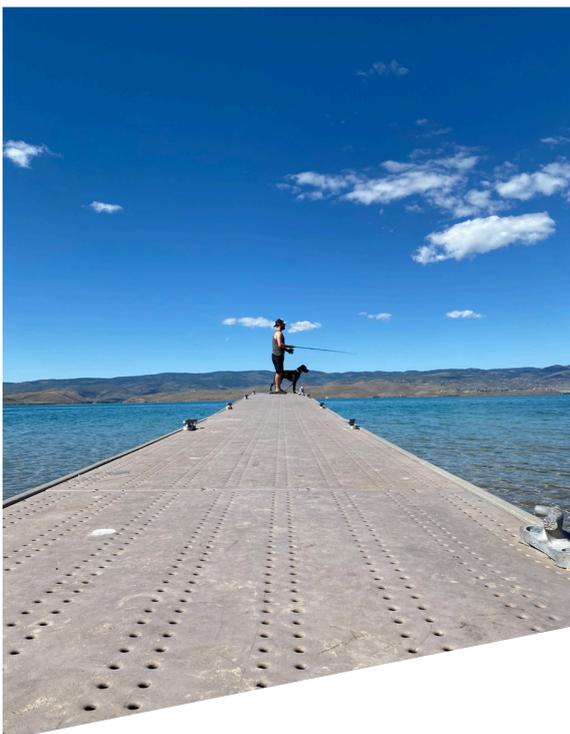
The Bear Lake area is one of Utah and Idaho's most unique landscapes as well as a popular summer recreation spot. In recent years, concerns have arisen regarding the current and future health of the lake and what should be done to mitigate the environmental threats it faces.

As part of a six-month research project addressing the impacts of tourism on Bear Lake ecosystems, researchers interviewed seven scientists whose work addresses the lake and surrounding areas. Scientists discussed threats to the lake's health as well as possible actions to mitigate threats and improve conditions. These data-driven concerns can be used to inform effective environmental management and action when shared with the public, local nonprofits, and policymakers.

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Key Findings

- 1** Interviews with scientists indicate that human impacts on the lake involve water pollution from sunscreens, plastics, and fertilizers and contamination from strained infrastructure.
- 2** General threats include the buildup of sediment on shores, fertilizer runoff, limited fish spawning habitat, and properly managed water levels.
- 3** Creating change involves actionable planning, behavior change, and collaboration.



Human Impacts on the Lake

Bear Lake sees roughly 40,000 visitors each weekend in the summer. Scientists identified the following human activities as having the most significant impacts on the lake and its future:

- Utilizing sunscreen containing toxic nanoparticles
- Leaving plastics on the beach that pollute the water and increase the likelihood of algal blooms
- New housing developments built to support tourism that strain the larger ecosystem due to inadequate and aging septic systems
- New and existing developments that impede fish passage and cut off access to their spawning grounds
- Lake level fluctuations that make fish spawning habitat inaccessible
- Fertilizer and other agricultural runoff

Overall, current visitor numbers are exceeding the carrying capacity of the lake.

General Threats to the Lake

Scientists also identified other major physical threats to the lake and surrounding ecosystem, including the following:

- The deposition or buildup of sediment and organic material on beaches from the diverted Bear River both impedes fish access to their spawning grounds and can also introduce mud onto recreational beach areas. This mud provides fertile grounds for invasive species to spread.
- Excessive amounts of nutrients from fertilizer used in agriculture, called nutrient loading, is adversely impacting water quality and causing algal blooms, which negatively affect the living conditions for fish and the microorganisms they eat. This influx of nutrients could eventually also make the lake unsuitable for swimming.
- Competition between endemic fish and stocked non-native sport fish for resources and breeding grounds, could lead to a decrease in native fish species if not managed properly.
- Decreasing water levels and increasing water temperatures, which stem from climate change as well as agricultural and developmental water diversions, can threaten fish health, promote invasive species growth, and jeopardize long-term recreation.



It's a whole system, all the pieces of the system are connected in some way. We've got to be looking at the whole picture and we really have not been doing that.



Recommendation #1: Actionable Plans for Preservation

Although the threats to the lake may seem daunting, several scientists highlighted that meaningful change can be made by creating actionable plans for preservation. Collaborations between scientists, policymakers, residents/landowners, developers, farmers, and ranchers can help to inform long-term plans to preserve and protect Bear Lake, including Utah's Comprehensive Management Plan. Aspects of these plans may include steps to reduce plastic, regulate Bear Lake development near wildlife habitats, maintain or improve aging infrastructure, upstream restoration, and continued data collection. By working together, stakeholders can ensure their voices are heard and concerns addressed.

Recommendation #2: Reducing Human Impacts

As mentioned, many threats stem from high visitor numbers. Tourists should be advised to wear reef-safe sunscreen to reduce harmful nanoparticles, and plastics and trash should be properly disposed of in additional receptacles. The community can encourage such behaviors by making reef-safe sunscreen widely available in stores and by placing convenient trash receptacles where tourists congregate. Additionally, farmers and ranchers in the community can also reduce their impact by working with scientists to determine new ways of meeting their water use needs while also ensuring lake levels are adequate for fish spawning.



Recommendation #3: Everyone Has a Role

A decade ago, Bear Lake welcomed 200,000 yearly visitors. That number has tripled, with 500,000-600,000 visitors annually 2021 through 2023.² New housing developments are growing rapidly to accommodate this influx of people. The increased traffic is overwhelming parking lots and two-lane roads, oftentimes creating unsafe conditions for other drivers, cyclists, and pedestrians. Negative impacts on fish populations and water quality also threaten to adversely impact recreational opportunities and human enjoyment of the surrounding area.

Recognizing these threats, scientists highlight the importance of taking actions to create a healthy environment for the lake. Businesses can contribute greatly by moving away from plastic and toward eco-friendly alternatives. Developers and city planners can work more closely with scientists to determine building plans that take into account migration pathways. Community members can also get involved by engaging in citizen science and helping to collect important data.



It's such an intricate system. Any one thing that we're focusing on isn't enough. We need to be looking at the whole picture.



Conclusions

As the community works together, they can shape the trajectory of development and change. The data scientists are collecting can inform future planning and also offer insights into what data might be missing. As various stakeholders create plans for their communities, scientists remind us that Bear Lake represents a complex ecosystem. Many different living beings depend on Bear Lake and, therefore, it needs to be managed as part of a larger interconnected system. If the lake is not healthy, everyone suffers, including the fish, businesses, tourists, residents, water users, and developers. To effectively lower the risks and keep Bear Lake healthy, everyone must take action and work together for all parties' mutual benefit.

Methods

Data was collected through semi-structured interviews ranging from 45 minutes to one hour. The scientists interviewed offered specific recommendations relating to their areas of expertise, as well as their understanding of major threats to the lake and surrounding ecosystem.

About CANRI

The Community and Natural Resources Institute, or CANRI, produces and promotes interdisciplinary and applied social science and humanities research focused on challenges at the intersection of people and the environment in the Intermountain West.

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References

1. Dosemagen, S., et al. "Opportunity Brief: Environmental Data as a Public Good." Open Environmental Data Project. (2021).
2. "Park Visitation Data." *Utah.gov*. (2024). <https://stateparks.utah.gov/resources/park-visitation-data/>

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