

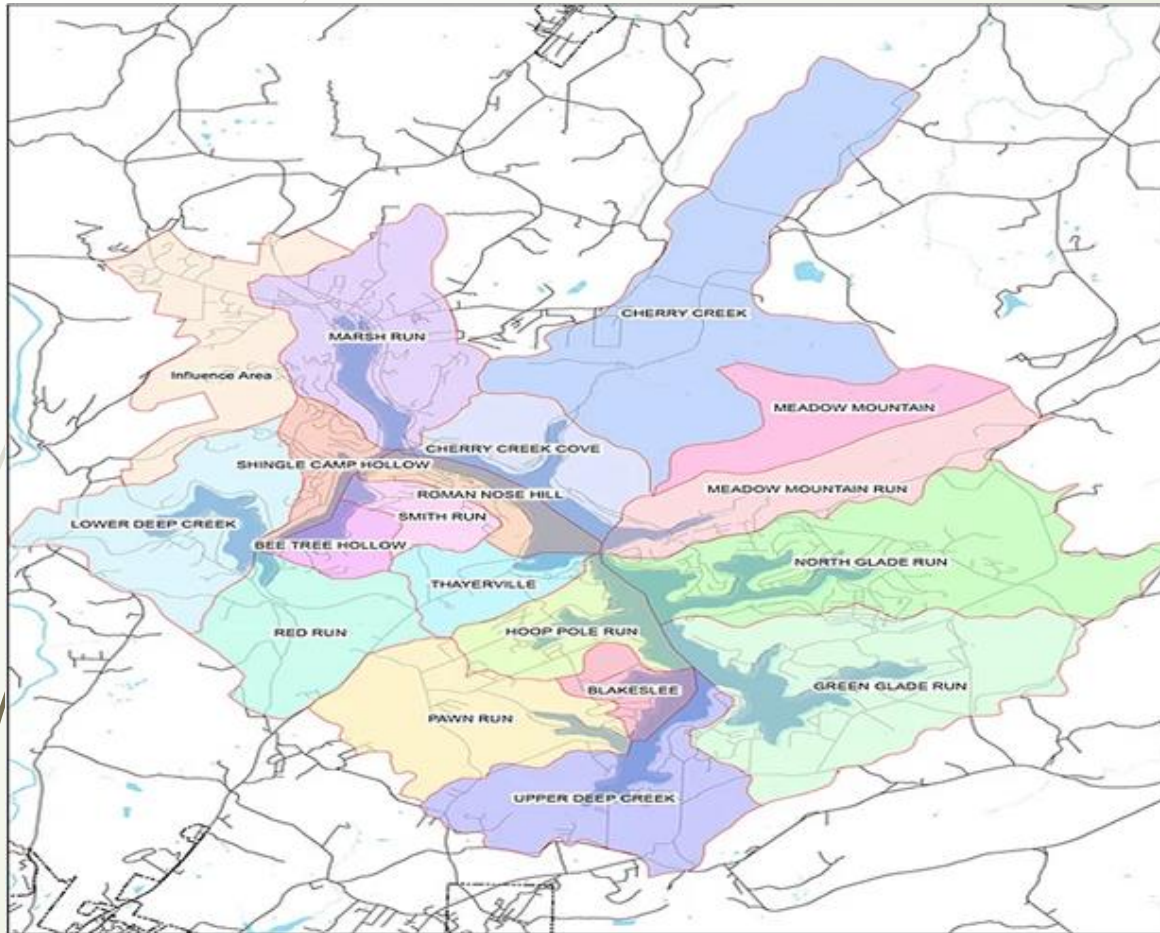


Environmental Impacts of Wake Boats on Deep Creek Lake with Consideration to Recreational & Social Benefits

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Group Paper

Deep Creek Lake



- The Watershed: 41,435 acres
Deep Creek Lake: 3,900 acres
- Located in Garrett County, MD
- Penelec constructed a dam that was completed in 1925
- In 2000, the State of MD purchased the lake
- DNR is tasked with managing it

Wake Boat Design

Wake boats are designed to create a large, specially shaped wake for wake boarders

Some design features include:

- Engine placed backward in the rear of the boat
- Ballast weight in the form of hard tanks or soft bags filled with water
- Hull design, gate system that shifts weight from one side to the other
- Wedges and plates- sits deep into the water with a shaped arc to create the greatest amount of water displacement possible
- Hydrofoil devices can be extended or retracted; when extended it creates a downward force that pulls the stern lower creating a larger wave



Retrieved from: <https://www.boatus.com/magazine/2018/april/wake-boats.asp>

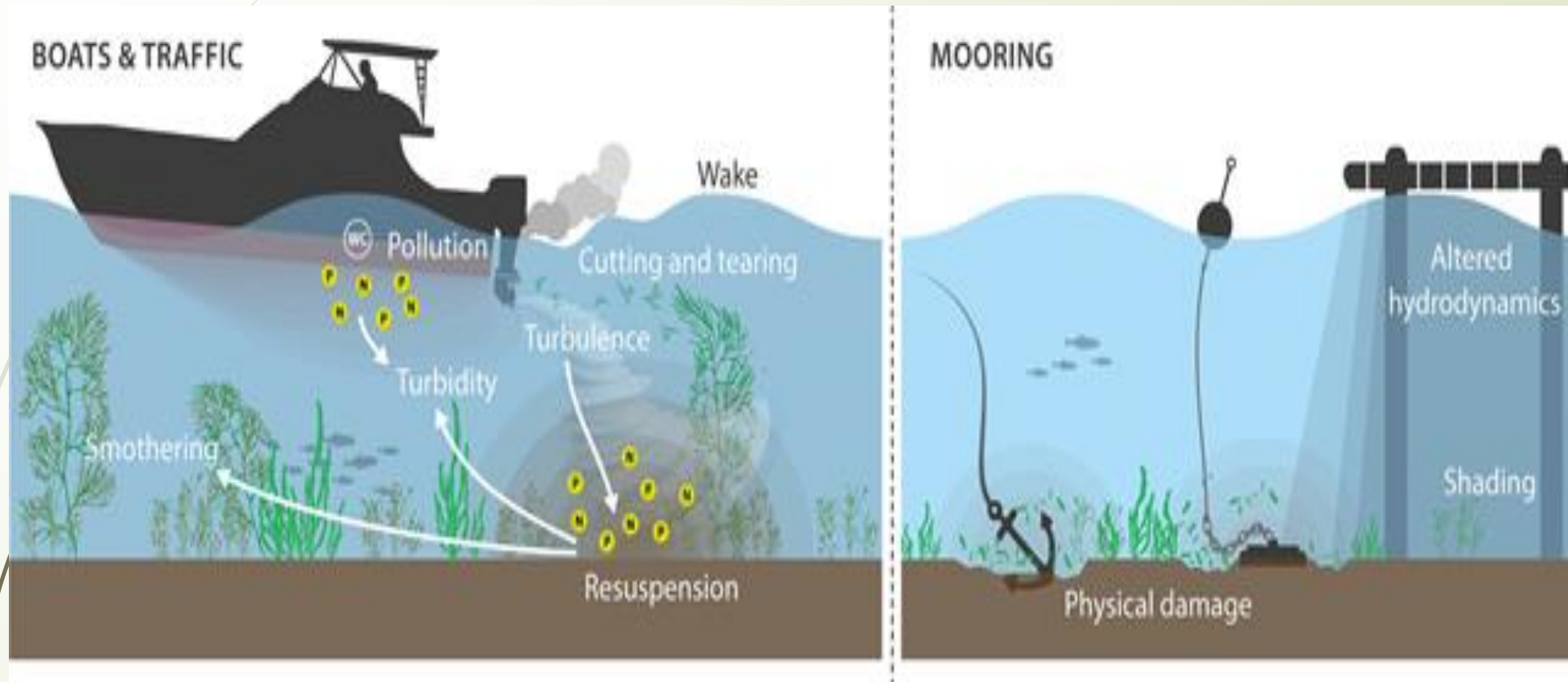


Environmental Analysis



- The larger waves from wake boats result in accelerated erosion in the shorelines, making a major impact in water bodies such as Deep Creek Lake. Erosion and deposition are naturally occurring but are a slow process and wake boats accelerate their occurrence, affecting the natural timeline.
- The velocity and impact of waves produced by wake boats are believed to be stronger than other recreational boats on shorelines (Bloom, 2017).
- By the constant impact of these waves, the shoreline vegetation gets affected which works as an attenuator to the wave to avoid major erosion (Bilkovic et. al, 2019).

Water Quality and Contaminants



This illustration shows the interaction between the boat activity and the lake, is an illustration in which you can observe the sequence of how it affects the environment.

Retrieved from: <https://link.springer.com/article/10.1007/s13280-019-01215-9#citeas>



US Management Strategies

Current Regulations in Virginia and Maryland

- All motorized boats, including wake boats must obey “no wake” speed limit of 3.5 mph in protected areas
- Most of the regulations currently in place are designed to promote the safe operation of conventional boats
- Deep Creek Lake
 - “no wake speed” of 3.5 mph within 100 feet of the shoreline anywhere on the lake
 - Ballast tanks must display maximum capacity in gallons and/or maximum weight in pounds to determine combined weight of the ballast, passengers, gear, and motors
 - \$200,000 Invasive species control project; ballast tanks must be properly decontaminated to prevent spread of aquatic invasive species



Comparative Studies

Current Regulations in Other High Use Areas

Lake Tahoe, CA

- All motorized watercraft operators must follow 600 ft “no wake zone” around all aspects of the Lake
- Ballast tanks require decontamination on water exit using hot water
- Motorized watercraft must be inspected prior to every launch for AIS

Lake Mead, AZ

- Wake boats do not present a concern to the shoreline or ecosystem more than other motorized watercraft
- AIS control: Boats docked more than 30 days require inspection and decontamination, including wake boat ballast tanks
- Interstate boats require inspection before entering the water

Comparative Studies

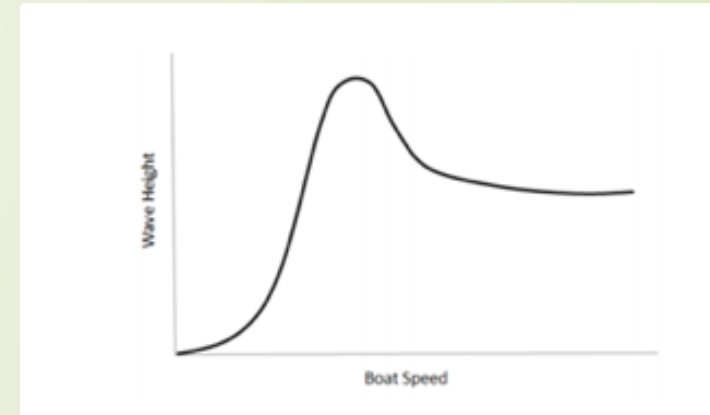
Current Regulations in Other High Use Areas

Oregon

- Wake surfing performed 200 feet from shore, other boats and docks
- This regulation excludes wake surfing in small coves or bays

Lake Norman, NC

- 150 ft “no wake zone” 150 ft from docks and other boats; more restriction required for wake boats
- LNMC aims to limit lakeshore erosion by limiting boat passes
- LNMC hopes to prohibit wake boats from entering coves less than 600 feet wide





Comparative Studies

Current Regulations in Other High Use Areas

Bone Lake, WI

- County-wide ordinance prohibiting wakes more than 50 feet long and two feet high within 700 feet of shoreline, dock, pier, raft or other restricted areas on all lakes.
- Aims to implement reduced-wake rules when lake water levels are high
- Research wake boat effect on shoreline, shoreface and turbidity

Lake Squam, NH

- HB137
 - establish a commission to study the impact of wake boats in the state
 - panel of environmental groups and Water Sports Industry Association for a balanced plan



Comparative Studies

Current Regulations in Other High Use Areas

Michigan

- Encourage best practices while operating wake boats; more research and data collection is required before regulations are made
 - Reduce speed within 300 feet of shore
 - No added ballast water or other weight
 - Do not operate near sandy areas, wetlands or lakefront residences
 - Avoid turning in tight circles; tight circles increase wave height and frequency
 - Avoid operating in shallow water or near shorelines (MLSA, 2015).

Vermont

- Senator John Rodgers introduced SB69 in Vermont to create local boating ordinances for wake boats throughout Wisconsin
 - Bill designed to control boats to limit spread of AIS
 - Erosion is a secondary issue

Economic Benefits/ Impacts

Tourism is a million-dollar industry in Garrett County that is vulnerable to the availability of recreational activities offered at Deep Creek Lake State Park.

Recreational tourism drives Garrett County revenue through the following avenues:

- Lodging
- Food & Beverage Industry
- Attractions
- Retail Shopping
- Marine Engineering (Boat repairs)



<i>Fiscal Year Revenue</i>	<i>Revenue From Admissions & Amusement Taxes</i>	<i>Revenue From Hotel Taxes</i>
2014	\$808,839	\$2,282,190
2015	\$816,385	\$2,369,239
2016	\$819,688	\$2,404,619



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Social Cost & Benefit Analysis

Social Benefit of Recreational Wake Boating

- Public Health
 - Social Quality of Life (interaction with friends and family)
 - Physical Health (Mobility)



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Social Cost to loss of Recreational Wake Boating

- Loss of Economic Revenue- Economic Collapse
 - Loss of Tourist
 - Business Closures
 - Loss of Jobs
 - Home Foreclosure
 - Loss of county residents



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Education & Outreach

The EPA uses a “Getting in Step Guide” for outreach that provides great logic for reaching out and educating the community. Identifying the following steps will help outreach reach new levels:

1. Define the concern and what is causing the concern?
2. What are the goals and objectives for the concern?
3. Who is the target audience and trying to be reached?
4. What message needs to be sent?
5. Create and implement the message.
6. Continuous evaluation of the message, along with identifying progress (United States, 2019).



Mitigating and Managing Detrimental Impact

- **Comprehensive Monitoring Program**
 - Establish baseline conditions, collect real time data
- **Identify and prioritize Environmentally Sensitive Areas**
 - Protect the most vulnerable areas
- **Educate Stakeholders on the potential environmental impacts of wake boats**
- **Consider expanding plant vegetation to prevent erosion with careful consideration on how that will impact recreational users**
- **Anticipate and address future growth**
 - Consider the consequences of increased wake boat usage
- **Consider policy/regulation changes**
 - Use other lakes and their policies as models
- **Consider prioritizing management strategies to overcome funding challenges**

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