

The primary scientific article in the shared folder is ‘A Field Study of Maximum Wave Height, Total Wave Energy, and Maximum Wave Power Produced by Four Recreational Boats on a Freshwater Lake’ by Marr et al., which went through an Independent Technical Review Process including addressing all comments from this review process. This study focuses on a combination of the maximum wave height, total wave energy, and maximum wave power produced for a variety of boats.

Below are sentences *directly from the executive summary of this article* with page number in () and my comments in **bold**.

- *The longer and heavier of the wakesurf boats, the Malibu Wakesetter MXZ, produced the highest waves with the greatest total wave energy and maximum wave power. (ix) - **Boat length, which is already regulated, greatly impacts wave characteristics. Our length requirement prevents larger wake surfing boats like this boat.***
- *Operating with full ballast tanks (Condition 1a) versus empty ballast tanks (Condition 1b) had little impact on maximum wave height, total wave energy, and maximum wave power for the two Malibu Wakesetter boats at operational distances greater than 100 ft. (ix) - **Ballast does not not impact the wave after 100 ft (Also see explanation on page 84, 6.1.3). Based on current length and horsepower guidelines, neither of the study’s ballast-carrying boats are permitted on Lake Louisa.***
- *Based on the data and our example method for determining recommended operational distance, we show that when operating under typical wakesurfing conditions, wakesurf boats required distances greater than 500 ft to attenuate wake wave characteristics (height, energy, and power) to levels equivalent to non-wakesurf boats operating under typical planing conditions. A second example, in which the largest wave was used as reference for the non-wakesurf boats (Condition 1a), an operational distance of 425 ft or greater was required. (ix-x) - **If a wakesurfing boat is 425 feet from the shoreline, the shoreline impact of its wave is equivalent to a wave from a fast moving ski boat that is 200 feet from the shoreline. Lake Anna used this paper to conclude that 500 feet from shoreline or docks was a reasonable distance for wakesurfing - even though they do not have length or horsepower restrictions (both contribute to wave height, energy and power)***

Current BRS Bylaws include the following:

- Fast moving boats, boats towing skiers, tubers, aqua boards, or towable of any kind, are required to stay at least 100 feet from the shoreline and docks, except while taking off and landing.
- Water skiing, tubing, aqua boarding, or towable of any kind, are permitted only from 9:00 a.m. until sunset. Boats with ballast should stay at the center of the lake when loaded, and travel at no wake speed within 100 feet of shoreline or docks.

Below is a figure that displays (in green) distance at Lake Louisa that corresponds to greater than 500 ft from the shoreline, which is the wake distance recommendation from this article.



Summary

Continue to permit wake surfing in the center of the lake marked by the connected green area (center and right) of the above map, which also corresponds to the deepest part of Lake Louisa.

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