

# The Influence of Self-Perception Bias on Perceptions of Shoreline Buffer Quality



# Final Report

## Executive Summary

Lake property owners can protect lakes by choosing to grow a vegetated buffer on their shoreline. Many programs are designed to encourage property owners to adopt buffers. This study tests whether self-perception bias, a universal human tendency for overly positive evaluations of one's self and past behavior, is a barrier to the success of those programs. The study finds strong evidence that self-perception bias affects property owners' evaluations of their shoreline's state, potentially preventing steps for remediation that might otherwise be taken. These findings suggest that providing property owners with objective information about their shoreline's ecological state may be an effective strategy for improving lake health in Wisconsin. Additional studies currently underway will field test specific methods for delivering that feedback, with results anticipated for communication to the Wisconsin lakes community in early 2014.



## Background

Shoreline development can negatively impact the health of Wisconsin's lakes, which support many populations of plants and animals, and are a major source of cultural and economic value to the state. Private property owners can protect lakes by choosing to grow a vegetated buffer on their shoreline, which can provide habitat for native species and keep contaminants out of the lake. While many owners currently maintain a buffer, others do not. In many places in Wisconsin, programs exist to encourage and assist owners of impaired shorelines voluntarily undertake shoreland restoration.

However, because residential shorelands are a transitional area where a natural environment (the lake) meets a built environment (the house), determining whether a shoreline is "impaired" can be ambiguous. Accurate evaluations in ambiguous contexts are often difficult to achieve. Accurately evaluating the state of one's own shoreline is likely to

be particularly difficult, because that state is at least partially the result of one's past decisions, and a negative evaluation may reflect poorly on the wisdom of those decisions. Research in psychology, as well as common experience, suggest that people are unconsciously motivated to avoid conclusions that threaten their self-view. Given the ambiguity inherent in evaluating shoreline state, that motivation may cause property owners to reach overly positive conclusions about their own personal shoreline. For owners of currently impaired properties, an overly positive evaluation may prevent them from taking steps to improve their shoreline, even if they support the goals of restoration.

This study investigated the influence of self-perception bias – an unconscious, universal human tendency – on Wisconsin lake property owners' evaluations of their personal shorelines. Participants rated photos of their own and others' shorelines on four dimensions: contribution to natural beauty, usefulness for enjoying the lake, contribution to good water quality, and habitat provided for aquatic and terrestrial species.

## Methodology

A sample of 140 individuals who owned residential lake property in Central Wisconsin were selected from databases collected by Nancy Turyk and Dan McFarlane at UW Stevens Point, as part of ongoing lakes assessment projects in Waushara, Portage, and Marathon Counties. The majority of properties (107) were located in Waushara County, followed by Portage County (21), and Marathon County (10). The lakes assessments were able to provide owner names, mailing addresses, and a photo of the shoreline part of each property. All selected photos showed some development, with approximately equal numbers showing low, moderate, and high development. Photos were cropped to show only the shoreline area, without any personally identifying information, in order to protect the anonymity of participants.

Each participant was mailed a survey that included eight photos of residential shorelines. One photo in each survey belonged to the owner, while the other seven belonged to one of the other participants. Participants were asked to rate each photo on four dimensions: contribution to natural beauty, usefulness for enjoying the lake, contribution to good water quality, and habitat provided for aquatic species. Ratings used a 7-point scale, where 1 indicated "low" and 7 indicated "high." This design allowed us to collect ratings of each property by the owner, as well as several ratings of each property by other people who were not the owner.

## Results

A total of 71 surveys were returned by respondents, yielding a response rate of 52%. Two surveys were returned by the postal service as undeliverable. Of those who returned surveys, 40% reported living at the lake property for 6 months or more per year.

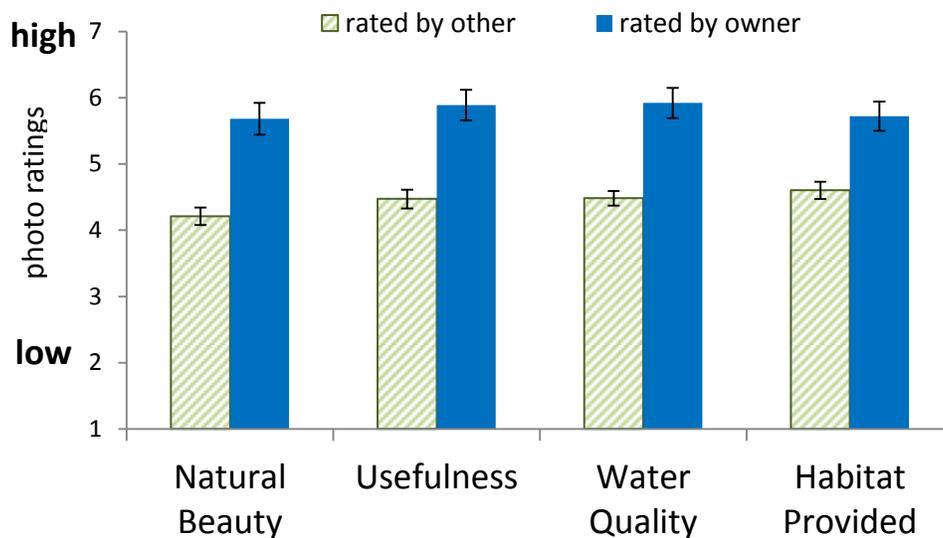
A minority of participants (24%) reported that they did not see their property in one of the photos. That result was not entirely unexpected, as in some cases the photo was

several years old, and close cropping of the shoreline images may have prevented recognition. Those participants were excluded from analysis.

Mixed effect modeling, a statistical technique similar to linear regression but allowing the inclusion of multiple random variables, was used to test the prediction that participants would rate their own property more highly than it would be rated by other participants. Results confirmed the prediction for all four dimensions. Results are presented in the graph below.

In all four areas, property owners rated their property more positively than it was rated by other participants. These findings suggest that helping property owners achieve accurate, objective evaluations of their shoreline's current state may be an effective strategy for increasing the number of individuals who choose to participate in shoreland restoration.

**Shoreline photo ratings by their owners,  
and by owners of other properties**



*variability shown with standard error bars*

## Recommendations

The results obtained here are robust, and they demonstrate a considerable difference in evaluations of the same properties depending on whether those evaluations are made by the owner or someone else. These findings suggest that the difficulty of achieving accurate, objective evaluations of how one's private property contributes to overall ecosystem health may be a barrier to behavior change, because the human tendency for self-perception bias may cause overly positive evaluations. Although these results are specific to lake shorelines, the same tendency is likely to affect other environmental evaluations as well, whenever the current state of a property is the result of decisions made by the owner.

Helping property owners achieve accurate, objective evaluations of their shoreline's current state may be an effective strategy for overcoming this challenge. Potential strategies, which should be field-tested before broad implementation, include objective self-assessment worksheets or summary assessments conducted by independent experts.

Caution is warranted in delivering objective evaluations, however. For owners of impaired shoreline properties, an accurate evaluation of their property's contribution to ecosystem health will be a negative evaluation. Most people do not enjoy being negatively evaluated, a fact which explains the unconscious motivation for self-perception bias. A challenge for future research will be not only finding ways to deliver objective feedback, but also to deliver it in a way that does not threaten property owners' self-image, which could cause reactance against restoration efforts and undermine any benefits obtained from outreach programs focused on improving lake health.

Follow-up studies currently underway will field test and compare the effectiveness of several methods for delivering more accurate evaluations, coupled with strategies for preventing reactance. Results from those studies are anticipated for early 2014.

**Authors:**

Michael S. Amato, Nelson Institute, University of Wisconsin – Madison

Bret R. Shaw, Life Sciences Communication, University of Wisconsin – Madison

John Haack, University of Wisconsin Extension, Spooner Agricultural Research Station

Colleen F. Moore, Psychology Department, Montana State University - Bozeman

July, 2013

Prepared for and funded by:  
Wisconsin Department of Natural Resources

