# The Evolution of a Model
# Volunteer Lake Protection Program

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## Introduction

Maine's nearly 6,000 lakes generate an estimated $3.5 to $6 billion in annual economic activity and support 52,000 jobs, while providing 400,000 Mainers with clean drinking water (Schuertz et al. 2001). This resource is at risk from increased developmental pressure, nutrient runoff, and the compounding effects of global climate change. Regulatory approaches, including mandatory shoreland zoning and restrictions on construction and dredging, have helped lake managers mitigate these risks. However, these top-down, enforcement-based approaches have not been sufficient to eliminate threats to Maine's lakes or stem water quality declines.

LakeSmart, an innovative voluntary certification program, is a promising tool to address these challenges. Based on the principles of community-based social marketing, the LakeSmart homeowner education and recognition program promotes positive conservation behavior by lake shore residents and rewards practices that help stem the flow of nutrient runoff and septic effluents, important sources of lake pollution. From humble beginnings (Welch and Smith 2008), LakeSmart – now operating on 39 lakes and 1 river in 13 of Maine's 16 counties – has become one of the most effective voluntary lake protection programs in the country.

## Concepts behind LakeSmart and the early years of the program

The LakeSmart program was designed using concepts of community-based social marketing to encourage and maintain sustainable behavior (McKenzie-Mohr 2006). Social psychology research indicates that behavior change can be promoted most effectively at the community level through direct inter-personal contact. For this reason, programs that rely heavily on media advertising may be effective in raising awareness for social, environmental, or health issues, but rarely bring about actual changes in social behavior. Programs that make use of traditional marketing tools and view the promoted behavior as a product to be sold may be equally ineffective because encouraging people to adopt a new behavior is much more complex than simply altering their preferences for one product over another. It turns out that real behavior change cannot be accomplished using only the advertising toolbox.

The Maine Department of Environmental Protection (DEP) designed LakeSmart to include several tools proposed by social marketing theory. The educational workshops serve a dual function, spreading knowledge about lake-friendly management practices (*communication*) and soliciting participants for LakeSmart (*commitment*). The incorporation of a combination of easy-to-implement best management practices (BMPs) with ones requiring more extensive changes also exemplifies *commitment* in the LakeSmart design. The LakeSmart sign (Figure 1), posted in visible locations on both the road- and the lake-side of LakeSmart properties, embodies several social marketing tools. The sign serves as a *prompt* to remind awardees to engage in the sustainable behaviors for which the sign was awarded and to increase the visibility of the program to neighbors and visitors (*communication*). The signs help promote LakeSmart practices as the apparent *norm* in the community, exerting social pressure on neighbors to join the program. The signs, and the concern for the lake they represent, may serve as *incentives* to participate in LakeSmart. Lastly, because the evaluation site visits are arranged to accommodate homeowner schedules, *convenience* for the participating property owners increases.

As chronicled in an early review of the LakeSmart program (Welch and Smith 2008), staff from the DEP, concerned about the increase in development on the shorelines of Maine lakes and associated water quality problems, met with leaders in the lake protection community in 2001 to gauge the need and potential for a community-based social marketing program to help mitigate the environmental impact from shoreline properties. Their vision was to combine landscaping BMPs and education efforts with incentives, recognition, and social pressure. After two years of planning, the DEP developed LakeSmart, a comprehensive lake protection program that would train lakeshore residents in the use BMPs, conduct property visits to assess existing runoff problems, suggest mitigation strategies for improvement, and issue an award sign that could be displayed on the property to acknowledge exemplary land management. The DEP initially partnered with the Soil & Water Conservation District (SWCD) to conduct the site visits so that DEP staff could avoid the impression they were part of an "undercover" code enforcement program.

The LakeSmart property evaluation is divided into four sections to emphasize the potential for nutrient runoff from each of these sources and to communicate their importance for mitigation efforts: (1) the driveway and parking area; (2) structures and septic system; (3) yard, recreation areas, and footpaths; and (4) buffer and
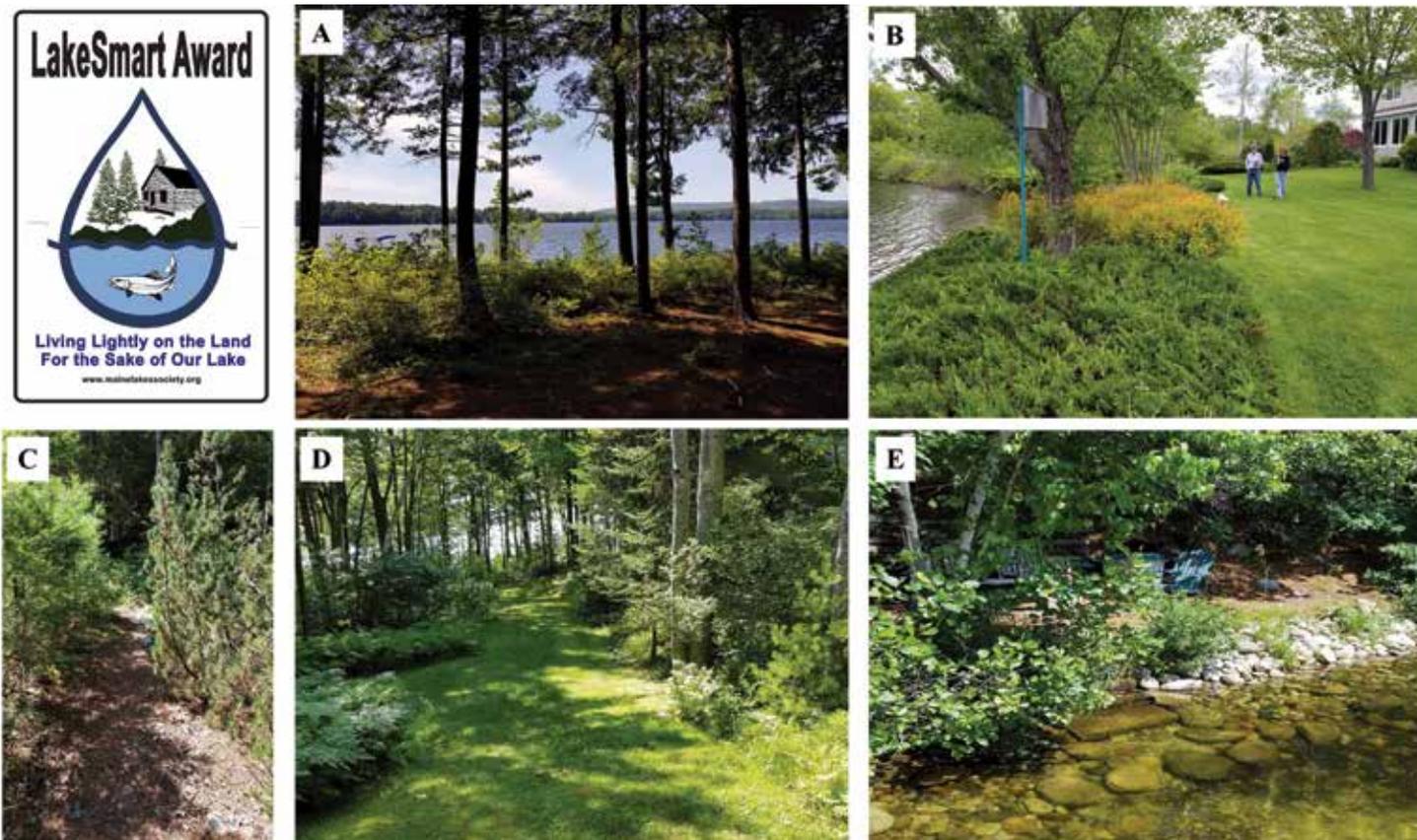
Figure 1. A composite figure showing the LakeSmart award sign for posting on the road- and lake-sides of a property and examples of landscaping best management practices promoted by LakeSmart: (A) an effective buffer with multiple layers of vegetation; (B) a manicured professionally designed buffer; (C) a mulched, winding path to the shoreline; (D) vegetated, curved path to the shoreline; and (E) a stable water access near a steep slope at the end of a lakeside path, also showing erosion stabilizing rip-rap at the shoreline.

water access. Only residents whose properties score well in all four categories during the LakeSmart evaluation receive LakeSmart certification. Those properties that score well in at least one, but not all four categories, receive a commendation recognizing their effort and encouraging them to keep improving their properties, and then seek re-evaluation. Every property owner receives a detailed description of the reviewer's findings and, if appropriate, illustrated instructions for implementing the suggested BMP's (Figure 2).

In the summer of 2003, the DEP began to offer BMP workshops on shoreline LakeSmart landscaping and maintenance, and to conduct evaluations of existing practices (Welch and Smith 2008). The pilot phase of LakeSmart lasted two years (2003-2005) during which time the program was operational, but the messaging and evaluation protocols were being fine-tuned. By 2005, LakeSmart had spread to 32 different lakes in 8 of Maine's



Figure 2. Infiltration steps recommended during a LakeSmart evaluation and installed at a shoreline property to slow the flow of nutrient laden runoff into an adjacent lake.

16 counties, primarily in the southern and eastern parts of the state. The effectiveness of the new LakeSmart program was evaluated by the DEP using phone and mail surveys, interviews, and focus groups. In response to feedback

that classroom-based workshops were good sources of information, but relatively ineffective tools for moving residents to action, the DEP transformed these workshops to shorter and more interactive "Walk 'n Talk" sessions. The

new format consisted of a tour of two properties to familiarize attendees with the appearance and function of BMPs, and the implementation of the LakeSmart evaluation process.

The DEP program evaluation also revealed the importance of "sparkplugs," local residents who, through their enthusiasm for lake protection, were able to spur their communities into action (Welch and Smith 2008). These "sparkplugs" exemplify the social marketing *communication* tool (i.e., using a credible source to disseminate information). The role of "sparkplugs" as local catalysts for the program was emphasized in the minor program adjustments that resulted from the post-pilot assessment.

The DEP also decided to emphasize changing resident behavior by establishing a new norm for lake-friendly practices and adopting the 15-percent "rule" proposed by Everett Rogers (Rogers 2003). Rogers observed that once 15 percent of a community has visibly adopted a new behavior, this behavior tends to become the norm. This concept of social diffusion was incorporated into the LakeSmart program by shifting the management focus on big lakes from lake associations to individual road associations, where the 15-percent participation threshold might be exceeded more quickly (Welch and Smith 2008).

New lake associations wishing to join the LakeSmart program were required to meet certain criteria to ensure that DEP time and money would be spent effectively (Welch and Smith 2008). Only active lake associations with a high membership among shoreline residents were considered for LakeSmart. Each lake association was asked to make a three-year commitment, during which they would actively promote LakeSmart and pursue the goal of reaching 15-percent LakeSmart certification among shoreline properties. Lake associations were also asked to select a local leader to act as a LakeSmart "sparkplug" and appoint a person to handle scheduling of property evaluations.

Recognizing the scheduling inflexibility and increased funding required to employ SWCD staff as LakeSmart evaluators, the Maine Congress of Lake Associations (COLA)

and the DEP began to develop a training program for volunteers who would conduct pre-evaluation "screenings" of properties (Figure 3). The volunteer screeners would determine whether a property had the potential to receive the LakeSmart award enabling the DEP to focus the SWCD evaluations on properties with a high likelihood of receiving the award. From 2008 to 2011, Maine COLA and the DEP co-trained volunteers for a pilot program running in two watersheds. These volunteer screeners enabled LakeSmart to reach more lakeshore residents in the pilot watersheds and operate more flexibly and inexpensively than when SWCD evaluators were used exclusively.

## A new dawn: LakeSmart and the Maine Lakes Society

In early 2011, Maine COLA, in the process of changing its name to the Maine Lakes Society (MLS), volunteered to assume sole management of LakeSmart when the state began trimming programs that were not actually mandated by state or federal law, including many run by the DEP. The LakeSmart program was suspended after a record season in 2011 (Figure 4), and the DEP and the MLS began to develop a strategy that would allow this highly successful and effective program to continue. After an inactive 2012 season, management

of LakeSmart was fully transferred to the MLS, which immediately began to transform and reinvigorate the program by building on its positive experience with volunteer evaluators during the DEP-Maine COLA two-watershed pilot project. The MLS expanded the volunteer network to incorporate all eleven lakes that were still actively pursuing LakeSmart, and began promoting the program again knowing that LakeSmart, with its focus on preventing nutrient runoff through education and the use of BMPs, could be an important lake protection tool.

In the four years that the MLS has managed LakeSmart (2013–2016), the



*Figure 3. The China Lake, Maine, volunteer LakeSmart evaluation team.*

program has expanded rapidly, both in terms of awards granted per year through 2015 (Figure 4), and in the number of participating lakes (Figure 5). Although the figures are not final for 2016, the number of LakeSmart awards has almost doubled to at least 226 (up from 117 in 2015), and the number of participating lakes has expanded to 53. The MLS continues to actively reform program management, relying more heavily on lake associations to administer LakeSmart and functioning as a service provider for LakeSmart. As such, the MLS helps participating lake associations implement the program by providing promotional material, organizing regional training workshops for LakeSmart volunteers, providing on-site and on-call coaching, communicating regularly with local "Team Leaders," and recognizing the importance of volunteer advancement and support. The day-to-day scheduling of screenings and evaluations is now the responsibility of participating lake associations.

Current training for volunteer LakeSmart screeners and evaluators consists of two parts: (1) an all-day introduction to lake science, the LakeSmart program, BMPs, available resources, and two or three site visits to practice using the evaluation tool; and (2) a half-day workshop where screeners- or evaluators-in-training conduct supervised property evaluations on their home lakes. The MLS believes that this revised training procedure has led to greater scientific understanding for property owners and more consistent property evaluations.

## The future of LakeSmart

Although LakeSmart has become a highly successful lake protection tool, enhancements are planned for future seasons. In response to increased demands for training, volunteer supervision, and outreach to lake associations, the MLS hopes to convert some of the most experienced volunteer evaluators to paid local LakeSmart representatives. The MLS plans to offer fewer full-day LakeSmart training workshops in selected locations rather than offering numerous workshops at multiple locations to small groups on an as needed basis, and to re-emphasize the 15 percent threshold for LakeSmart participation on all lakes to
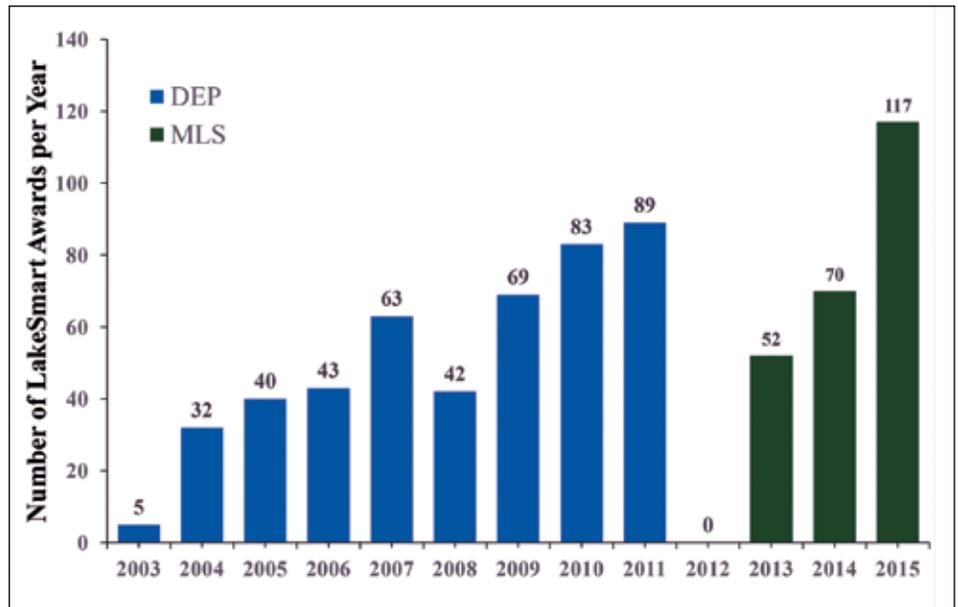


Figure 4. The number of LakeSmart Awards by year from 2003 to 2015 under Department of Environmental Protection (DEP) and Maine Lakes Society (MLS) leadership. The program was inactive during the change in leadership in 2012. Data obtained from the Maine Lakes Society.
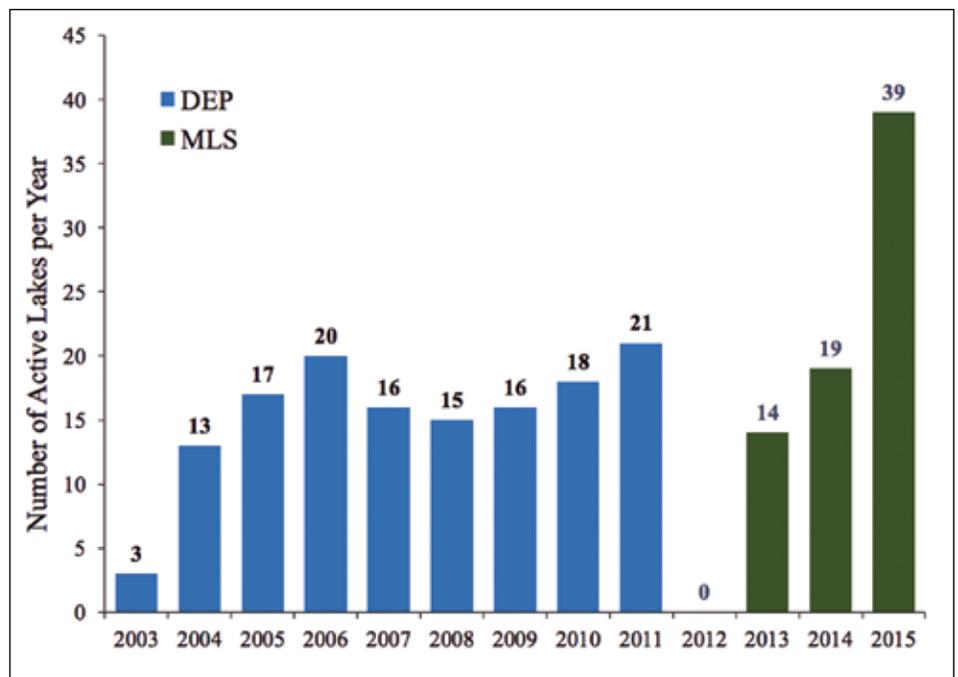


Figure 5. The number of lakes active in the LakeSmart program in the years 2003 to 2015 u1000nder Department of Environmental Protection (DEP) and Maine Lakes Society (MLS) leadership. A lake is defined as "active" if at least one shoreline property received an award in a given year. Lakes where properties only received commendations (certificates of recognition), but no full awards were not considered "active" for the purpose of this figure. Data obtained from the Maine Lakes Society.

help change the norm for lake-friendly landscaping best practices.

The LakeSmart award period will be limited to five years beginning in 2017, but shoreline property owners may apply for LakeSmart recertification. This change guarantees ongoing contact

with LakeSmart, increases the program profile in the community, and serves as an incentive to property owners to maintain their property at LakeSmart standards. Establishing new or expanding existing relationships with member-rich groups to increase participation in LakeSmart is

another goal. Recently, the MLS initiated a partnership with Maine Audubon (a 150-year-old conservation organization with a large membership base) to create the Loon Smart merit badge program (detailed in the summer 2016 Maine Audubon newsletter, *Habitat*), which can be earned by LakeSmart awardees who make efforts to provide nesting habitat for waterfowl, especially the iconic loon (Figure 6). The adverse effect of poor lake water quality on property values will also be emphasized in presentations and educational materials to help attract new LakeSmart participants. Finally, studies have reported that a strong sense of community is a driver of participation in conservation efforts (Chapin and Knapp 2015), so the MLS plans to continue fostering a strong sense of community among shoreline residents through its activities and sponsorships.

By 2020, the MLS hopes for a robust LakeSmart presence on all 172 Maine lakes classified as "impaired" or "high priority" by the DEP (presence on 27 of these lakes now). Once LakeSmart more fully expands its footprint within Maine, the MLS plans to license the program for use in other states, so this innovative, community-based social marketing program can be available to organizations in any region with an interest in using this approach to help protect their lakes.

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*Figure 6. Loon Smart merit badge developed through a partnership between the Maine Lake Society and Maine Audubon (above) and redesigned LakeSmart Award sign with Loon Smart merit badge incorporated (at right).*

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**F. Russell Cole**, Ph.D., is the Oak Professor of Biological Sciences emeritus and former director of the environmental studies program at Colby College. His teaching and research projects on Maine lakes span three decades, including collaborations with Bevier, Nyhus, and others investigating the impacts of shoreline development on riparian and littoral habitats in the Belgrade Lakes watershed.

**Alexa A.E. Junker** graduated from Colby College in 2016 as an environmental science major after completing an honors thesis on the development of the LakeSmart program. She is now completing requirements for a master of science degree in environmental change and management at the University of Oxford.