

# The Making of a Resource Steward

## The Relationship Between Stewardship & Recreational Boating and Fishing

Increasing the level of environmental stewardship among the general public is a critical yet daunting task in the quest to conserve the nation's natural resources. Without the support and cooperation of individual citizens, the overall mission will be impossible to accomplish. However, it is not clear how best to encourage environmental stewardship. Recruitment into outdoor recreation activities has often been used as a first step to getting people interested in the environment and creating new resource stewards, but little empirical evidence exists that participation alone creates a steward.

On behalf of the Recreational Boating and Fishing Foundation, researchers with the Conservation Management Institute and Department of Fisheries and Wildlife Sciences at Virginia Tech conducted a national mail survey during the fall of 2004 with three objectives:

1. Identify predictors and perceptions of environmental stewardship behavior,
2. Define the relationship between recreational boating and fishing and natural resource stewardship, and
3. Help natural resource educators chart a path for the creation of new and better resource stewards.

The Recreational Boating and Fishing Foundation defines aquatic stewardship as “taking personal responsibility to sustain and enhance freshwater and marine resources, while accepting an obligation to the environment.” This research is based on 3,324 responses to a mail survey sent to a sample of randomly selected U.S. households. Three groups of people are referred to in this report: **Active participants** have fished or boated in the last 5 years; **Lapsed participants** have fished or boated, but not in the last 5 years; **Non-participants** have never fished or boated.

### Perceptions of Stewardship

The term “stewardship” is used in many different contexts and is an especially important concept used by natural resource professionals and educators. However, people may have different perceptions of what stewardship means, and understanding those perceptions of stewardship is critical to ensuring that messages are appropriately designed and received.

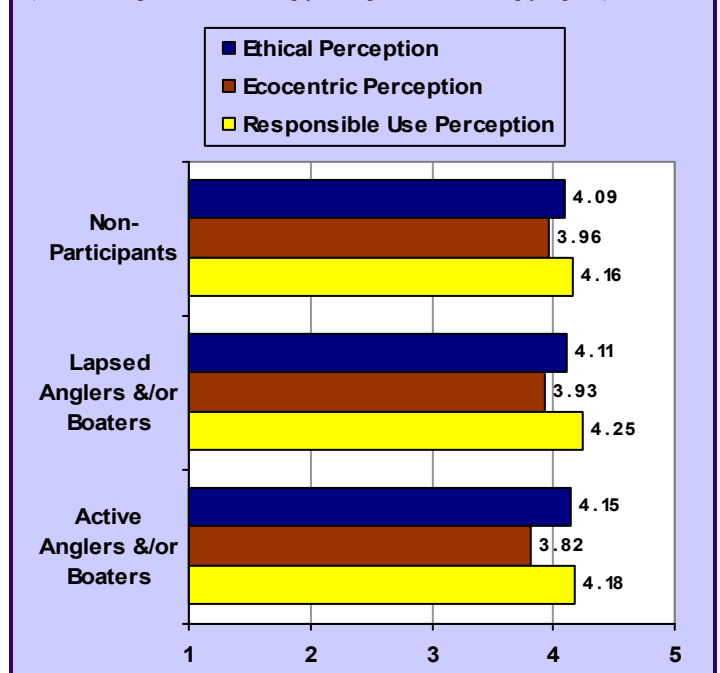
Respondents were asked to describe what they think of when they hear the term “natural resource stewardship” by agreeing or disagreeing with a series of statements fitting into one of three perception categories: Ethical (e.g., protecting the environment for future generations, an ethical responsibility), Ecocentric (e.g., preserving the environment in its natural state), and Responsible Use (e.g., managing natural resources wisely to provide for human needs).

The most important finding is that **there is not one, universal perception of stewardship**, and that an individual's perception generally is not related to his/her participation in fishing or boating (Figure 1). In fact, individuals often hold multiple (and seemingly opposing) perceptions simultaneously. Respondents generally expressed some level of agreement with all three types of statements. However, Responsible Use and Ethical scores tended to be higher than Ecocentric scores.

Another interesting finding is that **an Ethical perception of stewardship was a stronger predictor of pro-**

**environmental behaviors** than were the Responsible Use or Ecocentric perceptions (see Figure 11 on page 4). Knowing which perceptions are most commonly held (Responsible Use and Ethical), and which is most predictive of behavior (Ethical) has many implications for the design and execution of outreach and education programs.

**Figure 1. Average Stewardship Perception Scores.**  
(scores range from 1=Strongly Disagree to 5=Strongly Agree)



## Indicators of Stewardship

A primary objective of this research was to identify useful predictors of stewardship behavior so that outreach and education programs could be designed to target these concepts. This was done by asking about the stewardship behaviors respondents participate in and measuring their performance on a set of potential indicators.

To measure stewardship behaviors, respondents were asked about two types of behaviors: seven **Lifestyle behaviors** (e.g., recycling, picking up litter, using low-wattage light bulbs) and seven **Activism behaviors** (e.g., participating in a beach or stream clean-up, writing a letter to or voting for a politician based on pro-environmental views). The Lifestyle Behavior score (ranging from 0-2) is the average of the number and frequency of Lifestyle behaviors respondents participated in. The Activism Behavior score (ranging from 0-7) is simply a sum of the number of Activism behaviors a respondent has performed.

The second part of this evaluation was the potential indicators. In all, nearly 20 possible indicators of stewardship behavior were analyzed. Some of the predictors tested included demographics, perceptions of stewardship, ownership of the stewardship concept, perceived level of personal responsibility, religiousness/spirituality, level of environmental concern, perceived behavioral constraints, and participation in outdoor recreation.

Four indicators clearly were the best predictors of stewardship behavior. Each of these are defined and illustrated below.

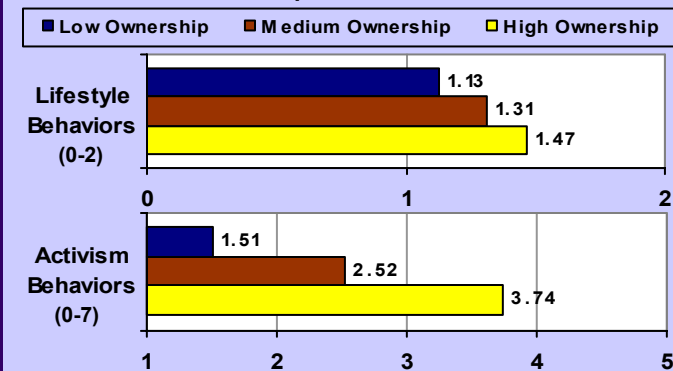
**Ownership** (Figure 3) was a measure of how strongly an individual identifies him/herself as a “natural resource steward.” Those with a high level of ownership in the stewardship concept had significantly higher behavior scores.

**Verbal commitment** (Figure 4) measured a person’s stated willingness to contribute time and/or pay more to help the environment. Individuals who stated they are more willing to help were also likely to have higher pro-environmental behavior scores.

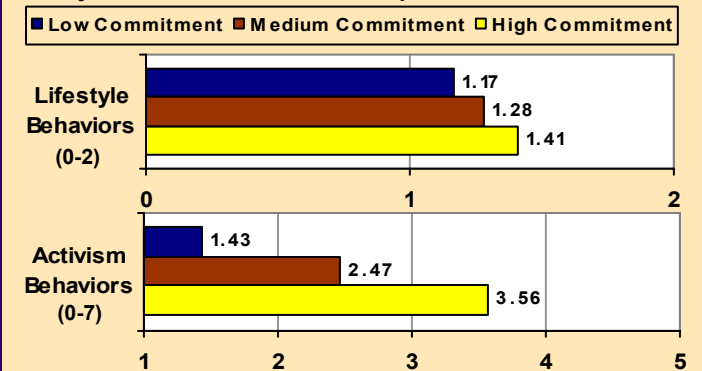
**Awareness of consequences** (Figure 5) scored an individual’s level of knowledge about the impacts of human actions on the environment. Higher awareness levels translated into higher behavior scores.

**Perceived seriousness** (Figure 6) quantified how seriously an individual perceives the environmental impacts of harmful recreation-related behaviors to be (e.g., littering, keeping over the limit of fish, picking a wildflower). As perceived seriousness increased, Lifestyle and Activism behavior scores improved significantly.

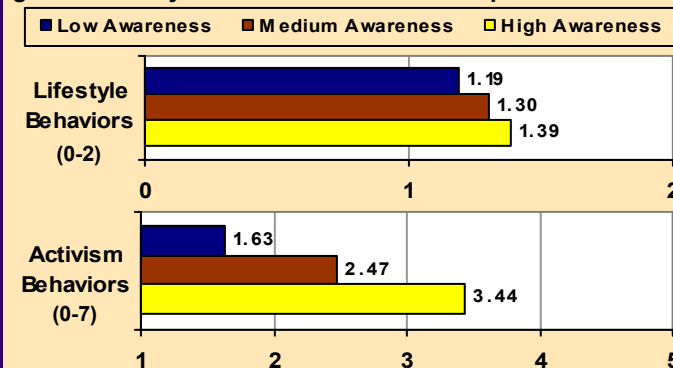
**Figure 3. Ownership as an indicator of general Lifestyle and Activism stewardship behaviors.**



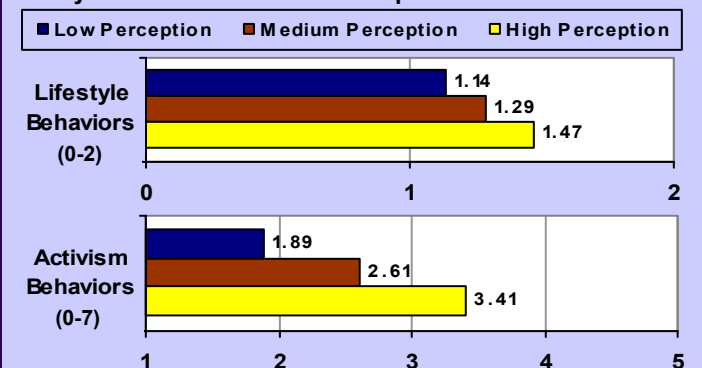
**Figure 4. Verbal Commitment as an indicator of general Lifestyle and Activism stewardship behaviors.**



**Figure 5. Awareness of Consequences as an indicator of general Lifestyle and Activism stewardship behaviors.**



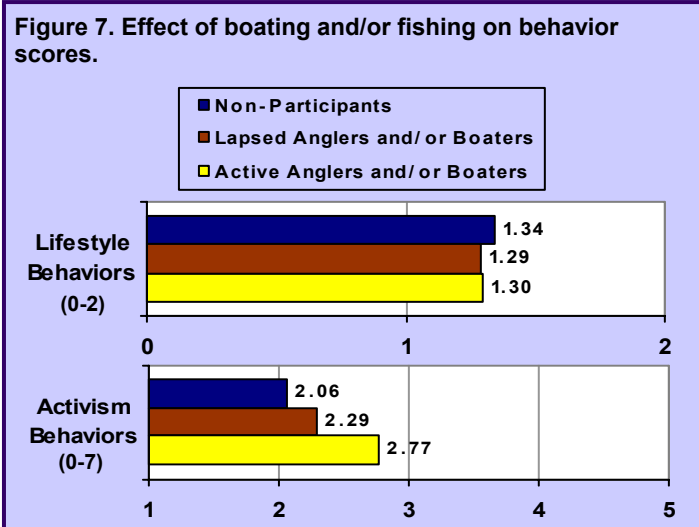
**Figure 6. Perceived Seriousness as an indicator of general Lifestyle and Activism stewardship behaviors.**



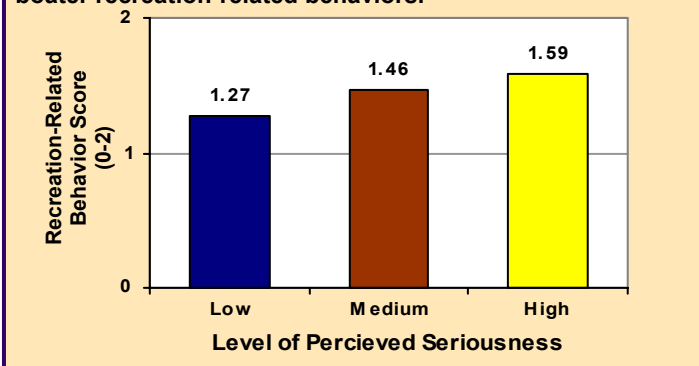
## The Role of Boating and Fishing Participation

Active boaters and/or anglers were slightly more likely than non-participants to engage in the Activism behaviors such as volunteering time or money and writing letters. However, they were not more likely to engage in the Lifestyle behaviors such as recycling and energy conservation (Figure 7). Further, when compared to other outdoor activities (e.g., birdwatching, camping, hiking), boaters and anglers were less likely to engage in both types of behaviors. This suggests that while participation in boating and fishing is associated with contributing time and money to conservation organizations (and may increase some aspects of political activism), it does not automatically translate into a broader ethic of environmental stewardship.

Although recreational fishing and boating by itself was not always predictive of behaviors, **early fishing and boating experiences and the conscious connection between fishing and boating experiences and environmental views were indicative of good stewardship.** Respondents who had first fished or boated by age 5 had higher Activism scores, and those who reported that their experiences strongly influence how they look at the environment scored higher on both the Lifestyle and Activism scales (Figure 8).

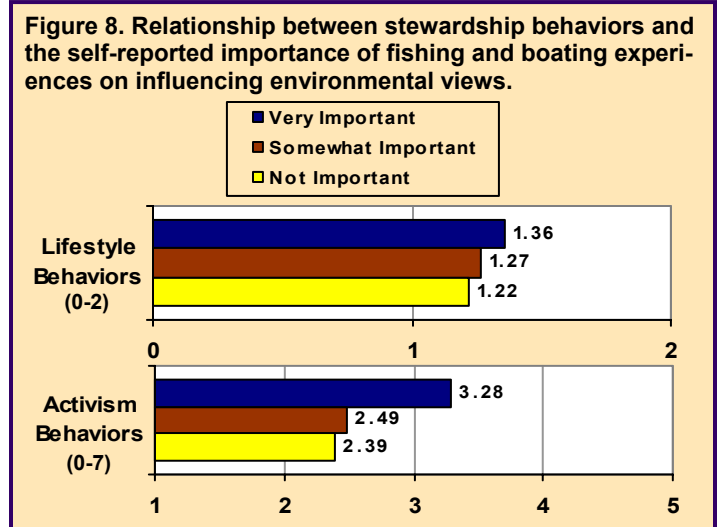


**Figure 9. The effect of increasing levels of perceived seriousness of depreciative actions on active angler and boater recreation-related behaviors.**

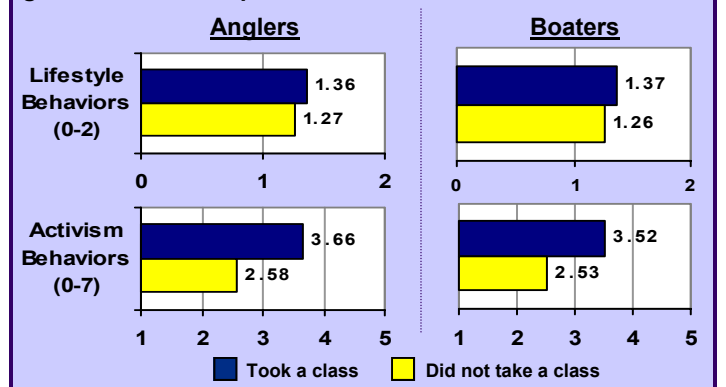


While perceived seriousness of depreciative actions (a good general stewardship indicator) was not higher among active anglers and boaters than non-participants, it was predictive of recreation-related stewardship behaviors (i.e., behaviors that take place in a recreational setting). These include activities such as washing a boat between uses in different bodies of water, traveling slowly through “wake zone” areas, not releasing non-native bait fish, using non-lead weights, and not feeding ducks or geese. A recreation-related behavior score was calculated in the same way as the Lifestyle Behavior score, (ranging from 0 to 2). **Participants who perceived negative actions as having more serious impacts on the environment behaved more pro-environmentally while recreating** (Figure 9).

Finally, individuals who had taken a class or workshop on fishing/boating skills or safety (16.6% of anglers and 30.1% of boaters) scored significantly higher on this perceived seriousness scale, had higher Lifestyle and Activism behavior scores (Figure 10), and also were more likely to always practice good stewardship while recreating. Thus, **classes and workshops may reinforce the stewardship message and build upon on initial recruitment efforts.**



**Figure 10. Relationship between education classes and general stewardship behaviors.**



## Pathways to Stewardship

There are many things that natural resource educators can do to maximize their efforts to promote good stewardship. Several recommendations come from this research:

**When talking about what good stewardship is, emphasize Ethical and Responsible Use perceptions.** At least eighty percent of all respondents agreed with these perceptions, which suggests that messages articulating these concepts would be well received. Because the Ethical perception was a better predictor of stewardship behaviors (Figure 11), programs that emphasize a personal stewardship ethic and include elements of responsible use should be most effective in producing better resource stewards.

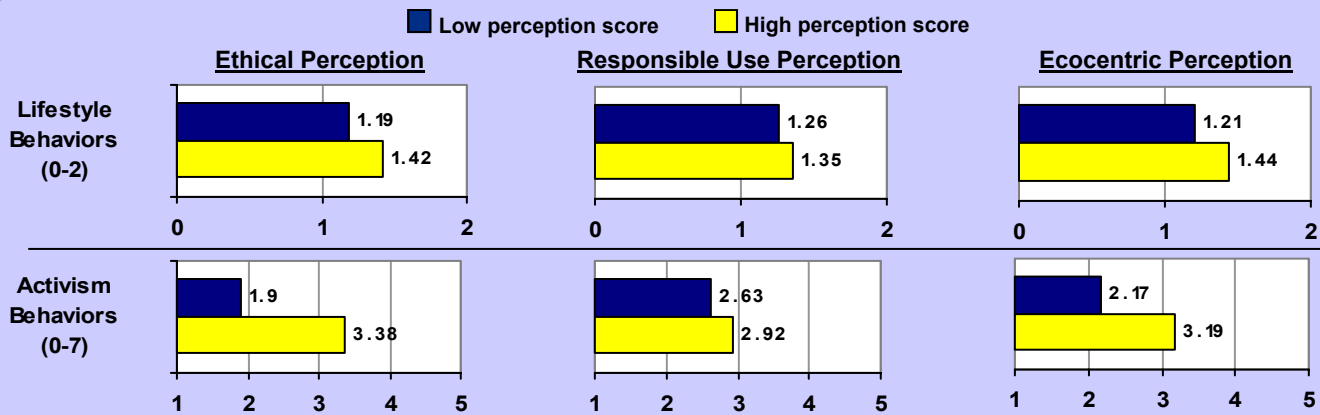
**Design educational programs and messages to focus on the strongest predictors of stewardship behavior.** Ownership (identification with being a natural resource steward), verbal commitment, awareness of consequences, and perceived seriousness of depreciative actions are strong predictors of stewardship behavior and can be targeted by outreach efforts. Messages that 1) encourage a personal connection with and responsibility toward the environment, 2) highlight the ecological consequences of poor

stewardship, and 3) teach stewardship skills are the most likely to raise stewardship levels.

**Don't stop education programs at recruitment.** Continue to be involved with participants. Initiate repeated contacts through workshops and informal venues. From an individual's perspective, the first step to protecting the environment is understanding the positive and negative impact of human actions, and then gaining the skills needed to reduce impacts and improve environmental conditions. Workshop attendance raises the perceived seriousness of depreciative actions and increases stewardship behaviors both while recreating and in everyday life.

**Don't forget the big picture.** Boaters and anglers clearly understood the obvious, localized consequences of actions such as littering, sewage dumping, and fuel spills. However, they often lacked an understanding of larger-scale, potentially ecologically devastating consequences of some actions such as not washing a boat between bodies of water and releasing non-native bait fish. These large-scale perspectives should be incorporated into educational messages whenever possible.

Figure 11. Effect of stewardship perception on pro-environmental behaviors.



Prepared in June, 2006, for the Recreational Boating and Fishing Foundation by Karen Hockett and Julie McClafferty of the Virginia Tech Conservation Management Institute and Dr. Steve McMullin of the Virginia Tech Department of Fisheries and Wildlife Science.

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To download the full project report, visit <http://www.rbff.org> and go to the Research section.

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