

THE NORTHEASTERN AREA'S OBJECTIVES AND BELIEFS TOWARD NATIONAL FORESTS AND GRASSLANDS

Lori B. Shelby
Department of Economics
Colorado State University
Ft. Collins, CO

Deborah J. Shields
U.S. Forest Service

Michael D. Miller
Colorado State University

Brian M. Kent
U.S. Forest Service

Abstract.—The Northeastern Area, an organizational unit of the State and Private Forestry branch of the U.S. Forest Service, serves the Northeastern and Midwestern United States. For this study, residents of the Northeastern Area were asked about their *objectives* for the management, use, and conservation of forests and grasslands and *beliefs* about the role the Forest Service should play in fulfilling those objectives on public land. This paper summarizes the Northeastern Area results and compares these results with the other states. Major findings for the Northeastern Area states and the other states include but are not limited to the following: (a) The public sees the protection of ecosystems and habitats as an important objective and role for the agency; (b) There is a lack of support for developing new paved roads; (c) On average, the public is neutral with respect to expanding energy and mineral production, and expanding timber production and livestock grazing; (d) Reducing the loss of open space is supported; (e) Using management tools to reduce wildfires is an important objective and an appropriate role for the agency; (f) There is support for increasing law enforcement efforts.

1.0 INTRODUCTION

Objectives are statements of outcomes or conditions that an individual, group, or government body desires to achieve. In the context of decisions, objectives are explicit statements of why people care about a problem (Kenney, 1988). Beliefs are expressed as agreement with a proposition, or more formally as cognitive content held as true. Information on the strength of an individual's agreement with land management objectives, and their beliefs regarding the role of federal agencies in achieving those objectives, have been shown to provide useful public input to the forest planning process (Shields et al., 1999).

Objectives can also be thought of as general beliefs (i.e., goals which guide decisionmaking) (Keeney & Raiffa, 1976). This approach is consistent with work on cognitive hierarchies, which have gained recognition as a theoretical framework for understanding human behavior (Fulton et al., 1996; Vaske & Donnelly, 1999). One of the constructs included in the cognitive hierarchy is beliefs, which include general and specific beliefs. Beliefs are defined as what is believed to be true or factual. Whittaker et al. (2006) analyzed the cognitive hierarchy by considering the specificity of the measured variables. Their findings suggest that general beliefs have more influence on general management action acceptability (e.g., hunting) than on more specific management actions (e.g., destroying a problem bear). General beliefs (e.g., objectives) and specific beliefs yield different information and can inform management decisions in different ways.

1.1 Legislative background

The 1993 Government Performance and Results Act (Public Law 103-63) requires that each federal agency submit to Congress a strategic plan every 3 years that includes long-term goals and objectives. For the Forest Service, these goals and objectives must be consistent

with the agency's mission, which is to sustain the health, diversity, and productivity of the nation's public forests and grasslands to meet the needs of present and future generations. The Government Performance and Results Act requires each agency to ask for the views and suggestions of anyone "potentially affected by or interested in" its strategic plan. The long-term goals and objectives of the Forest Service's strategic plan must therefore reflect not only the agency's mission, but also the public's views and beliefs regarding our country's publicly managed forests and grasslands.

1.2 National survey background

The National Survey of Values, Objectives, Beliefs, and Attitudes (VOBA) is one source of information on the public's views and beliefs that is used to develop the Forest Service's strategic plan. This recurring survey is designed to reflect the changing goals and interests of the American public over time. The original survey instrument was implemented in 1999/2000 as a module of the National Survey on Recreation and the Environment (NSRE) (Shields et al., 2002). The survey was revised and implemented again as part of NSRE in 2003/2004 (Version 2) (Shelby et al., 2007a). In Version 2 of the survey respondents were asked about their:

- *objectives* for the management, use, and conservation of forests and grasslands; and
- *beliefs* about the role the Forest Service should play in fulfilling those objectives on public land.

1.3. Northeastern area of the United States

Twenty Northeastern and Midwestern states¹ are served by the Northeastern Area, State and Private Forestry branch of the U.S. Forest Service (NE Area). This part of the U.S. is more than 40 percent forested and more than 75 percent of the forests are privately owned (one of the largest concentrations of privately owned forests in the world). Nearly 50 percent of the U.S. population resides in this area,

¹The NE Area includes Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Wisconsin, and the District of Columbia.

which contains less than 20 percent of U.S. land. The Northeastern and Midwestern states are the nation's leading producers of forest products and employment (USDA Forest Service, 2006). The NE Area works in partnership with state forestry agencies and other partners to influence the management, protection, and sustainable use of forests, and provide financial support and professional expertise to states, private forest landowners, nonprofit groups, tribal nations, and communities (USDA Forest Service, 2006). The NE Area mission statement is to "lead and help to support sustainable forest management and use across the landscape to provide benefits for the people of the 20 Northeastern and Midwestern states and the District of Columbia" (USDA Forest Service, 2003, p. 3). Given the unique population distribution and forest ownership in this region of the country, and the forestry goals and objectives of the NE Area, it is crucial that public input is obtained on a regular basis. This article examines data from respondents in the 20 states in the NE Area as a subset of the VOBA Version 2 data (see Shelby et al., 2007b for more detailed information and results). General beliefs (objectives) and specific beliefs are examined to explore whether or not the different levels of specificity yield different information. These results are intended to facilitate an understanding of the objectives of NE Area residents, and provide information on which of the Forest Service's current and potential activities NE Area residents believe to be appropriate.

2.0 METHODS

Thirty objective statements and 30 corresponding belief statements were included in Version 2 of the telephone survey (implemented in 2003/2004). Prefacing the objective statements with "It is a role of the Forest Service to..." created corresponding belief statements. These question modifications shifted the focus from general objective statements to specific beliefs about the appropriate role of the Forest Service on public land. Items were measured on a 5-point scales (objectives, 1 = *not at all important* to 5 = *very important*; beliefs, 1 = *strongly disagree* to 5 = *strongly agree*).

The VOBA survey is administered by the Human Dimensions of Research Laboratory at the University of Tennessee, Knoxville, as part of the National Survey on Recreation and the Environment for the U.S. Forest Service. The survey uses a nationwide random sample of telephone numbers facilitated by a computer-aided telephone interviewing system (CATI). Each respondent was given a random selection of the objective statement and the corresponding belief statement. With this sampling design, the number of respondents for each set of objectives and beliefs varies. The overall goal of this matrix sampling design was to control interview time with respondents, yet still collect analytically valuable information. The design lowers the costs of survey administration and reduces respondent burden, which leads to fewer nonresponses and better sample quality. The number of respondents for each statement in the Northeastern Area ranged from 253 to 316 (confidence interval of ± 4.6 percent to ± 5.1 percent at a 95 percent confidence level). For the remainder of the United States, the number of responses ranged from 369 to 451 (confidence interval of ± 5.5 percent to ± 6.2 percent at a 95 percent confidence level). In total, 1,437 NE Area respondents and 2,066 respondents from the remainder of the United States were asked a random selection of the VOBA survey statements.

The 30 U.S. states not in the NE area are referred to as *Other States*. Paired samples *t*-tests are used to examine differences in responses between the 30 matching belief and objective statements for the NE Area respondents. Independent samples *t*-tests are used to compare the NE Area States to the Other States for the objective and belief statements. Effect sizes (Cohen's *d* for the paired samples *t*-test and Pearson's *r* for the independent samples *t*-test) were calculated as indicators practical significance. A correction for multiple comparisons (e.g., a Bonferroni correction) was not conducted due to the low sample sizes, which would result in a decrease in power and an increase in the probability of a Type II error. Our findings should be viewed as exploratory.

3.0 RESULTS

The results of the paired and independent samples *t*-tests for the objective and belief statements with statistically significant differences are in Tables 1 and 2. Table 3 shows the remaining survey statements where no statistical differences were evident for either the paired or independent samples *t*-tests. All tables report the complete statement as presented in the survey. The descriptive results are limited to a selection of objectives/beliefs, and to statistically significant differences (See Shelby et al., 2007b for more information). All Cohen's *d* results were ≤ 0.3 . All Pearson's *r* results were $\leq .11$. These results suggest that the relationships are "minimal" (see Vaske et al., 2002 for more information on interpreting effect sizes)

3.1 Developing new paved roads

Average objective ratings ($M = 2.67$, $SD = 1.43$) and belief ratings ($M = 2.91$; $SD = 1.46$) for NE Area respondents were slightly less than neutral (3.00) for developing new paved roads. Paired *t*-test results ($t = -2.64$; $p < .05$) showed that respondents were less than likely to think that the objective of developing new paved roads was important than they were to believe that achieving the objective was an appropriate role for the Forest Service (Table 1).

3.2 Protecting ecosystems and habitats

Mean responses were positive for NE Area respondents on the objective ($M = 4.60$, $SD = 0.86$) and belief statements ($M = 4.61$, $SD = 0.86$). The mean response for NE Area residents was statistically different from the other states for the belief ($M = 4.46$, $SD = 1.00$) that an appropriate role of the Forest Service is to protect ecosystems and habitats (independent samples, $t = -2.06$, $p < .05$; Table 2).

3.3 Expanding energy and mineral production

Expanding energy and mineral production resulted in means near neutral for both the objective ($M = 3.18$; $SD = 1.32$) and belief statements ($M = 2.86$, $SD = 1.42$) for NE Area respondents. A paired *t*-test showed that the difference between the objective and belief

Table 1.—Paired t-test results for NE Area objective/belief responses

Objective statement ¹	Mean difference	SE	t
Developing new paved roads on forests and grasslands for access by cars and recreational vehicles.	-0.25	.10	-2.64*
Reducing the loss of open space and wildlife habitat due to conversion of forests and grasslands to residential areas or other development.	0.19	.09	2.07*
Expanding energy and mineral production on forests and grasslands.	0.36	.09	3.93**
Expanding timber production and livestock grazing on forests and grasslands.	0.21	.10	2.08*
Simplifying the permitting process for some established uses of forests and grasslands such as grazing, logging, mining, and commercial recreation.	-0.18	.08	-2.18*
Developing volunteer programs to improve or maintain forests and grasslands (e.g., planting trees, improving water quality, or maintaining trails and recreation sites).	0.22	.07	3.42*
Informing the public about recreation concerns on forest and grasslands such as safety, respect for other visitors and wildlife, and minimization of impacts from recreational use.	-0.22	.06	-3.86**
Informing the public on the economic value received by developing our natural resources.	0.22	.07	2.97*
Increasing law enforcement efforts by public land agencies on public lands in order to increase safety of visitors and protect resources.	-0.16	.07	-2.47*
Using management tools such as prescribed fires and tree thinning in order to reduce the risk of catastrophic wildfires across forests and grasslands in general.	-0.33	.07	-5.09**
Using management tools such as prescribed fires and tree thinning in order to reduce the risk of catastrophic wildfires on forests and grasslands, but only around communities.	-0.16	.08	-2.12*

*p < .05; **p < .001

¹Matching belief statements are identical to the objective statements with a preface of "It is a role of the Forest Service to...". Objectives were measured on a 5 point scale 1 = *not at all important* to 5 = *very important* and beliefs were measured on a 5 point scale 1 = *strongly disagree* and 5 = *strongly agree*.

Table 2.—Independent samples t-test results for NE Area States and other states

Objective statement ¹	NE Area States		Other States		t
	M	SD	M	SD	
Objective differences					
Providing natural resources from forests and grasslands to support communities dependent on grazing, energy production, mining or timber harvesting.	3.60	1.22	3.88	1.16	.004*
Making management decisions concerning the use of forests and grasslands at the local level rather than at the national level.	3.82	1.19	4.00	1.13	.046*
Using management tools such as prescribed fires and tree thinning in order to reduce the risk of catastrophic wildfires on forests and grasslands, but only around communities.	3.82	1.12	4.05	1.05	.009*
Belief differences					
Protecting ecosystems, and wildlife and fish habitats.	4.61	0.86	4.46	1.00	.040*
Informing the public on the economic value received by developing our natural resources.	3.76	1.31	4.03	1.20	.005*
Increasing law enforcement efforts by public land agencies on public lands in order to increase safety of visitors and protect resources.	4.15	1.03	3.99	1.17	.050*

*p < .05; **p < .001

¹Matching belief statements are identical to the objective statements with a preface of "It is a role of the Forest Service to...". Objectives were measured on a 5 point scale 1 = *not at all important* to 5 = *very important* and beliefs were measured on a 5 point scale 1 = *strongly disagree* and 5 = *strongly agree*

Table 3.—Additional VOBA survey statements

Objective statement¹

- Managing use of motorized off-highway vehicles (e.g., snowmobiles, dirt bikes, or all-terrain vehicles) on forests and grasslands by restricting them to designated roads, trails and areas.
- Developing and maintaining continuous trail systems that cross both public and private land for motorized vehicles such as snowmobiles or ATVs.
- Developing and maintaining continuous trail systems that cross both public and private land for non-motorized recreation such as hiking, cross-country skiing or horseback riding.
- Conserving and protecting forests and grasslands that are the source of our water resources, such as streams, lakes, and watershed areas.
- Preserving the ability to have a ‘wilderness’ experience on public lands, through protection and management of areas in designated wilderness systems.
- Preserving the cultural uses of forests and grasslands by Native Americans and traditional groups, such as firewood gathering, herb/berry/plant gathering, and ceremonial access.
- Developing national policies that guide natural resource development of all kinds (e.g., by specifying sustainable levels of extraction, and regulating environmental impacts).
- Expanding commercial recreation services on forests and grasslands (e.g., by specifying sustainable levels of extraction, and regulating environmental impacts).
- Providing companies with forest commodities in exchange for assistance in achieving management goals, such as ecosystem restoration on public forests and grasslands.
- Informing the public on the potential environmental impacts of all uses associated with forests and grasslands.
- Allowing the transfer of responsibility for managing public lands to members of a local community advisory board.
- Using public advisory committees to advise government agencies on public land management issues.
- Allowing for diverse uses of forests and grasslands such as grazing, recreation, and wildlife habitat.
- Reducing the spread of invasive species across forests and grasslands (e.g., invasive weeds, nonnative fish, or exotic insect and disease pests).

¹Matching belief statements are identical to the objective statements with a preface of “It is a role of the Forest Service to...”.

responses differed statistically ($t = 3.93; p < .001$, Table 1). On average, NE Area respondents were more likely to think that expanding energy and mineral production was important than achieving the objective was an appropriate role for the Forest Service.

3.4 Expanding timber production and livestock grazing

Similarly to expanding energy and mineral production, responses were neutral for expanding timber production and livestock grazing on the objective ($M = 3.25, SD = 1.38$) and the belief ($M = 3.06, SD = 1.48$). NE Area states were more likely to think that expanding timber production and livestock grazing was important than expansion as an appropriate role for the Forest Service (paired samples, $t = 2.08, p < .05$; Table 1).

3.5 Reducing loss of open space

Overall, mean responses for the objective ($M = 3.99, SD = 1.27$) and the belief statements ($M = 3.79, SD = 1.36$) indicated the objective was important and that the respondents agreed with the belief. A paired t -test showed that the difference between the objective and belief statement responses were statistically significant ($t = 2.07, p < .05$; Table 1). Individual respondents were more likely to think that the objective important than they were to beliefs achieving the objective was an appropriate role for the Forest Service.

3.6 Using management tools to reduce wildfire

Using management tools to reduce wildfire was asked by two different objectives in the VOBA survey (i.e., reducing wildfire in general and reducing wildfire around communities). For the *in general* question, the mean responses for the objective ($M = 4.08, SD = 1.07$) and the belief statements ($M = 4.41, SD = 0.99$) were positive. For the question stating that the management methods were acceptable *but only around communities*, the responses were still favorable, but lower than the *in general* question. For the objective ($M = 3.82, SD = 1.12$) and the belief ($M = 3.98$ and $SD = 1.08$), the statements were

positive. Paired *t*-tests results showed that the difference between the objective and belief statements for both the *in general* question ($t = -5.09$; $p < .001$; Table 1) and the community specific question ($t = -2.12$; $p < .05$; Table 1) were statistically significant. On average, individual respondents were less likely to think that the objectives were important than achieving the objectives as appropriate Forest Service roles.

3.7 Increasing law enforcement efforts

Overall, mean responses for the objective ($M = 4.08$, $SD = 1.07$) and the belief statements ($M = 4.41$, $SD = 0.99$) were positive. A paired *t*-test showed that the difference between the objective and belief responses were statistically significant ($t = -5.09$; $p < .001$; Table 1). On average, individual respondents were less likely to think that the objective was important than that achieving the objective was an appropriate Forest Service role on public lands.

4.0 DISCUSSION AND CONCLUSIONS

Although findings such as those reported here provide practical insights into the objectives and beliefs of the NE Area public, the effect sizes were minimal. This information coupled with the survey statements that were not statistically significant (Table 3) either for the objective versus the belief, or for NE Area states versus other states, supports the idea that the VOBA survey's objectives are a solid predictor of the beliefs. This preliminary information is consistent with the VOBA survey being reliable across the Forest Service regions of the United States. To thoroughly understand the objectives and beliefs of the NE Area residents toward national forest and grassland management, future research should involve the creation of a survey specific to the needs of the NE Area.

5.0 ACKNOWLEDGMENTS

The foundational research for this article was conducted with Drs. Wade and Ingrid Martin of California State University-Long Beach. Drs. Holly Bender, Michelle Haefele, and Donna Lybecker provided technical support at various stages of this research.

6.0 CITATIONS

- Fulton, D.C., Manfredo, M.J., & Lipscomb, J. (1996). **Wildlife value orientations: A conceptual and measurement approach.** *Human Dimensions of Wildlife*, 1, 24–47.
- Keeney, R., & Raiffa, H. (1976). **Decisions with multiple objectives.** NY: Wiley.
- Keeney, R., (1988). **Structuring objectives for problems of public interest.** *Operations Research*, 36(3), 396–405.
- Shelby, L.B.; Shields, D.J.; Lybecker, D.L.; Miller, M.D.; Kent, B.M.; Bashovska, B. 2007a, in review. **The American public's objectives and beliefs regarding forests and grasslands: 2004 survey results.** Gen. Tech. Rep. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Shelby, L.B.; Shields, D.J.; Miller, M.D.; Lybecker, D.L.; Kent, B.M.; Bashovska, B. 2007b, in review. **The Northeastern Area's objectives and beliefs responses regarding forests and grasslands: 2004 survey results.** Gen. Tech. Rep. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Shields, D.J., Kent, B., Martin, W., and H. Wise. (1999). **Incorporating stakeholder objectives in the forest planning process.** Proceedings of the Society of American Foresters 1998 National Convention, Traverse City, Michigan, September 19-23.
- Shields, D.J.; Martin, I.M.; Martin, W.E.; Haefele, M.A. 2002. **Survey results of the American public's values, objectives, beliefs, and attitudes regarding forests and grasslands: A technical document supporting the 2000 USDA Forest Service RPA Assessment.** Gen. Tech. Rep. RMRS-GTR-95. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

- U.S. Department of Agriculture, Forest Service. 2003. **Northeastern Area state and private forestry strategic plan: FY 2004 to FY 2008.** NA-IN-02-03. Newtown Square, PA; Northeastern Area, State and Private Forestry.
- U.S. Department of Agriculture, Forest Service. 2006. **The year in forestry state and private forestry in the Northeast and Midwest fiscal year 2005.** NA-IN-06-06. Newtown Square, PA; Northeastern Area, State and Private Forestry.
- Vaske, J.J., & Donnelly, M.P. (1999). **A value-attitude-behavior model predicting wildland preservation voting intentions.** Society & Natural Resources, 12, 523–537.
- Vaske, J.J., Gliner, J.A., & Morgan, G.A. (2002). **Communicating judgments about practical significance: Effect size, confidence intervals and odds ratios.** Human Dimensions of Wildlife, 7(4), 287–300.
- Whittaker, D., Vaske, J.J., & Manfredi, M.J. (2006). **Specificity and the cognitive hierarchy: Value orientation and the acceptability of urban wildlife management actions.** Society and Natural Resources, 19, 515–530.