

# The Influence of Financial Incentive Programs in Promoting Sustainable Forestry on the Nation's Family Forests

Michael A. Kilgore, John L. Greene, Michael G. Jacobson,  
Thomas J. Straka, and Steven E. Daniels

## ABSTRACT

Financial incentive programs were evaluated to assess their contribution to promoting sustainable forestry practices on the nation's family forests. The evaluation consisted of an extensive review of the literature on financial incentive programs, a mail survey of the lead administrator of financial incentive programs in each state forestry agency, and focus groups with family forest owners in four regions of the country. The study found that financial incentive programs have limited influence on forest owners' decisions regarding the management and use of their land. Family forest owners viewed one-on-one access to a forester or other natural resource professional to "walk the land" with them and discuss their management alternatives as the most important type of assistance that can be provided. Recommendations for increasing the effectiveness of financial incentive programs in promoting sustainable forestry are discussed.

**Keywords:** family forests; financial incentives; sustainable forestry; nonindustrial private forestland (NIPF); focus groups; policy tools; taxes; cost-share; technical assistance

Management of the nation's family forests, a term synonymous with nonindustrial private forests (NIPF), has a rich and extensive history of being influenced by public policies and programs. Concerns over timber supply, encouraging production of nonmarket forest

benefits, securing long-term investments in forestry, and minimizing adverse environmental impacts associated with forest management and timber harvesting are major reasons for the public's interest in private forestry. Although a variety of policy tools are used to influence the management and

use of family forests (e.g., education, technical assistance, and regulation), financial incentive programs play a prominent role. The scope of financial incentive programs is extensive, the most popular being cost sharing or grants for implementing certain practices (e.g., treeplanting and timber stand improvement) and property tax reductions for forestland managed or used a certain way. The federal government has been the major provider of funding for cost-share programs and states have been the major provider of property tax incentives, but in some states private industry, state forestry associations, and nongovernment organizations also sponsor incentive programs.

Financial incentive programs for family forests date to the 1940s and generally were motivated by concern over timber scarcity, a predominant focus on sustained timber yield as a management objective, and general recognition that better-managed private for-

Received June 28, 2006; accepted March 14, 2007.

Michael A. Kilgore (mkilgore@umn.edu) is associate professor, University of Minnesota Department of Forest Resources, 115 Green Hall, 1530 Cleveland Avenue North, St. Paul, MN 55108. John L. Greene (jgreen01@fs.fed.us) is research forester, USDA Forest Service Southern Research Station, New Orleans, Louisiana. Michael G. Jacobson (mgj2@psu.edu) is associate professor, The Pennsylvania State University School of Forest Resources, University Park, Pennsylvania. Thomas J. Straka (tstraka@clemson.edu) is professor, Clemson University Department of Forestry and Natural Resources, Clemson, South Carolina. Steven E. Daniels (steve.daniels@usu.edu) is professor, Utah State University Departments of Sociology, Social Work and Anthropology, and Environment and Society, Logan, Utah. Funding for this study was provided by the National Commission on Science for Sustainable Forestry.

Copyright © 2007 by the Society of American Foresters.

ests could provide a larger share of the nation's timber supply (Stoddard 1942, 1961). Thus, initial programs were designed to help owners of small tracts of forestland be more productive timber managers. The term "sustainable forestry," described generally as managing forests for their ecological, economic, and social benefits such that these benefits do not diminish in quantity or quality over time, has gained prominence as a desired approach to forest management over the last 20 years. For purposes of this study, the definition of sustainable forestry follows the definition used in the *National Report on Sustainable Forests—2003* (USDA Forest Service 2004), which specifically includes the concept of biodiversity. With such a broad and inclusive focus, it is unrealistic to expect that the concept of forest sustainability was explicitly incorporated into the initial incentive programs, given the concept became popular nearly 50 years after the first financial incentive programs were established.

Perhaps more fundamentally important, however, is the potential philosophical difference between the objectives of current financial incentive programs and the concept of sustainable forest resource management. Although the first-generation financial incentive programs focused primarily on timber production, to what extent do today's programs encourage other land-management objectives embraced by the nation's family forest owners?

The purpose of our study was to evaluate the relative effectiveness of the different tax, cost-share, and other types of financial incentive programs in promoting sustainable forestry practices on the nation's family forests. Our core hypothesis was that there may be a policy disconnect between the kinds of practices these programs encourage and the practices associated with sustainable forestry that family forest owners wish to apply. Given this potential difference, we sought to (1) identify the perspectives of the administrators of financial assistance programs, (2) identify the perspectives of the recipients (i.e., forest landowners) of financial assistance programs, (3) evaluate the compatibility between sustainable forestry and the framework of public and private financial incentive programs directed toward family forest owners, and (4) recommend needed changes to existing financial incentive programs.

## Previous Assessments of Financial Incentive Programs

From the time US forest owners were first becoming interested in long-term management, policymakers and researchers began suggesting ways to improve the management and sustainability of family forest holdings (Williams 2004). These included technical assistance, perhaps leveraged through coordinated management of forest ownerships (Stoddard 1942, Cloud 1966); financial incentives to owners who showed an interest in managing their forest (Folweiler and Vaux 1944); reduced property, estate and inheritance taxes, more favorable tax credits and deductions, more favorable capital gains treatment of timber income, and more cost sharing of forest management expenses (Fecso et al. 1982, Sampson and DeCoster 1997); incentive programs for nonmarket forest products such as wildlife and recreation (Greene and Blatner 1986); assistance to manage forests to maintain and improve timber values (Blatner and Greene 1989); and incentives linked to specific stewardship practices such as reforestation (Greene 1998, Koontz and Hoover 2001).

Research on incentive programs has found that a considerable portion of family forest owners are either unaware that financial and tax incentive programs exist or lack understanding of how the programs can benefit them (Yoho and James 1958, Perry and Guttenberg 1959, Sutherland and Tubbs 1959, Anderson 1960, Hutchison and McCauley 1961, McClay 1961, Quinney 1962, Schallau 1962, 1964, Farrell 1964, Christensen and Grafton 1966, Stoltenberg and Gottsacker 1967, Koss and Scott 1978, Greene et al. 2004). Other studies have documented that many owners who participate in an incentive program would have undertaken the supported practice anyway (James et al. 1951, Brockett and Gerhard 1999, Baughman 2002), although the incentive program often enables the owner to treat additional acres beyond what would otherwise have occurred (Royer 1987, Bliss and Martin 1990). With respect to tax policy, studies have documented that favorable property tax and capital gains provisions have little effect on forest owner behavior (Stoddard 1961, Ellefson et al. 1995, Brockett and Gerhard 1999, Kluender et al. 1999), and forest property tax programs are only modestly successful in accomplishing their intended objectives (Hibbard et al. 2003).

Research also has shown that three approaches consistently lead family forest owners to elevate the level of forest stewardship on their land: technical assistance, cost sharing of practices, and management planning assistance. All three approaches put owners in direct contact with a forester or other natural resource professional. In a foundational study of forest owners in Mississippi, James et al. (1951) concluded that family forest owners prefer technical assistance over financial or tax incentives. In their recent study of policy tools to encourage application of sustainable timber harvesting practices in the United States and Canada, Kilgore and Blinn (2004) also found technical assistance to be the most effective way to encourage owners to apply sustainable practices, followed by cost-share programs.

In their study of the Forest Stewardship Program (FSP), Esseks and Moulton (2000) documented that obtaining a forest management plan provides two-thirds of participating forest owners their first contact with a professional forester. A like fraction of forest landowners begin managing their land for multiple purposes and applying practices that are new to them. These owners' participation in the FSP resulted in additional personal investments averaging \$2,767 for forest management activities, with nearly two-thirds indicating they would not have made the expenditure had they not received the initial cost-share funds (Esseks and Moulton 2000). Both Greene and Blatner (1986) and Baughman (2002) concluded that direct contact with a forester or other natural resource professional is a key determinant for family forest owners becoming forest managers. Egan et al. (2001) cited aspects of the FSP that involve contact with a professional—obtaining a management plan and technical assistance—as the program's most desirable attributes.

Stated briefly, research has repeatedly shown that technical assistance, cost sharing, and putting family forest owners in direct contact with a forester or other natural resource professional are among the program approaches that are most preferred by owners and most effective in leading them to apply sustainable forest management practices on their land. Forest owner acceptance of innovations in tax and other financial incentives has been shown to follow traditional diffusion channels, beginning with local leaders (Doolittle and Straka 1987). Finally, from a policy standpoint, linkages

are crucial. Incentives will be most effective in changing forest owner behavior if they are specifically linked to stewardship practices rather than being available regardless of management behavior.

## Methods and Data

The data needed to accomplish the study's objective came from two sources: administrators of financial incentive programs and family forest owners.

A mail survey was used to collect information from the lead administrator of federal and state financial incentive programs in each state forestry agency. The questionnaire asked the recipients to name and describe the public and private financial incentive programs available to family forest owners in their state, as well as their awareness of any private incentive programs offered in neighboring states. For purposes of our study, financial incentive programs were defined as programs that provide financial assistance to help landowners implement forestry practices, state forest property tax programs, and programs that provide financial compensation to landowners in return for limited real property rights (e.g., the right to subdivide the land).

In follow-up questions, recipients were asked to assess forest owner awareness of each program, its overall appeal among the owners aware of it, and its effectiveness in encouraging sustainable forest management and enabling owners to meet their objectives of forest ownership. They also were asked to estimate the percentage of program practices that remained in place and enrolled acres that remained in a forested condition over time, as well as to suggest ways to improve owner participation in the program and its administrative effectiveness. Likert scale ratings (1–4) were used to judge administrator perceptions of each program with respect to these program attributes.

The draft questionnaire was pretested using the incentive program administrators in each research team member's home state and refined based on their feedback. The final questionnaire consisted of a total of 89 questions on 30 pages and was sent to the identified incentive program administrators in each state ( $n = 50$ ) in March 2005 using the Dillman (1999) Tailored Design Method. The latter included phone and/or e-mail contact with the program administrator before distributing the questionnaire, mailing a cover letter and questionnaire, and follow-up telephone calls and e-mails to

nonresponding states. The process resulted in all 50 states providing completed and usable questionnaires. Descriptive statistics were generated from the data. Tukey tests were performed to identify significant differences between programs for specific program attributes.

The eight federal incentive programs evaluated were:

- **FSP.** USDA Forest Service program that focuses on assisting forest owners in preparing and implementing a forest stewardship management plan.

- **Forest Land Enhancement Program (FLEP).** USDA Forest Service's primary cost-share vehicle providing for technical, educational, and assistance to promote sustainability of NIPFs.

- **Conservation Reserve Program (CRP).** USDA Farm Service Agency program that uses annual rental payments and cost-share assistance for establishing long-term resource conserving covers on eligible farmland.

- **Wildlife Habitat Incentives Program (WHIP).** USDA Natural Resources Conservation Service program to provide technical and cost-share assistance to establish and improve fish and wildlife habitat.

- **Forest Legacy Program (FLP).** USDA Forest Service program created to identify and protect environmentally important private forestlands through the purchase of partial interests in the property (e.g., development rights) using perpetual conservation easements (up to 75% federal funding).

- **Environmental Quality Incentives Program (EQIP).** USDA Natural Resources Conservation Service voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals.

- **Landowner Incentive Program (LIP).** US Department of the Interior program to provide cost-share grants to protect, restore, and enhance habitats on private lands to benefit federally listed, proposed, candidate, or other at-risk species.

- **Wetlands Reserve Program (WRP).** USDA Natural Resources Conservation Service program to provide technical and financial support to landowners for protection, restoration, or enhancement of wetlands on private lands.

The information was gathered from family forest owners via a series of eight focus groups: two each in Pennsylvania, Min-

nesota, South Carolina, and Oregon (representing East, Midwest, South, and West US regions, respectively). The focus groups were designed and conducted using conventional techniques, drawn primarily out of the approach of Krueger and Casey (2000). In each state, one focus group was conducted with landowners who were members of the state's Small Woodland Owners Association, and one was conducted with landowners who were not members. The association membership was used as a proxy variable for the knowledge level of the participants, with the assumption that association members would be variously more informed, experienced, and active managers with larger tracts of land. As such, there was concern that if they were mixed in with less active managers, the association members might intimidate the others and/or dominate the focus group. Since part of the focus group method is to control for participant characteristics and create a safe social environment for interaction and disclosure, using association membership as a proxy measure of management experience was appropriate.

In each state, local staff from the Cooperative Extension system were invaluable key contacts in conducting the focus groups, and their input was very important in the solicitation of participation in the focus groups. As a rule, the participants in the association member focus groups were easier to identify because their membership and activist role in state forestry issues made them more visible. The association member participants were identified through referrals provided by local extension offices and/or forest landowner associations. The nonmember participants were identified through various mailing lists and property tax roles, depending on the state. There is no assumption that the focus groups' participants are somehow statistically representative of a broader population; however, the local extension contacts in each study locale were confident that the participants were broadly typical of the target demographic. The research was conducted pursuant to the Institutional Review Board requirements of Utah State University regarding protocols for research involving human subjects, and participants were offered \$100 each for their participation in the research. The focus groups were all roughly 3 hours long and averaged 11 participants (range, 7–17 participants).

The focus groups were facilitated in as

**Table 1. Mean ratings of federal forestry incentive program attributes as reported by state program administrators.<sup>a</sup>**

| Program Attribute                         | FSP                | CRP                | EQIP               | FLEP              | FLP                | LIP               | WRP                | WHIP               |
|-------------------------------------------|--------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--------------------|
| Awareness <sup>b</sup>                    | 2.7 <sup>A</sup>   | 2.6 <sup>A</sup>   | 2.2 <sup>AB</sup>  | 2.6 <sup>A</sup>  | 2.0 <sup>AB</sup>  | 1.4 <sup>B</sup>  | 1.8 <sup>AB</sup>  | 2.2 <sup>AB</sup>  |
| Appeal <sup>c</sup>                       | 3.2 <sup>AB</sup>  | 2.8 <sup>BAC</sup> | 2.3 <sup>BDC</sup> | 3.4 <sup>A</sup>  | 2.9 <sup>BAC</sup> | 1.6 <sup>D</sup>  | 2.2 <sup>DC</sup>  | 2.7 <sup>BAC</sup> |
| Sustainability effectiveness <sup>d</sup> |                    |                    |                    |                   |                    |                   |                    |                    |
| Conservation                              | 2.9 <sup>BC</sup>  | 2.9 <sup>BAC</sup> | 2.2 <sup>BC</sup>  | 3.1 <sup>AB</sup> | 3.9 <sup>A</sup>   | 2.2 <sup>C</sup>  | 2.7 <sup>BC</sup>  | 2.4 <sup>BC</sup>  |
| Parcelization                             | 2.7 <sup>BDC</sup> | 2.7 <sup>BDC</sup> | 2.1 <sup>DC</sup>  | 3.0 <sup>BA</sup> | 3.9 <sup>A</sup>   | 1.6 <sup>D</sup>  | 3.0 <sup>BAC</sup> | 2.4 <sup>BDC</sup> |
| Forest Type                               | 3.0 <sup>BA</sup>  | 2.9 <sup>BA</sup>  | 2.3 <sup>B</sup>   | 3.3 <sup>A</sup>  | 3.6 <sup>A</sup>   | 2.3 <sup>B</sup>  | 2.8 <sup>BA</sup>  | 2.1 <sup>B</sup>   |
| Wildlife/fisheries                        | 3.5 <sup>BA</sup>  | 3.2 <sup>BA</sup>  | 2.8 <sup>B</sup>   | 3.5 <sup>BA</sup> | 3.6 <sup>BA</sup>  | 3.4 <sup>BA</sup> | 3.2 <sup>BA</sup>  | 3.6 <sup>A</sup>   |
| Water quality                             | 3.6 <sup>A</sup>   | 3.4 <sup>A</sup>   | 3.0 <sup>A</sup>   | 3.4 <sup>A</sup>  | 3.7 <sup>A</sup>   | 3.3 <sup>A</sup>  | 3.2 <sup>A</sup>   | 3.2 <sup>A</sup>   |
| Soil                                      | 3.5 <sup>A</sup>   | 3.6 <sup>A</sup>   | 2.9 <sup>BA</sup>  | 3.5 <sup>A</sup>  | 3.7 <sup>A</sup>   | 2.3 <sup>B</sup>  | 2.8 <sup>BA</sup>  | 3.5 <sup>BA</sup>  |
| Forest management                         | 3.6 <sup>BA</sup>  | 2.7 <sup>BDC</sup> | 2.4 <sup>EDC</sup> | 3.7 <sup>A</sup>  | 3.3 <sup>BAC</sup> | 2.0 <sup>E</sup>  | 1.7 <sup>ED</sup>  | 2.2 <sup>ED</sup>  |
| Overall average                           | 3.3 <sup>B</sup>   | 3.1 <sup>BC</sup>  | 2.5 <sup>C</sup>   | 3.4 <sup>BA</sup> | 3.7 <sup>A</sup>   | 2.4 <sup>E</sup>  | 2.8 <sup>DC</sup>  | 2.8 <sup>DC</sup>  |
| Objectives effectiveness <sup>d</sup>     |                    |                    |                    |                   |                    |                   |                    |                    |
| Timber                                    | 3.5 <sup>A</sup>   | 2.4 <sup>BC</sup>  | 2.1 <sup>BC</sup>  | 3.5 <sup>A</sup>  | 3.1 <sup>BA</sup>  | 1.7 <sup>C</sup>  | 1.8 <sup>C</sup>   | 1.8 <sup>C</sup>   |
| Recreation                                | 3.2 <sup>A</sup>   | 2.6 <sup>BA</sup>  | 2.0 <sup>BC</sup>  | 3.2 <sup>A</sup>  | 3.4 <sup>A</sup>   | 1.7 <sup>C</sup>  | 2.6 <sup>BA</sup>  | 2.8 <sup>BA</sup>  |
| Wildlife                                  | 3.6 <sup>A</sup>   | 3.2 <sup>BA</sup>  | 2.6 <sup>B</sup>   | 3.6 <sup>A</sup>  | 3.4 <sup>A</sup>   | 3.6 <sup>A</sup>  | 3.2 <sup>BA</sup>  | 3.5 <sup>A</sup>   |
| Aesthetic                                 | 3.5 <sup>A</sup>   | 2.6 <sup>BA</sup>  | 2.4 <sup>B</sup>   | 3.2 <sup>BA</sup> | 3.5 <sup>A</sup>   | 2.7 <sup>B</sup>  | 2.8 <sup>BA</sup>  | 3.0 <sup>BA</sup>  |
| Soil                                      | 3.6 <sup>A</sup>   | 3.7 <sup>A</sup>   | 3.1 <sup>A</sup>   | 3.6 <sup>A</sup>  | 3.4 <sup>A</sup>   | 3.3 <sup>A</sup>  | 3.0 <sup>A</sup>   | 3.0 <sup>A</sup>   |
| Invasive                                  | 2.7 <sup>BA</sup>  | 2.3 <sup>BA</sup>  | 2.6 <sup>BA</sup>  | 2.9 <sup>A</sup>  | 2.6 <sup>BA</sup>  | 3.0 <sup>BA</sup> | 1.9 <sup>B</sup>   | 2.7 <sup>BA</sup>  |
| Overall average                           | 3.4 <sup>A</sup>   | 2.8 <sup>BC</sup>  | 2.5 <sup>C</sup>   | 3.3 <sup>A</sup>  | 3.2 <sup>BA</sup>  | 2.7 <sup>C</sup>  | 2.6 <sup>C</sup>   | 2.8 <sup>C</sup>   |
| Remain in place (%)                       | 74 <sup>A</sup>    | 77 <sup>A</sup>    | 71 <sup>A</sup>    | 81 <sup>A</sup>   | 84 <sup>A</sup>    | 71 <sup>A</sup>   | 85 <sup>A</sup>    | 71 <sup>A</sup>    |
| Remain in forest (%)                      | 79 <sup>A</sup>    | 70 <sup>A</sup>    | 67 <sup>A</sup>    | 78 <sup>A</sup>   | 87 <sup>A</sup>    | 63 <sup>A</sup>   | 70 <sup>A</sup>    | 76 <sup>A</sup>    |

<sup>a</sup>Tukey's groupings of like means across incentive programs for each respective program attribute. Alpha = 0.05. Means with the same letter are not significantly different.

<sup>b</sup>4 = Very aware; 3 = moderately aware; 2 = moderately unaware; 1 = very unaware.

<sup>c</sup>4 = Very appealing; 3 = moderately appealing; 2 = moderately unappealing; 1 = very unappealing.

<sup>d</sup>4 = Very effective; 3 = moderately effective; 2 = moderately ineffective; 1 = very ineffective.

consistent a manner as possible to generate data that could be reliably compared across them. A “how to conduct focus groups” white paper was prepared within the team and used as a reference to guide the process in each study site. Team members developed guidelines on how to conduct the focus groups following Daniels and Walker (2001), and used them as a reference to guide the process at each study site. The entire research team was on site in Pennsylvania where the first two focus groups occurred, and there was one team member who attended all eight focus groups, and thereby had a comprehensive experience against which all of the other researchers’ views could be compared. The focus groups were audio recorded, but not videotaped. In addition, the flow of the conversation was “mind mapped” (Buzan [1991] and Daniels and Walker [2001]) using a large expanse of paper taped to the wall. There was no attempt to get agreement on the ideas that went on the mind map as in nominal group techniques; rather, it became a spatial record of the topics of conversation that was more relational than mere flipcharting might have been. That map also was a valuable archival source of insight into the cognition of the focus group participants during the data analysis.

The focus group audiotapes were qualitatively analyzed to identify the salient themes that were unique to each region as

well as those shared in common across groups. The data from all the focus groups were amassed in a single location, coded, and interpreted by a single researcher. The focus groups from each region were coded in terms of themes without consideration for what might be themes in other regions. Once the region-specific themes were identified, they were compared across regions to identify the emergent patterns. The data were then reanalyzed to look specifically for the appearance or absence of the emergent patterns in each region. This is not grounded theory/inductive research because we had an a priori set of broad research questions about the participants such as their motivations for land management and their knowledge and use of incentive programs.

## Results

**Financial Incentive Program Administrator Perspectives.** *Federal Programs.* FSP and FLEP are closest to what foresters consider “traditional” forestry incentives programs (Table 1). The program administrators rated these two programs highest with respect to forest landowner awareness and appeal, although awareness and appeal was rated fairly modestly for all programs. LIP was viewed to be least known and appealing to family forest owners. As a group, LIP, WRP, and EQIP were distinctly less appealing than the other programs. The perceived appeal of a particular

program appears to be related to available funding. Programs that are funded more adequately and consistently or those that have large cost-share components received higher scores with respect to the program’s appeal. Generally, both awareness and appeal were rated highest for the better-funded programs and those with traditional timber and wildlife objectives, specifically programs that encourage and pay for activities such as treeplanting, forest management, and wildlife management.

Most federal financial assistance programs were highly rated in terms of encouraging sustainability (Table 1). FLP scored highest with respect to promoting conservation—much higher than any other program. In terms of promoting sustainable practices associated with important forest values (maintaining or enhancing forest cover types, wildlife and fish habitat, water quality, and soil productivity), FLEP and FLP were considered the most effective. Least effective in promoting sustainable forestry practices were LIP, EQIP, WRP, and WHIP (with the notable exception of promoting practices that sustain wildlife habitat). With respect to a program’s overall effectiveness in encouraging sustainable forest management practices, FLP and FLEP were rated highest, and LIP was rated lowest. Not surprisingly, the ability of a program to address parcelization concerns was considered

highest for the FLP. LIP received the lowest marks for its ability to prevent forest-land subdivision.

FSP, FLEP, and FLP also were rated highest for their ability to assist forest owners in meeting a range of landowner objectives (Table 1). This applies not only to timber production, but nontimber values as well (e.g., recreation, wildlife, aesthetics, and soil productivity). Interestingly, these three programs were considered more effective at helping a landowner achieve wildlife objectives than WHIP, the program designed specifically for improving wildlife habitat.

When asked to evaluate the extent to which practices funded through a financial incentive program remain in place over time, program administrators ranked WRP and FLP highest, with an average of 85 and 84% of practices still in place, respectively (Table 1). The programs in which their practices were considered least likely to remain in place were WHIP, EQIP, and LIP, with a retention rate of practices supported by these programs averaging 71%. No significant differences exist among the eight federal programs evaluated with respect to the percent of program practices that remain in place or acres of land that remain in forest over time.

Overall, program administrators gave most federal financial incentive programs relatively high marks. Increased funding and staff resources, single agency delivery, simplification of paperwork and processes, and improved landowner and administrative accountability were seen as important challenges to program administration and delivery where improvements could be made. Changes to existing programs that the program administrators suggested involved making more foresters available for program delivery and streamlining and simplifying landowner reporting requirements.

**State Programs.** Administrators of financial incentive programs were asked also to name, describe, and rate financial incentive programs offered to family forest owners by their state. All 50 states have some type of preferential property tax to protect forestland from being fragmented or converted to other uses. Each state takes its own unique approach, but administrators rated property tax programs above average with respect to forest owner awareness of them and appeal among those owners that are aware of them (Table 2). They also rated the programs only somewhat successful in encouraging sustainable forest management, but less so with re-

**Table 2. Mean ratings of state and privately sponsored forestry incentive program attributes as reported by state program administrators<sup>a</sup>**

| Program attribute                         | State property tax programs | State financial incentive programs | Industry and state association programs | Land trust and NGO programs |
|-------------------------------------------|-----------------------------|------------------------------------|-----------------------------------------|-----------------------------|
| Awareness <sup>b</sup>                    | 3.0 <sup>A</sup>            | 2.7 <sup>A</sup>                   | NA                                      | NA                          |
| Appeal <sup>c</sup>                       | 3.0 <sup>A</sup>            | 3.3 <sup>A</sup>                   | NA                                      | NA                          |
| Sustainability effectiveness <sup>d</sup> |                             |                                    |                                         |                             |
| Conservation                              | 3.0 <sup>A</sup>            | 3.4 <sup>A</sup>                   | 2.9 <sup>A</sup>                        | 2.7 <sup>A</sup>            |
| Parcelization                             | 2.9 <sup>A</sup>            | 3.3 <sup>A</sup>                   | 2.9 <sup>A</sup>                        | 2.9 <sup>A</sup>            |
| Forest type                               | 2.9 <sup>A</sup>            | 3.2 <sup>A</sup>                   | 3.2 <sup>A</sup>                        | 3.2 <sup>A</sup>            |
| Wildlife/fisheries                        | 2.8 <sup>A</sup>            | 3.4 <sup>A</sup>                   | 2.8 <sup>A</sup>                        | 3.1 <sup>A</sup>            |
| Water quality                             | 3.0 <sup>A</sup>            | 3.4 <sup>A</sup>                   | 3.0 <sup>A</sup>                        | 3.1 <sup>A</sup>            |
| Soil                                      | 2.9 <sup>A</sup>            | 3.3 <sup>A</sup>                   | 3.0 <sup>A</sup>                        | 3.0 <sup>A</sup>            |
| Forest management                         | 2.8 <sup>A</sup>            | 3.4 <sup>A</sup>                   | 3.5 <sup>A</sup>                        | 2.9 <sup>A</sup>            |
| Overall average                           | 3.0 <sup>B</sup>            | 3.3 <sup>A</sup>                   | 3.0 <sup>B</sup>                        | 3.0 <sup>B</sup>            |
| Objectives effectiveness <sup>d</sup>     |                             |                                    |                                         |                             |
| Timber                                    | 3.0 <sup>BA</sup>           | 3.5 <sup>BA</sup>                  | 3.7 <sup>A</sup>                        | 2.9 <sup>B</sup>            |
| Recreation                                | 2.6 <sup>A</sup>            | 3.1 <sup>A</sup>                   | 2.7 <sup>A</sup>                        | 3.3 <sup>A</sup>            |
| Wildlife                                  | 2.7 <sup>B</sup>            | 3.4 <sup>A</sup>                   | 2.8 <sup>BA</sup>                       | 3.3 <sup>BA</sup>           |
| Aesthetic                                 | 2.7 <sup>A</sup>            | 3.3 <sup>A</sup>                   | 2.7 <sup>A</sup>                        | 3.3 <sup>A</sup>            |
| Soil                                      | 2.8 <sup>A</sup>            | 3.6 <sup>A</sup>                   | 3.1 <sup>A</sup>                        | 3.1 <sup>A</sup>            |
| Invasive                                  | 2.0 <sup>B</sup>            | 3.2 <sup>A</sup>                   | 2.3 <sup>BA</sup>                       | 2.1 <sup>B</sup>            |
| Overall average                           | 2.6 <sup>B</sup>            | 3.3 <sup>A</sup>                   | 2.9 <sup>B</sup>                        | 3.0 <sup>B</sup>            |
| Remain in place (%)                       | 80 <sup>A</sup>             | 83 <sup>A</sup>                    | NA                                      | NA                          |
| Remain in forest (%)                      | 74 <sup>A</sup>             | 83 <sup>A</sup>                    | NA                                      | NA                          |

<sup>a</sup>Tukey's groupings of like means across incentive programs for each respective program attribute. Alpha = 0.05. Means with the same letter are not significantly different.

<sup>b</sup>4 = Very aware; 3 = moderately aware; 2 = moderately unaware; 1 = very unaware.

<sup>c</sup>4 = Very appealing; 3 = moderately appealing; 2 = moderately unappealing; 1 = very unappealing.

<sup>d</sup>4 = Very effective; 3 = moderately effective; 2 = moderately ineffective; 1 = very ineffective.

spect to enabling owners to meet their objectives of forest ownership. Although few suggested improvements to their state property tax programs, those that did identified changes with respect to program administration and objectives, guidelines, eligibility requirements, and valuation methods.

The administrators identified 35 other financial incentive programs for family forest owners in 27 states. Four states (Illinois, South Dakota, Mississippi, and Virginia) sponsor two such programs and two states (Oregon and Washington) sponsor three. Many of the programs are funded by state tax revenues from forestry activities. Programs that help fund traditional forest management practices are the most common, followed by programs that focus on riparian area protection and wildlife habitat improvement. One state has its own version of the federal FSP. All but a handful of the programs use cost-shares for supported practices, with the rest relying on tax credits or deductions. Program administrators rated these programs above average overall for encouraging sustainable forest management and enabling owners to meet their objectives of forest ownership (Table 2). The most frequently mentioned suggestions for improving these programs include increased funding and simplified eligibility requirements, administrative procedures, and contracts.

Program administrators viewed the overall effectiveness of state financial assistance programs superior to state property tax programs regarding the ability of each to encourage sustainable forest management and enable owners to meet their objectives of forest ownership. No statistical differences were found between these two types of state-sponsored financial programs with respect to landowner awareness of or appeal for the program. Additionally, both programs were viewed similarly with respect to the percent of practices funded or required that remain in place, as well as the percent of acres of land affected by each program that remain in forest over time.

**Privately Sponsored Programs.** Financial incentive programs for family forest owners that are sponsored by private entities exist in 24 states. Forest industry is the major sponsor of such programs, accounting for 20 of the 29 programs offered. State forestry associations sponsor programs in two states (Maine and Texas). The state program administrators rated these incentive programs moderately effective at encouraging sustainable forestry on family forestlands and particularly effective in preventing conversion of forest cover types and encouraging forest management on these lands (Table 2). Protecting wildlife and fish habitat received the lowest mean effectiveness rating (2.79), although the rating is above 2.5, suggesting it

was perceived to be somewhat effective. With respect to assisting family forest owners achieve their ownership objectives, these programs were viewed especially effective at encouraging timber production.

The program administrators identified incentive programs sponsored by land trusts or other nongovernmental organizations in nine states located in the Midwest, South, and West. These programs generally were rated lower than other privately sponsored programs regarding their effectiveness in promoting sustainable forestry, with preventing conversion of forest cover types being the exception (Table 2). With respect to their effectiveness in helping family forest owners achieve certain landownership objectives, the results were mixed. Programs sponsored by nongovernmental organizations were considered less effective with respect to timber production objectives, but more effective in addressing recreation, wildlife, and aesthetic objectives.

#### ***Family Forest Owner Perspectives.***

The family forest landowners who participated in the eight focus groups expressed a high degree of attachment to their forestland. The forestland of many participants had been in their families' possession since the mid-19th century, with some having the roads that access their property named after their family. Still others had only owned the land for a few years, perhaps as a retirement home site or investment. Despite these differences in land tenure, there was a broadly shared commitment to long-term forest stewardship and management. Forestland ownership seemed much more tied to self-identity and lifestyle than opportunities for generating a financial return from timber management. In nearly all focus groups, the majority of participants stated that financial return is not a driver for their land-management decisions. The exception was in the South, where financial return was considered an important landownership objective among both association and nonassociation members.

Knowledge and use of incentive programs was much more variable within individual groups than among groups of family forest owners. The most widely used programs were tax related, specifically preferential property tax assessments and capital gains treatment of timber revenue. Overall knowledge of other financial incentive programs (federal, state, and private) was substantially lower. When considering all focus group participants, virtually every financial

incentive program had been used, but few landowners had participated in more than one or two programs. A substantial majority of the nonforestry association members and a large fraction of association members—as many as one-half in some regions—did not have a written forest management plan for their property.

The form of incentive that received the greatest support was technical assistance—it was clearly preferred over financial incentives. Across all eight focus groups, there was a recurring sentiment that direct technical assistance, specifically having a service forester “walk the land” with them, was the most highly valued assistance that could be provided. Even among landowners with substantial forest management experience, land tenure, and forest holdings, technical assistance was strongly supported. Family forest owners clearly wanted to “do what is right” for their land, and sincerely wanted to know what is required to do so.

A number of criticisms of financial incentive programs were voiced by family forest owners: inconsistent program administration and implementation—both between programs and within a program over time; slow and bureaucratic administrative processes to enroll in programs; inadequate program funding; long waiting periods for a service forester to visit their property; and the perception that some forest landowners receiving cost-share assistance do not completely fulfill the required activities. These sentiments were shared across the regions and seemed, in some cases, to be linked to a broad antigovernment sentiment.

The term “sustainable forestry” resonated with forest owners at a conceptual level, but the specific tactics to be used to practice sustainable forestry were not well understood. Because of the long-term orientation that the owners expressed toward land tenure, sustainable forestry with its implicit multidimensional focus on both timber and nontimber benefits readily appealed to them. However, focus group participants frequently described the concept of sustainable forestry in terms of a one-dimensional concept (often timber-oriented) analogous to sustained yield.

However, forestland certification—a means of documenting forestry practices against predetermined standards judged to be promoting sustainable forestry—had not made significant inroads among family forest owners. Except for those who were certified through their participation in the Amer-

ican Tree Farm System, virtually no owners had pursued certification or expressed much knowledge about or interest in it. In some cases, focus group participants suggested that certification is an attempt by others (environmentalists were cited in the South; timber companies were cited in the West) to control the management of private forestland.

## **Discussion**

The views of and perspectives toward financial incentive programs among program administrators and family forest owners are heavily influenced by where each sits. For program administrators, the major point of contact with family forest owners is through delivery of the programs. As such, they see that financial incentive programs play an important role in promoting sustainable practices on the forestlands participating in the programs. Suggestions for program improvement largely centered on improved administrative design and increased program visibility and availability. We interpret their perspectives on the goals of financial incentive programs to be largely consistent with the concept of sustainable forestry.

In contrast, family forest owners do not generally consider financial incentive programs important to their forest management decisions. Many owners—even members of forestry associations—are largely unfamiliar with the programs available to them. As such, they perceive the programs as being difficult to access, inflexible with respect to their property's characteristics and ownership objectives, unpredictable with respect to funding levels and program requirements over time, and capable of reaching only a small fraction of family forests.

However, there does not appear to be any structural disconnect between financial incentive program goals and the practice of sustainable forestry. Forest owners sincerely desire to practice good forest stewardship and believe that financial incentive programs promote the application of sustainable forestry practices. Still, financial incentive programs play only a minor role in most owners' decisions regarding forestland management and uses. Moreover, many programs do not address the landowner's most pressing need, that being ready access to a service forester who can be consulted one-on-one to secure advice and expertise on how to achieve their land-management objectives.

In summary, the key to promoting the concept and practice of sustainable forestry as viewed by family forest owners is technical assistance and information. Moreover, these owners want access to foresters who are able to explain and demonstrate to them how to pursue sustainable forestry through their land-management practices.

## Recommendations

Despite their differences, both administrators of forestry financial assistance programs and family forest owners see considerable opportunities to increase the effectiveness by which financial incentive and related programs are delivered. This included increased program funding, visibility, and availability; greater consistency with respect to program eligibility requirements and implementation rules; and greater accountability and reporting for practices funded. Based on the findings from the survey of state incentive program administrators and perspectives shared by the focus group participants, the following recommendations are made to elevate the concept of sustainable forestry among the nation's family forest owners and address concerns about existing programs.

**Increase Funding and Availability for One-on-One Technical Assistance State Service Foresters.** Direct access to a forester for onsite consultation was viewed as the single greatest need among family forest owners. Family forest owners believe they know their land better than anyone else, but lack the technical knowledge to maximize the land's potential. Having a forester walk the land with them builds this bridge between an in-depth understanding of the land's characteristics and forest management possibilities.

**Emphasize Technical Assistance Rather than Certification to Convey the Concept of Forest Sustainability.** The majority of these owners are not motivated by financial arguments such as "certified timber will receive a price premium," largely because generating a financial return is not the principal reason they own forestland. The most effective approach to promoting long-term stewardship is to assist family forest owners in correctly applying the forest management practices that will enable them to meet their ownership objectives.

**Require a Written Forest Management Plan for Participation in Financial Incentive Programs.** A forest management plan provides the context for how the cost-

shared practices will help the owner realize landownership and management objectives and was identified by state incentive program administrators as an important tool for assisting landowners in identifying their landownership goals.

**Design Incentive Programs to Put Forest Owners in Direct Contact with a Forester or Other Natural Resource Professional.** Face-to-face contact between a landowner and natural resource professional increases the owner's awareness of land-management possibilities and likelihood the practices will be applied correctly. This contact also may serve as an impetus for the owner making additional investment in forest management.

**Design Financial Incentive Programs to Address Regional Differences in Forest Characteristics and Forest Owner Objectives.** Variability in land tenure arrangements, demographic and socioeconomic conditions, and timber markets across the United States is considerable, as was borne out in the focus groups. A one-size-fits-all approach constrains the potential uses of financial incentive programs.

**Link Financial Incentives Directly to Stewardship Practices.** Cost-shared practices that are tied to a landowner's long-term stewardship objectives will increase the likelihood that needed follow-up treatments and/or additional management activities will be undertaken.

**Fund Cost-Share Applications According to Their Expected Environmental and Economic Benefits.** Targeting limited resources to the forestlands and practices where the benefits will be greatest increases program effectiveness over policies that distribute funds on a first-come-first-served basis. State administrators of financial incentive programs identified the lack of information about site- and practice-specific environmental and economic benefits as a major barrier to improved program effectiveness and accountability.

**Maintain Adequate Funding and Stable Program Requirements for Financial Incentive Programs.** Long-term consistency with respect to program financing and administration will attract additional interest among family forest owners who currently view these as important deterrents to program participation.

**Coordinate the Administration and Delivery of Financial Incentive Programs.** Having a single agency in each state designated as the point of contact for all fi-

nancial incentive programs will reduce the current high level of confusion that exists among family forest owners with respect to program availability, eligibility, application procedures, and delivery.

These recommendations reflect the views and sentiments of state financial assistance program administrators and the family forest participants who participated in this study. Many of the recommendations suggest substantially different ways of administering and allocating resources toward landowner assistance programs than exists today. Aligning these programs to be consistent with the way family forest owners say they want them will require a new way of thinking on how to structure and deliver these programs, as well as the roles and responsibilities of public and private sectors in providing forest landowner assistance.

## Literature Cited

- ANDERSON, W.C. 1960. *The small forest landowner and his woodland*. USDA For. Serv. Southeastern Forest Experiment Station Pap. 114. 15 p.
- BAUGHMAN, M.J. 2002. *Characteristics of Minnesota forest landowners and the Forest Stewardship Program*. Paper presented at Reaching Out to Forest Landowners, Cloquet, MN, Sept. 18, 2002. College of Natural Resources, University of Minnesota, Colquet, MN. 14 p.
- BLATNER, K.A., AND J.L. GREENE. 1989. Woodland owner attitudes toward timber production and management. *Resour. Manage. Opt.* 6:205-223.
- BLISS, J.C., AND A.J. MARTIN. 1990. How tree farmers view management incentives. *J. For.* 88(8):23-29, 42.
- BROCKETT, C.D., AND L. GERHARD. 1999. NIPF tax incentives: Do they make a difference? *J. For.* 97(4):16-21.
- BUZAN, T. 1991. *Use both sides of your brain*, 3rd Ed. Dutton Adult, New York, NY. 160 p.
- CHRISTENSEN, W.W., AND A.E. GRAFTON. 1966. *Characteristics, objectives, and motivations of woodland owners in West Virginia*. West Virginia Univ. Agricultural Experiment Station, Station Bull. 538. 28 p.
- CLOUD, M.C. 1966. Promoting forest management with owners of medium-sized parcels of land. *J. For.* 64:536-537.
- DANIELS, S.E., AND G.B. WALKER. 2001. *Working through environmental conflict: The collaborative learning approach*. Praeger Publishers, Westport, CT. 328 p.
- DILLMAN, D.A. 1999. *Mail and Internet surveys: The tailored design method*, 2nd Ed. John Wiley & Sons, New York. 480 p.
- DOOLITTLE, M.L., AND T.J. STRAKA. 1987. Regeneration following harvest on nonindustrial pine sites in the South: A diffusion of innovations perspective. *South. J. Appl. For.* 11(1): 37-41.

- EGAN A, D. GIBSON, AND R. WHIPKEY. 2001. Evaluating the effectiveness of the Forest Stewardship Program in West Virginia. *J. For.* 99(3):31–36.
- ELLEFSON, P.V., A.S. CHENG, AND R.J. MOULTON. 1995. *Regulation of private forestry practices by state governments*. Univ. of Minnesota Agricultural Experiment Station, Station Bull. 605-1995. 225 p.
- ESSEKS, J.D., AND R.J. MOULTON. 2000. *Evaluating the Forest Stewardship Program through a national survey of participating forest land owners*. Northern Illinois Univ., Social Science Research Institute, Center for Governmental Studies, De Kalb, IL. 111 p.
- FARRELL, J.H. 1964. *The small-woodland owner in the Missouri Ozarks—A close-up*. USDA For. Serv. Central States Forest Experiment Station Res. Pap. CS-10. 15 p.
- FECISO, R.S., H.F. KAISER, J.P. ROYER, AND M. WEIDENHAMER. 1982. *Management practices and reforestation decisions for harvested southern pinelands*. SRS Staff Rep. AGES821230, USDA Statistical Reporting Service, Washington, DC. 74 p.
- FOLWEILER, A.D., AND H.J. VAUX. 1944. Private forest land ownership and management in the loblolly-shortleaf type of Louisiana. *J. For.* 42(11):783–790.
- GREENE, J.L. 1998. The economic effect of federal income tax incentives in southern timber types. P. 231–241 in *Meeting in the middle: Proc. of the 1997 Society of American Foresters National Convention, Memphis, TN*. Society of American Foresters, Bethesda, MD.
- GREENE, J.L., AND K.A. BLATNER. 1986. Identifying woodland owner characteristics associated with timber management. *For. Sci.* 32: 135–146.
- GREENE, J.L., T.J. STRAKA, AND R.J. DEE. 2004. Nonindustrial private forest owner use of federal income tax provisions. *For. Prod. J.* 54(12):59–66.
- HIBBARD, C.M., M.A. KILGORE, AND P.V. ELLEFSON. 2003. Property taxation of private forests in the United States: A national review. *J. For.* 101(3):44–49.
- HUTCHISON, O.K., AND O.D. MCCAULEY. 1961. *The small woodland owner in Ohio*. USDA For. Serv. Central States Forest Experiment Station Tech. Pap. 183. 12 p.
- JAMES, L.M., W.P. HOFFMAN, AND M.A. PAYNE. 1951. *Private forest landownership and management in Central Mississippi*. Tech. Bull. 33, Mississippi State College, Agricultural Experiment Station, State College, MS. 38 p.
- KILGORE, M.A., AND C.R. BLINN. 2004. Policy tools to encourage the application of sustainable timber harvesting practices in the United States and Canada. *For. Policy Econ.* 6(2):111–127.
- KLUENDER, R.A., T.L. WALKINGSTICK, AND J.C. PICKETT. 1999. The use of forestry incentives by nonindustrial forest landowner groups: Is it time for a reassessment of where we spend our tax dollars? *Nat. Resour. J.* 39:799–818.
- KOONTZ, M.A., AND W.L. HOOVER. 2001. Tax incentives to promote environmental management by nonindustrial private forest owners. P. 128–134 in *Proc. of the 2000 SAF National Convention*, November 12–20. Washington DC Society of American Foresters, Bethesda, MD.
- KOSS, W., AND B.D. SCOTT. 1978. *A profile of western Washington forest landowners*. DNR Rep. 37, State of Washington, Department of Natural Resources. 50 p.
- KRUEGER, R.A., AND M.A. CASEY. 2000. *Focus groups: A practical guide for applied research*, 3rd. Ed. Sage Publications, Thousand Oaks, CA. 213 p.
- MCCLAY, T.A. 1961. Similarities among owners of small private forest properties in nine eastern localities. *J. For.* 59(2):88–92.
- PERRY, J.D., AND S. GUTTENBERG. 1959. *South-west Arkansas' small woodland owners*. USDA For. Serv. Southern Forest Experiment Station Occasional Pap. 170. 14 p.
- QUINNEY, D.N. 1962. *Small private forest landowners in Michigan's Upper Peninsula*. USDA For. Serv. Lake States Forest Experiment Station, Station Pap. 95. 20 p.
- ROYER, J.P. 1987. Determinants of reforestation behavior among southern landowners. *For. Sci.* 33(3):654–667.
- SAMPSON, R.N., AND L.A. DECOSTER. 1997. *Public programs for private forestry*. American Forests, Washington, DC. 100 p.
- SCHALLAU, C.H. 1962. *Small forest ownership in the Urban Fringe area of Michigan*. USDA For. Serv. Lake States Forest Experiment Station, Station Pap. 103. 17 p.
- SCHALLAU, C.H. 1964. *Forest owners and timber management in Michigan*. USDA For. Serv. Lake States Forest Experiment Station, Res. Pap. LS-9. 39 p.
- STODDARD, C.H. JR. 1942. Future of private forest land ownership in the northern Lake States. *J. Land Public Utility Econ.* 18(3):267–283.
- STODDARD, C.H. 1961. *The small private forest in the United States*. Resources for the Future, Inc., Washington, DC. 171 p.
- STOLTENBERG, C.H., AND J.H. GOTTSACKER. 1967. Forest owner attitudes toward forestry. *Iowa State J. Sci.* 42(1):83–87.
- SUTHERLAND, C.F. JR., AND C.H. TUBBS. 1959. *Influence of ownership on forestry in small woodlands in Central Wisconsin*. USDA For. Serv. Lake States Forest Experiment Station, Station Pap. 77. 21 p.
- WILLIAMS, M. 2004. *Americans and their forests: Studies in environment and history*. Cambridge University Press, New York. 599 p.
- USDA FOREST SERVICE. 2004. *National report on sustainable forestry—2003*. USDA For. Serv. FS-766. 139 p.
- YOHIO, J.G., AND L.M. JAMES. 1958. Influence of some public assistance programs on forest landowners in Northern Michigan. *Land Econ.* 34(4):357–364.