

*Center for Great Plains Studies
University of Nebraska-Lincoln*

**The Second National Survey of Participants in
the Forest Stewardship Program**

(with Comparisons to the Findings of the First Survey)

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Opinions expressed are those of the authors and not necessarily those of the University of Nebraska-Lincoln.

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**Evaluating the Forest Stewardship Program
Through Surveys of Participating Forestland Owners:
Comparisons between Two National Surveys**

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Executive Summary

Introduction

This report presents the findings from a second national survey of participants in the Forest Stewardship Program (FSP) of the USDA Forest Service. Launched in 1991, the FSP provides technical assistance through state forestry agencies to help landowners develop management plans for their non-industrial private forestland (NIPF). These plans typically list the owners' objectives in managing their land and then recommend activities (e.g., planting trees, thinning), on a stand- or site-specific basis, to achieve each objective. For purposes of this program, non-industrial private forest acreage consists of rural land that either has existing tree cover or is suitable for growing trees and that is "owned by any [non-industrial] private individual, group, association, corporation, Indian tribe or other private legal entity." Non-industrial owners typically do not use the land to supply inputs for their manufacturing of forest products (like pulp, paper, and lumber).

Through telephone interviews and mailed-back questionnaires, this second study surveyed a total of 1,281 FSP participants whose stewardship plans were written between 1997 and 2004. The first national survey focused on 1,220 FSP clients with plans written between 1991 and 1997. Since most of the questions asked in second survey were the same or similar to ones found in the first study, many comparisons are possible. Therefore, this report is a study of continuity and change in the Forest Stewardship Program using two "snapshots" in time of participants' reports on their forestland, their management of it, and relevant personal traits (education, frequency of visiting the subject land, previous experience with written management plans, etc.). This report does provide more detail on the second survey since a document of approximately equal length submitted to USDA in February 2000 focused exclusively on the 1991-1997 years.

Both surveys' main purpose was to gather information from the FSP's clients that would shed light on the program's effectiveness to date. As in the first study, the second survey found considerable evidence of success, as well as some areas where improvement seems needed.

Chapter 2: Who Responded to the Survey?

In order to identify regional differences and similarities in the FSP's outcomes, we developed four regional samples: Pacific States, Mountains and Plains States, Southern, and Northern. Random samples of 308 to 339 participants were surveyed in each region. Geographic representativeness was achieved by allocating to each state a share of the 308 to 339 respondents per region that was approximately equal to its share of all program clients listed as having received new or revised stewardship plans, 1997-2004. To achieve national-level estimates of program effectiveness, we combined the regional results after assigning a weight to each region proportionate to its share of the total clients nationwide.

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Representative samples need reasonably high response rates. Eighty percent of the Mountains and Plains States' eligible sample members were interviewed or took part by mail, while 72% did in the Pacific States, 52% in the South, and 67% in the Northern region.

Clientele surveys like this one can measure the extent to which programs have attracted participants who are appropriate either in the sense of being the kinds of citizens whom policy makers wanted to serve or of having traits likely to promote achievement of the program's performance goals. Our findings regarding both criteria were largely positive.

- Appropriately, most of the surveyed participants had never before possessed a written management plan for forestland they owned, although the relevant percentage dropped--from 67% of the weighted national sample in the first survey to 54% in the second (Table 2.5).
- Most of the second national survey's respondents were not absentee owners; they either lived on the land subject to the FSP plan at least one month of the previous year (62%) or visited it 15 to 29 days (20%--see Table 2.6).
- Ninety-four percent reported being either the principal decision maker for the subject land, themselves, or sharing that role with their spouses (Table 2.7). An alternative outcome might have been many owners losing interest in the land to the point of delegating decision-making to someone else.
- Some surveyed owners—30%--had not looked at their stewardship plans in the previous 12 months. However, 45% reported consulting it at least two times in the past year; 69%, at least once (Table 2.8).
- Three other traits of the FSP participants may concern policy makers. The FSP clients tend to be *better educated* and *own substantially more forestland* compared to the family forestland owners who responded to the 2003 National Woodland Owner Survey (tables 2.12 and 2.15). Also, 95% of the total FSP clients whom we surveyed were whites.
- A clearly positive outcome was that the foresters and other authors of stewardship plans had turned out comprehensible documents. Ninety-one percent of the national sample reported their plans to be “easy” or “very easy to understand” (Table 2.22). The comparable figure for the first national FSP study was essentially the same—93%.
- Also, almost all the owners we contacted regarded themselves as still participating in the program—95% did compared to 92% of the total sampled reached in the first national survey (Table 2.4).

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Chapter 3: Implementation of the Forest Stewardship Plans

The major survey findings reported in Chapter 3 were:

- 80% of the total responding owners in the second national survey had started to implement their stewardship plans (Table 3.1).
- As in the first national survey, the management objective, “growing trees or caring for their health,” was the one reported most frequently in all four regions (Table 3.4). Among the 1997-2004 program clients, from 78% of the Northern States’ respondents to 95% of the Pacific States’ sample said it was in their plans. Second-ranking in both surveys was the purpose of improving/protecting wildlife habitat (67% to 81%), and third was harvesting trees for sale (43% to 69%). The greatest change between the first and second national studies was in the percentage of owners reporting harvesting as a management objective. It grew from 55% to 65%.
- This change had the consequence of increasing somewhat the percentage of total current FSP participants reporting that they had started to implement the objective of harvesting for sale (such as by actually logging and selling or at least by marking trees for cutting). It rose between the first and second national surveys from 34% to 37%, not a statistically significant change but more encouraging than the corresponding measures of implementing plan recommendations for the other types of management objectives (e.g., improving wildlife habitat), all of which recorded decreases (Table 3.5).
- Across the four regions, from 59% of the total surveyed owners in the South to 74% in the Pacific states reported carrying out a *multi-resource* management approach. They were applying recommended practices to achieve at least two separate management objectives (Table 3.14). From 38% to 49% described how they were pursuing three different objectives. In all regions, the most frequently cited two-objective combination was growing/caring for trees and improving wildlife habitat (Table 3.16).
- The two national surveys found an identical percentage of total owners who reported spending some of their own money on plan implementation for which they expected no reimbursement—69% (Table 3.19). Moreover, between the first and second study, the estimated average expenditure per year by current program participants increased from \$756 to \$996 (Table 3.21).
- Statistical analysis was used to identify traits of the respondents, their forestland, and their experiences with technical and cost-share assistance that were associated with owner decisions (1) to start carrying out the stewardship plans, (2) to apply recommended activities for at least two separate management objectives, (3) to do so for three or more purposes, and (4) to spend at least \$1,000 on plan implementation which would not be reimbursed. Technical assistance received

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after the plan was in hand proved to be a statistically and practically significant predictor of all four decisions, and in all cases it increased the chances of a positive decision. Follow-up cost-share assistance improved the likelihood of starting to implement one's stewardship plan and of spending at least a \$1,000 on it. Three other traits also qualified as significant predictors that increased the chances for two to all four of the decisions being made: being relatively better educated, living on or at least frequently visiting the forestland subject to the stewardship plan, and having had a written management plan before participating in the FSP (tables 3.10, 3.17 3.18, and 3.22).

Chapter 4: Changes in Management Behavior

Chapter 4 focused on changes in management behavior associated with receiving a Forest Stewardship plan.

- The second national survey found, as did the first, that most FSP participants had applied at least one plan-recommended management activity that was *new to them*, “that is, an activity that you had never done before.” Fifty-four percent of the total sample for the 1997-2004 period made this report, compared to 55% among the 1991-1997 group of program clients (Table 4.1). Moreover, in implementing their plans, many respondents—31% in the second survey and 30% in the first—were using new activities to achieve two or more separate management objectives (Table 4.1). This finding suggests that FSP's emphasis on multi-resource stewardship achieved the added benefit of encouraging the learning and application of new management practices. Regression analysis supported this suggestion. It found that the more separate objectives in the plan, the more likely the program participant was to report applying new activities (Table 4.10).
- According to both national surveys, the most frequently reported new practices came under the management objective, “growing trees or caring for their health, such as planting, thinning, or preventing fires.” The second most common was “improving or preserving your forestland as habitat for wildlife, such as regarding food, cover, or water available for wildlife.”

The second survey asked some questions not covered in the first, including:

- Had the forestland owner ever harvested trees for sale before receiving a stewardship plan? Fifty-two percent of the weighted national sample had not (Table 4.6). Of that number one-quarter reported their first commercial harvests as a result of carrying out recommendations in the plan.
- Research on timber sales has found that owners who hire consultants to evaluate tree stands and help conduct the sale may obtain significantly better prices and other terms. The FSP's emphasis on managing with the benefit of professional advice may have encouraged participants to seek consultants' help with timber sales.

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Seventy-six percent of the surveyed owners who cut and sold trees according to Their plans' recommendations reported that they had obtained advice from professionals on the terms of the sale. Fifty-six percent of that subgroup said that they had paid for the assistance, and seven in ten of them had never before spent money for that purpose (Table 4.7).

- Another type of professional input into managing forestland may be printed or electronically delivered information such as in magazines, newsletters, or Internet information services. In the national sample, only 12% of the surveyed owners reported paying for this type of input before receiving their stewardship plans, while 20% did so at the time of the survey (Table 4.8). Though modest in size, this 8 percentage-point change is statistically significant. So were the corresponding changes in each of the four regional samples.
- Given the technical challenges in coping with pests, drought, fire, and other threats to forest health, as well as the complexities of marketing, it is hoped that many FSP participants will continue to seek professional advice. When asked how likely they would do so "sometime in the next two years," 42% answered "very likely"; and a total of 64% were either "very likely" or at least "moderately likely." However, only 19% reported being "very likely" to agree to pay for such advice, while the combined "very" and "moderately likely" percentage for paid advice was 36% (Table 4.9).

Chapter 5: Policy Inferences

This last chapter of the report searches through the survey findings for policy inferences, that is, for indications of whether policy makers for the Forest Stewardship Program (FSP) should seek to improve it or leave well enough alone. Some findings suggest the program is succeeding as it is currently structured, while others point to possibly needed changes. Among the encouraging findings is that the generally positive pattern of program performance found in the first survey (for participants who received their Stewardship Plans, 1991-1997) was repeated in the second survey (for clients with new or revised plans, 1997-2004). The summaries of chapters 2 through 4 above describe those achievements: low drop-out rates; eight in ten of the total respondents having started to implement their plans, majorities pursuing multiple resource objectives through the plan-recommended activities already being carried out; and a majority applying practices that were new to them. Also, for implementing their stewardship plans, the owners' annual average expenditures of unreimbursed money increased significantly between the first and second surveys.

On the other hand, between the two surveys, the availability of cost-share assistance declined considerably. Although such grants are not integral components of the Forest Stewardship Program, their continued decline threatens to reduce implementation of the stewardship plans below levels that would be possible if funding remained steady. According to the second survey, follow-up technical assistance had even stronger

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impacts. Forestland owners who received it were more likely to carry out six different types of desirable management practices compared to program participants lacking it.

The increase between the two national surveys in the proportion of FSP participants who previously had a written plan presents a dilemma. On the one hand, the program was designed to help primarily owners lacking such plans. However, our analysis showed that the owners experienced with plans tended to do a better job of implementing their Forest Stewardship plans.

The program's revised *National Standards and Guidelines* (October 2005)¹ accommodate both types of clients. That document calls for "special attention" both to landowners in "important forest resource areas" and to "those new to, or in the early stages of managing their land in a way that embodies multi-resource stewardship principles." The owners with pre-FSP written plans could contribute significantly to improved management in the high-priority areas.

Other likely causal factors we identified (both in the weighted national sample and in some or all the regional samples) included the positive relationships between (a) management performance and (b) both owners' years of formal education and their frequency of living on or visiting the forestland subject to the plans. Favoring owners with higher education is probably not feasible or desirable. But the program's service deliverers may choose either to discourage applicants who expect to spend little if any time on the subject forestland or to help them arrange for surrogates who will put in the necessary time on site.

¹ USDA Forest Service, *Forest Stewardship Program: National Standards and Guidelines* (http://www.fs.fed.us/spf/coop/library/fsp_standards&guidelines.pdf [accessed December 2, 2005]).

Chapter 1

Focus and Purpose of Report

Introduction

This report compares the findings from two national surveys of participants in the Forest Stewardship Program (FSP) of the USDA Forest Service. Launched in 1991, the FSP provides technical assistance through state forestry agencies to help landowners develop management plans for their non-industrial private forestland (NIPF). These plans typically list the owners' objectives in managing their land and then recommend activities (e.g., planting trees, thinning), on a stand- or site-specific basis, to achieve each objective. For purposes of this program, non-industrial private forest acreage consists of rural land that either has existing tree cover or is suitable for growing trees and that is "owned by any [non-industrial] private individual, group, association, corporation, Indian tribe or other private legal entity" (USDA, Forest Service, 2003, p. 10).² Industrial owners use the land to supply inputs for their manufacturing of forest products (like pulp, paper, and lumber).³

Through telephone interviews and mailed-back questionnaires, the first national survey focused on 1,220 FSP clients with Forest Stewardship plans written between 1991 and 1997. The second study reached a total of 1,281 program participants whose plans were received between 1997 and 2004. Since most of the questions asked in the first survey were the same or similar to those in the second, many comparisons are possible. Therefore, in large part the following report is a study of continuity and change in the Forest Stewardship Program using two "snapshots" in time of participants' reports on their forestland, their management of it, and relevant personal traits (education, frequency of visiting the subject land, previous experience with written management plans, etc.). This report provides more detail on the second survey since a document of approximately equal length submitted to USDA in February 2000 focused exclusively on the 1991-1997 years.

Both surveys' main purpose was to gather information from the FSP's clients that would shed light on the program's effectiveness to date. As in the first study, the second survey found considerable evidence of success, as well as some areas where improvement seems needed.

The Importance of Nonindustrial Private Forest Lands

A 2002 inventory found that nonindustrial private forest lands (NIPF) comprised about 49% of all woodland in the United States (Smith, Miles, Vissage, and Pugh, 2003).

² See also 16 U.S.C. 2103A, Forest Stewardship Program.

³ "Industrial forestland "is: owned by a company that also has "sawmills or other wood-processing facilities." www.pacificforest.org/about/glossary.html

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Given this percentage, the American people have a big stake in how NIPF is managed. From good practices should come major societal benefits including:

- a sustained supply of timber products (saw logs, pulpwood, fuel wood, etc.),
- protection of watersheds and water quality (including for public drinking water supplies)⁴ through forests' capacity to filter out contaminants, absorb stormwater, and cool surface water temperatures through shading, among other beneficial functions (Anderson and Masters, no date),
- enhancement of habitat for fish and wildlife,
- preservation of important cultural and historical sites, and
- promotion of recreational opportunities.

In 1996 NIPF land produced an estimated 60% of the total round wood timber output, while forestry industry land accounted for 28% and publicly owned land, 12% (Johnson, Vissage, and Stratton, 2001). In the 1990 legislation authorizing the Forest Stewardship Program, Congress expressed the hope that NIPF's share of total timber supply would "rise with expanded assistance programs."⁵ Various survey findings show that NIPF owners have tended to rank production relatively low in importance, often seeing logging as detrimental to those higher-ranked objectives (Moulton and Birch, 1995 and 1996; Birch and Moulton, 1997; Young and Reichenbach, 1987; Baughman, Cervantes, and Rathke, no date). With professional advice, they might see that harvesting can promote those other goals, such as when thinning improves scenic vistas, allows enough sunlight to stimulate the growth of forbs and other herbaceous plants for wildlife to eat,⁶ and generally improves tree stand health.

Ill-informed harvesting may, however, be highly damaging to the natural environment and the future timber-producing potential of the land. An estimated "60% of the nation's total stream flow" comes from forests (Natural Resources Council 1998, p. 40). Over-harvesting of trees may increase total runoff to the point that downstream flooding occurs or is worsened. Stormwater traveling through clumsily logged areas may pick up sediment, nitrates, and other pollutants that degrade water quality. In the "Findings" section of its 1990 amendments to the Cooperative Forestry Act, Congress observed that "over half of the forest lands of the United States are in need of some type of conservation treatment."⁷

⁴ Caryn Ernst, Eichard Gullick, and Kirk Nixon, 2004. "Protecting the Source: Conserving Forests to Protect Water, *Opflow* (American Water Works Association): 30 (5).

⁵ Public Law 101-624, November 28, 1990, Subtitle A, Section 2, *U.S. Statutes at Large*. 101st Congress, 2d Session, vol. 4, Pt. 5.

⁶ Virginia Department of Forestry, *Thinning Timber for Wildlife* (<http://www.dof.virginia.gov/mgt/wildlife/thinning-timber.shtml> [accessed September 22, 2005]).

⁷ Public Law 101-624, November 28, 1990, Subtitle A, Section 2, *U.S. Statutes at Large*. 101st Congress, 2d Session, vol. 4, Pt. 5.

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Objectives of USDA's Forest Stewardship Program

The program's authorizing legislation⁸ gives these objectives:

[T]o encourage the long-term stewardship of nonindustrial private forest lands by assisting owners of such lands to more actively manage their forest and related resources by utilizing existing State, Federal, and private sector resource management expertise and assistance programs

[The assistance funded through the program] shall be directed to help such owners understand and evaluate alternative actions they might take, including—

- (1) managing and enhancing the productivity of timber, fish and wildlife habitat, water quality, wetlands, recreational resources, and the aesthetic value of forest lands;
- (2) investing in practices to protect, maintain, and enhance the resources identified in paragraph (1);
- (3) ensuring that afforestation, reforestation, improvement of poorly stocked stands, timber stand improvement, practices necessary to improve seeding growth and survival, and growth enhancement practices occur where needed to enhance and sustain the long-term productivity of timber and nontimber forest resources to help meet future public demand for all forest resources and provide the environmental benefits that result, and
- (4) protecting their forest from damage caused by fire, insects, disease, and damaging weather.

The program's original *National Standards and Guidelines* include this objective that may be considered implied in the authorizing legislation:

The Forest Stewardship Program focuses on providing services to landowners not currently managing their forestland according to a resource management plan that embodies multi-resource stewardship principles.⁹

There have been various definitions of a "multiple-resource" management plan. The Florida Division of Forestry (which administers the FSP in that state) defined it as one providing "for any combination of the following benefits: timber, soil, aesthetics, wildlife, water, [and] recreation."¹⁰ The corresponding definition used in an outreach brochure of Mississippi's Forestry Commission was: "landowners wanting to manage their woodlands for such multiple benefits as wildlife, erosion control, timber, water quality, and recreation."¹¹ The National Sustainable Agriculture Information Service gives this definition: "comprehensive, multi-resource management plans...give

⁸ Section 1215 of the Food, Agriculture, Conservation, and Trade Act of 1990, P.L. 101-624, 104 Stat. 3525, Nov. 28, 1990.

⁹ USDA Forest Service, *Forest Stewardship Program: National Standards and Guidelines* (<http://www.fs.fed.us/spf/coop/library/FSP%20National%20Standards%20&%20Guidelines.pdf> [accessed September 26, 2003]).

¹⁰ Florida Department of Agriculture and Consumer Services, Division of Forestry, 2003. *Florida Forestry Information: Florida's Forest Stewardship Program* (<http://www.sfrc.ufl.edu/Extension/ffws/fsp.htm> [accessed September 25, 2003]).

¹¹ Mississippi Forestry Commission, n.d. *The Forest Stewardship Program*, 2 pp.

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landowners the information they need to manage their forests for a variety of products and services.”¹²

Implementation of the Program

By September 1997 foresters, wildlife biologists and other resource professionals in state agencies and private consulting firms had written or assisted in writing more than 130,000 Forest Stewardship plans covering about 16.5 million acres (USDA Forest Service 1998). By September 2004, another approximately 123,000 plans covering over 11.6 million acres had been written.¹³

Since the authorizing legislation provides for delivery of the FSP’s technical assistance through state and local agencies, there has been considerable variety in the program’s administration. In the fall of 2003, when doing preliminary research for the survey, we looked for outreach material about the FSP at the Internet sites of 32 state forestry agencies. The following four subsections of the chapter summarize the sites’ information about landowner eligibility for the FSP, the authors of the management plans, the cost of the plan preparation to the landowners, and the objectives they should pursue through their stewardship plans.

Eligibility

Neither the federal authorizing legislation nor the follow-up regulations set a minimum acreage standard to be eligible for the program or excluded owners with more than some maximum number of acres. However, as of September 2003 many of the 32 states in our inventory specified minima and other conditions:

- Hawaii, Maryland, and Pennsylvania required at least 5 acres and Alaska, 7.
- The State of Washington specified 5 acres, also, but only if the owner wanted to be eligible for reimbursement for the cost of plan preparation.
- Ten acres comprised the threshold in Connecticut, Kentucky, Minnesota, Mississippi, New Jersey, New Mexico, North Carolina, South Carolina, Tennessee, West Virginia, and Massachusetts (if the owner wanted help with the cost of plan preparation).
- Arkansas required 20 acres, of which at least 10 were forested.
- Florida had a 25-acre minimum.
- Oklahoma specified no minimum, but rather that at least 25% of the total acres for a stewardship plan be forested, and that all one’s forestland be enrolled.
- The eligibility criteria given in the websites for Arkansas, Florida, Georgia, Oklahoma, and Tennessee included words to the effect that applicants must intend to manage their land with a multi-resource approach. For example, the Oklahoma program required (under “Who is Eligible?”), “You must have a primary objective of land management and at least one other secondary objective.” The

¹² USDA, 2005. *Building Better Rural Places* (http://www.attra.ncat.org/guide/a_m/stewardship.html [accessed September 24, 2005]).

¹³USDA Forest Service, 2005, The Performance Measurement Accountability Data..

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wording in the Tennessee website was almost identical on this condition.

Authors of the Management Plans

The state websites varied also in their designations of who would write the plans.

- State foresters or “staff” of the state forestry agency were mentioned in a few websites (e.g., Connecticut, Delaware, and Michigan).
- But most of the 32 websites referred to foresters or other natural resource professionals either without specifying their organizational affiliations or stating that they could be either public employees or private consultants certified by the state forestry agency. For example, the Mississippi site urged potential applicants to contact “the local county forester” who would help them “select a natural resource specialist who will assist you in developing management objectives for your woodlands.”¹⁴
- Washington State’s Forest Stewardship Program provides for “coached planning” whereby the landowners write their own plans after taking courses that “consist of several evening sessions plus a field day that follows a set curriculum.”¹⁵ One of these courses held in February and March 2005 extended over 9 successive Monday evenings, plus one Saturday field day. The \$75 fee covered “a Forest Stewardship Handbook, aerial photos and maps of your property, and all handouts.”¹⁶ Colorado and Montana, among other states, also offer the “coached” approach to landowners developing their own plans.

Cost to Owner for the Plan’s Preparation

Among the 32 state program websites we surveyed, those for six—Alaska, Arkansas, Connecticut, Minnesota, South Dakota, and Wyoming—stated that all or “most” participating owners would pay nothing for preparation of their stewardship plans. Others described various reimbursement conditions—including Hawaii’s provision for up to 75% of the cost depending on the complexity of the plan, Maryland’s range of \$100 to \$300 in fees based on the number of planned acres, Michigan’s ceiling of 50%, and New Jersey’s 75% maximum.

Plan Objectives

Twenty-eight of the 32 websites articulated one or more objectives that stewardship plans should embody.

- More than half mentioned managing for multiple benefits—by using the phrase “multiple resource stewardship,” by listing a variety of separate objectives (e.g., woodland health, timber production, water quality, wildlife habitat, recreation, aesthetics) or, more simply, by calling for both “economic and environmental benefits.” Only one state specifically allowed for a single-purpose plan. West Virginia’s website as of September 2003 stated, “A plan can be diverse and

¹⁴ Mississippi Forestry Commission, no date. *The Forest Stewardship Program* (Jackson, MS), p. 2.

¹⁵ Cooperative Extension, Washington State University, 2000. *Washington’s Forest Stewardship Program: Success through Partnerships—Highlights 2000* (Pullman, WA), p. 2.

¹⁶ Forest Stewardship “Coached Planning” Short Courses (<http://whatcom.wsu.edu/enviro/forest/forestworkshop.htm> [accessed September 24, 2005]). See also the study by Theo and Bergstrom (1996) of coached planning workshops in two Washington counties.

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- contain numerous objectives or may be oriented to achieve one main goal.”¹⁷
- Several states urged a long-term approach to forest management, such as planning to enhance the value of forests for future generations as well as the present and applying plans with at least a ten-year time horizon.

Structure of the Report

Following this introduction to the report, **Chapter 2** discusses:

- how the second survey was conducted, including the drawing of the sample,
- the extent to which the 1,281 respondents were representative of all Forest Stewardship participants who received their plans between 1997 and 2004,
- the surveyed program clients’ background characteristics (age, education, gender, race, etc.), and
- four other traits hypothesized to be particularly important determinants of whether the program is meeting its objectives, namely, the participating owners’ previous experience with written management plans, their frequency of visiting the land covered by their FSP plans, whether they are still the decision-makers for the land, and how often they look at their plans.

In both Chapter 2 and the three that follow, we draw many comparisons to the findings of the first national survey

Chapter 3 compares the two surveys’ findings that address these 6 questions:

- How many of the responding FSP participants had begun to apply at least some part of their stewardship plan?
- To what types of management objectives were the applied practices most frequently directed?
- What reasons did the respondents give for *not* starting to implement parts of their stewardship plans (e.g., lack of time, money, or follow-up technical assistance)?
- What proportion of the surveyed owners were following a multi-resource approach to managing their forestland that is, applying plan-recommended activities to achieve two or more separate management objectives?
- How much of their own money did owners contribute to stewardship plan implementation?
- What owner background traits and other conditions (e.g., use of follow-up cost-share or technical assistance) shaped these management outcomes?

Chapter 4 compares the two national surveys’ findings as to:

- What proportions of the responding forestland owners said that they were applying management activities that were *new to them*?
- Which management objectives yielded the most new-to-the-owner activities?

¹⁷ West Virginia Division of Forestry, no date. *Stewardship Program* (<http://www.wvforestry.com/stewardship.cfm?menucall=steward> [accessed September 25, 2003]).

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The second survey asked some questions not covered in the first. We therefore report also about:

- What percentages of surveyed owners harvested *for sale* for the first time as a result of carrying out stewardship plans?
- In implementing their plans how many owners had their first experience in paying for professional advice about the terms of sale (e.g., volume, price)?
- What proportion of FSP clients started to pay for magazines, Internet services, or other sources of information on managing their forestland who never, before their participation in the FSP, had spent money for that purpose?
- What percentage intended to seek advice in the next two years from a professional in forestry and to *pay* for it?

Chapter 5 draws policy inferences from the previous three chapters. It focuses on indications of whether policy makers for the Forest Stewardship Program (FSP) should seek to improve it or leave well enough alone. Some findings suggest the program is succeeding as it is currently structured, while others point to possibly needed changes.

Among the encouraging findings is that the generally positive pattern of program performance found in the first survey (for participants who received their stewardship plans, 1991-1997) was repeated in the second survey (for clients with new or revised plans, 1997-2004). Among the findings that suggest problems are the continued tendency of FSP clients to be unrepresentative of nonindustrial forestland owners in important respects and, also, the substantial decreases—between the two surveys—in the percentage of program participants who obtained cost-share assistance for implementing their stewardship plans. The cost-share programs are separate from the Forest Stewardship Program, and the decline in their funding was not a flaw in the FSP, itself. With less cost share money in the second study period, the FSP's performance potential was most probably reduced.

Chapter 2

Who Responded to the Survey?

Introduction

This chapter begins by evaluating the extent to which our 1,281 respondents were representative of participants in the Forest Stewardship Program (FSP) whose plans were written during the years 1997 to 2004. If the representativeness is low, the report's usefulness to program policy-makers and other stakeholders will be low. Next, the chapter profiles the respondents' personal background and ownership characteristics. Information on gender, race, age, educational attainment, and acres of forestland owned (among other traits) should be useful to program managers as they strive to deliver services in ways sensitive to their clients' diversity.

The survey provides data also on the extent to which the FSP has recruited forestland owners who should benefit from the program—namely, those who never before had written management plans, clients who visit the forestland subject to the stewardship plans relatively often rather than being absentee owners, those who continued to be the principal decision-makers for the land rather than having delegated that function after the plans were developed, and those who look at their plans fairly frequently rather than having shelved them for the duration.

These clientele profiles set the stage for analyses presented in chapters 3 and 4. There we examine whether the same forestland owner traits are associated with, and likely explanations of, owners' decisions to manage their forestland more intensively. For example, we test whether there tends to be more management activity if the owners live on or frequently visit their land covered by the stewardship plan, compared to owners who rarely are on the land. We check also whether level of education makes a difference in how much effort surveyed owners give to implementing their plans.

This chapter ends with comparisons between the FSP participants whom we surveyed in the initial study, covering the years 1991 to 1997, with the clientele studied in the second survey, covering the years 1997 to 2004. We found that the two groups tended to be quite similar in gender, race, education, age, acres of forestland owned, land under the stewardship plans, and years they owned the land. One significant difference is that proportionally more members of the sample for 1997-2004 had written management plans before enrolling in the FSP.

Also in this chapter, we examine whether FSP participants tend to be representative of

Chapter 2: Who Responded to the Survey?

the generality of nonindustrial private forestland owners. We compare the demographic traits measured in our study to those found by the 2003 and 2004 National Owner Surveys. There are several significant differences.

Representativeness of the Respondents for the 1997 to 2004 Period

The representativeness of the respondents to the survey covering 1997 to 2004 depends on two factors:

- (1) how our samples of program participants were drawn, and
- (2) how high were the response rates that we obtained.

Biased samples yield biased results regardless of how close the response rate is to 100%. But even with an initially representative sample, survey findings will not be representative if too many of those well-chosen program clients cannot be reached or, when contacted, choose not to participate in the study.

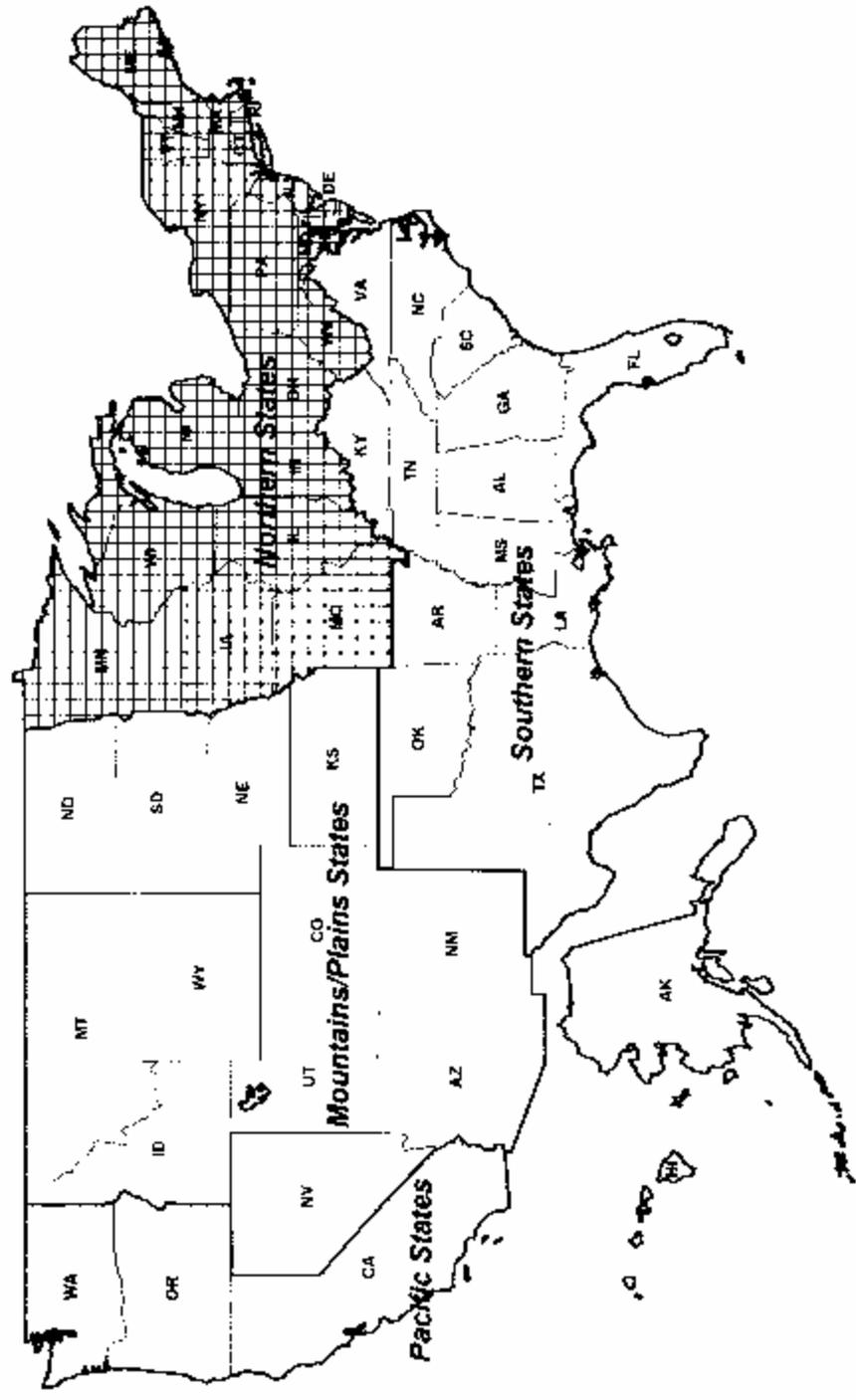
The Sampling Processes

To enhance the usefulness of the study's findings, we constructed separate samples, one for each of four geographic regions: Pacific States, Mountain and Plains States, Southern States, and Northern States.¹⁸ The map on the following page (Figure 2.1) shows the states included in each region. When national-level indicators were needed, we converted the findings from the four separate regions into percentage breakdowns for a "weighted national sample." The weighting procedures are discussed a little later in this chapter.

Aiming to generalize from each region's sample to all FSP participants for that region, we needed to build our samples from lists of actual FSP clients. With the indispensable assistance of the state forestry agencies that administer the Forest Stewardship Program in their states, we developed a sampling pool consisting of all owners who, according to agency records, received plans developed at least in part through FSP financial assistance. Forty-nine of the 50 state government agencies administering the program sent us state-wide lists of clients. State law in Idaho precluded providing names unless the person agreed to be identified. Accordingly, the Idaho Department of Lands contacted the forestland owners who received plans under the FSP for the study period (1997 to 2004), and we were able to survey by phone 47 owners for that state.

¹⁸The "North" is USDA Forest Service's Northeastern Area (Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin). The "South" is Region 8 (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia). The "West" is broken into Pacific States (Alaska, California, Hawaii, Oregon, and Washington), plus the "Mountains/Plains" (Arizona, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, South Dakota, Utah, and Wyoming).

Regional Breakdown For Forest Stewardship Program Survey



Prepared by: Center For Governmental Studies, NITL

Figure 2.1

*Source: "Table 35 Summary of forest stewardship plans and acres accomplished by States" (USDA Forest Service, 1998)

Chapter 2: Who Responded to the Survey?

For the other 49 states we randomly selected samples from the given lists and contacted the chosen landowners ourselves. Those with listed telephone numbers received a letter that introduced the purposes of the study, promised that all responses would be kept in strict confidence, and included ten first-class stamps as modest compensation for the time the survey would take. Where phone numbers were not available but addresses were, the prospective respondents received the explanatory letter and the incentive postage stamps, along with a printed questionnaire and a postage-guaranteed return envelop.

Geographic Representativeness

Besides random selection as a necessary condition for representative samples, also important is that the surveyed forestland owners represent the geographic dispersion of the clientele. Accordingly, we drew the samples so that each state's share of the regional total of respondents would be as proportional as possible to its share of the total clients for the region. For example, since Alaska reported 17% of the total of 1,380 Pacific States' owners with new plans written during the study period, we allocated 17% of the slots in the initial regional sample to that state. As Table 2.1 shows (compare columns 3 and 5), Alaska's share of total owners from the Pacific States who received stewardship plans, 1997 to 2004 (17%), was fairly close to its share of total forestland owners participating in the survey (11%). The matches were closer for California and Washington, and they tended to be a great deal better in the other three regions. Among the twelve Mountain and Plains States, the gap between a state's percentage of total regional clients and its share of total respondents varies from zero to six percentage

Table 2.1. Comparison of (1) regional breakdowns of Forest Stewardship Program participants found in lists provided by state agencies that administer the program to (2) regional breakdowns of respondents to the Second National FSP Survey for the study period, Fiscal Years 1997-2004				
	Forestland Owners Who Obtained Stewardship Plans, 1997 to 2004*		Forestland Owners Who Participated in the Second National FSP Survey	
Region (1)	Number (2)	% of Total (3)	Number (4)	% of Total (5)
Pacific States				
Alaska	239	17	36	11
California	204	15	41	13
Hawa ii	12	1	4	1
Oregon	320	23	97	30
Washington	605	44	147	45
<i>Regional Total</i>	1,380	100%	325	100%
Mountain and Plains States				
Arizona	53	1	1	1
Colorado	410	11	47	15
Idaho	446	12	42	13
Kansas	270	7	21	7
Montana	465	13	53	17
Nebraska	238	7	15	5
Nevada	35	1	2	1
New Mexico	162	4	17	5

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Table 2.1 (continued)	Forestland Owners Who Obtained New Plans, 1997 to 2004		Forestland Owners Who Participated in the Second National FSP Survey	
	Region	Number	Percentage of Total	Region
North Dakota	492	14	35	11
South Dakota	198	5	15	5
Utah	30	1	5	2
Wyoming	858	24	55	18
<i>Regional Total</i>	3,657	100%	308	100%
Southern States				
Alabama	1,266	7	20	7
Arkansas	942	5	16	5
Florida	809	4	16	5
Georgia	1,399	7	24	8
Kentucky	7,319	38	116	37
Louisiana	205	1	2	1
Mississippi	228	1	4	1
North Carolina	1,740	9	28	9
Oklahoma	545	3	7	2
South Carolina	1,247	7	21	7
Tennessee	933	5	13	4
Texas	852	4	13	4
Virginia	1,737	9	30	10
<i>Regional Total</i>	19,222	100%	310	100%
Northern States				
Connecticut	141	1	2	1
Delaware	337	1	0	0
Illinois	3,372	7	26	8
Indiana	7,456	16	46	14
Iowa	1,468	3	12	3
Maine	3,747	8	29	8
Maryland	1,614	4	13	4
Massachusetts	852	2	5	1
Michigan	1,531	3	10	3
Minnesota	2,876	6	22	6
Missouri	1,402	3	5	1
New Hampshire	642	1	8	2
New Jersey	434	1	3	1
New York	2,623	6	16	5
Ohio	2,793	6	24	7
Pennsylvania	566	1	6	2
Rhode Island	84	1	1	1
Vermont	426	1	7	2
West Virginia	949	2	10	3
Wisconsin	12,304	27	94	28
<i>Regional Total</i>	45,627	100%	339	100%
<i>Overall Total</i>	69,886		1,279	

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points (Table 2.1). Among the 13 Southern and 20 Northern states, the largest disparity is two points.

Calculating Response Rates

Another critically important condition for a representative sample of respondents is a reasonably high response rate. Borrowing from the American Association for Public Opinion Research (AAPOR, 2004), we use this definition of response rate. It is a ratio, consisting of the:

Numerator = the number of completed telephone interviews, plus completed mailed-back questionnaires (for cases where phone numbers were not listed or persons contacted by phone preferred to participate via a mailed version of the survey),

Denominator = the completions plus:

- the cases where the contacted person refused to participate in the survey,
- those who never spoke to us over the phone or communicated by mail *and* were presumed to be eligible for the survey, that is, owners of forest land with a Forest Stewardship Plan written or revised for them sometime between 1997 and 2004.

As discussed in Chapter 1, this second national survey about the FSP was designed to be as comparable as possible to the first. Time was one important dimension of comparability. While the first study surveyed FSP participants whose plans were written during the seven years, from 1991 when the program was launched through 1997, the second survey's time frame was also intended to be seven years, 1997 through 2003. However, when respondents could not be confident about whether their only or a revised plans dated from 2003 or sometime in early 2004, we accepted those uncertain cases. Among the comparisons we expected to make (and do draw in chapters 3 and 4) is whether the reported plan implementation behavior differed by the years passed since the plan was written. Because decisions to start to harvest, thin, improve wildlife habitat, etc. may be conditioned by the time elapsed since owners decided on their plans' contents, we needed a similar time frame for both surveys.

Ineligibles

There were six categories of listed owners who were ineligible for the survey. Although we requested clientele lists for 1997 to 2003, not every administering agency was able to keep records that differentiated by year in which the plan was written. Therefore, in all four regions, our phone contacts or mail correspondence yielded some cases—4% to 8% of the totals—where the plans were written before 1997 (Table 2.2's data row 3). In other words, they should have been in the pool of program clients from whom we sampled for the first survey.

Another small group of owners—2% to 4%--reported that they had sold the land that was subject to FSP plans (Table 2.2's data row 4). A third, fortunately even smaller group—1% to 2%--comprised those cases where the listed owner had died or was too sick or infirm to participate (row 5). A fourth group of owners ineligible for the survey—1% to

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3%--reported that they had made inquiries about obtaining a plan, perhaps attended a meeting or even a course about the program, but ultimately decided against having a plan or had not yet received one (row 6). Then a fifth group----4% to 14%--asserted that they had never been involved in the program (row 7). Perhaps they were on the state forestry agency’s clientele list because of having participated or shown interest in a related program.

Finally, we classified as ineligible s the 2% to 6% of total sampled cases where the initial contact letters were returned undelivered *and* no phone link could be established (row 8). These forestland owners were removed from the “eligible to be surveyed” category because given the information provided to us in the files of the program implementers—the state forestry agencies—no survey seemed feasible. Where phone contacts were not successful, *but* the letters appear to have been delivered, the cases were classified as eligible; and we mailed questionnaires.

Component Parts	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %
1. Sampled owners who participated in the survey by telephone or mail	54 (324)	53 (308)	30 (310)	46 (339)
2. Sampled owners who were contacted and refused to participate	2	4	4	5
3. Owners apparently on list because had received plan before 1997 (but no new or revised plan since 1997)	4	5	4	8
4. Respondents not eligible to be surveyed because had sold land with Forest Stewardship Plan (FS Plan)	3	4	3	2
5. Owners who had died or were too sick or infirm to participate in the survey	1	1	2	2
6. Owners reporting that had not signed up for a FS Plan, but had shown interest	3	3	2	1
7. Other owners reporting that had neither signed up nor showed any interest.	5	14	7	4
8. No contact possible: Neither address nor phone number was valid.	4	2	6	5
9. Owners who could not be contacted by phone or mail but address seemed valid	23	14	35	26
10. Owners not surveyed because of over-sampling	1	0	7	1
Total percent	100%	100%	100%	100
Total owners who were in sample	603	580	1,019	541

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After deducting these six groups of ineligible cases, we were left with significant numbers in each region—14% to 35%—where the introductory letters were apparently delivered (i.e., the US Postal Service did not return them to us), but neither interviewer phone calls nor mailed questionnaires yielded communications from the listed owners (row 9). These cases remained potentially eligible for the survey.

Estimating the Eligibility of Owners in Sample Who Could Not be Contacted

AAPOR allows for estimating “what proportion of cases of unknown [i.e., potential] eligibility is actually eligible,” providing we have persuasive evidence to support the estimate (p. 29). As suggested by APPOR (p. 36), we assumed that, among the potential respondents with whom we had not communicated, the percentage eligible for the survey was the same as the percentage we found among the owners who (a) were reached by phone or responded by mail and (b) reported that they still owned land for which there was an FSP plan written since 1997. For example, 78 percent of the Pacific States’ owners with whom we talked on the phone or received back a mailed questionnaire reported that they, indeed, had received a new or revised FS plan since 1997. Therefore, to estimate the proportion of the Pacific owners of unknown eligibility who were likely to report the same condition, if somehow contacted, we multiplied their number (142) by 0.78, yielding 111. That discounted number was added to the denominator in the calculation of the Pacific States’ response rate (see Table 2.3’s data row 3).

The Actual Response Rates

The response rates per regions vary from 52% for the Southern States to 80% for the Mountains and Plains States, with the calculated percentage for the Pacific States being 72% and that for the Northern States, 67% (Table 2.3). The weighted national average—with each region’s weight being its share of the national total for listed clients—is 64%.

The weighted average for the 1991-1997 survey was higher, 72%. Some of the difference probably derived from the downward trend in participation in all forms of surveys resulting from such factors as greater use of call screening, potential respondents’ confusing of our policy survey with telemarketing, and fear of identify theft, among other causes. (Tourangeau, 2002). In our survey there was the special problem of a comparatively low response rate for the Southern Region (52%), caused in large part by a very low percentage for one state, Kentucky, which had by far the largest number of listed FSP plans--38% of the 13-state regional total (Table 2.1). For close to half of the Kentucky cases, we could not find listed phone numbers. Those forestland owners were therefore sent questionnaires by mail, but that form of surveying has historically been less successful in winning participation from potential respondents (Folz, 1996; Fowler et al., 2002).

What is a reasonably good response rate? Writing in 2000, Sellers expected, “Phone surveys should provide response rates of at least 40%, and often up to 80%.” As of at least 2004, the U.S. Office of Management and Budget would not approve surveys by

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federal agencies if they expected to achieve less than a 60 percent response rate (Harris-Kojetin, 2004). However, in his review published in 2004 Tourangeau reported that “very few telephone surveys achieve response rates higher than 60%” (p. 783).

By these standards our figures for the Pacific and the Mountains/Plains States (72% and 80%) are relatively very good. The Northern States’ rate was fairly good (67%), as was the weighted national percentage (64%). However, we still need to adjust our survey findings to take into account the missing cases. Later in this chapter, as well as in the remaining sections of the report, those adjustments are made, based on very conservative assumptions about how the non-respondents would have answered questions if somehow they had been surveyed.

Table 2.3. Response rate for each region and the weighted national sample of FSP participants with plans written, 1997-2004: Number of cases per category of potential respondents				
Categories of Potential Respondents	Pacific States	Mountain and Plains States	Southern States	Northern States
1. Owners who reported Forest Stewardship Plans written (new or revised) since 1997 and who participated in the survey via phone or mail	324	308	310	339
2. Owners who refused to participate	14	16	43	34
3. Owners for whom no phone or mail contact could be made but who were presumed to be eligible for the survey ²	111	62	243	130
4. Total potential respondents = sum of rows 1 through 3	449	385	596	503
5. Response rate = row 1 divided by row 4	72%	80%	52%	67%
6. Weighted national sample = 64% (the sum of the weighted response rates for each region, with the weight per region equal to its share of the total number of Forest Stewardship Program participants found on the lists provided by the 50 states—see Table 2.1).				

²We made a downward adjustment in the numbers of “eligibles” for the “no-contacts” category of respondents, using what we had learned from owners or their relatives whom we could contact by phone or by mail. As discussed earlier, some sampled owners were ineligible because they had sold the forestland that had been the subject of FSP plans. Some were too sick to participate in the survey or had died. Yet others told us that they had “never” had plans. This group included persons who had applied for a plan or otherwise shown interest in the program but had not completed an application or signed a plan. Finally, some people were apparently on the lists by mistake. For example, several professional foresters, both from government and the private sector, must have been listed because they had helped to write plans. Our downward adjustment was that, among the owners whom we were unable to contact (by phone or mail), we assumed that the proportion of them who fell into one of these ineligibility categories was the same as the proportion we found among the owners with whom we did communicate by phone or mail.

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Profiles of Surveyed FSP Participants

This section of the chapter profiles the FSP participants whom we surveyed and who answered questions about their backgrounds. The featured traits are:

- whether the surveyed owner reported still being in the Forest Stewardship Program rather than having dropped out
- whether prior to signing up for the FSP the owner had ever had a written management plan for his/her forestland
- whether the respondent was the “principal decision maker for how that land is managed”
- the frequency over the past year that the owner looked at his/her FSP plan
- frequency with which the owner visited forest land covered by the plan
- gender
- race
- formal education
- age
- occupation
- total acreage of forestland owned
- proportion of that land covered by FSP plans
- length of time respondents owned their land that was under a stewardship plan, and
- year when the FSP plan was written, and
- the author of the stewardship plan (the owners, themselves, someone from the state’s forestry agency, or a private forester recommended by that agency).

This profiling has two main purposes. *First*, knowledge of a program’s actual clientele may tell program administrators and other interested parties how well it is achieving key “intermediate” program goals, such as whether the “targeted” types of clients have been attracted to the program (Posavac and Carey, 1997). If not, the program may not be able to make enough progress towards its ultimate goals—like improving the long-run productivity of private forestland.

- For example, as discussed in Chapter 1, the FSP was expected to enroll particular owners who lacked professionally approved plans for managing their forestland. If an evaluation tool like our survey found the contrary, the program’s outreach efforts and other practices could be changed to sign up more appropriate clients.
- A second intermediate outcome to test for in these profiles is whether clients turned out to be the principal decision-makers for managing their land. They may have thought they were when the plan was written, but lacked the time or interest to make the major decisions.
- A related trait is whether the assisted owners live on or frequently visit their forestland covered by the plan. If not, they may not be contributing much if any muscle power of their own to implementing their plans; and they may lack the time to monitor any efforts by other persons.
- A fourth key to achieving ultimate program goals is whether the clients actually look at their plans. The plans may sit on the shelf or in some never-opened file cabinet drawer.

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The *second* purpose of these profiles is to analyze owner traits (e.g., education, time on the land, and years of owning the subject land) that help to explain program outcomes discussed in chapters 3 and 4, specifically whether owners who received plans:

- have begun to implement them,
- have started to apply sets of plan-recommended activities that amount to a multi-resource approach to managing their forestland,
- have spent on implementing their stewardship plans significant sums of their own money for which they do not expect to be reimbursed, and
- have changed their management styles in the sense of applying practices new to them.

For example, we found that it was more likely that surveyed owners had started to implement their plans if they were relatively well educated. Also, the likelihood of practicing a multi-resource approach tended to increase with the number of days the owner spent on land subject to his/her stewardship plan. Knowledge of such causal factors that improve performance can be used to shape policies for program implementation.

Comparisons between the Two National FSP Surveys

Most of the following discussion in this chapter, as well as in chapters 3 and 4, permit comparisons between the recent national survey of FSP participants—of those who received new or revised plans, 1997 to 2004—and the findings of the first national survey, which focused on recipients of new plans from the launching of the program in 1991 to 1997. Our comparisons identify continuity and variation in the program's outcomes. On balance, we found more similarities than differences. However, this pattern was not due to the two studies surveying mostly owners who were repeat clients, that is, persons who are like the 1991-1997 clientele because they had received FSP plans during that period and then obtained new or revised plans sometime during 1997 to 2004. In fact, 20% of the total respondents for 1997-2004 reported that they had also received an FSP plan before 1997. By region, the percentages were: 6% in the Pacific States, 8% in the Mountain and Plains States, 14% in the Southern States, and 25% in the North.

The Basic Intermediate Outcome Question: Have most of the assisted forestland owners stayed with the program rather than dropping out?

Table 2.4 presents the first such comparison between the two national FSP surveys. It contains data on the most basic of all intermediate program outcomes—the extent to which the program has retained its recent clients. It cannot hope to improve significantly the management of the nation's private forestland if most clients drop out after just a few years. According to the table's two right-hand-most columns, 92% of the first study's respondents (those receiving their plans 1991-1997) and 95% of the second's (1997-2004) reported that they were still in the program. In other words, only 8% in the first national survey and 5% in the second said that they had decided not to use their Stewardship Plans or to discontinue their use. In the survey for 1997-2004, the percent of reported "drop-outs" across the four regions varied narrowly between 4% (in the Northern States) and 7% (Southern).

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Table 2.4. Status of FSP participants with new or revised plans, 1997-2004, at the time of the survey: Percentages who reported selves as still in the program versus those classifying selves as dropouts: By region						
Trait	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %*	Weighted National Sample 1991-1997 %*
Still in program	95	94	93	96	95	92
Dropped out of program	5	6	7	4	5	8
Total percent	100%	100%	100%	100%	100%	100%
Total respondents	324	308	310	339	1,281	(1,220)

*To arrive at the national-level values, each response was given three weights. (1) The first weight was its region's fraction of the total number of Forest Stewardship participants found in all the lists sent to us by the participating state offices. (2) The second weight adjusted for the size of the final regional sample. We took the average of the four samples, 320.25, and divided it by each region's actual sample size. For example, the responses from the Pacific states were weighted by 0.988 (320.25/324) so as to make them equivalent to the responses in regions with a total of 320.5 completions, while the responses from the Southern Region were multiplied by 1.033 (320.25/310) to achieve the same outcome. (3) Then the responses for all four regions were multiplied by 4.0 so as to have a national total of 1,281, rather than 320.25. The number, 1,281, is the actual sum of all surveyed forestland owners.

These numbers may understate the actual drop-out rate since some or many of the *non-respondents* may have chosen to duck the survey because they had left the program. However, even if we make the very conservative assumption that half of the non-respondents had quit, there would still be 72% in the South to 85% in the Mountains/Plains region reporting that they were using their FSP plans.¹⁹

Intermediate Outcome Question: Has the program attracted mostly the preferred kind of clients—those who never before had written management plans for their forestland?

To what extent did the FSP enroll 1997 to 2004 owners who really needed written

¹⁹ The non-respondents consist of both the owners whom we contacted and refused to be interviewed and the persons whom we could not reach but presume were eligible (see the notes to Table 2.3). To calculate these percentages, we add half the number of non-respondents to the sample's actual total of forestland owners who reported using their plans, and then we add the other half to the surveyed non-users. The resulting adjusted percentages were:

Percentages of forestland owners with active plans if we assume that 50% of non-respondents had quit the FSP.			
Pacific States	Mountains and Plains	Southern States	Northern States
82%	85%	72%	81%

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management plans in the sense that they did not have any for their forestland before joining the program? According to program literature that we consulted, the FSP has sought to emphasize serving owners who never had a professionally drafted or approved plan or at least not one that aimed to achieve multiple objectives (i.e., “managing and enhancing the productivity of timber, fish and wildlife habitat, water quality, wetlands, recreational resources, and the aesthetic value of forest lands”).²⁰ Landowners already with plans may be assisted if they intended to improve their management through new or revised plans.

A 2003 national survey of owners of family forestland found that “only 3% of family landowners have written forest-management plans” (USDA Forest Service Press Release, June 19, 2005).²¹ However, in our second national FSP survey, forestland owners who possessed written plans before they requested their “first or only Forest Stewardship Plan” ranged from 27% in the Mountains/Plains States to 43% in the North, with the weighted national sample percentage being 39% (Table 2.5). In this key respect, our sample of FSP participants was not representative of the generality of the NIPF owners. Moreover, relatively many of our respondents had prior experience with written plans, which did not disqualify them, but puts their “neediness” in some doubt.

The first survey asked a similar but not identical question: “Before you signed up for the Forest Stewardship Program, had you ever received advice for managing your forestland from a specialist in managing forest land?” Thirty-three percent of that weighted national sample responded “yes.” Since some of them may have received only oral advice, it seems likely that the percent with written plans was lower (less than 30%)—perhaps enough lower to suggest that an important difference in the clientele may have occurred. In the time period 1997 to 2004, compared to 1991-1997, it looks as though the FSP attracted landowners who were somewhat more experienced with professionally recommended management practices.

²⁰This quotation is taken from the enabling legislation: Sec 5d.1 [16 U.S.C. 2103A] Forest Stewardship Program]. Literature emphasizing owners without written plans include: State & Private Forestry: Northern and Intermountain Regions, *Forest Stewardship Program: Description and Benefits* (<http://www.fs.fed.us/r1-r4/spf/stewardship.html>). (accessed September 11, 2003); State of Michigan, Department of Natural Resources, *Forest Stewardship Plan 2000-2001*, the section on “Target Landowners.”

²¹ http://www.fs.fed.us/ne/newtown_square/news/releases/2005/fs-ne-0347.shtml (accessed July 5, 2005).

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Table 2.5. Among current participants who received their FSP plans, 1997-2004, the percent who had and had not received a written management plan before participating in the program: By region

	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %*	Weighted National Sample 1991-1997 %**
Yes, had received a plan before.	32	27	33	43	39	31
No, had never received one.	64	68	59	50	54	67
Not sure or did not say	4	5	8	7	7	2
Total percentage	100	100	100	100	100	100
Total respondents ²²	308	289	288	324	1,214	1,120

***Text of question in second national survey:** “Before you requested your first or only Forest Stewardship plan, did a forestland management professional ever visit forestland you owned and develop a written management plan for it?”

****Text of question in first national survey:** "Before you signed up for the Forest Stewardship Program, had you ever received advice for managing your forestland from a specialist in managing forestland?"

Intermediate Outcome Question: Are most of the assisted owners physically on their forestland enough days so that they can effectively manage progress towards, realizing their plan’s objectives?

The USDA’s 2002 guide for drafting stewardship plans advises, “The first and most essential task for you, the writer of forest stewardship plans, is to help the landowner identify and articulate his or her forest management objectives” (Russell and Stein, p. 6). Goals selected by the owner, rather than imposed by the agency, are more likely to be achieved, particularly if the owners bother to visit the subject land and either directly manage it or check up on the actions of their delegates. An obvious concern is that too many owners may sign up for the plans, enjoy nominally participating in a stewardship program, but cannot find the time even to visit the land. However, the FSP appears to attract clients who spend a significant amount of time on at least part of their forestland subject to the management plans. Across the four regions, from 60% in the Northern States to 72% in the Mountains/Plains States reported that they “normally live at least one month per year on property that includes forestland covered by your Forest Stewardship plan written since 1997” (Table 2.6). Another 14% to 21% said that they visited the land for a total of 15 to 29 days over the last year. Only 1% (in each region) admitted to no visits. Previous studies found that the typical nonindustrial private

²² This table and most others throughout the report focus on the forestland owners who, at the time of the survey, classified themselves as current participants in the program. As such, they answered all or almost all the survey’s questions. By contrast, most of the drop-outs answered just the first few questions and then terminated the interview. Therefore, the tables focusing on traits of the owners, their FSP plans, and forestland necessarily are limited to the current participants.

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forestland owner lived on or close to his/her land (Bourke and Luloff, 1994).

The comparable questions we used in the first national FSP survey were not exactly the same, except that the weighted national sample then and in the second survey had almost identical percentages for “living on the land at least one month”—61% for the sample drawn from the 1991-1997 clientele and 63% for the 1997-2004 group (Table 2.6).

Table 2.6. Among current participants who received their FSP plans, 1997-2004, the reported frequency at which they lived on or visited the subject land: Percent by time category and region						
Measure of Presence on the Land	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %*	Weighted National Sample 1991-1997 %**
Normally live on the land at least one month per year.	69	72	65	60	62	61
Visited land 15 to 29 days.	16	14	18	21	20	Not available
Visited 7 to 14 days.	7	6	6	6	6	na
Visited 1 to 6 days.	4	6	7	7	7	na
No visit last year.	1	1	1	1	1	na
Not sure or won't say	3	1	3	5	4	na
Total percent	100	100	100	100	100	100
Total respondents	308	289	288	324	1,214	1,120

***Text of question in second national survey:** “Do you normally live at least one month of the year on property that includes forestland covered by your Forest Stewardship plan written since 1997?” If not, they were asked: “About how many days in the last year did you visit some of the property covered by your Forest Stewardship plan?”

****Text of question in the first national survey:** “Is your principal residence on any land covered by your Forest Stewardship plan?” If not, they were asked: “Do you normally live at least one month of the year on such land?”

Intermediate Outcome Question: Are the owners the principal decision-makers for how their land is managed?

The Forest Stewardship Program would not be well served if the owners for whom the plans were written turned out *not* to be the principal decision makers for how the land is managed. That is, the FSP plans may embody their objectives for the land; but someone else has the time, interest, or delegated assignment actually to decide what is done on the land. However, as suggested by the high percentage of surveyed owners who are on their forestland more than two weeks of the year, almost all the respondents—93% to 95% across the four regional samples--indicated that either they made the decisions by themselves or jointly with their spouses (Table 2.7).

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Table 2.7. Among current participants who received their FSP plans, 1997-2004, the percentage reporting being the principal decision-makers for their land covered by the plans: By Region*

Decision-making Roles	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %
The respondent is the principal decision-maker.	59	53	70	65	66
The respondent and his/her spouse share that role.	36	41	23	28	28
(Either the respondent by self or with spouse makes the decisions.)	(95)	(94)	(93)	(93)	(94)
Spouse is the principal decision-maker.	1	0	0	0	0
Someone else is.	4	5	6	5	4
Don't know or won't say	0	1	1	2	2
Total percent	449	385	100	100	100
Total respondents	308	289	288	324	1,214

Text of question: "Considering the land covered by your current Forest Stewardship plan, who is the principal, decision-maker for how the land is managed?"

Intermediate Outcome Question: Are owners consulting their stewardship plans, at least in the sense of looking at it sometime in the past year?

The last intermediate outcome question addressed in this chapter is how frequently the participating forestland owners looked at their plans. Were the latter important enough to managing the land to be consulted at least once or twice in the 12 months preceding the survey?

Across the four regions from 44% in the Northern States to 48% in the Mountains/Plains region reported consulting the plan two or more times (Table 2.8). And from 68% to 73% looked at it at least once.

As discussed earlier, when describing landowner management behaviors, we need to adjust for non-response error, that is, differences in our findings if we somehow surveyed the owners who refused to be interviewed as well as those we could not communicate with via phone or mail. This need is particularly great when the behavior under consideration is likely to be different among program clients who are unhappy with the program; and such unhappiness, itself, seems more likely among the non-respondents. Therefore, for this behavior, we make the very conservative assumption that two-thirds of the non-respondents in the full sample had *not* consulted their plans. This adjustment

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yields a range with majorities still for the owners who looked at their plans at least once—from 51% in the South to 64% in the Mountains/Plains region.²³ Of course, among clients who had already implemented their plans to a large or full extent, it might not have been necessary to pull out the plan in 2004-2005.

Table 2.8. Among current participants who received their FSP plans, 1997-2004, the frequency with which they looked at their written plans in the past year: By frequency category and region*					
Frequency of Looking at FSP Plans	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %
Four or more times	18	18	14	15	15
Two to three times	28	30	34	29	30
(At least twice)	(46)	(48)	(48)	(44)	(45)
Once	27	25	22	24	24
(At least once)	(73)	(73)	(70)	(68)	(69)
Not at all	26	26	29	31	30
Not sure or didn't say	1	1	1	1	1
Total percent	100	100	100	100	100
Total respondents	308	289	288	324	1,214

***Text of question:** "In the last 12 months, about how often did you happen to look at the Forest Stewardship Plan we've been discussing." This question or a variant of it was *not* asked in the first national FSP survey.

Personal Background Traits

With these five intermediate outcome questions addressed and the Forest Stewardship Program looking rather successful regarding each (i.e., that most assisted landowners are still in the program, most needed written plans because they never had any before, most live on the subject forestland or visit it frequently, almost all are the principal decision-makers for managing the land, and most looked at the plan at least once in the past year), we turn to other traits of the surveyed landowners. Program managers usually want to know the gender, age, and educational distributions of their clients. Sometimes there are explicit or implicit demographic goals, such as having a clientele that is representative of the population stratum being served. Another use of background data—which we employ in chapters 2 and 3—is to determine if client's age, education, or other traits make statistically significant differences in their behavioral responses to the program.

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Percentages of forestland owners who looked at their FSP plans in the last year if we assume that two-thirds of non-respondents had not consulted the plan at all.			
Pacific States	Mountains and Plains	Southern States	Northern States
61%	64%	51%	56%

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For example, do better educated landowners do more with their forest stewardship plans?

Regarding gender and race, the current FSP participants (i.e., those surveyed owners classifying themselves still in the program) were similar to the non-industrial private forest owners who responded to earlier studies (Bourke and Luloff 1994, Sampson and DeCoster 1997). Regardless of region, our respondents were overwhelmingly male and white. However, compared to a recent USDA Forest Service survey of owners of family (versus industrial) forestland, the FSP clients were much better educated.

Gender

Across the four regions, males comprised 74% to 84% of our respondents (Table 2.9). The percentages of females were significantly higher in the Pacific States' sample (26%) compared to both the Southern and Northern regions' cases (16% and 19%, respectively). And the difference between the Mountains/Plains' states 22% value for female respondents and the corresponding 16% value for the Southern States was also greater than sampling error alone could explain. However, the other inter-regional comparisons were not statistically significant.²⁴ By contrast the three-point difference at the national level—the second survey's 18% value for female respondents compared to the 15% in the first study—is greater than sampling variability can account for. In other words, there was a small, but significant increase in the female share of the owners reporting participation in the Forest Stewardship Program.

The basic explanation for the predominance of males among respondents is that they exceeded females by far in the lists of forestland owners sent to us by the state forestry agencies. That pattern is shown in the apparent gender distributions for all four of the “gross” regional samples that we drew from those lists.²⁵ The 581 to 1,025 owners selected per region for those samples (Table 2.10) should reflect very closely the gender breakdown for the full lists since we used random sampling, stratified by state. As indicated in Table 2.10, case listings whose owners had male-sounding names comprised 50% to 71% of the samples' members; and the combinations of those cases with the category, “Two owners listed with at least one having a male-sounding name,” aggregated to 75% to 80% of the total cases (data line 3 in Table 2.10).

²⁴ In this report we use as our standard of statistical significance that there is no more than a 5 in 100 chance that the observed difference is due entirely to sampling error.

²⁵ Our “gross” samples were those drawn from the lists, while the actual samples consist of the forestland owners from the gross samples whom we were able to survey by telephone or mail. The Southern region's gross sample of 1,025 is much larger than the other three because of our difficulty in finding telephone numbers for FSP participants in that region. Therefore, for some Southern States, we were compelled to draw additional random samples in order to meet our target of at least 300 completed surveys per region.

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**Table 2.9. Among current participants who received their FSP plans, 1997-2004, their gender:
Percent by region**

Trait	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
Males	74	78	84	81	81	84
Females	26	22	16	19	18	15
Did not answer	0	0	0	0	1	1
Total percent	100	100	100	100	100	100
Total respondents	308	289	288	324	1,214	1,120

Table 2.10. The genders of forestland owners who received FSP plans, 1997-2004, as indicated by names of such clients supplied by the state forest agencies that administered the FSP: By region

Gender Indications	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %
1. Single owners with male-sounding names	50	62	71	69
2. Two owners listed with at least one having a male-sounding name	25	15	4	11
(3. <i>Ownerships likely to involve males=data rows 1 and 2</i>)	(75)	(77)	(75)	(80)
4. Single owners with female-sounding names	18	13	18	16
5. Other*	7	10	7	4
6. Total Percent	100	100	100	100
7. Total names in lists	603	581	1,025	735

*This category contains mostly cases where the owners' gender is not inferable from the listed names (e.g., "Castle Ranch") and a very few cases per region with more than two owners with the genders inferable.

Race

The domination of whites among our respondents was even greater than the ascendancy of males. Across the four regions, from 86% in the Pacific States to 96% of the surveyed current FSP participants in the Northern States classified themselves as "White" (Table 2.11). The only statistically significant difference between this set of findings and the

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corresponding one for the first national FSP survey concerns the Pacific States. The percentage white in that region’s sample for 1991-1997 program clients was 94% compared to the new finding of 86%. Among the Pacific States’ respondents for 1997-2004 most of the owners who reported being non-white labeled themselves as “Native Americans” and “Other,” with this latter category consisting mostly of Pacific Islanders and part-Native Americans.

In the 2003 National Woodland Owner Survey conducted by USDA’s Forest Service, (Butler and Leatherberry, 2004b), the recorded percent white at the national level was 90%, but 95% when adjusted for non-response.²⁶ Ninety-five percent is also what we found in the second national sample (Table 2.11). Therefore, it may not be easy for the FSP to enroll proportionally more non-whites because there are simply relatively so few non-industrial private forestland owners who are not white.

Table 2.11. Among current participants who received their FSP plans, 1997-2004, their race: Percent by group and region						
Race	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
White	86.4	95.2	93.4	96.0	95.1	96.3
Black or African-American	0.3	0.0	1.0	0.0	0.3	0.4
Hispanic or Latino	0.3	1.0	0.7	0.3	0.5	0.3
American Indian or Alaska Native	2.3	0.7	1.4	0.6	0.9	0.5
Asian	0.6	0.0	0	0.0	0.0	0.1
Other	3.6	1.0	1.0	0.6	0.8	0.7
Did not answer	6.5	2.1	2.5	2.5	2.4	1.7
Total respondents	308	289	288	324	1,214	1,120

Education

The program respondents whom we surveyed had considerably more formal education than the average adult. For 2004 the U.S. Census Bureau estimated that 24% of the nation’s non-institutionalized civilian residents 25 years and older had received bachelor’s degrees.²⁷ By contrast, across our four regional samples, the percentages of

²⁶ From an e-mail message from Brett Butler, August 12, 2005.

²⁷ US Census Bureau. *Educational Attainment in the United States: 2004*, Table 1a. Percent of High school and College Graduates of the Population 15 Years and Over (<http://www.census.gov/population/www/socdemo/education/cps2004.html> [accessed September 30, 2005]).

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respondents with at least a college degree ranged from 47% in the Northern region to 71% in the Pacific States (Table 2.12). The measure calculated for the weighted national sample, 51%, is considerably higher also than the percentage found in the 2004 National Woodland Owners' Survey—27% with a bachelor's or higher degree (Butler and Leatherberry, 2005). This comparison suggests that FSP participants are better educated than the generality of private forestland owner as well as the adult population as a whole.

Table 2.12. Among current participants who received their FSP plans, 1997-2004, their highest level of formal education completed: Percent by level and region						
Educational Attainment	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
Up to and including completion of high school	16	20	28	36	33	29
Associate's degree	12	14	13	15	14	15
Bachelor's degree	31	33	30	25	27	26
Graduate degree	40	32	27	22	24	28
(At least a bachelor's degree)	(71)	(65)	(57)	(47)	(51)*	(54)
Did not know or no answer	1	1	2	2	2	2
Total percentages	100	100	100	100	100	100
Total respondents	308	289	288	324	1,214	1,120

*The comparable percentage found in the 2004 National Woodland Owner Survey was 27% (Butler and Leatherberry, 2005).

Our numbers on this dimension remained quite consistent between the first and second national FSP surveys except for the Pacific States, where the percent with at least college degrees increased by 17 points to 71%.²⁸ Elsewhere the differences over the two time periods varied by only three to six points and are not statistically significant except for the three-point difference in the weighted national samples (54% in the first survey versus 51% in the second—Table 2.12).

²⁸

Percentages of then current FSP participants in the 1991-1997 samples who reported having at least a bachelor's degree.			
Pacific States	Mountains and Plains	Southern States	Northern States
54%	58%	61%	49%

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Occupation

The distributions of occupations also remained rather stable across the two national surveys of FSP participants with one important exception (Table 2.13). The percentage of retired persons increased in all four regional samples—from four percentage points (Pacific States) to ten points (Mountains and Plains). The statistically significant differences are the ten percentage-point increase in the percent of retired respondents for the Mountains/Plains States and the five-point increment in the weighted national samples.²⁹ Retired persons therefore became the single largest occupational group in all four regional samples—from 30% in the Southern States to 33% in the Pacific States.

Table 2.13. Among current participants who received their FSP plans, 1997-2004, their occupations: Percent by category and by region						
Occupational Categories	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
Retired	33	31	30	32	32	27
Farmer	5	11	9	9	9	9
Forest business operator	6	5	3	3	3	5
Non-farm or forestry manager	13	16	17	13	14	14
Doctor, lawyer, engineer, educator or other professional	25	19	22	19	20	22
Other white collar	4	8	5	5	5	8
Skilled worker	7	6	8	11	10	8
Other non-white collar	3	3	3	6	5	4
No response	4	1	3	2	2	1
Total percent	100	100	100	100	100	100
Total Respondents	308	289	288	324	1,214	1,120

Professionals—doctors, lawyers, engineers, teachers, etc.—ranked second, comprising 19% to 25% of total participants across the four regions. In the first national survey they were also second in importance, making up 22% to 24% of the totals. Third again were non-farm-or-forestry managers (13% to 17% in the second survey), while farm operators,

²⁹

Percentages of then current FSP participants in the 1991-1997 samples who reported being retired.			
Pacific States	Mountains and Plains	Southern States	Northern States
29%	21%	25%	28%

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themselves, accounted for small percentages of the regional totals (5% to 11%).

Age of FSP Participants

The two FSP surveys' findings regarding owner's age are very similar. In both studies relatively few surveyed owners across all four regions were younger than 35 years old (Table 2.14). The survey of 1991-1997 participants found that this age group comprised just 4% to 6% of the total per region, while in the second study the range is slightly lower, 1% to 5%. Many more respondents—23% in the first survey and 27% in the second were 65 or older (Table 2.14). Between the two FSP studies the average age of current clients increased an insignificant two points—from 55 to 57 years old. The later mean is just slightly below the 59 year-old average that Butler and Leatherberry (2005) report for the 2004 National Woodland Survey.

Table 2.14. Among current participants who received their FSP plans, 1997-2004, their age: Percent by age category and by region						
Age Categories	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
up to 34	1	4	5	1	3	4
35 to 44	13	11	15	13	13	17
45 to 54	28	30	26	28	28	31
55 to 64	33	29	26	28	27	24
65 and over	24	26	26	28	27	23
No response	1	0	2	2	2	1
Total percent	100	100	100	100	100	100
(Average age)	(57)	(57)	(57)	(58)	(57)	(55)
Total Respondents	308	289	288	324	1,214	1,120

Acres of Forestland Owned

While our FSP participants may be similar in age to the general population of non-industrial private forestland owners, they differ significantly in the number of acres owned. Table 2.15 matches our study's findings to those of the 2003 National Woodland Owner survey of "family forest owners."³⁰ Since that survey combines the Pacific and Mountains/Plains states into the "Western States," we did the same for Table 2.15.³¹

³⁰ "Family forests include lands that are at least 1 acre in size, 10% stocked, and owned by individuals, married couples, family estates and trusts, or other group of individuals who are not incorporated or otherwise associated as a legal entity. Family forest owners constitute the dominant ownership group in the United States, holding 4 of every 10 forested acres" (Butler and Leatherberry, 2004a), p. 4.

³¹ Each region's responses (i.e., those for the Pacific States and those for the Mountains/Plains States) are

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Across all three regions where the two surveys are compared on the numbers of reported forestland acres owned, there are very marked differences in the same direction. As indicated in the average and median values per region, the family forest owners reported much smaller holdings. In the Western States, for example, while our study yielded an average holding of 196 acres, the Woodland Owner Survey had a mean of 32 acres for that region (Table 2.15). The corresponding medians are 40 acres versus only 8 acres. Medians avoid the distorting effect of extreme values like the 24,000 acres reported by one of our owner respondents in the Southern Region. The next largest ownership found for that region was one case of 8,000 acres.

Acreage Categories	Western States (including Pacific and Mountains/Plains States)		Southern States		Northern States	
	FSP Clients %	Natl. Woodland Owner %	FSP Clients %	Natl. Woodland Owner %	FSP Clients %	Natl. Woodland Owner %
1 to 9 acres	14	64	2	56	2	61
10 to 49	39	26	26	31	28	29
50 to 99	14	4	23	7	26	6
100 to 499	22	5	36	6	37	4
500 to 999	3	< 1	5	< 1	3	< 1
1,000 and above	6	< 1	7	< 1	3	< 1
No response	1	No data given	1	No data	1	No data
Total percent	100	100	100	100	100	100
Average acres	196	32	333	30	146	20
Median acres	40	8	90	8	80	7
Total Respondents	597	No data given	288	No data	324	No data

*Source: Butler and Leatherberry, 2004a.

Table 2.15's ranges of owned forestland indicate that, among family forest owners as a group, most holdings—56% in the Southern States to 64% in the West--consist of fewer than 10 acres. By contrast, in the same three regions, only 2% to 14% of our FSP respondents reported owning fewer than 10 acres. For the Southern and Northern States the most common range for FSP participants was 100 to 499 acres, while for the Western

weighted according to that region's share of the two-region total number of participant names we received from the state forestry agencies.

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States the modal class was 10 to 49 acres. The first national FSP survey yielded similar disparities when its findings were compared to a 1994 national survey of non-industrial private forestland owners (Esseks and Moulton, 2000, Table 2.14). Given these consistent findings, we feel safe in concluding that FSP participants tend to have own more forest acres than do the generality of NIPF owners. A likely explanation, at least in part, is the minimum acreage requirement imposed by many state forestry agencies that administer the FSP. As discussed in Chapter 1, we found that as of the fall of 2003 two states specified at least 5 acres, one required 7 acres, eleven defined the threshold as 10 acres, and two wanted 20 or 25 acres.

Table 2.16 provides data on total forestland owned for all four regions and allows comparisons across the two national surveys of FSP participants. The two sets of numbers tend to be very similar. None of the tabled differences between the first and second surveys is statistically significant except for the percentages of owners reporting acres in the range of 50 to 99 (i.e., 19% of the national weighted sample in the first study versus the 24% recorded for the second—Table 2.16). Not even the 91-acre difference in the national average number of acres owned (198 compared to 289) is greater than sampling error alone can explain. These means are too greatly shaped by relatively very large ownerships. Therefore, the almost identical medians—78 acres and 80—are better summary measures of the two sets of ownership reports.

Table 2.16. Among current participants who received their FSP plans, 1997-2004, the total acres of forestland they owned: Percent by acreage category and region						
Acreage Categories	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	<i>Weighted National Sample 1991-1997 %</i>
1 to 9 acres	9	19	2	2	3	5
10 to 49	37	42	26	28	29	31
50 to 99	15	13	23	26	24	19
100 to 499	28	16	36	37	35	34
500 to 999	4	2	5	3	3	5
1,000 and above	6	7	7	3	5	6
No response	1	1	1	1	1	0
Total percent	100	100	100	100	100	100
Average acres	(233)	(155)	(333)	(146)	(198)	(289)
Median acres	(55)	(35)	(90)	(80)	(78)	(80)
Total Respondents	308	289	288	324	1,214	1,120

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The second survey shows that, as with the first, relatively few participants reported owning as many as 500 acres of forestland—from 6% in the Northern Region to 12% among the Southern States’ respondents (see the top categories by acreage in Table 2.16). That survey’s cases with 1,000 acres or more consisted of only 3% to 7% of the regional totals. However, the median size ownerships were rather large compared to family forest owners as a whole; they ranged from 35 acres in the Mountains/Plains States to 90 acres in the South. Not surprisingly, overall acres of forestland per owner correlated with the number of acres under an FSP plan. The correlation coefficient is 0.715 out of a possible 1.00.

The Land under Approved Plans

Table 2.17 focuses on two important measures of the forestland that the surveyed FSP owners had placed under approved plans: the number of acres and the ratio of those acres with a plan to the owners’ total forest holdings. The obvious ideal is to have the assisted owners to apply their professionally approved stewardship plans to all their forestland; no portion is denied the benefits of informed planning. Oklahoma required as a condition of eligibility that all one’s forested acres to be enrolled (see the discussion in Chapter 1).

Table 2.17. Among current participants who received their FSP plans, 1997-2004, the total acres they owned that were under the plans: Percent by acreage category and region						
Acreage Categories	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
1 to 9 acres	9	23	2	2	3	7
10 to 49	37	41	30	38	36	33
50 to 99	17	13	22	28	25	20
100 to 499	28	16	36	27	29	30
500 to 999	3	3	4	1	2	5
1,000 and above	3	2	5	1	2	5
No response	3	2	1	3	3	0
Total percent	100	100	100	100	100	100
Average acres	(175)	(168)	(220)	(158)	(176)	(198)
Median acres	(50)	(33)	(81)	(65)	(65)	(66)
Total Respondents	308	289	288	324	1,214	1,120

A comparison of tables 2.16 and 2.17 shows similar distributions by region across size categories, largely because most surveyed FSP participants did subject all their forestland to their FSP plans. More specifically, as with their responses on total acres owned, few respondents reported plans covering 1 to 9 acres, except the 23% in the Mountains and Plains region. Few also—2% to 9%--had as many as 500 acres under a plan (see the

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highest categories by acreage in Table 2.17). The Southern States recorded the largest percentage of surveyed owes with at least 100 acres—46%. Across the four regions, the average holdings under plans ranged from 158 acres in the Northern States to 220 in the South, while the medians varied from 33 acres in the Mountains/Plains region to 81 in the South. The weighted national sample’s median of 65 acres (Table 2.17) is just 13 acres fewer than the median for all forestland owned, whether or not under a stewardship plan (Table 2.16).

Comparing the two national FSP surveys on land under plans shows a lower weighted national average in the second study, 176 acres versus 198. However, the 65-acre median value for the 1997-2004 sample is virtually identical to that for the first survey (1991-1997—Table 2.17).

A more important similarity across the two surveys is that the program continued to persuade most participants to plan for *all* their forestland. The study of 1991-1997 clients recorded 64% achieving that standard, and the corresponding value for the 1997-2004 participants is 60% (Table 2.18). Not surprisingly, the percent of owners classified with all their forestland under an FSP plan tends to decline as the number of total forest acres they own increases. For example, among the 1997-2004 respondents with 10 to 49 acres under plans, the percent with comprehensive coverage ranged from 73% in the Northern States to 84% in the South. By contrast, among the surveyed owners with 100 to 499 acres, the range is 42% to 63%; and it is markedly lower for the 500-acre-and-larger group--32% to 42% (Table 2.18). Nevertheless, in each of the four regions majorities of all the respondents (56% to 70%) indicated having plans that covered 100% of their forestland (Table 2.18).

Acreage Categories	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
1 to 9 acres	82	78	60	86	79	81
10 to 49	75	75	84	73	76	78
50 to 99	77	77	76	63	67	63
100 to 499	63	62	63	42	49	56
500 and above	42	42	41	32	37	45
Percent of all cases reporting 100% coverage	69	70	68	56	60	64
Total Respondents	308	289	288	324	1,214	1,120

*Some surveyed owners reported their acres under an FSP plan to be greater in number than the “total acres currently owned that you consider to be forest land.” Presumably, some of the excess consisted of pasture, cropland, or acres with other uses that were to be managed in conjunction with forestland to achieve such purposes as improving water quality, wildlife habitat, and recreational opportunities or pursuing agro-forestry objectives. In fact, 89% of the cases with such ratios greater than 1.0 also reported that they were

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pursuing one of these objectives for which non-forest land is appropriate.

Length of Ownership and Year When FSP Plan Was Written

Table 2.19 indicates that, by the time of the survey, large majorities of the responding owners--from 80% in the Southern States to 86% in the North--had owned forestland covered by the plans for at least five years. From 49% (Southern) to 62% (Northern region) were owners for 11 or more years (see the highest two categories of years owned). The average length of ownership ranged from 16 years in the Mountains/Plains States to 20 years in the North. The national-level figures for 1997-2004 participants are virtually identical to those for 1991-1997 (19 years versus 18). By comparison, the 2004 National Woodland Owner Survey found longer ownership periods. From the grouped data in a preliminary report on that study (Butler and Leatherberry, 2005), we derived a higher average and median: 23.4 years and 21.3, respectively. Perhaps, with fewer years owning their forestlands, the FSP clients we surveyed tended to have had less time to have accomplished their management goals and, therefore, a greater interest in technical assistance geared to that purpose.

In chapters 3 to 4, where we look for explanations of variations in the surveyed owners' management behaviors, we test the hypothesis that, the longer an FSP participant owned the land, the better he/she manages it (other causal conditions held constant), perhaps because of the stronger interest (financial, emotional) in the land associated with longer tenure.

Table 2.19. Among current participants who received their FSP plans, 1997-2004, the number of years they owned the land covered by those plans: Percent by time category and region						
Time Periods	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
One year or less	1	0	2	1	1	2
Two to four years	14	15	12	9	10	13
Five to 10 years	26	31	31	24	26	26
(at least 5 years)	(83)	(82)	(80)	(86)	(84)	(84)
11 to 20 years	24	24	15	25	22	23
Over 20 years	33	27	34	37	36	35
No response	2	3	6	4	5	1
Total percentage	100	100	100	100	100	100
Average years	(18)	(16)	(18)	(20)	(19)	(18)
Median years	(14)	(11)	(12)	(16)	(15)	(14)
Total respondents	308	289	287	324	1,214	1,120

Table 2.20 presents the survey's findings as to how much time had elapsed since the respondents' Forest Stewardship plans were received. Across the four regions, from 31% in the Northern States to 40% in the South had obtained their plans in just the past year or two (Table 2.20). The corresponding percentage for the weighted national sample is 34%. By contrast, among the FSP participants surveyed in the first national survey, only

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12 percent had plans no more than two years old. Forty-six percent had plans from five to seven years old. The comparable measure for the second survey is 23 percent. In chapters 2 and 3 we shall test the common-sense hypothesis that, the more years elapsed since the plan was written, the more progress in implementing the plan. Table 2.20's differences on this time dimension suggest that, if the hypothesis were valid, we should find less progress among the 1997-2004 clients.

Table 2.20. Among current participants who received their FSP plans, 1997-2004, the number of years elapsed since receiving the plans: Percent by time category and region						
Time Periods	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
One to two years	38	38	40	31	34	12
Three to 4 years	27	26	25	24	24	28
Five to six years	18	18	14	19	18	22
Seven years	6	6	5	5	5	24
Not clear	11	12	16	21	19	24
Total percentage	100	100	100	100	100	100
Average years	(3.3)	(3.2)	(3.1)	(3.4)	(3.3)	(4.4)
Median years	(3)	(3)	(3)	(3)	(3)	(5)
Total respondents	308	289	287	324	1,214	1,120

Who Wrote the Stewardship Plans?

Table 2.21 shows the East-West division in the FSP's administration regarding the role of the owners, themselves, in writing the plans. As discussed in Chapter 1, FSP clients in some Western states owners may attend classes in which they are coached to write their own plans. In our Pacific and Mountains/Plains States' samples, 25% and 21%, respectively, of the owners reported themselves as being their plans' authors (Table 2.21). By contrast, owner-authored plans comprised just 3% and 6% of the other two regions' totals. Among the Pacific States' respondents, the most common type of author was a private forestry consultant, while in the other three samples that role was fulfilled by state forestry agency staff. These regional figures can obscure differences by state. For example, Egan (2001) found in West Virginia that "most forest stewardship plans were written by consulting foresters, followed by foresters from the West Virginia Division of Forestry" (p. 33).

At the level of the weighted national samples, there was a six-percentage-point decline in the role of state forestry agencies as plan authors--from 67% in the first survey to 61% in the second--and also a five-point increase--from 20% to 25%--in the frequency of private forestry consultants writing plans (Table 2.21). Both differences are statistically significant. These changes should be encouraging to observers of the FSP who worry that it may have taken business away from the private sector.

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Table 2.21. Among current participants, the authors of their plans received 1997-2004: Percent by type of author and region

Type of Author	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %	Weighted National Sample 1991-1997 %
The owners, themselves, with some training or coaching	25	21	3	6	7	9
Someone from the state's forestry agency	18	56	77	56	61	67
Private forestry consultant recommended by the state agency	49	16	17	28	25	20
Someone else	7	6	2	6	5	2
Don't know/won't say	1	1	1	4	2	2
Total percentage	100	100	100	100	100	100
Total respondents	308	289	288	324	1,214	1,120

Did the Forestland Owners Find Their Stewardship Plans Difficult to Understand?

The sixth and last intermediate program outcome we discuss in this chapter is whether the forestland owners found their stewardship plans difficult to understand. As just discussed, very few owners wrote their own plans (7% of the national sample—Table 2.21). They were therefore dependent on the writing skills of public-sector and private foresters who, after talking with the owners and hopefully visiting their land, developed a plan with these (recommended) basic components: the clients' "management objectives," "baseline habitat conditions," and "management recommendations" (Russell and Stein, 2002).

Table 2.22. Among the current FSP participants, perceptions of the ease of understanding their Forest Stewardship plans: By region*

Response Options	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample % 1997-2004	Weighted National Sample 1991-1997 %
Very easy	37	48	40	36	38	32
Easy	55	46	53	55	53	61
("very easy" or "easy")	(92)	(94)	(93)	(91)	(91)	(93)
Difficult	4	3	3	6	5	4
Very difficult	2	1	1	0	1	1
Don't know/Won't say	2	2	3	3	3	2
Total respondents	(308)	(289)	(288)	(324)	(1,214)	(1,120)

***Text of question:** "Overall, how easy or difficult has it been for you to understand your Stewardship Plan? Very easy, easy, difficult, very difficult, not sure?"

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Early in the survey we asked the question, “Overall, how easy or difficult has it been for you to understand your Stewardship Plan?” Among the surveyed owners who classified themselves as still in the program, only 4% (in both the Mountains/Plains and the Southern regions) to 6% (in the Pacific States) chose the “difficult” or “very difficult” response options (Table 22.2). From 91% (Northern) to 94% (Mountains/Plains) considered their plans as either “very easy” or “easy” to understand. At the national level, the first and second national samples recorded essentially the same distributions—both over 90% for either “very easy” or “easy” to grasp.

Summary

The four regional survey samples achieved representativeness by the criterion of geographic distribution. Each state’s percentage share of the samples of 308 to 339 FSP participants per region was close to its share of all listed program clients for the region. Also satisfied rather well was the criterion of reasonably high response rates. Eighty percent of the Mountains and Plains States’ eligible sample members were interviewed or took part by mail, while 72% did in the Pacific States, 52% in the South, and 67% in the Northern region.

Clientele surveys like this one can measure the extent to which programs have attracted participants who are appropriate either in the sense of being the kinds of citizens whom policy makers wanted to serve or of having traits likely to promote achievement of the program’s performance goals. Our findings regarding both criteria were largely positive.

- Appropriately, most of the surveyed participants had never before possessed a written management plan for forestland they owned, although the relevant percentage dropped--from 67% of the weighted national sample in the first survey to 54% in the second (Table 2.5).
- Most of the second national survey’s respondents were not absentee owners; they either lived on the land subject to the FSP plan at least one month of the previous year (62%) or visited it 15 to 29 days (20%--see Table 2.6).
- Ninety-four percent reported being either the principal decision maker for the subject land, themselves, or sharing that role with their spouses (Table 2.7). An alternative outcome might have been many owners losing interest in the land to the point of delegating decision-making to someone else.
- Another positive trait reported by most respondents was that they continued to pick up and look at their stewardship plans. Forty-five percent reported consulting it at least two times in the past year; 69%, at least once (Table 2.8).
- Sixty percent of the current participants agreed to stewardship plans covering all their forestland holdings (Table 2.18).
- Two other traits of FSP participants may concern policy makers. The FSP clients tended to be better educated and own substantially more forestland compared to the family forestland owners who responded to the 2003 or 2004 National Woodland Owner Survey (tables 2.12 and 2.15).
- A clearly positive outcome was that the foresters and other authors of stewardship plans had turned out comprehensible documents. Ninety-one percent of the national sample reported their plans to be “easy” or “very easy to understand”

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(Table 2.22). The comparable figure for the first national FSP study was essentially the same—93%.

- Also, almost all the owners we contacted regarded themselves as still participating in the program—95% did compared to 92% of the total sampled owners reached in the first national survey (Table 2.4).

Chapter 3

Implementation of the Forest Stewardship Plans

Introduction

Chapters 3 and 4 discuss the extent to which the Forest Stewardship Programs' three main objectives have been furthered, that is, the evidence from the survey as to whether the technical assistance has significantly assisted private forest landowners to:

- “more actively manage their forest and related resources”;
- “keep these lands in a productive and healthy condition for present and future owners”; and
- “increase the economic and environmental benefits of these lands.”

These objectives are articulated in the program's “National Standards and Guidelines” (USDA Forest Service, 1994). The first one listed above—more active management—may be considered another “intermediate outcome,” while the second and third may be classified as “final program outcomes.”³² That is, from more active management, as well as from other conditions (including the six intermediate steps discussed in Chapter 2), should come healthier and more productive forests, yielding higher levels of profitable logging, cleaner water ways, and less destructive wild fires (among other benefits). Implied in the call for improvements in both economic and environmental outcomes is yet another intermediate step. The statement of “National Standards and Guidelines” calls it a “multi-resource” approach rather than one that focuses exclusively on a single kind of management objective such as income enhancement or enjoyment of scenery. Management plans embodying a multi-resource approach should allow for efficient pursuit of multiple goals. For example, thinning may be designed to achieve both scenic vistas and improved tree stand health, as well as reducing the spread of wild fires.

In this chapter we assess how active the assisted owners' management has been by addressing these six questions:

- How many of them have begun to apply at least some part of their stewardship plan?

³² The Abt and Associates consulting firm uses the same distinction, such in the example of their evaluation of a health-care program in which an “intermediate outcome indicator” was the number of children receiving health services and the “final outcome” was the hoped-for decrease in mortality rates among children. Abt Associates Inc., *Using Intermediate Program Outcomes* (www.abtassociates.com/Page.cfm?PageID=421&FamilyID=400 [accessed July 13, 2005]).

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- To what types of management objectives have the applied practices been most frequently directed (e.g., caring for the health of their forests, harvesting timber for sale, protecting or improving wildlife habitat, protecting or enhancing water resources, improving recreational opportunities, or pursuing agro-forestry objectives)?
- What reasons do the respondents give for *not* starting to implement parts of their stewardship plans (e.g., lack of time, money, local contractors)?
- How many owners have started to manage using a multi-resource approach, that is, applying plan-recommended activities to achieve two or more separate management objectives?
- How much of their own money are owners contributing to stewardship plan implementation?
- What owner attitudes, background traits, and other conditions (e.g., availability of cost-share money) shape these management outcomes?

Chapter 4 chapter focuses mostly on managerial activity that surveyed forestland owners said was *new* to them.

Plan Implementation

To inventory the contents of the sampled owners' stewardship plans, the survey questionnaire asked if they contained recommended management activities with any of the following seven objectives:

- “growing trees or caring for their health, such as planting trees, thinning trees, or preventing fires,”
- “harvesting trees for sale, such as selecting trees to be cut for saw logs, poles, or firewood,”
- “improving or preserving your forestland as habitat for wildlife, such as regarding food, cover, or water available to wildlife,”
- “improving or preserving the quality of water resources such as by planting vegetative strips next to ponds or fencing off streams from livestock,”
- “improving or protecting recreational opportunities on your forestland, such as by creating hiking trails or preserving scenic tree stands,”
- “agro-forestry, such as planting windbreaks or blending the growing of trees with cropping or pasturing,” or
- Some “other” objective (this was an open-ended option).

When owners replied “yes” about an objective (e.g., caring for tree health, harvesting), they were asked three follow-up questions: Had they been able to start carrying out any of the activities recommended in their stewardship plans to achieve that objective? If so, which activities had they started? And were any activities new to the owner?

Across all four regions, sizable majorities of the program participants—from 76 percent in the Southern States to 87 percent in the Pacific States--reported that they had begun to implement their plans (Table 3.1). That is, the owners said they were applying at least one recommended activity (e.g., thinning trees) for at least one managerial objective

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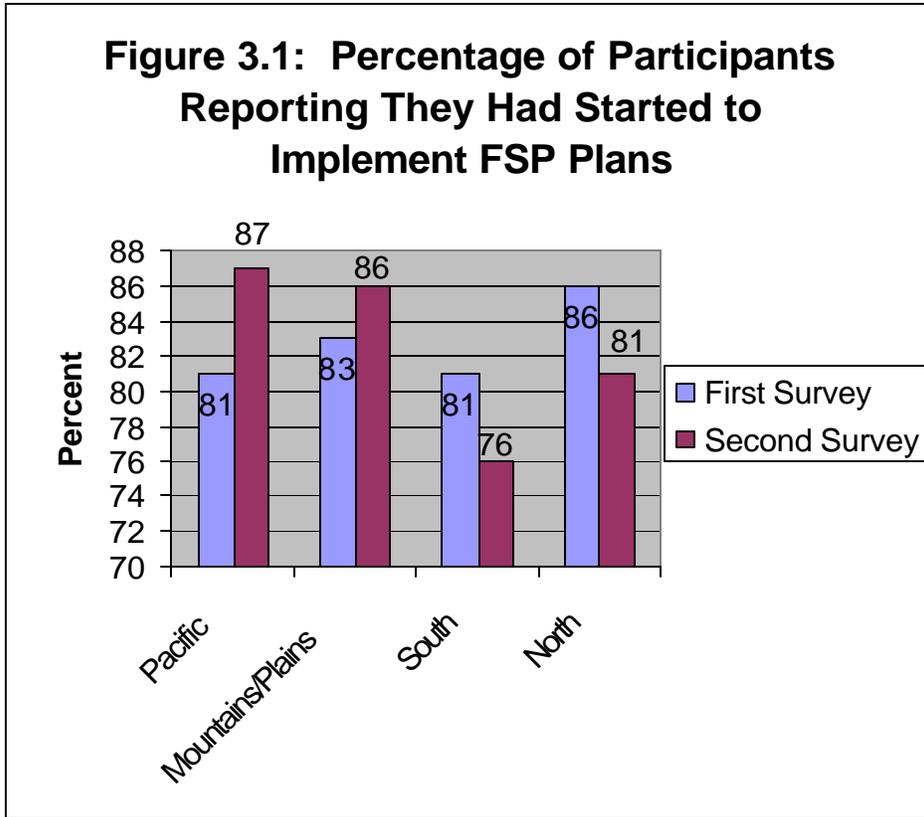
(such as growing or caring for trees). The corresponding value for the weighted national sample is 80%, down 4 points from 84%, the level measured for the first survey's national sample (Table 3.1). This difference is statistically significant (i.e., greater than sampling error alone can explain). It is due entirely to decreased "start" levels in both the Southern States (from 81% in the first study to 76% in the second) and in the North (from 86% to 81%--see Figure 3.1). In the other two regions, the corresponding percentages increased.³³

	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample* 1997-2004 %	Weighted National Sample* 1991-1997 %
1. Started	87	86	76	81	80	84
2. Have not begun to implement but regard self as still in the program	8	8	17	15	15	8
3. Dropped out	5	6	7	4	5	8
Total percentage	100	100	100	100	100	100
Total respondents	324	308	310	339	1,281	1,220

*To arrive at the national-level values, each response was given three weights. (1) The first weight was its region's fraction of the total number of Forest Stewardship participants found in all the lists sent to us by the participating state offices. (2) The second weight adjusted for the size of the final regional sample. We took the average of the four samples, 320.5, and divided it by each region's actual sample. For example, the responses from the Pacific states were weighted by 0.986 (320.5/325) so as to make them equivalent to the responses in regions with a total of 320.5 completions, while the responses from the Southern Region were multiplied by 1.034 (320.5/310) to achieve the same outcome. (3) Then the responses for all four regions were multiplied by 4.0 so as to have a national total of 1,282, rather than 320.5. The number, 1,282, is the actual sum of all surveyed forestland owners.

Although Table 3.1's "start" levels are high, there may be overstatement due to nonresponse. As discussed in Chapter 2, the survey reached 64% of the eligible respondents. How many of the 36% whom we failed to survey might have reported no plan implementation whatsoever? To answer this question, some kind of assumption must be made about their behavior. We chose the conservative assumption that *half* of the

³³ Some of the tables in this and later chapters have entries from the "total surveyed FSP participants," both those classifying themselves as current participants and those reporting that they had dropped out of the program. Other tables are based on the "current FSP participants" because only they provided the information that is the subjects of the tables.



nonrespondents had done *nothing* with their plans. If this were true, the “start” levels would decrease, but not drastically. They would range from 64% in the Southern region to 79% in the Mountains/Plains States.³⁴

A second potential cause of overstating the extent of plan implementation would be measurement error, such as from respondent misstatement. Perhaps many of the surveyed owners fabricated activity to make themselves look good. There are three reasons to doubt that many did. First, we asked each owner who reported plan implementation to specify activities being carried out. Ninety percent gave us two or more different activities. Fabrication becomes less likely when it requires multiple, specific misstatements. Second, we tried to assure non-starters that their status was legitimate. Each question about starting to carry out planned activities was prefaced with an excuse for non-implementation: “For lack of time or other reasons, some owners have not begun carrying out their plan’s recommended activities, while some owners have started. Have you been able to . . .?” A third reason is that responses from the “starters”

34

Percentages of forestland owners who had started to implement their FSP plans if we assume that 50% of non-respondents had not begun.			
Pacific States	Mountains and Plains	Southern States	Northern States
77%	79%	64%	71%

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to other questions were consistent with plan implementation. Seventy-seven percent of them reported that they had requested cost-sharing or follow-up technical assistance for carrying out their plans. Another 16 %--for a total of 93%--said that, although they had not asked for such assistance, they had spent some of their own money to implement their plans.

The Drop-outs

Across the four regions, from 4% to 7% of the surveyed forestland owners reported that they had dropped out of the program (Table 3.1). The national-level estimate is 5%, compared to 8 percent found in our first FSP survey.

The drop-outs identified in the second study totaled 73, and more than half did not permit us to ask questions about why they had dropped out. They refused to be interviewed, even for a short time. Among the 32 owners offering reasons for leaving the program, 19% cited a lack of time to carry out the plan, 31% blamed it on insufficient money to cover implementation expenses (although only 2 of them, or 6% of the total, complained specifically about lack of cost-share dollars), and 44% talked about flaws that they found in the plans, including that their land was not suited to the recommended activities, they disagreed with the choice of trees to harvest, they disliked the required access roads, and the timetable for action was too slow (Table 3.2). Another 28% admitted to a change of objectives. One of these owners said he had joined the FSP because he needed a tax break and found another way to obtain it, two said that their fathers had set up the plan without their buy-in, and one decided to clear the land to use it for pasture.

Table 3.2. Reasons given for having <i>dropped out</i> of the program—from surveyed participants who received new or revised FSP plans, 1997-2004		
Type of Reason	Number of Respondents Giving This Reason	That Number as Percentage of “Dropouts” Giving Reasons %
Not enough time to carry out the plan	6	19
Not enough money	10	31
Unable to find contractor or other labor to do the needed work	1	3
Found flaws in the plan	14	44
Drought or fire made plan unworkable	3	9
Owner lost interest or changed his/her objectives	9	28
Poor health	2	6
Total “dropouts” who gave reasons	32	--

The Non-starters: Explanations Directly from Them

Across the regions we found that 8% to 17% of the surveyed owners had *not* begun to implement their plans but still considered themselves participants in the program (see

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Table 3.1's data line 2). These respondents totaled 153 in number. When we asked them "why-not" questions for each type of managerial objective for which they reported no progress, the most common reason, given by 25 percent of these respondents, was that it was too early in the plan period to begin the recommended activity (Table 3.3). Most of this group of 38 "non-starters"—29 respondents—gave that plausible explanation for

Table 3.3. Reasons given for <i>not having started</i> to carry out any recommended management activities-- from participants who received new or revised FSP plans, 1997-2004.		
Type of Reason	Number of Respondents Giving This Reason	That Number as Percentage of "Dropouts" Giving Reasons %
Too early in the plan period (including 29 cases about trees not mature enough to cut)	38	25
Log prices too low	7	5
Not enough time to carry out the plan; family or other interests take precedence.	35	22
Not enough money: including couldn't afford needed equipment (five cases) and didn't get expected cost-sharing (two cases)	21	14
Lack of expected technical assistance from public forestry agencies	6	4
Unable to find contractor or other labor to do the needed work	3	2
Live too far away from forestland to provide effort or guidance	9	6
Changed objectives for plan or no longer approve of specific recommendations.	18	12
Legal obstacles: Co-owner doesn't agree with plan (3 cases), tenant has year left on lease (1 case), lack of right of way through neighbors' land for logging equipment or other access needs (5 cases)	10	7
Drought, storm, pest infestation, or fire made plan unworkable	4	3
Owner sick or "too old"	12	8
Total "dropouts" who gave reasons	153	--

their failure to have begun harvesting for sale. Very few—just 7% of the total "non-starters"--blamed their inaction on low market prices for logs or other forest products. Few also blamed public forestry agencies for not providing promised cost-share (2 cases) or technical assistance, including advice for harvesting (6 respondents).

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Comprising the second most frequent type of explanation for inaction—from 22% of the non-starters—were reports about lack of time, including competition from higher-priority issues in their lives. A variant of this kind of explanation—from 6%—was that they lived too far from the land to provide needed labor or supervisory inputs.

“Change of mind” reasons came from 12% of the non-starters. They either decided to pursue other objectives with their land (e.g., build houses or maintain the land in pasture); or they found fault with the plan, such as its requirement to cut down trees that the owners valued.

Seven percent cited legal obstacles as reasons for not beginning to implement FSP plans. Five of these ten nonstarters reported difficulty in obtaining access to the forestland subject to their plans; they needed to improve or build roads or bridges on neighbors’ land.

Types of Recommended Management Activities Reported in the Plans

This section of the chapter analyzes the management activities of the “starters.” First we describe the activities reported to be in their plans. Next come their reports as to which types of practices they said they had started *to carry out*. Thirdly, we use statistical analysis to identify likely causes of being a “starter” rather than a “non-starter.” Finally, we discuss the program’s success in encouraging multi-resource management.

As stated earlier in this chapter, the management activities we expected to find in FSP plans fall under six specific objectives and one residual (i.e., “other”) type of objective; and we asked, type by type, if the surveyed owners’ plans included any such activities. If they did, there was the follow-up question: Had the owner “been able to start carrying out any of the recommended activities” of that type?

Table 3.4 shows that in both the first and second national surveys about the FSP, the management objective, “growing trees or caring for their health,” was the one reported most frequently. Among the 1997-2004 program clients, from 78% of the Northern States’ respondents to 95% of the Pacific States’ sample said it was in their plans (Table 3.4). It ranked first also among the 1991-1997 program participants, with a range across the four regions of 82% to 94%. Second-ranking in both surveys was objective of improving/protecting wildlife habitat.

The higher percentages found in Table 3.4 for the first three listed objectives (growing or caring for trees, harvesting, and promoting wildlife habitat) did *not* result from them appearing first, second, and third in the telephone questionnaire. During the actual interviews, we randomized the order of appearance so as to reduce bias. For example, if the same managerial objectives were always discussed early in the interview, their frequencies in Table 3.4 might be inflated because of respondents who needed to demonstrate early that they were “good stewards.” Similarly, randomizing the order should have decreased the distorting effect from surveyed landowners who, realizing that they had said “no” about inclusion of the first several objectives in their plans, started to say “yes” in order to avoid being seen as managerial “zeroes.”

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In the two national surveys the percent of total respondents per region reporting the management objective, “growing or caring for trees” as management objectives, remained largely unchanged. In the sample for the Mountain/Plains States, it stayed at 86 percent (Table 3.4). It increased by a percentage point in the Pacific region. The four percentage-point decreases in both the Southern and Northern states were not statistically significant.

Table 3.4. Among current participants at the times of the two surveys, the percentages who reported these managerial objectives in their stewardship plans: By national survey (first and second), and region						
Management objective	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %	
<i>Grow or care for trees</i> ¹	Second survey	95	86	85	78	81
	First survey	94	86	89	82	85
<i>Harvesting trees for sale</i> ²	Second	54	43	58	69	65
	First	43	23	53	62	55
<i>Improving or preserving land as wildlife habitat</i> ³	Second	81	70	78	67	71
	First	64	73	87	74	77
<i>Improving/ preserving quality of water resources</i> ⁴	Second	33	20	44	23	29
	First	35	35	48	29	36
<i>Improving/protecting recreational opportunities</i> ⁵ (not asked in first survey)	Second	33	19	26	30	28
<i>Agro-forestry activities</i> ⁶	Second	8	25	13	6	9
	First	12	51	11	10	13
<i>Other objectives</i> ⁷ (not asked in first survey) ⁸	Second	17	13	11	7	9
Total respondents :						
Second survey	308	289	288	324	1,214	
First survey	272	245	274	331	1,120	

Texts of questions:

¹ “Does your plan recommend activities having to do with *growing trees or caring for their health*, such as

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planting, thinning, or preventing fires?”

² “Does your plan recommend activities having to do with *harvesting trees for sale*, such as selecting trees to be cut for saw logs, poles, or firewood?”

³ “Does your Stewardship Plan recommend any activities for *improving or preserving your forestland as habitat for wildlife*, such as regarding food, cover, or water available to wildlife?”

³ “Does your plan recommend activities having to do with *harvesting or marketing your trees*, such as which trees to cut or when to cut and sell them?”

⁴ “Does your Stewardship Plan . . . recommend any activities for *improving or preserving the quality of water resources* such as by planting vegetative strips next to ponds or fencing off streams from livestock?”

⁵ “Does your Forest Stewardship Plan recommend any activities for *improving or preserving recreational opportunities on your forestland*—such as by creating hiking trails or preserving scenic tree stands

⁶ “Does your Stewardship Plan recommend any *agro-forestry activities*, such as building windbreaks or blending the growing of trees with cropping or pasturing?”

⁷ “Does your Forest Stewardship Plan recommend any types of forestland management activities that we’ve not already mentioned?”

⁸ First survey asked whether “other activities” had been carried out, not if they were in the plan, and perhaps not implemented.

Among the relatively few significant changes recorded in Table 3.4 are: the 17-point increase in Pacific States’ participants with a *wildlife-habitat objective* in their plans (from 64% to 81%), the 9- and 7-point decreases (respectively) among Northern States’ and Southern region’s respondents with that objective, the 15-point drop in Mountain/Plains States’ participants and the 6-point decrease in the Northern region’s respondents reporting the objective of *improving/preserving the quality of water resources*, and the Mountain/Plains States’ large decrease (26 points) in the relative frequency of having an *agro-forestry objective*

Perhaps the most policy-important changes are the statistically significantly higher percentages of surveyed owners with *harvesting-for-sale* activities in their plans: 11 percentage points greater among the 1997-2001 Pacific States’ participants, compared to their 1991-1997 counterparts; the 20-point improvement for the Mountain/Plains States; and the 7-point increase for the Northern States. The change at the national level was ten points—from 55% to 65% (Table 3.4). The Forest Stewardship Assistance Act introduced in March 1990 had as one of its stated objectives to “expand the assistance provided to private landowners in the production of timber.”³⁵ It looks as though between the two periods under study, 1991-1997 and 1997 to 2004, proportionally more

³⁵ United States. Cong. House of Representatives. Committee on Agriculture. *Miscellaneous Forestry. Hearing*, 14, March 1990. 101st Congress, 2nd Session. Opening Statement of Senator Harold Volkmer, p. 1 (cited in Moorhouse, 2004, p. 3).

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of the program's participants receiving new or revised plans included a production objective in them.

Progress in Implementing Activities to Achieve Managerial Objectives

Table 3.5 indicates, per type of managerial objective, the percentages of participants who reported that they had started to implement their plans. For each objective, they were

Table 3.5. Percentages of current FSP participants who reported that they had begun to carry out activities recommended in their plans: By management objective,* national survey (first and second), and region					
Management Objectives	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
<i>Grow or care for trees:</i> ¹	Second survey	84	79	63	66
	First survey	87	78	77	74
<i>Harvesting trees for sale</i> ²	Second	31	29	30	37
	First	27	17	30	34
<i>Improving or preserving land as wildlife habitat</i> ³	Second	70	60	62	58
	First	50	58	73	63
<i>Improving/ preserving quality of water resources</i> ⁴	Second	27	16	29	20
	First	27	28	38	28
<i>Improving/protecting recreational opportunities</i> ⁵ (not asked in first survey)	Second	27	16	20	23
	First	27	16	20	23
<i>Agro-forestry activities</i> ⁶	Second	5	20	6	6
	First	10	42	7	10
<i>Other objectives</i> ⁷	Second	11	10	2	3
	First	3	2	3	2
Total respondents :					
Second survey		308	289	288	324
First survey		272	245	274	331

*Texts of questions:

¹ "Does your plan recommend activities having to do with *growing trees or caring for their health*, such as

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planting, thinning, or preventing fires?”

² “Does your plan recommend activities having to do with *harvesting trees for sale*, such as selecting trees to be cut for saw logs, poles, or firewood?”

³ “Does your Stewardship Plan recommend any activities for *improving or preserving your forestland as habitat for wildlife*, such as regarding food, cover, or water available to wildlife?”

³ “Does your plan recommend activities having to do with *harvesting or marketing your trees*, such as which trees to cut or when to cut and sell them?”

⁴ “Does your Stewardship Plan . . . recommend any activities for *improving or preserving the quality of water resources* such as by planting vegetative strips next to ponds or fencing off streams from livestock?”

⁵ “Does your Forest Stewardship Plan recommend any activities for *improving or preserving recreational opportunities on your forestland*—such as by creating hiking trails or preserving scenic tree stands

⁶ “Does your Stewardship Plan recommend any *agro-forestry activities*, such as building windbreaks or blending the growing of trees with cropping or pasturing?”

⁷ “Does your Forest Stewardship Plan recommend any types of forestland management activities that we’ve not already mentioned?”

asked if they had begun to carry out “recommended activities for... [the objective, like harvesting for sale].” Those who said they had begun were asked, in a follow-up question, to list the activities for each type of objective. The companion Table 3.6 shows the frequently mentioned activities per objective. For example, thinning was often cited as an activity to promote timber stand health.

Across all four regions and in both time periods (1991-1997 and 1997-2004), the most frequently mentioned management objective towards which activities had been *carried out* was the rather broad type, “growing trees or caring for their health.” It was reported in the second survey by 63% of the Southern States’ participants in the FSP to 84% in the Pacific States (Table 3.5). The range was somewhat higher in the earlier survey—from 70% to 87% across the regional samples. Statistically significant are the 14-percentage-point decrease for the Southern sample (from 77% in the first sample to 63% in the second), as well as the 8 percentage-point drop in the weighted national samples (from 74% to 66%).

Also greater than sampling error can explain are: the 12-percentage-point *increase* in the portion of Mountains/Plains respondents who harvested trees for sale or at least prepared for such logging (from 17% to 29%), the 20-percentage-point increase for the Pacific States’ in surveyed owners carrying out wildlife-habitat practices (from 50% to 70%), the 11-point decrease in the percentage of Southern States’ respondents implementing the same objective, the 12-point decline between the first and second studies in the percentage of surveyed active clients in the Mountain/Plains region doing water-quality work, the 11-point decrease for the same management objective in the Southern sample, and the 22-point drop in Mountain/Plains respondents applying agro-forestry practices.

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Between the two national surveys, the percentage of respondents who harvested trees or prepared for logging climbed somewhat—from 34% to 37% (Table 3.5). While not a statistically significant increase, it may represent an achievement, since (a) the level is rather high—37%--and there were significant *decreases* for four of the other types of management objectives.³⁶ As discussed earlier, previous studies had found a tendency among private forest land owners to ignore or minimize timber production in favor of other objectives (Sampson and DeCoster 1997, Theo and Bergstrom 1996).

Table 3.6. Frequently reported types of recommended activities being implemented, by major management objective: Percent of current FSP participants (who received their plans, 1997-2004) reporting each type: By region				
	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %
<i>Growing trees or caring for their health</i>				
Planting, re-seeding, and other efforts to grow new trees	50	35	30	23
Thinning, cutting out dead trees, and other timber stand improvement through removing trees	60	51	35	39
Removing brush, building fire breaks, and other activities to protect against fires	29	19	18	4
Removing vines, combating beetles, and fighting other tree competitors or predators	13	16	10	15
<i>Harvesting for sale</i>				
Preparing for harvesting such as marking trees for cutting, clearing area, and getting permits to log	4	1	5	5
Good harvesting practices such as cutting only the mature, dead, storm-damaged, or diseased trees; cull out the non-indigenous species	17	10	16	16
Good post-harvest practices, such as cleaning up harvest debris and re-seeding the area	1	1	2	1
<i>Improving/preserving wildlife habitat</i>				
Providing nesting areas for birds and ducks	14	11	5	6
Providing woody cover for wildlife, such as by leaving snags or slash piles, planting trees for wildlife cover (including wildlife corridors) and leaving fence rows	39	32	33	30
Creating open areas for wildlife, such as by thinning, mowing, and promoting grass cover	16	21	20	17
Providing water for wildlife, such as by digging ponds and water holes, preserving wetlands, and flooding fields for waterfowl	15	10	8	9
Providing food for wildlife, such as by planting grasses that they eat, trees that bear edible berries, and farm parcels that are left un-harvested	13	12	30	21

³⁶ Growing or caring for trees, improving/preserving wildlife habitat, and improving/preserving the quality of water resources.

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<i>Improving/preserving water quality</i>	Pacific	Mtns./Plains	South	North
Prevent pollution from storm water, such as by planting vegetative buffers, building berms, and keeping logging a distance from waterways	23	11	25	15
Prevent pollution from livestock such as by fencing them out of streams or not pasturing them near waterways	4	4	4	1
Create, enlarge, or protect ponds or streams, such as by building a dam, stocking streams, and cleaning out trees or brush	6	2	7	5
<i>Improving/protecting recreational opportunities</i>				
Improving mobility through the forested land, such as by building and maintaining roads and trails for hiking, skiing, and horseback riding.	19	9	14	21
Protecting or enhancing scenery, such as by preserving unique or old tree stands, thinning to see wildlife better, and planting wildlife food patches	13	7	8	4
Managing land for hunting	1	1	1	2
<i>Agro-forestry activities</i>				
Building windbreaks that combat soil erosion	1	13	1	0
Pasturing livestock in wooded areas	3	4	2	3
Plant crops among trees or planting trees that yield crops	1	1	2	2
Total respondents who were still in the program	308	289	288	324

In both national surveys, the Pacific States (with 87% in the first study and 84% in the second) led in the percentage of FSP participants reporting progress in achieving the objective, “growing trees or caring for their health” (Table 3.5). The Northern Region ranked first in the frequency of activities for harvesting trees (40% in both surveys). Regarding practices for wildlife habitat, the South was first in the first survey, with 73%, while the Pacific region led in the second with 70%. The South ranked first on water quality activities in both surveys. There was no clear leader for the objective, improving/protecting recreational opportunities on forestland. In contrast, the Mountain/Plains states were substantially ahead in both surveys for implementation of agro-forestry practices.

Differences in the Reported Implementation of Forest Stewardship Plans

Table 3.5’s plan-implementation percentages depend in large part on whether a particular managerial objective was contained in the FSP plans. For example, compared to other regions proportionally more surveyed owners from the Southern States (29%--Table 3.5) reported having begun to carry out practices for improving water quality, probably in part because relatively more respondents in that region (44%--Table 3.4) included that type of management objective in their plans compared to the other regions.. And the higher level of inclusion seems at least partially due to more of the Southern States’ clients having bodies of water on or adjacent to their FSP land. The second national survey asked, “Does the forest land covered by your Stewardship Plan have any ponds, lakes, rivers, creeks, or other bodies of water on it or right next to it?” Eighty-five percent of the

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surveyed Southern FSP participants responded “yes,” compared to 54% to 79% in the other three regions.³⁷

Table 3.7 presents the “yes” percentages broken down by whether the surveyed owners also had included a water-quality objective in their plans. In three of the regional samples (excepting the North’s) and in the weighted national sample, the presence of a body of water on or next to the FSP land made statistically and practically significant differences in whether a water-quality objective was in the plan. The most dramatic difference was for the South: 30 percentage-points. While 49% of that region’s 245 respondents with bodies of water on or next to their forestland reported a water-quality objective, only 19% of their 37 counterparts without water so close had plans with that management objective. At the national level, the disparity was 36% among 870 respondents with water bodies on or adjacent, compared to 13% among the 320 without.

Table 3.7 Percentages of current participants with new or revised plans, 1997-2004, who reported that their plans included the objective of “improving or preserving the quality of water resources,” related to whether they also reported water bodies on or next to their FSP land: By region (with the numbers of respondents per region that did or did not have water bodies that close indicated in parentheses)					
Presence of Ponds, Lakes, Rivers, Creeks, or Other Bodies of Water on or Right Next to Respondents’ FSP Land	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
Yes	41 (216)	30 (154)	49 (245)	25 (255)	36 (870)
No or not sure	17 (90)	8 (133)	19 (37)	17 (60)	13 (320)
Statistically significant difference in a chi-square test	Yes	Yes	Yes	No	Yes

Another difference determined in part by geography is the frequency of respondents reporting agro-forestry activities in their plans and being carried out. For many years farmers and ranchers in the Plains States have used forested windbreaks to reduce soil erosion from wind.³⁸ In both tables 3.4 and 3.5 the Mountain/Plains States have the

³⁷

Among FSP participants who received new or revised plans, 1997-2004, the percentages who reported having a stream, creek, lake, or other body of water on or adjacent to their FSP land:			
Pacific States	Mountains and Plains	Southern States	Northern States
71%	54%	85%	79%

³⁸ John Ball, Dave Erickson, and Brian L. Garbisch, no date. *The New Prairie Forests* (Habitats: South Dakota Forests): <http://www.northern.edu/natsource/HABITATS/Windbr1.htm> [accessed 9-25-05].

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highest percentages for that type of management objective—the blending of agriculture and forestry.

Start-to-implement Percentages by Management Objective

Table 3.8 presents the “start-to-implement” percentages for each type of management objective. These measures derive from dividing (a) the number of owners reporting that they had begun to carry out an objective’s recommended activities by (b) the number who included that type of objective in their plans. In this table’s 20 intra-regional comparisons,³⁹ only a quarter of them show increases between the first and second survey, the largest being the 8-percentage-point rise in the Pacific States’ measure of

Table 3.8. Percentages of owners with a particular management objective in their plans who reported having started to carry out activities recommended in the plan to achieve that objective: Comparisons of current program participants with new or revised plans, 1997-2004 (in bold type), to participants surveyed in the first national survey (1991-1997): By region					
Management Objective	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Samples %
Growing or caring for trees					
Second survey	89	91	73	83	81
First survey	92	90	87	85	86
Harvesting trees for sale					
Second survey	56	78	50	58	56
First survey	62	74	56	64	62
Improving/preserving wildlife habitat					
Second survey	86	86	78	82	81
First survey	78	79	84	82	82
Improving/preserving water quality					
Second survey	79	79	64	74	70
First survey	76	79	80	74	77
Improving/protecting recreational opportunities (asked only in second survey)	81	82	78	81	81
Promoting agro-forestry					
Second survey	60	74	47	70	62
First survey	81	82	66	82	78
Other	55	76	19	38	35
Comparison not possible for first survey					

³⁹ No comparisons were possible for the recreational opportunities objective and for “other” objectives.

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owners with wildlife habitat improvement/preservation in their plans who had started to carry out recommended activities. This change was statistically significant, as was the 7-point increase in starting to apply practices for the same objective in the Mountain/Plains region. Most of the remaining three-quarters of the comparisons involve decreases, only three of which were greater than sampling error alone can explain: the 14-point reduction in the Southern States' percentages for carrying out activities to grow or care for trees, the 16-point decrease in the same region's percentages for the water-quality objective, and the 19-point decrease in the Pacific States for applying activities to promoting agroforestry (Table 3.8).

As shown in Table 3.4, compared to the first national FSP survey, the second study found that the plans written 1997-2004 tended to have higher percentages of owners whose plans included the important objective of harvesting for sale (Table 3.4). By comparison, between the two surveys the "start-to-implement" percentages for respondents with this objective declined in three of the four regions (except for the Mountain/Plains States—Table 3.8).

We initially hypothesized that this difference was due in part to relatively more of the second study's subjects receiving their plans later in the second 7-year study period (1997-2004) compared to the subjects of the first study's time frame (1991-1997). However, the tool for causal analysis we used, logistic regression, did not find the variable, years elapsed since receipt of plan, to be a statistically significant predictor of whether an owner with the objective of harvesting for sale in his/her plans had started to apply related practices.

Conditions Shaping Landowners' Decisions to Begin Implementing Their Forest Stewardship Plans

In this part of the chapter, we use data analysis to identify variables that appear to have shaped FSP participants' decisions as to whether to start implementing their plans. Most did begin, but—as discussed earlier—15% did not (Table 3.1). Among the traits of the forestland owners, their stewardship plans, and their forest holdings that we hypothesized to be causes of those decisions were:

- *Time elapsed since received the stewardship plan.* It seemed likely that, the more years elapsed since the plan was written, the greater the chance that owners had marshaled the resources needed to begin implementing their plan. We found this relationship in the first national FSP survey (Esseks and Moulton, 2000). Moreover, as shown in Table 3.9, numerous respondents gave "lack-of-time" reasons for not having started to apply activities recommended in their plans. Included in this category were the many cases of owners reporting that the scheduled start time for application was a year or more in the future?
- *Length of time during which the surveyed person owned that land.* It seemed likely also that, the longer someone owns the land, the more knowledge he/she has about its problems and appreciation of its potentialities, which in turn would motivate the owner to develop a plan he/she could implement. However, perhaps equally plausible is the explanation, the more years of ownership, the less urgent the need to start implementing the FSP plans because of the work already done in

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past years.

- *Frequency of visiting the land.* In explaining their failure to implement any part of their stewardship plan, several “non-starters” complained that they lived too far away to visit the subject land often and either apply recommended practices, themselves, or find someone else to do the work (Table 3.3).
- *Number of acres subject to the plan.* It seemed possible that, the more acres owned, the higher the owner’s financial capacity to implement stewardship plan recommendations.
- *The frequency with which the owners consulted their FSP plans* in the past year may indicate the perceived usefulness of the plan to the owner and, therefore, correlate with plan implementation.
- *Proportion of the surveyed person’s total owned forestland acres covered by the plan.* Another plausible causal condition to us was that, the more of the owner’s total forest acres covered by the stewardship plan, the more seriously the owner regarded the plan and, perhaps, the more likely he/she would start to use it.
- *Receipt of follow-up technical assistance and/or cost-share money to implement the plan.* Analysis of the first national survey’s data found that receipt of either form of assistance was associated with a higher likelihood of starting to carry out recommended activities (Esseks and Moulton, 2000). However, very few of the non-starters for individual management objectives cited lack of either type of assistance as reasons for not beginning to apply that segment of their plans (Table 3.9).
- *The owner’s pre-FSP receipt of professionally written management plans.* Prior development of such plans for the owner suggests an appreciation of and acquaintance with professional plans that would increase the probability of him/her implementing the FSP plan’s recommendations.
- *Whether the surveyed owners had received a Forest Stewardship plan prior to a new or revised one obtained during the period 1997-2004.* Twenty percent of the weighted national sample reported a previous FSP plan for some part of their land. Perhaps, they would be more likely to start to implement the new or revised plan because of that past experience.
- *Owner’s occupation.* We speculated that retired owners might have more time to work on plan implementation. It also seemed likely that owners who were farmers would be more likely to use the plan because their occupation made them active managers of land.
- *Age of owner.* Owners in the typically higher-earning years—40s to 60s--might be more likely to implement stewardship plans because of their greater financial resources.
- *Gender* of the principal decision-maker for the forestland covered by the plan. We are interested in whether gender makes a difference in how the land is managed.
- *Formal education.* Better educated owners might be intellectually better equipped to agree to stewardship plans that met their needs and that they would be able to carry out.

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Table 3.9. Frequently reported types of explanations for not yet having started to carry out activities recommended in their plans (received 1997-2004): Percentage of participants giving each type, by management objective*

Type of Explanation	Growing or caring for trees %	Harvesting for sale %	Improving wildlife habitat %	Improving water quality %	Improving recreational opportunities %
Plan scheduled start of activity is later.	30	52	25	13	8
Lack of time: work or family matters takes precedence	23	10	50	11	24
Economic deterrents: lack of money, equipment, adequate prices for timber	22	17	23	15	27
Lack of access to land through other owners' properties	16	4	7	3	4
Lack of interest in, understanding of, or agreement with, plan's recommendations	13	7	11	4	16
Natural obstacles: drought, forest fire, infestations, disease	8	4	6	2	0
(Specifically mentioned that needed cost share or some kind of grant to start carrying out recommended activities)	1	2	3	4	1
(Specifically mentioned that needed technical assistance to carry out activities)	1	3	3	>1	0
Total respondents (across all regions) who had not started activities of this type	152	291	139	98	61

* Percentages do not sum to 100% because not all types of reasons are presented.

The particular analytical tool we employ for identifying such associations and measuring their practical and statistical significance is logistic regression (Hosmer and Lemeshow, 1989; Menard, 2002). Here it is used to examine relationships between (a) such potential causes of forest management behavior as receipt of follow-up technical assistance or cost sharing and (b) the behaviors we are trying to understand:

- whether the owners have started to implement their forest stewardship plan,
- if they are applying management practices to pursue at least two separate resource objectives,
- whether they are actively pursuing three or more objectives,
- if they are using practices that are new to them as forestland owners, and
- if they spent at least one thousand unreimbursed dollars on plan implementation...⁴⁰

⁴⁰ “Logistic regression is useful for situations in which you want to be able to predict the presence or absence of a characteristic or outcome [e.g., the owner having started to implement his/her Forest Stewardship Plan] based on values of a set of predictor variables [e.g., time elapsed since plan, educational level of the owner, whether the owner lives or frequently visits the forest land covered by the

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A crucial advantage of regression analyses is that they can estimate the *independent* effect of a potential causal condition like owner's level of education, that is, its effect when other possibly competing conditions like receipt of cost share money or years of formal education are taken into account. For example, it would be misleading (and embarrassing) to claim that follow-up technical assistance made a significant difference in the likelihood of starting to implement stewardship plans when, if we used regression analysis, it was found that technical help's effect disappears. In that event, owners' educational level might be a variable that, though correlated with interest in technical help, proved to be the real causal influence. While received, the technical assistance might have proven of little value. The spurious relationship would then be similar to smart children doing well in certain schools not because of high-quality instruction there, but because the kids are very capable from the start.

Findings of the Cause-and-Effect Analysis

Time elapsed since receipt of plan does not explain variation in starting to implement the plan, not even if we limit the analysis to surveyed owners who had harvesting for sale as their only management objective. This special focus on harvesting seemed warranted because more than half of the non-starters with that management objective told us in the interview that their trees were not yet mature enough for logging (Table 3.9).

Length of ownership time, number of acres subject to the plan, and proportion of total owned forest acres under the plan also did not prove to be statistically significant predictors of a positive decision to start implementing the plan. Neither did *the frequency with which the owner consulted his/her stewardship plans, owner's occupation, and his/her age*.

However, *frequency of visiting* the land did. This variable was highly significant (i.e., a very small chance that the relationship was due to sampling error). And as Table 3.10 indicates, with an additional ten days at the property, it is estimated that the chances of deciding to start carrying out at least one plan-recommended activity were *1.8 times higher* than if the owner had not visited those extra days (other causal variables in the calculations held constant). We found the same kind of relationship in regression analyses for the Pacific States (where chances increased by a factor of 2.0 for ten more days), the Mountain/Plains States (a factor of 1.9), and the Northern sample (1.8).

plan]” (“Logistic Regression, “ in “Index” of *SPSS 12.0 for Windows*.)

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Table 3.10. Traits of the owners, their plans, and their forestland that were associated with the decision to start implementing Forest Stewardship Plans, among participants who received new or revised plans, 1997-2004.		
Trait*	If the trait's value changes by this much:	then the estimated chances of starting to carry out the activities change by this much:
Number of days spent visiting (or residing) on the forestland subject to the stewardship plan	An additional ten days on the property	1.8 times higher chance
Receipt of follow-up technical assistance (requested after the plan was in the owners' hands)	Yes, received such assistance versus, no, did not	3.0 times higher
Receipt of cost-share assistance for implementing the stewardship plan	Yes, received such assistance versus, no, did not	1.8 times higher
Possessed a professionally written management plan before obtained a Forest Stewardship Plan	Yes, had such a prior plan versus, no, did not	2.7 times higher
Number of years of formal education	An additional year of education	1.1 times higher
Number of acres covered by the plan	An additional 100 acres in the plan	1.01 times higher
Number of separate management objectives the owner is pursuing via the stewardship plan.	An additional objective in the plan	2.5 times higher
Measure of how well these 7 variables together explain the decision to start implementing activities for at least 1 objectives**		..351
Number of cases on which analysis was based		1,114

*Except for the acres-in-the-plan variable, all other variables were estimated to have statistically significant associations (at the .02 level or better) with the decision to start implementing. The estimated increase per variable in the chances of owners starting to implement their plans assumes that the other causal variables in the analysis are held constant.

** This measure is the Nagelkerke R square. For this set of variables to explain all variation in the decision, the Nagelkerke R square would have to be 1.00 (Menard, 2000, p.25).

Table 3.11 shows the effect of increasing the number of days on the property in a simpler form; the table (a “cross-tabulation”) relates the values of only two variables—(1) days living on or visiting the property to (2) whether the owner started to implement his/her stewardship plan. For example, in the Pacific States’ sample, only half of the few respondents who reported no visit in the past year also said that some plan implementation had begun. Among the owners who reported visiting one to six days, the percentage of starters increases to 71%. Then among the group visiting from a week to two weeks, the measure is 81% and so on.

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Table 3.11. Among current FSP participants who received plans, 1997-2004, the percentages who started to implement their stewardship plans: By how many days they visited or lived on the subject property and by region*					
Days at the FSP property	Pacific States %	Mountain & Plains States %	Southern States %	Northern States %	Weighted National Sample 1997-2004 %
zero	50	100	75	50	60
1 to 6	71	63	68	65	66
7 to 14	81	82	78	80	80
15 to 29	94	95	87	91	90
At least a month each year	93	94	82	88	87

***Texts of questions:** “Do you normally live at least one month of the year on property that includes forestland covered by your Forest Stewardship plan written since 1997?” And, if not, “About how many days in the last year did you visit some of the property covered by that Forest Stewardship Plan?”

Another statistically and practically significant predictor of a positive decision to start carrying out one’s stewardship plan is receipt of *follow-up technical assistance*. The survey included this question: “After receiving their Stewardship Plans, some owners request a forester, wildlife biologist, or other professional in forest management to visit their land to give follow-up technical advice. Did you receive such a visit and follow-up advice for your plan written since 1997?” Those surveyed owners who answered “yes,” are estimated to have been 3.0 times more likely to have started to implement their plans than those who responded, “no” or “don’t know,” holding constant the other six variables in the analysis (i.e., those listed in Table 3.10). In other words, where the assistance was available, requested, and received, it may have either provided truly necessary help or at the least encouraged owners to do what they were already thinking of doing —to start implementing their stewardship plans.

This last comment raises a question of causal sequence: Would the owners receiving follow-up technical assistance have started to implement their plans anyway? Maybe they had made up their minds to carry out recommended activities, but decided to ease their way with whatever help they could find. In Chapter 5 we discuss other interview responses indicating that most of the recipients of this type of help (60% of them in the weighted national sample) told us that they would not “have done as much without the follow-up [technical] assistance” (Table 5.4).

Table 3.12 shows the relationship between follow-up technical assistance and plan implementation in a cross-tabulation. The table compares the surveyed landowners who did and did not receive that type of technical assistance by whether they had started to apply their stewardship plans (by region). In three of the regions (excepting the Pacific States), there were statistically significant differences in the percentages. For example, while 85% of the surveyed non-recipients in the Mountains/Plains states had started, proportionally more of the recipients—97%--had begun. In the Southern region’s sample the corresponding differences are 71% versus 92%, and a difference of 14 percentage points was found for the Northern States (i.e., 78% of the non-recipients compared to 92% among those who did report the follow-up assistance).

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Separate logistic regression analyses by region found an independent effect for follow-up technical assistance in the same three regions, even after taking into account other potentially competing causes like cost-share assistance and owner's years of education. Receiving technical assistance is estimated to have increased the chances of a positive decision to start implementing stewardship plans by 4.1 times in the Mountain/Plains States' sample, 3.3 times in the Southern sample, and by a factor of 2.5 in the North.

Regression analysis found that *follow-up cost-share assistance* also increased the percentage of FSP participants who had begun to carry out recommended management practices: in the Pacific (by a factor of 2.7) and Southern states (by 3.0 times), as well as in the weighted national sample. Table 3.12 shows the same relationships in a cross-tabulation.

Table 3.12. Among current FSP participants who received plans, 1997-2004, the percentages who started to implement their stewardship plans: By whether they had received follow-up technical or cost-share assistance and by region*					
Type of Assistance	Pacific States %	Mountain & Plains States %	Southern States %	Northern States %	Weighted national sample 1997-2004 %
Follow-up technical assistance					
Among those who received this assistance	93 (182)	97 (178)	92 (153)	92 (172)	92 (651)
Among those who did not receive	90 (124)	85 (110)	71 (129)	78 (149)	77 (548)
Follow-up cost-share money					
Among those who received this assistance	95 (162)	93 (119)	93 (87)	90 (83)	92 (342)
Among those who did not receive	88 (143)	91 (169)	77 (195)	84 (237)	82 (855)

*The numerical base for each percentage is indicated in parentheses. **Bold type** highlights the pairs of percentages whose members are statistically significantly different from one another.

We should add that in the regression analyses of the findings for the first national FSP survey, four of the variables that were statistically significant predictors of starting to implement plans in that study were also found in the analysis discussed just above: receipt of follow-up technical assistance, cost-share assistance, possession of a professionally written management plan prior to participation in the FSP, and also whether the surveyed owner lived on the land subject to the stewardship plan (Esseks and Moulton, 2000, the Appendix). Being found in both analyses suggests that these variables are truly important shapers of FSP participants' behaviors.

Table 3.13's data points to a possible constraint on plan implementation. Except in the Pacific States' sample, proportionally fewer in the 1997-2004 group reported *follow-up technical assistance*, compared to levels found in the first national FSP survey. The percentage-point differences between the two surveys are not statistically significant except in the Northern Region where the spread is an impressive minus 13 points.

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Table 3.13. Among current FSP participants who received plans in the two periods, 1997-2004 and 1991-1997, the percentages who reported follow-up technical assistance and cost-share funds: By region*					
Type of Assistance	Pacific States %	Mountain & Plains States %	Southern States %	Northern States %	Weighted National Sample %
Follow-up technical assistance	Second survey	59	62	53	53
	First survey	55	67	56	66
Follow-up cost-share money	Second Survey	53	41	30	26
	First survey	61	65	52	56
Total respondents classifying selves as active participants in the FSP	Second Survey	308	289	288	324
	First Survey	272	245	274	331

* **Bold type** highlights the pairs of percentages whose members are statistically significantly different from one another.

The percentage-point differences for receipt of *cost-share assistance* between the two national surveys are much more pronounced. Each of the four regions recorded statistically significant decreases—from 61% to 53% in the Pacific States’ sample, a 24-point decrease for the Mountain/Plains States, 22 point for the Southern region, and 30 points in the North (a drop from 56% to 26%—Table 3.13). Among other possible causes are the reductions in federal money for forestry cost-share grants, which will be discussed in Chapter 5.

Other Variables Affecting Forestland Owners’ Decisions to Implement Their Stewardship Plans

Three other variables among our candidate causal conditions made significant contributions to the likelihood of FSP participants starting to implement their plans (Table 3.10). In the weighted national sample (though not in any of the regression analyses of the regional samples), possession of a *professionally written management plan prior to taking part in the FSP* was associated with a higher probability of having started to apply recommended practices--by a factor of 2.7

The *years of formal education* appear also to increase the likelihood of starting to implement—by an estimated factor of 1.1 per year in the national sample and 1.2 for the Southern States’ sample. Not unexpectedly, the *number of separate management objectives in the plan* (e.g., growing or caring for trees, harvesting for sale, preserving/improving wildlife habitat) is estimated to have a strong impact (with the estimated likelihood of starting to implement increasing 2.5 times per separate objective—Table 3.10). Perhaps the more purposes, the more likely owners will find at least one that appeals greatly to them and/or for which they have enough resources—time, money, help from family members—to start to apply recommended activities. Also,

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perhaps the more objectives that owners agree to put into their plans, perhaps the greater their underlying enthusiasm for managing their forestland land effectively.

Progress towards Managing Forestland with a Multi-Objective Approach

Across the four regions, majorities of the surveyed owners—from 59% in the Southern States to 74% in the Pacific region—reported that they had begun to implement recommended activities for at least *two separate* kinds of management objectives such as improving tree stands *and* protecting wildlife (Table 3.14). Thirty-eight percent to 49% reported progress in achieving three different kinds of objectives. As discussed earlier, one of the Forest Stewardship Program’s major goals was to encourage multi-objective management of forestland. Ideally, the plan-development process enables owners to identify their several objectives and then to choose management practices that are complementary rather than conflicting. For example, an owner interested in improving both long-term income from harvesting and the quality of habitat for certain kinds of wildlife might agree to thin and harvest trees in ways that achieved both objectives.

When comparing the percentages for the second national FSP survey to those for the first, we find mixed results (see Table 3.14 and figures 3.2 and 3.3). On the one hand, the Pacific States recorded statistically significant *increases* for both the proportions of owners with at least two management practices being actively pursued and the proportions with three or more. Also significant were the Southern region’s 9-point *decrease* in the percent with at least two active objectives and the 7-point *increase* in the Northern sample’s percent with at least three, as well as the four-point improvement in the percent of owners at the national level with activities applied for three or more objectives (from 35% to 39%). On the other hand, at the national level, there was no change between the two surveys in the percentages reporting activity directed towards at least two objectives (Table 3.14).

Table 3 14. Percentages of all surveyed owners with new or revised plans, 1997-2004, who reported that they had begun to carry out activities recommended in their plans for at least two to four separate management objectives, compared to findings for participants surveyed in the first national survey (1991-1997): By region						
Had begun to carry out at least one activity for:	Pacific State %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %	
At least two objectives	Second Survey	74	67	59	63	62
	First Survey	55	64	68	60	62
At least three objectives	Second	49	42	38	39	39
	First Survey	31	38	42	32	35
Total respondents	Second survey	324	308	310	339	1,281
	First survey	305	275	305	353	1,220

*See the definitions of the separate managerial objectives listed for Table 3.4. **Bold type** highlights the pairs of percentages whose members are statistically significantly different from one another.

Figure 3.2. Program Outcome: % of Total Surveyed Owners Who Had Started to Implement Activities for at Least Two Separate Management Objectives

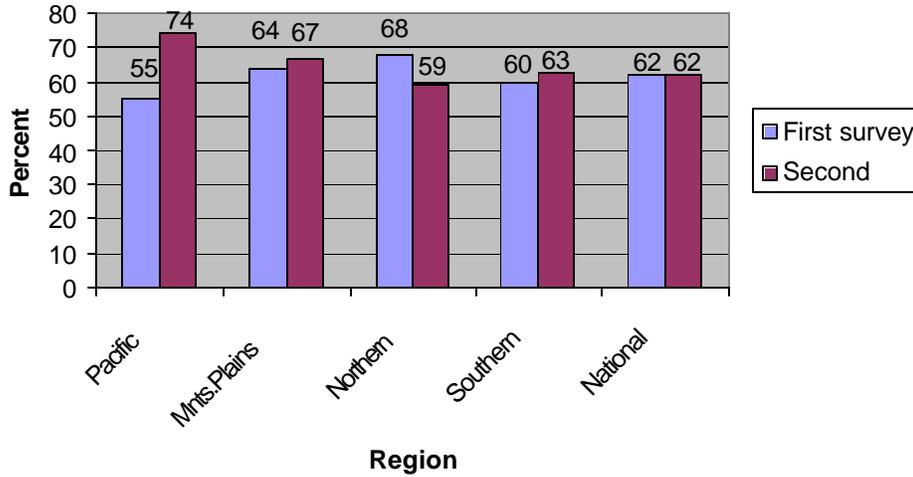
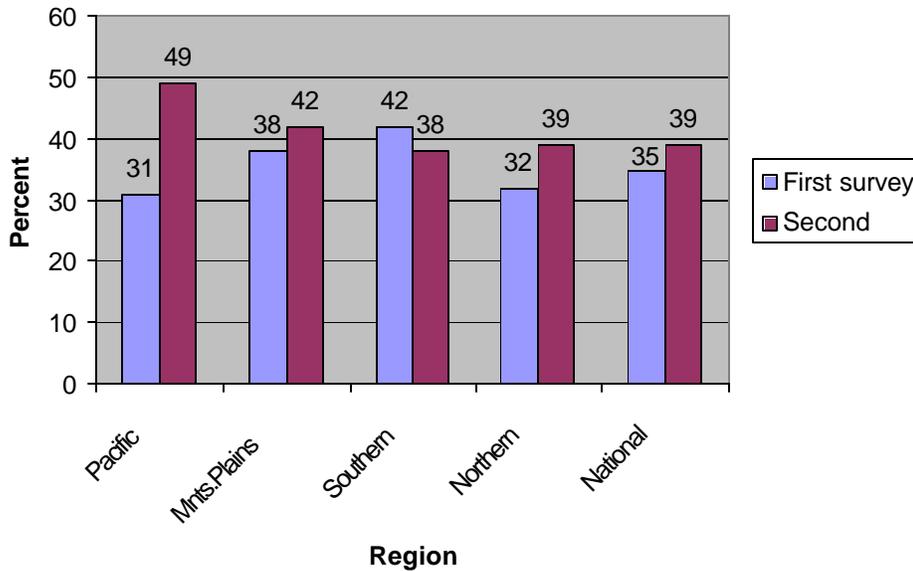


Figure 3.3. Program Outcome: Percent of Total Surveyed Owners Who Had Started Carrying Out Activities for at Least Three Separate Management Objectives



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Given the importance of the multi-resource purpose of the Forest Stewardship Program, we should adjust Table 3.14's percentages for non-response error. As discussed in Chapter 2 and earlier in this one, we make very conservative assumptions about how the non-respondents would have answered if we had somehow surveyed them. Here, if we assume that only a third of them would have reported two or more objectives, the percentages drop, but remain above 50% for three of the regions: Pacific States, 63%; Mountain/Plains, 60%; Southern States, 47%; and Northern States, 55%.

Table 3.15's more detailed analysis is limited to the current participants in the FSP as of the time of the survey. It includes the average numbers of separate management objectives being pursued by the application of plan-recommended activities. These means varied within the narrow range of 2.03 to 2.27 in the first national survey and 2.11 to 2.55 in the second.

Table 3.15. Percentages of current FSP participants with new or revised plans, 1997-2004, who reported that they had begun to carry out activities recommended in their plans for <i>at least two to four separate</i> management objectives, compared to findings for participants surveyed in the first national survey (1991-1997: By region*					
Had begun to carry out at least one activity for:	Pacific State %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
At least two objectives					
Second Survey	78	71	64	66	66
First Survey	61	71	75	64	68
At least three objectives					
Second	51	44	41	40	41
First Survey	35	42	47	34	39
At least four objectives					
Second	23	16	18	17	17
First Survey	14	15	13	11	12
Average number					
Second	2.55	2.30	2.11	2.11	2.13
First survey	2.03	2.23	2.27	2.04	2.13
Total respondents					
Second	308	289	288	324	1,214
First survey	272	245	274	331	1,120

*See the definitions of the separate managerial objectives listed for Table 3.4.

Most Common Combinations of Management Objectives Being Actively Pursued

Table 3.16 presents per region the three most common two-objective combinations of management activities that individual surveyed owners were carrying out. In *all* regions, the most frequent combination consisted of (1) some recommended activity or activities in the category, "growing trees or caring for their health," plus (2) some activities with the objective of "improving or preserving your forestland as habitat for wildlife." Across the four regions, from 45% to 64% of the current FSP participants reported implementing

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one or more activities in both of these categories. The combination of growing/caring for trees and harvesting for sale ranked second in the Mountains/Plains States and in the Northern region. Harvesting for sale plus improving wildlife was second in the South and third in the Pacific, Mountains/Plains, and Northern States.

Table 3.16. Progress in achieving the program’s multi-objective approach to managing forestland: The three most frequent combinations of two management objectives that FSP participants, 1997-2004, reported they had begun to carry out: Percentages of current participants per region reporting these combinations

	Pacific States	Mountain and Plains States	Southern States	Northern States
First most frequent	Growing/caring for trees and Improving wildlife habitat (64%)	Growing/caring for trees and Improving wildlife habitat (53%)	Growing/caring for trees and Improving wildlife habitat (48%)	Growing/caring for trees and Improving wildlife habitat (45%)
Second most	Growing/caring for trees and Improving water quality (25%)	Growing/caring for trees and Harvesting for sale (28%)	Harvesting for sale and Improving wildlife habitat (26%)	Growing/caring for trees and Harvesting for sale (31%)
Third most	Harvesting for sale and Improving wildlife habitat (24%); as well as Harvesting and Improving water quality (24%)	Harvesting for sale and Improving wildlife habitat (20%)	Improving wildlife habitat and Improving Water quality (25%)	Harvesting for sale and Improving wildlife habitat (26%)
Total respondents	308	289	288	324

Conditions Shaping Landowners’ Decisions to Start Implementing Recommended Activities for Two or More Separate Management Objectives

Given the importance of a multi-resource approach to managing forestland, we used logistic regression to identify conditions that shape owners’ decisions to start carrying out activities recommended in their stewardship plans to achieve two or more separate management objectives. The hypothesized explanatory variables for this analysis were, with a few exceptions, the same as those listed earlier in this chapter for our regression analysis of owners’ decisions to start implementing their plans, that is, to do something to achieve at least one objective.

The variables found to be statistically significantly related to the decisions for actively pursuing two or more objectives (Table 3.17) were, for the most part, the same traits that the earlier analysis identified as likely to shape the decisions for at least one management objective (Table 3.10). An extra ten days with the owner on the property is associated with a 1.5 times higher chance of applying practices for two or more objectives, other variables in the analysis held constant (Table 3.17). Surveyed owners who received follow-up technical assistance are estimated to have been 3.2 times more likely to report at least two objectives being pursued by the implemented activities. Cost-share assistance is right behind, with an estimated 3.1 factor. Another statistically significant explanatory variable is whether the owners possessed a professionally written plan before obtaining

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their stewardship plans. If they did, the chances of at least a two-objective pattern of plan implementation increased by an estimated 2.0 times, other things being equal.

Table 3.17's summary of regression findings contains two variables not found in the previous analysis. The first is whether the owner found his/her stewardship plan to be "very easy" to understand. Respondents who did are estimated to have been 1.7 times more likely to report applying practices for at least two management objectives. The second "new" variable is the number of years that the respondent owned the forestland subject to a stewardship plan. Its relationship to a two-objective pattern of implementation is in a negative "direction." For an additional ten years of ownership, the regression analysis estimated a modest drop in the chances of implementation—by a factor of 0.88. We have no ready explanation for this relationship. As mentioned earlier, a longer term of tenure may mean that the owner had the opportunity previously to achieve several management objectives, leaving just one for the FSP.

Table 3.17. Traits of the owners, their plans, and their forestland that are associated with the decisions to start carrying out recommended activities for achieving <i>two or more separate management objectives</i>, among current participants receiving new or revised FSP Plans, 1997-2004		
Trait*	If the trait's value changes by this much:	then the estimated chances of starting to carry out the activities change by this much:*
Number of days spent visiting (or residing) on the forestland subject to the stewardship plan	An additional ten days on the property	1.5 times higher chance
Receipt of follow-up technical assistance (requested after the plan was in the owners' hands)	Yes, received such assistance versus, no, did not	3.2 times higher
Receipt of cost-share assistance for implementing the stewardship plan	Yes, received such assistance versus, no, did not	3.1 times higher
Possessed a professionally written management plan before obtained a Forest Stewardship Plan	Yes, had such a prior plan versus, no, did not	2.0 times higher
Found the Forest Stewardship Plan "very easy to understand"	Yes, found the plan "very easy" to grasp	1.7 times higher
Years owned the forestland	An additional ten years of owning	0.88 times lower
Number of acres covered by the plan	An additional 100 acres in the plan	1.1 times higher
Number of separate management objectives the owner is pursuing via the stewardship plan	One additional objective in the plan	2.6 times higher
Measure of how well these 8 variables together explain the decisions to start implementing activities for at least 2 objectives**		.309
Number of cases on which analysis was based		955

*With the exception of the acres-in-the-plan variable, all these variables were estimated to have statistically

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significant associations (at the .035 level or better) with the decisions to start carry out activities for two or more objectives. The analysis was limited to respondents with at least two such objectives in their plans. The estimated increase or decrease per variable in the chances of owners making that decision assumes that the other causal variables in the analysis are held constant.

** The measure is the Nagelkerke R square. For this set of variables to explain all variation in the decision, the Nagelkerke R square would have to be 1.00 (Menard, 2000, p.25).

When we undertook regression analyses for the separate regional samples, several of the same owner or plan traits emerged as statistically significant predictors of a two-or-more-objective pattern of plan implementation:

- Receipt of follow-up technical assistance—in all four regions
- Receipt of cost-share assistance—in the Pacific States' sample
- Days of living on or visiting the subject property—Pacific, Mountain/Plains and Northern regions
- Possession of a professionally written management plan prior to participating in the FSP—in the Northern region.

We must add that the regression analyses conducted for the *first survey's* national-level sample also identified as significant predictors: follow-up technical assistance, cost sharing grants, the respondent living on the property at least one month per year, and a professional plan written before taking part in the FSP (Esseks and Moulton, 2000, the Appendix). Finding these plausible causal relationships in both surveys at the national level and in individual regions suggests that the variables are important to consider when making policy. Follow-up assistance of both kinds (technical and cost-sharing) appears to increase significantly the chances of multiple-objective management, as does living on the subject land or visiting it fairly frequently.

Conditions Shaping Landowners' Decisions to Start Implementing Recommended Activities for Three or More Separate Management Objectives

Since as many as 41% of all surveyed forestland owners in the second national study reported applying plan-recommended activities for *three* or more separate practices (Table 3.15), we did a separate set of national- and regional-level regression analyses to identify likely causal conditions of this management pattern. Table 3.18 summarizes the findings.

Again, owner's time on the forestland subject to the stewardship plan made a difference; an extra ten days is estimated to increase the likelihood of managing for at least three separate objectives by 1.4 times (other variables in the analysis held constant). Respondents with follow-up technical assistance were 1.9 times more likely to manage their land in this way than those without such help. Surveyed owners with prior professionally written plans were estimated to be 1.7 times more likely.

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Table 3.18. Traits of the owners, their plans, and their forestland that were associated with the decisions to start carrying out recommended activities for achieving <i>three or more separate management objectives</i>, among current participants receiving new or revised FSP Plans, 1997-2004		
Trait*	If the trait's value changes by this much:	then the estimated chances of starting to carry out the activities change by this much:*
Number of days spent visiting (or residing) on the forestland subject to the stewardship plan	An additional ten days on the property	1.4 times higher chance
Receipt of follow-up technical assistance (requested after the plan was in the owners' hands)	Yes, received such assistance versus, no, did not	1.9 times higher
Possessed a professionally written management plan before obtaining a Forest Stewardship Plan	Yes, had such a prior plan versus, no, did not	1.7 times higher
Number of acres covered by the plan	An additional 100 acres in the plan	1.1 times higher
Number of separate management objectives the owner is pursuing via the stewardship plan	One additional objective in the plan	2.5 times higher
Measure of how well these 5 variables together explain the decisions to start implementing activities for at least 3 objectives**		.208
Number of cases on which analysis was based		763

*All these variables were estimated to have statistically significant associations (at the .048 level or better) with the decisions to start carry out activities for three or more objectives. Included in the regression equation were the “contextual” variables of number of acres subject to the stewardship plan and number of separate management objectives found in the plan. The analysis was limited to respondents with at least three such objectives. The estimated increase per variable in the chances of owners deciding to implement practices for three or more objectives assumes that the other causal variables in the analysis are held constant.

** The measure is the Nagelkerke R square. For this set of variables to explain all variation in the decision, the Nagelkerke R square would have to be 1.00 (Menard, 2000, p.25).

When we did regional analyses for a three-objective pattern, we found that:

- the variable, owners’ days on the property, was a statistically significant predictor in the Pacific and Northern regions;
- receipt of technical assistance significantly increased the likelihood of a three-objective pattern of active management in the Mountain/Plains States and the Southern region;
- cost-share assistance did so in the Pacific States; and
- owners’ years of formal education made significant positive differences in the Pacific and Southern samples; that is, the more education, the more likely the respondents were to report applying recommended activities to achieve three or more separate management objectives.

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Participants Spent Their Own Money on Plan Implementation

Another kind of positive response from the clients of technical assistance programs is the expenditure of their own money to implement the given advice. Although the unpaid labor of owners, family, and friends may be all that is needed for some forestry practices (e.g., thinning or pruning), other practices (like seeding, spraying, and fencing) may require paid inputs. Across the four regions from 67% of the total surveyed owners in the Northern States to 83% in both the Pacific and Mountain/Plains region reported expenditures for which they did not expect to be reimbursed (Table 3.19).⁴¹ The estimated percentage for the weighted national sample was 69%, unchanged from the first national survey. At the regional level, there were statistically significant changes only for the Pacific States and the Mountain/Plains States. The former recorded a 13-point increase in the percentage of respondents reporting un-reimbursed expenditures on their plans, while in the Mountains/Plains region the significant increase was 6 points.

Table 3.19. Percentages of total surveyed FSP participants with new or revised plans, 1997-2004, who reported that, in carrying out recommended activities, they had spent some of their own money for which they would not be reimbursed, compared to findings for participants surveyed in the first national survey (1991-1997): By region					
Type of Assistance	Pacific States %	Mountain & Plains States %	Southern States %	Northern States %	Weighted National Sample %
Yes, had spent some of their own money.					
Second Survey	83	83	70	67	69
First survey	70	77	73	67	69
Had not spent any of their own money, don't know if had, or had dropped out of FSP					
Second survey	17	17	30	33	31
First survey	30	23	27	33	31
Total surveyed respondents					
Second Survey	324	308	310	339	1,214
First Survey	305	275	305	353	1,281

***Text of question:** "To carry out activities recommended in your Forest Stewardship Plan written since 1997, have you spent any of your own money for which you will not be reimbursed?"

As with our findings about (1) the percentage of respondents who reported having started to implement their Forest Stewardship Plans and (2) the percent applying recommended activities to achieve two or more separate management objectives, we need to adjust this important percentage about expenditures for possible overstatement due to nonresponse.

⁴¹ These percentages are conservative because they are based on all surveyed owners, including those who told us that they had dropped out of the program. Some of the latter may have made unreimbursed expenditures before they left the program. However, since our interviews with them rarely progressed beyond the report that they had dropped out, we did not acquire information about expenditures on whatever plan implementation may have occurred.

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Here we make the conservative estimate that two-thirds of the non-respondents would have reported no expenditures at all or none for which they did not expect reimbursement. Even with that assumption, the estimated percentages of FSP participants helping to implement plans with their own money would range from 52% in the South to 73% in the Mountain/Plains region.⁴²

Table 3.20 reports the percentages of respondents who classified themselves in one of six expenditure ranges: from \$1 to \$500, \$500 to \$999, \$1,000 to \$4,999, \$5,000 to \$9,999, and at least \$10,000. The most frequently reported *range* in both national surveys was \$1,000 to \$4,999, with 24% and 23%, respectively, in the first and second studies' weighted national samples reporting their unreimbursed spending to have been in this range. If we regard at least \$1,000 as a significant threshold, we find 38% of the first national sample spending that much and 36% of the second.

To facilitate comparisons among respondents in the two separate national surveys, we converted the findings on these categories of expenditures (e.g., \$500 to \$999) into average expenditures by using the midpoint in each range. For example, the owners who reported spending from \$500 to less than \$1,000 were assumed to have paid out \$750, those in the \$1,000 to \$4999 group to have spent \$3,000, and so on. According to this method of conversion, the unreimbursed spending among surveyed program participants in the second survey (including those who had dropped out) averaged from \$1,832 (Northern States) to \$3,712 (Pacific States--Table 3.21). The corresponding estimate for the weighted national sample was \$2,172. In developing the regional and national-level estimates, we made the conservative assumption that no money had been spent by the drop-outs from the program.

With the exception of Mountain/Plains States' entries, the second survey's figures on average expenditure are lower compared to the first. The weighted national sample's average decreased 17% (from \$2,704 to \$2,252), despite inflation over the six years between the two surveys. Between December 1998 and December 2004 the seasonally unadjusted consumer price index for urban consumers grew by 18%.⁴³ However, since we knew that the forestland owners in the second national sample tended to have possessed their written stewardship plans fewer years at the time of the survey compared to the program clients surveyed in the first study (see Table 2.21), we tried another

⁴²

The percentages of FSP participants having received new or revised plans, 1997-2004, who reported spending unreimbursed money of their own on implementing their stewardship plans, adjusted for non-response error (i.e., assuming that two-thirds of the non-respondents had not spent any such money).			
Pacific States	Mountains and Plains	Southern States	Northern States
69%	73%	52%	56%

⁴³ From an index of 161.3 to 190.3: The US Department of Labor's Bureau of Labor Statistics (<http://data.bls.gov/cgi-bin/surveymost> [accessed October 1, 2005]).

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Table 3.20. Percentages of all surveyed FSP participants with new or revised plans, 1997-2004, who reported that that in carrying out recommended activities they had spent money for which they would not be reimbursed, compared to findings for participants surveyed in the first national survey (1991-1997): By level of reported expenditure and by region*						
Type of Assistance	Pacific States %	Mountain & Plains States %	Southern States %	Northern States %	Weighted National Samples %	
No, had not spent any money for which will not be reimbursed or don't know or dropped out.	Second survey	19	18	33	32	31
	First survey	33	24	30	36	33
Reported they had spent less than \$500.	Second Survey	13	17	14	21	19
	First survey	8	16	14	17	16
From \$500 to \$999	Second Survey	12	18	10	16	14
	First Survey	7	14	8	14	11
From \$1,000 to \$4,999	Second Survey	28	30	24	21	23
	First Survey	25	33	23	23	24
From \$5,000 to \$9,999	Second Survey	14	9	10	5	7
	First Survey	12	8	11	6	8
\$10,000 or more	Second Survey	14	8	9	5	6
	First Survey	15	5	14	4	8
Total surveyed respondents	Second Survey	324	308	310	339	1,281
	First Survey	305	275	305	353	1,220

*Text of question: “How much of your own money have you spent so far for which you will not be reimbursed?”

measure of spending for plan implementation-the average expenditure per participant *per year* since received plan. This measure reveals *increases* between the two surveys in all regions (see data line 2 in Table 3.21); and three of the differences (the Southern States being the exception) were statistically significant, as was the 32% increase in the national sample's per-year average from \$756 in the first survey to \$996 in the second.

Since it seemed possible that much of the unreimbursed money spent by program participants represented the owners' matches for public cost-sharing grants for the application of recommended practices, we compared the expenditures of owners who had

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Table 3.21. Average unreimbursed expenditures in dollars reported by current FSP participants, 1997-2004, for implementing their plans: for all respondents, for those with and for those without cost-sharing assistance, compared to reports from the first national survey (1991-1997): By region					
Type of Assistance	Pacific States %	Mountain & Plains States %	Southern States %	Northern States %	Weighted National Samples %
1. Average total expenditure per participant.					
Second survey	\$3,905	\$2,830	\$2,947	\$1,875	\$2,254
First survey	\$4,054	\$2,526	\$3,807	\$1,949	\$2,704
2. Average expenditure per participant <i>per year</i> since received plan.					
Second survey	\$1,639	\$1,419	\$1,422	\$757	\$996
First survey	\$1,007	\$908	\$1,175	\$474	\$756
3. Average total expenditure per respondent who received some cost-sharing assistance					
Second survey	\$5,204	\$2,985	\$4,540	\$3,440	\$3,788
First survey	\$5,250	\$2,753	\$5,079	\$2,864	\$3,642
4. Average per respondent who did <i>not</i> receive cost-sharing					
Second Survey	\$2,532	\$2,762	\$2,281	\$1,355	\$1,672
First Survey	\$2,035	\$2,116	\$2,606	\$806	\$1,582
Total current participants					
Second Survey	308	289	288	324	1,214
First Survey	272	245	274	331	1,120

taken part in those programs to respondents who had not. Participation did make statistically and practically significant differences in three of the four regions. For example, cost-share participants in our 1997-2004 sample for the Pacific region reported an average of \$5,204 that would not be paid back to them, which was 2.1 times larger than the average expenditure by surveyed owners in those states who had not received cost-share assistance, \$2,532 (compare Table 3.21's data lines 3 and 4 for the second survey). In the Southern and Northern states, the differences between these two groups varied by significant factors of 2.0 and 2.5, respectively, while in the Mountains/Plains states, it was an insignificant 1.1.⁴⁴ The difference at the national level--\$3,788 on average spent by cost-share recipients versus \$1,672 reported by others--was greater than sampling error alone can explain, as was the corresponding difference in the first national sample (\$3,642 compared to \$1,582).

These differences are not surprising. As owners responded to the incentive of one or more government dollars for every dollar they spent, the total paid out by the cost-share clients tended to be higher than what the non-subsidized owners spent. The surprise might be in the average amounts of money reported by the non-cost-share respondents. Their money investments ranged from a low of \$1,315 per owner in the North's 1997-

⁴⁴ Statistical significance was determined in an independent samples *t* test at the .05 level.

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2004 sample to \$2,466 in the Mountain/Plains region (Table 3.21's line 4). Cost-sharing helped, but apparently was not indispensable to significant expenditures for implementing the FSP plans

Conditions Shaping Owners' Decisions to Spend Their Own Money on Plan Implementation

Given the importance of unreimbursed owner spending on stewardship plan implementation—both as signs of participants' seriousness of intention to manage their forestland actively and for the private funds leveraged to improve the health and productivity of private forests—we used regression analysis to identify the likely conditions shaping those expenditure decisions. First we tried the ordinary least squares form of regression, but the candidate causal variables available in our data set did not account for much of the variation in money spent (just 16%). Therefore, we switched to logistic regression to identify conditions shaping decisions to spend *at least \$1,000*. Thirty-seven percent of the second survey's current FSP participants did so, and we had much more success in explaining why they did.

That regression study found that, taking into account other causal conditions in the analysis, an extra 10 days of being on the property was estimated to increase by 1.4 times the chances of spending at least \$1,000 not expected to be reimbursed (Table 3.22). A study of investment decisions by NIPF owners in Northern California also found that residence on the land was a significant positive predictor (Romm, Tuazon, and Washburn, 1987).

In the second FSP survey, receipt of follow-up technical assistance boosted the chances of spending \$1,000 or more by a factor of 2.1, while cost-share had a much stronger impact—a factor of 4.5. An additional year of formal education was estimated to increase the likelihood by 1.2 times, which was the same estimated impact for an additional time of consulting one's stewardship plan during the past year. Also significant was the number of separate management objectives in the plan, as well as the number of acres covered by the plan. The higher the value of either of those two variables, the higher the chances of the surveyed owner spending at the indicated level (Table 3.22).

When doing the same analysis for the individual regional samples, we found these statistically significant predictors of increases in the chances of at least \$1,000 in expenditures on the plan:

- in the Pacific States' sample: receipt of cost share assistance, number of times the plan was looked at over the past year, and acres subject to the stewardship plan;
- in the Mountain/Plains States: frequency of consulting the plan, years elapsed since receipt of the plan, and number of separate management objectives;
- in the Southern region: days on the property, follow-up technical assistance, and cost-share assistance; and
- for the Northern States: days on the land, acres covered by the plan, cost-share assistance, technical assistance, years of formal education, frequency of consulting the plan, and number of separate objectives.

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Table 3.22. Among current FSP participants who received their plans, 1997-2004, the traits of the owners, their plans, and their forestland that were associated with spending at least \$1,000 of unreimbursed money on implementing their stewardship plans		
Trait*	If the trait's value changes by this much:	then the estimated chances of spending at least \$1,000 change by this much:*
Number of days spent visiting (or residing) on the forestland subject to the stewardship plan	An additional ten days on the property	1.4 times higher chance
Receipt of follow-up technical assistance (requested after the plan was in the owners' hands)	Yes, received such assistance versus, no, did not	2.1 times higher
Receipt of cost-share assistance for implementing the stewardship plan	Yes, received such assistance versus, no, did not	4.5 times higher
Number of years of formal education	One additional year of education	1.2 times higher
Number of times owner looked at his/her stewardship plan in the past 12 months	One additional time	1.2 times higher
Respondent was a farmer or managed some other business	Yes, was a farmer or other manager; no, was not	1.6 times higher
Number of acres covered by the plan	An additional 100 acres in the plan	1.3 times higher
Number of separate management objectives the owner is pursuing via the stewardship plan	One additional objective in the plan	1.3 times higher
Measure of how well these 8 variables together explain the decision to spend money on plan implementation**		.353
Number of cases on which analysis was based		1,117

*All these variables were estimated to have statistically significant associations (at the .004 level or better) with the decisions to spend as much as \$1,000 on plan implementation that would not be reimbursed. The estimated increase per variable in the chances of owners spending that much money assumes that the other causal variables in the analysis are held constant.

** The measure is the Nagelkerke R square. For this set of variables to explain all variation in the decision, the Nagelkerke R square would have to be 1.00 (Menard, 2000, p.25).

In the three regional samples where it was identified as a significant predictor (the Mountain/Plains region being the exception), cost-share grants had the greatest impact (among the mostly dichotomous variables). It ranked first in the national-level analysis (Table 3.22). Technical assistance emerged as significant in two regional samples (Southern and Northern), as well as at the national level, even after taking account of the effects of cost-sharing on landowner expenditure. In other words, both technical and financial aid had independent effects. For example, at the national level, among the 442 current FSP participants who reported receiving neither kind of follow-up aid, only 21%

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said that they had spent at least \$1,000 (Table 3.23). Among respondents with follow-up technical assistance and no cost share, 35% spent at that level. If they received cost share but no technical assistance, the percent is 45%. But if they had both, it climbs to 71%. So, both the independent and joint effects are substantial, but especially the combination of the two forms of aid.

Both kinds of follow-up assistance were statistically significant predictors of unreimbursed owner expenditures also in the first national FSP survey. They were associated with higher levels of spending.

Table 3.23. Percent of current FSP participants who received plans, 1997-2004, reporting that they spent at least \$1,000 on implementing their plans for which they did not expect to be reimbursed: By whether they had received technical and/or cost-share assistance.			
Received neither form of assistance	Received only follow-up technical assistance	Received only cost-share assistance	Received both technical and cost-share assistance
21% did	35% did	45% did	71% did
out of 442 respondents	out of 404 respondents	out of 103 respondents	out of 237 respondents

Summary

In this chapter on stewardship plan implementation we found:

- 80% of the total responding owners in the second national survey had started to implement their stewardship plans (Table 3.1).
- As in the first national survey, the management objective, “growing trees or caring for their health,” was the one reported most frequently in all four regions (Table 3.4). Among the program clients receiving their stewardship plans, 1997-2004, from 78% of the Northern States’ respondents to 95% of the Pacific States’ sample said it was in their plans. Second-ranking was the objective of improving/protecting wildlife habitat (67% to 81%), and third was harvesting trees for sale (43% to 69%). The greatest change between the first and second national studies was in the percentage of owners reporting harvesting as a management objective. It grew from 55% to 65%.
- This change had the consequence of increasing somewhat the percentage of total current FSP participants who started to implement the objective of harvesting for sale (such as by actually logging and selling or at least by marking trees for cutting). It rose between the first and second national surveys from 34% to 37%, not a statistically significant change but more encouraging than the measures of implementing plan recommendations for the other types of management objectives (e.g., improving wildlife habitat), all of which recorded decreases (Table 3.5).
- Across the four regions, from 59% of the total surveyed owners in the South to 74% in the Pacific states reported carrying out a multi-resource management

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approach. They were applying recommended practices to achieve at least two separate management objectives (Table 3.14). From 38% to 49% were pursuing three different objectives. In all regions, the most frequently cited two-objective combination was growing/caring for trees and improving wildlife habitat (Table 3.16).

- The two national surveys found an identical percentage of total owners who reported spending some of their own money on plan implementation for which they expected no reimbursement—69% (Table 3.19). Moreover, between the first and second study, the estimated average expenditure per year by current program participants increased from \$756 to \$986 (Table 3.21).
- Statistical analysis was used to identify traits of the respondents, their forestland, and their experiences with follow-up assistance that were associated with owner decisions (1) to start carrying out the stewardship plans, (2) to apply recommended activities for at least two separate management objectives, (3) to do so for three or more objectives, and (4) to spend at least \$1,000 on plan implementation which would not be reimbursed. Technical assistance received after the plan was in hand proved to be a statistically and practically significant predictor of all four decisions, and in all cases it increased the chances of a positive decision. Follow-up cost-share assistance improved the likelihood of starting to implement one's stewardship plan and spending at least a \$1,000 on it. Three other traits also qualified as significant predictors that increased the chances for two to all four of the decisions being made: being relatively better educated, living on or rather frequently visiting the forestland subject to the stewardship plan, and having had a written management plan before participating in the FSP (tables 3.10, 3.17 3.18, and 3.22).

Chapter 4

Evidence that the Forest Stewardship Program Changes

Management Behavior

Introduction

Continuing the discussion of plan implementation begun in Chapter 3, this chapter focuses on management activity that surveyed forestland owners said was new to them. Specifically, we compare the two national surveys' findings as to:

- What proportions of the responding forestland owners said that they were applying management activities that were new?
- Which management objectives yielded the most new-to-the-owner activities?

The second survey asked some questions not used in the first. We therefore can report on:

- What percentage of surveyed owners were harvesting *for sale* for the first time?
- In connection with timber sales generated at least in part from their stewardship plans' recommendations, how many owners for the first time paid for advice about the terms of sale (e.g., volume, price)?
- How many FSP clients started to pay for magazines, newsletters, Internet services, or other sources of information on managing their forestland who never, before their participation in the FSP, had spent money for that objective?
- What percentage intended to seek advice in the next two years from a professional in forestry and to *pay* for it?

Management Activities Being Carried Out that Were New to the Surveyed Owners

The Forest Stewardship Program appears to have changed behavior in the sense of helping owners to carry out management activities that were new to them. Across the four regions, from 53% in the Southern and Northern samples to 64% of the surveyed owners from the Pacific region had started to carry out at least one plan-recommended management activity that was “new to you, that is, an activity that you had never done before” (Table 4.1). Figure 4.1 illustrates the changes between the two national surveys on this measure of management. Two regions—Pacific and Mountain/Plains—saw

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statistically significant increases in the percentages of respondents with at least one new activity: 9 and 11 percentage points, respectively. The two other regions recorded decreases, but both (2 percentage points for the Southern region and 3 for the North) were insignificant. At the level of the national weighted samples, the percent of total surveyed respondents (including the dropouts) with a management activity new to them remained virtually unchanged—at 54% versus 55%.⁴⁵

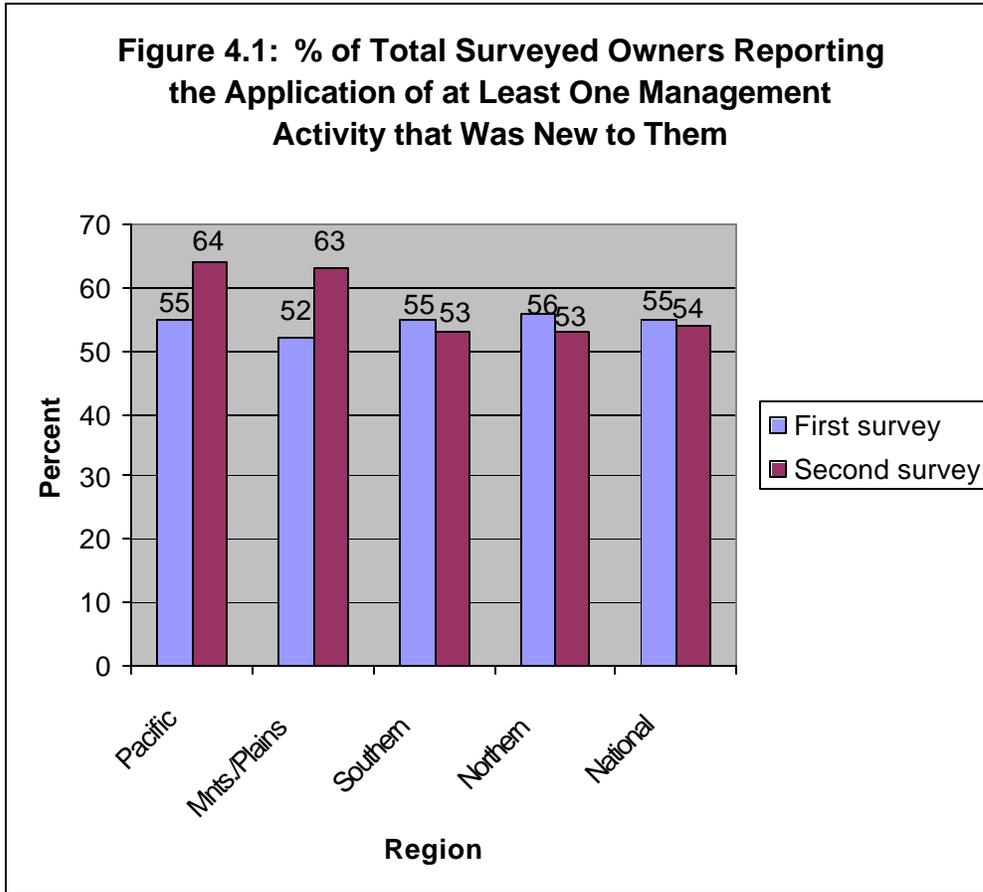
Table 4.1. Percentages of total surveyed FSP participants who reported that they had begun to carry out plan-recommended activities that were <i>new to them</i>.* By number of separate management objectives, ** national survey (first and second), and region					
Had begun to carry out one or more new activity for:	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
At least one management objective					
Second survey	64	63	53	53	54
First Survey	55	52	55	56	55
At least two separate objectives					
Second survey	39	37	35	29	31
First Survey	29	34	32	29	30
At least three separate objectives					
Second survey	20	19	18	14	16
First Survey	13	15	16	11	13
Total respondents					
Second survey	324	308	310	339	1,281
First survey	305	275	305	353	1,220

*"New to you, that is, an activity that you had never done before."

**Management objectives covered in the survey: "Growing or caring for trees," "Harvesting trees for sale," "Improving or preserving wildlife habitat on your forestland," "Improving or preserving the quality of water resources," "Improving or protecting recreational opportunities," "Agro-forestry activities," and "Other."

As Table 4.1 shows, 29% of Northern States' owners surveyed in the second study to 39% of the Pacific region's sample reported implementing activities for at least two separate management objectives, and 14% to 20%, at least three. The percentages for the national weighted samples remained virtually unchanged between the two surveys.

⁴⁵ We assumed that none of the dropouts would have reported a new activity.



Methodological Considerations

It does not seem likely that owners would fabricate a “yes” answer to the type of question on which Table 4.1 and Figure 4.1 are based. For respondents worried about how socially desirable their answers sounded, continuing to apply good practices from the past may seem better or no worse than admitting that they had just recently begun to use the practices.

As discussed in chapters 2 and 3, another possible source of overstatement is nonresponse error. If again we adopt the very conservative assumption that two-thirds of the nonrespondents did *not* apply new practices, we adjust the percentages accordingly and find that, in those circumstances, still from 43% of the Southern States’ sample to 57% of the Mountain/Plains States’ respondents would report at least one management activity that was new to them.⁴⁶

⁴⁶

The percentages of FSP participants having received new or revised plans, 1997-2004, who reported applying at least one management activity that was new to them, assuming that two-thirds of the non-respondents did not.			
Pacific States	Mountains and Plains	Southern States	Northern States
55%	57%	43%	46%

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Types of New Management Activities Reported by Current FSP Participants

Table 4.2 presents, by type of management objective, the percentages of current FSP participants who reported carrying out activities that were new to them. In both national surveys the management objective, growing or caring for trees, recorded the most cases of new activities. In the second study, the range for this objective is from 32% of the Northern States' current participants (i.e., excluding the dropouts) to 43% of the

Table 4.2. Percentages of current FSP participants who reported applying at least one plan-recommended activity that was new to them: * By management objective,** national survey (first and second), and region						
Management Objective	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %	
<i>Grow or care for trees</i> ¹	Second survey	38	43	34	32	35
	First survey	51	40	45	39	42
<i>Harvesting trees for sale</i> ²	Second	15	16	14	17	17
	First	12	9	14	19	17
<i>Improving or preserving land as wildlife habitat</i> ³	Second	40	35	35	30	33
	First	29	33	38	28	31
<i>Improving/ preserving quality of water resources</i> ⁴	Second	16	8	17	8	11
	First	15	14	18	11	14
<i>Improving/protecting recreational opportunities</i> ⁵ (not asked in first survey)	Second	25	15	19	24	23
<i>Agro-forestry activities</i> ⁶	Second	3	10	4	4	4
	First	5	21	4	4	5
<i>Other objectives</i> ⁷	Second	8	6	2	2	2
	First ⁸	1	2	3	2	2
Total respondents:						
Second survey		308	289	288	324	1,214
First survey		272	245	274	331	1,120

**New to you, that is, an activity that you had never done before."

Chapter 4: Changes in Management Behavior

****Definitions of management objectives:**

¹ “Does your plan recommend activities having to do with *growing trees or caring for their health*, such as planting, thinning, or preventing fires?”

² “Does your plan recommend activities having to do with *harvesting trees for sale*, such as selecting trees to be cut for saw logs, poles, or firewood?”

³ “Does your Stewardship Plan recommend any activities for *improving or preserving your forestland as habitat for wildlife*, such as regarding food, cover, or water available to wildlife?”

³ “Does your plan recommend activities having to do with *harvesting or marketing your trees*, such as which trees to cut or when to cut and sell them?”

⁴ “Does your Stewardship Plan . . . recommend any activities for *improving or preserving the quality of water resources* such as by planting vegetative strips next to ponds or fencing off streams from livestock?”

⁵ “Does your Forest Stewardship Plan recommend any activities for *improving or preserving recreational opportunities on your forestland*—such as by creating hiking trails or preserving scenic tree stands

⁶ “Does your Stewardship Plan recommend any *agro-forestry activities*, such as building windbreaks or blending the growing of trees with cropping or pasturing?”

⁷ “Does your Forest Stewardship Plan recommend any types of forestland management activities that we’ve not already mentioned?”

⁸ The first survey asked whether “other activities” had been carried out, not if they were in the plan, and perhaps not implemented.

Mountain and Plains States’ respondents. In the earlier survey, from 39% of the Northern region’s sample to 51% of the Pacific States’ current FSP participants reported new activities of this kind. Ranking second in both surveys is the objective, improving or preserving forestland as wildlife habitat.

The percentages for the weighted national samples show little change between the two surveys except for the management objective, growing/caring for trees, for which there was a statistically significant 7 percentage-point decrease (from 42% to 35%). The magnitudes of these percentages are determined in part by the proportions of respondents who had started to apply the kind of management activity in question. If in the second survey relatively fewer owners had growing/caring for trees in their stewardship plans (Table 3.4), and/or fewer had the resources or inclination to carry them out (Table 3.5), there would be less chance of proportionally as many current FSP participants reporting new practices of that type. Therefore, we offer Table 4.3, which gives the percentages, by management objective, of the responding owners who carried out recommended activities *and* who told us that at least one was new to them.

At the level of the weighted national samples, the record for implementing new practices looks rather good. Across the six types of management practices covered in both surveys, 41% to 62% of the owners who carried out any activities for a particular objective reported that at least one of the practices for that objective was new (see Table

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Table 4.3. Among current FSP participants who reported carrying out plan-recommended activities for a particular management objective, the percentages who said that at least one of the implemented practices was new to them:* By national survey (first or second) and region. (In parentheses is the “base” for each percentage.)**						
Management Objective		Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
<i>Grow or care for trees¹</i>	Second	47 (258)	57 (228)	56 (182)	50 (213)	52 (775)
	First	60 (236)	51 (190)	58 (211)	56 (231)	56 (826)
<i>Harvesting trees for sale²</i>	Second	50 (95)	55 (85)	51 (85)	43 (130)	46 (405)
	First	45 (73)	52 (42)	48 (81)	49 (132)	48 (383)
<i>Improving or preserving land as wildlife habitat³</i>	Second	61 (215)	63 (174)	60 (177)	55 (183)	58 (683)
	First	59 (136)	57 (141)	52 (200)	47 (199)	50 (707)
<i>Improving/ preserving quality of water resources⁴</i>	Second	59 (83)	53 (45)	65 (82)	51 (55)	58 (244)
	First	58 (73)	52 (68)	48 (105)	49 (72)	49 (309)
<i>Improving/protecting recreational opportunities⁵</i> (not asked in first survey)	Second	48 (82)	58 (45)	40 (58)	39 (80)	41 (261)
<i>Agro-forestry activities⁶</i>	Second	56 (16)	55 (58)	53 (17)	67 (15)	59 (73)
	First	54 (26)	52 (102)	53 (19)	48 (27)	50 (115)
<i>Other objectives⁷</i>	Second	66 (35)	60 (30)	50 (6)	67 (9)	62 (44)
	First	38 (8)	10 (4)	86 (7)	53 (15)	61 (40)
Total respondents:						
	Second survey	308	289	288	324	1,214
	First survey	272	245	274	331	1,120

**New to you, that is, an activity that you had never done before.”

**The base for the percentage is the number of all surveyed owners who reported carrying out plan-recommended activities for the indicated management objective, whether or not any was new to them.

4.3’s column for the weighted national sample). Between the two surveys, there were two statistically significant changes at the level of the national samples: an 8-percentage-point increase in the relative number of implementers of wildlife habitat practices who had practices new to them and, also, a corresponding increase of 9 points

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for water-quality practices.

In summary, according to owner reports gathered in the two surveys, the Forest Stewardship Program has been helping large percentages of its clients (84% and 80%--Table 3.1) to start using recommended management practices. Moreover, when selecting which activities to begin implementing, sizable percentages (55% and 54%--Table 4.1) chose at least one that they never before had used. Table 4.4 lists the common types of plan-recommended activities that respondents to the second survey said were new to them. For example across the four regional samples from 13% to 21% of the second survey's current FSP participants reported applying new practices for planting, re-seeding or other efforts at growing trees.

Table 4.4. Frequently reported types of recommended activities being implemented that were new to current FSP participants in the second national survey (i.e., they received their plans, 1997-2004): Percent by management objective and by region				
Type of Management Objective	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %
<i>Growing trees or caring for their health</i>				
Planting, re-seeding, and other efforts to grow new trees	21	16	15	13
Thinning., cutting out dead trees, and other timber stand improvement through removing trees	22	25	15	16
Removing vines, combating beetles, and fighting other tree competitors or predators	6	10	7	7
Removing brush, building fire breaks, and other activities to protect against fires	8	7	5	2
<i>Harvesting for sale</i>				
Preparing for harvesting such as marking trees for cutting, clearing area, and getting permits to log	3	1	5	3
Types of logging: thinning, pre-commercial thinning, clear-cutting	8	8	7	7
Good harvesting practices such as cutting only the mature, dead, storm-damaged, or diseased trees; cull out the non-indigenous species	7	5	4	5
<i>Improving/preserving wildlife habitat</i>				
Providing nesting areas for birds and ducks	5	3	2	2
Providing woody cover for wildlife, such as by leaving snags or slash piles, planting trees for wildlife cover (including wildlife corridors) and leaving fence rows	21	14	11	9
Creating open areas for wildlife, such as by thinning, mowing, and promoting grass cover	9	14	10	9
Providing water for wildlife, such as by digging ponds and water holes, preserving wetlands, and flooding fields for waterfowl	11	4	6	5
Providing food for wildlife, such as by planting grasses that they eat, trees that bear edible berries, and farm parcels that are left un-harvested.	6	4	14	10

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<i>Improving/preserving water quality</i>	Pacific	Mtns./Plains	South	North
Prevent pollution from storm water, such as by planting vegetative buffers, building berms, and keeping logging a distance from waterways	12	5	15	7
Prevent pollution from livestock such as by fencing them out of streams or not pasturing them near waterways	4	2	4	1
Create, enlarge, or protect ponds or streams, such as by building a dam, stocking streams, and cleaning out trees or brush	3	2	3	2
<i>Improving/protecting recreational opportunities</i>				
Improving mobility through the forested land, such as by building and maintaining roads and trails for hiking, skiing, and horseback riding	7	6	6	8
Protecting or enhancing scenery, such as by preserving unique or old tree stands, thinning to see wildlife better, and planting wildlife food patches	6	3	2	2
<i>Agro-forestry activities</i>				
Pasturing livestock in wooded areas	2	2	2	0
Building windbreaks that combat soil erosion	1	8	1	2
Total respondents who were still in the program	308	289	288	324

*"New to you, that is, an activity that you had never done before."

Traits of the Owners, their Stewardship Plans, and their Forestland Associated with Carrying out Management Activities that Were New to Them

Given the importance of the flexibility and perhaps risk-taking shown by assisted forestland owners who decided to apply management activities that were new to them, we used logistic regression to identify traits of those owners, their stewardship plans, and their forestland that appear to have facilitated such decisions.

As Table 4.5 shows, innovation in the sense of applying new practices was more likely if the respondents spent more time at the subject property, had more formal education, had received follow-up technical assistance, worked with a plan written by someone in their state government's forestry agency (rather than written by themselves or a private forestry consultant recommended by the state agency), and were pursuing more separate management objectives through their plans. It was *less* likely, the longer the respondent owned the land and, also, the more acres of forestland under the plan.

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Table 4.5. Traits of the owners, their plans, and their forestland that were associated with the decision to carry out at least one plan-recommended management activity that was new to them, among current FSP participants who received new or revised FSP Plans, 1997-2004.		
Trait*	If the trait's value changes by this much:	then the estimated chances of starting to carry out a new management activity change by this much:
Number of days spent visiting (or residing) on the forestland subject to the stewardship plan	An additional ten days on the property	1.3 times higher chance
Number of years of formal education	An additional year of education	1.1 times higher
Receipt of follow-up technical assistance (requested after the plan was in the owners' hands)	Yes, received such assistance versus, no, did not	1.7 times higher
Stewardship plan was written by someone from respondent's state government forestry agency rather than by self or by a private consultant recommended by the state	Yes, plan was written by such a person; no, it was not	1.5 times higher
Number of separate management objectives the owner is pursuing via the stewardship plan.	An additional objective in the plan	2.0 times higher
Years owned land subject to the plan	An additional 10 years	0.77 times lower
Number of acres covered by the plan	An additional 100 acres in the plan	0.96 times lower
Measure of how well these 7 variables together explain the decision to start implementing at least 1 new practice**		.265
Number of cases on which analysis was based		1,111

*Except for the acres-in-the-plan variable, all variables were estimated to have statistically significant associations (at the .004 level or better) with the decision to start implementing one or more new practices. The estimated increase or decrease per variable in the chances of owners making that decision assumes that the other causal variables in the analysis are held constant.

** The measure is the Nagelkerke R square. For this set of variables to explain all variation in the decision, the Nagelkerke R square would have to be 1.00 (Menard, 2000, p.25).

When doing the same analysis for the individual regional samples, we found the following statistically significant predictors of whether owners applied at least one new management practice:

- in all four regions, the estimated chances of the owner applying a new practice increased with his/her number of separate management objectives;
- in three regions (excepting the Pacific region), the more years owning the land, the *less* likely the owner was to report one or more new practices;
- in the Mountain/Plains States and Northern region the likelihood of a new practice went up with receipt of follow-up technical assistance;

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- in two regions also—Mountain/Plains and South—more years of formal education were associated with a higher likelihood of one or more management activities being new to the owner;
- only in the indicated single region, each of the following variables was a significant predictor that *increased* the chances of a new practice:
 - (a) Pacific States--frequency of looking at the plan, finding the plan “very easy” to understand, and total un-reimbursed money spent on the plan;
 - (b) Mountain/Plains--having the plan be authored by someone in the state forestry agency rather than by a private forester or by the owner, himself or herself;
 - (c) South--the owner being a professional (engineer, doctor, attorney, etc.) and owner’s age; and
 - (d). North—number of days visiting or living on the land covered by the stewardship plan.

In one region—the Southern States—the likelihood of new practices *decreased* if the principal decision-maker for the forestland was a female by herself, that is, not sharing that role with a spouse or other person.

Owners Harvest and Sell Trees from Their Land for the First Time

As described at the beginning of Chapter 3, a clear objective of the Forest Stewardship Program has been to increase the economic benefits from managing private forests. Included is expanding the amount of timber available for sale rather than used exclusively as firewood for the forestland owners’ homes, fence posts for livestock or scenic effects, or some other benefits restricted to their properties. However, as discussed in Chapter 1, a 1994 survey of nonindustrial private forestland (NIPF) owners found that less than half of the respondents reported having ever harvested timber from their land. The regional breakdowns were 49% in the North, 45 % in the South, and 43% in the West, which incorporates our Pacific and Mountain/Plains regions (Moulton and Birch, 1995, 1996, and Birch and Moulton, 1997). Jennings’ review of studies for individual states (2003) found some higher percentages, such as 50% in Alabama and 56% for Virginia.

Included in the second national FSP survey were the following two questions, the responses to which allowed us to construct Table 4.6:

- “Have any trees been cut and sold according to recommendations in your stewardship plan written since 1997?”
- “Before your first or only Stewardship Plan was written, had timber ever been harvested for sale from forestland you owned at the time?”

Table 4.6 indicates that the FSP participants whom we studied in the second national survey were broadly similar in their commercial harvesting experiences to the general NIPF owners whom the USDA Forest Service had surveyed a decade before (see the previous paragraph). In three of our regional samples close to half (49% to 52%) had never harvested for the objectives of selling the timber. In the Mountain/Plains States’ sample, an estimated 75% had not done so (Table 4.6). However, participating in the FSP seems to have made a modest but statistically significant difference. Across the four

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regions, from 17% to 25% of the previous non-commercial harvesters changed to logging for sale as part of carrying out activities recommended in their stewardship plans. Helping a sixth to a quarter of the non-sellers to enter the market is a practically significant program achievement. As a group the owners who changed their management behavior in this important respect comprised 13% of the total current FSP participants whom we surveyed.

Table 4.6. Among current FSP participants, 1997-2004, (1) the percentages who, before receiving their first or only Forest Stewardship Plan, had <i>never</i> harvested trees for sale, and (2) the percentage of those previous non-commercial harvesters who cut and sold trees for the first time in accordance with recommendations of their stewardship plans. Percent by region (in parentheses are the denominators for the percentages)*					
Harvesting Experience	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
1. Among all current participants, the percent who had never before harvested trees for sale or were not sure.	49 (308)	75 (289)	50 (288)	52 (324)	52 (1,214)
2. Percent of those surveyed owners in data line 1 who harvested for first time in following stewardship plan recommendations	17 (151)	19 (216)	25 (143)	25 (167)	25 (633)

*The denominators (in parentheses) for data line 1 are all surveyed owners who classified themselves as current FSP participants, while the denominators for data line 2 are the numbers of program clients who had never harvested trees for sale prior to receiving their first or only Forest Stewardship Plan.

We tried using logistic regression to identify traits of the owners, their stewardship plans, the forest holdings that differentiated the changers to commercial sales from the non-changers. The results were too modest to justify a separate table. The chances of making the change increased with the number of separate management objectives the owner was pursuing via his/her stewardship plan, receipt of follow-up technical assistance, having obtained professional advice on managing one’s forestland before participating in the FSP, and having the current FSP plan being written by a private forestry consultant recommended by the state forestry agency. However, together these four traits accounted for a small proportion of the variation in the decision to change—just. 0.16 on a scale of 0 to 1.00.

Owners Pay for Advice about the Terms of Their Timber Sales for the First Time

Henly and colleagues 1988) found that forestland owners are likely to obtain better prices and other terms of sale if they seek advice from professional foresters. Hubbard and Abt (1989) found a similar relationship for stumpage prices received. According to Egan and colleagues’ research on the Forest Stewardship Program in West Virginia (2001), FSP participants were “more likely than the general NIPF owning public to employ . . . professional foresters when conducting timber sales” (p. 36). Another benefit of forester involvement may be that the contract is written so the logging is conducted in environmentally beneficial ways (Egan and colleagues, 2001).

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As shown in Table 4.7, modest percentages of current FSP participants reported that they had cut and sold trees according to recommendations in their stewardship plans—from 21% in the Southern States’ sample to 29% in the North (data line 1). Moreover, among these owners who harvested for sale, large percentages—69% to 83%--obtained advice from forestry professionals “on the terms of the sale like timber volume and prices” (line 2). Then, about half of those gaining advice—46% to 64%-- paid for it (line 3). And of

Table 4.7. Among current FSP participants who received their plans, 1997-2004, and reported following plan recommendations to harvest for a sale, the percentage who obtained advice from a forestry professional on the terms of the sale and the percentages who paid for that advice, including those who never before had purchased such assistance: By region *

Harvesting Experience	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
1. Current FSP participants who cut and sold trees according to recommendations in their plans	23 (308)	23 (289)	21 (288)	29 (324)	27 (1,214)
2. Among those who cut and sold, the % who obtained advice from professionals in forestry on the terms of the sale	70 (70)	69 (67)	83 (60)	75 (95)	76 (323)
3. Among those who obtained professional advice, the % who paid for it	64 (50)	46 (46)	57 (51)	56 (73)	56 (252)
4. Among those who paid for this advice, the % who did so for <i>the first time</i> when following recommendations in their FSP plans	59 (32)	76 (21)	72 (29)	71 (41)	71 (141)
5. Among <i>all surveyed</i> owners who cut and sold trees according to their plans, the percentage who ended up paying for marketing advice for the first time	27 (70)	24 (67)	33 (60)	30 (95)	30 (323)

*The denominators (in parentheses) for data line 1 are all surveyed owners who classified themselves as current FSP participants, while the denominators for data line 2 are the numbers of program clients who had harvested trees for sale according to their Forest Stewardship Plans. Similarly, the denominators for line 3 consist of the respondents represented by the percentages in line 2 (that is, the Pacific States’ denominator for line 3 is 70% of the base for the line 2 entry). There is the same relationship between line 4’s denominator and the percentage in line 3. Line 5’s denominators are the same as those for line 2.

those paying for the assistance, most of them—59% to 76%--did so for the first time (line 4). However, these first-time purchasers of professional advice for marketing comprise just 8% of the weighted national sample’s total respondents and 6% to 9% of the regional totals.⁴⁷ On the other hand, if more owners were encouraged to harvest for sale under

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Among all current FSP participants who received stewardship plans, 1997-2004, the percentages of the surveyed owners who harvested for sale, sought professional advice for the terms of their sales, and paid for that advice but had never done so before.			
Pacific States	Mountains and Plains	Southern States	Northern States
6%	6%	7%	9%

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FSP-type management plans, Table 4.7’s pattern of findings suggests that many of them would end up hiring, for the first time, professionals to help with marketing, resulting hopefully in better prices for the owners, more business for foresters, and perhaps improved logging from an environmental perspective.

Participating Forestland Owners Obtain New Informational Inputs for Their Management Decisions

The fourth type of change in owners’ management behavior that the survey identified was in the informational inputs that respondents reported using. Hopefully, the experiences of working with professionals to develop FSP Plans would persuade program clients to begin using printed or electronically delivered professional information sources, if they were not already doing so. Among the current FSP participants surveyed in the second national study, only 6% to 14% across the four regions said that, *prior* to receiving their first or only FSP plan, they had *paid for* “a magazine, newsletter, or Internet information service that includes material about how to manage your forestland” (Table 4.8). By comparison, at the time of the second survey, from 14% in the Mountain/Plains States to 22% in the North reported paying for such information sources. The 8- to 9-percentage-point differences per region are all statistically significant. It looks as though participation in the program helped, albeit with modest numbers of program clients.

Table 4.8. Increased use of paid professional advice: Percentages of current FSP participants (received plans 1997-2004) who paid for printed or electronically delivered management information before receiving their first or only stewardship plan and the percentage who reported having paid for such information afterwards (as of the time of the survey): By region					
Information Status*	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
Paid for information <i>before</i> received plan	12	6	9	14	12
Paid for information <i>after</i> received plan	21	14	17	22	20
Total current participants	308	289	288	324	1,214

***Texts of questions:** “Do you currently pay for a magazine, newsletter, or Internet information service that includes material about how to manage your farmland?”

“Did you pay for such a magazine or other in formation source before your first or only Forest Stewardship Plan was written?”

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FSP Participants’ Intentions about Seeking Professional Advice in the Future

Table 4.9’s findings suggest that the experiences of participating in the Forest Stewardship Program motivated some owners to consider seeking professional advice in the future for managing their land. Across the four regional samples, from 39% of the Pacific States’ sample to 50% in the South reported that they were “very likely” to “seek advice about your forestland from a professional in managing forests” in the next two years. In the Mountain/Plains and Southern samples, the percentages of “very likely” responses about this intention were statistically significantly greater—by 14 and 17 percentage points, respectively--than the percentages in the same regions for surveyed owners who had obtained advice and a written management plan prior to signing up for

Table 4.9. Seeking professional advice: Percentages of current FSP participants who obtained advice before FSP, who were “very likely “ to seek advice in the next two years, and who were “very likely” to pay for that advice: By national survey (first and second) and by region					
Seeking Advice from a Forestry Professional	Pacific States %	Mountain and Plains States %	Southern States %	Northern States %	Weighted National Sample %
1. Obtained advice before FSP:*					
Second Survey	32	27	33	43	39
First Survey	36	24	39	27	31
2. Very likely to seek advice in next two years**					
Second	39	41	50	40	42
First	35	41	52	49	48
3. “Very likely” or “moderately likely” to seek advice					
Second	58	61	72	61	64
First	56	64	67	65	65
4. Very likely to pay for it***					
Second	21	15	17	20	19
Not asked in the first survey					
5. “Very likely” or “moderately likely” to pay					
Second	39	33	37	36	36
Not asked in the first survey					
Total respondents:					
Second survey	308	289	288	324	1,214
First survey	272	245	274	331	1,120

Texts of questions: *”Before you requested your first or only Forest Stewardship plan, did a forestland management professional ever visit forestland you owned and developed a written management plan for it?” The comparable question in the first national survey did not include development of a written plan.
 ***”How likely is it that sometime in the next two years, you will seek advice about your forestland from a professional in managing forests?”

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***"How likely are you to agree to pay for such advice?"

the FSP (compare Table 4.9's data lines 1 and 2). The Pacific States also saw an increase, but of just 7 points, while the Northern States recorded a three-point drop. The pattern in the first national survey was similar, except that statistically significant increases were found in three of the four regions. The combined percentages for "very" and "moderately likely" varied little between the two surveys. At the national level the difference was just one percentage point: 64% versus 65% (Table 4.9). Table 4.9's fourth data line shows that relatively few FSP participants were "very likely" to agree to pay for professional advice in the next two years—from 15% in the Mountain/Plains States to 21% in the Pacific region. Adding in those respondents who were "moderately likely" to pay increases the percentages to a range of 33% to 39% across the regional samples. The national level measure is 36% (Table 4.9).

The next table, 4.10, explores further the relationship between having experienced technical assistance and the intention of obtaining more in the future. This table reports the results of logistic regression analysis that looked for traits of the owners, their stewardship plans, and their forestland that were associated with being "very likely" to seek professional advice in the next two years. The analysis found that receipt of follow-up technical assistance for implementing the current or only stewardship plan made a statistically and practically important difference. It was estimated to increase the chances

Table 4.10. Traits of the owners, their plans, and their forestland that were associated with being "very likely" to seek management advice from a forestry professional sometime in the next two years, among surveyed participants who received new or revised FSP plans, 1997-2004.		
Trait*	If the trait's value changes by this much:	then the estimated chances of being "very likely" to seek advice change by this much:
Number of years of formal education	An additional year of education	1.2 times higher
Receipt of follow-up technical assistance (requested after the plan was in the owners' hands)	Yes, received such assistance versus, no, did not.	2.3 times higher
Number of separate management objectives the owner pursued through the stewardship plan	An additional objective in the plan	1.2 times higher
Number of total forestland acres owned	An additional 100 acres of forestland	1.1 times higher
Number of times in past year that looked at his/her stewardship plan	An additional time	1.3 times higher
Measure of how well these 5 variables together explain the intention of being "very likely" to seek additional technical assistance**		.203
Number of cases on which analysis was based		1,153

*All variables were estimated to have statistically significant associations (at the .006 level) with the intention of seeking such assistance within the next two years. The estimated increase per variable in the

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chances of owners having that intention assumes that the other causal variables in the analysis are held constant.

** The measure is the Nagelkerke R square. For this set of variables to explain all variation in the decision, the Nagelkerke R square would have to be 1.00 (Menard, 2000, p.25).

of being “very likely” to seek additional technical assistance by a factor of 2.3 (Table 4.10). Curiously, the experience of having had a professionally written plan before participating in the FSP did not significantly affect the intention to get advice in the future. Traits that did have positive effects are: more years of formal education, a greater number of separate management objectives in the stewardship plan, more acres of forestland owned, and consulting the plan more separate times in the 12 months prior to being surveyed.

All five of these apparently causal variables listed in Table 4.10 were found statistically significant when the analysis focused on the Northern States’ sample alone. Four (the exception being education) made positive differences in the Pacific States. Three did in the Southern sample: follow-up technical assistance, acres owned, and frequency of consulting one’s plan. But none did in the Mountain/Plains States.

Summary

Chapter 4 focused on changes in management behavior associated with receiving a Forest Stewardship plan.

- The second national survey found, as did the first, that most FSP participants had applied at least one plan-recommended management activity that was new to them, “that is, an activity that you had never done before.” Fifty-four percent of the total sample for the 1997-2004 period made this report, compared to 55% among the 1991-1997 group of program clients (Table 4.1). Moreover, in implementing their plans, many respondents—31% in the second survey and 30% in the first—were using new activities to achieve two or more separate management objectives. This finding suggests that FSP’s emphasis on multiple resource stewardship may have had the added benefit of encouraging the learning and application of new management practices. Regression analysis supported this suggestion. It found that, the more separate objectives in the plan, the more likely the program participant was to report applying new activities (Table 4.10).
- According to both national surveys, the most frequently reported new practices came under the management objective, “growing trees or caring for their health, such as planting, thinning, or preventing fires.” The second most common was “improving or preserving your forestland as habitat for wildlife, such as regarding food, cover, or water available for wildlife.”

The second survey asked some questions not covered in the first, including:

- Had the forestland owners ever harvested trees for sale before receiving a stewardship plans? Fifty-two percent of the weighted national sample had not (Table 4.6). Of that number one-quarter reported their first commercial harvests as

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a result of carrying out recommendations in the plan.

- Research on timber sales has found that owners who hire consultants to evaluate tree stands and help conduct the sale may obtain significantly better prices and other terms. The FSP's emphasis on managing with the benefit of professional advice may have encouraged participants to seek consultants' help with timber sales. Seventy-six percent of the surveyed owners who cut and sold trees according to their plans' recommendations reported that they had obtained advice from professionals on the terms of the sale. Fifty-six percent of that subgroup said that they had paid for the assistance, and seven in ten of them had never before spent money for that purpose (Table 4.7).
- Another type of professional input into managing forestland may be printed or electronically delivered information such as in magazines, newsletters, or Internet information services. In the weighted national sample, only 12% of the surveyed owners reported paying for this type of input before receiving their stewardship plans, while 20% did so at the time of the survey (Table 4.8). Though a modest percentage-point change, it is in the right direction and is statistically significant. So were the corresponding changes in each of the four regional samples.
- Given the technical challenges in coping with pests, drought, fire, and other threats to forest health, as well as the complexities of marketing, it is hoped that many FSP participants will continue to seek professional advice. When asked how likely they would do so "sometime in the next two years," 42% answered "very likely"; and a total of 64% were either "very likely" or at least "moderately likely." However, only 19% reported being "very likely" to agree to pay for such advice, while the combined "very" and "moderately likely" percentage for paid advice was 36% (Table 4.9).

Chapter 5

Policy Inferences

Introduction

In this last chapter of the report, we search the previous chapters' survey findings for policy inferences, that is, for indications of whether policy makers for the Forest Stewardship Program (FSP) should seek to improve it or leave well enough alone. Some findings suggest the program is succeeding as it is currently structured, while others point to possibly needed changes. Among the encouraging findings is that the generally positive pattern of program performance found in the first survey (for participants who received their Stewardship Plans, 1991-1997) was repeated in the second survey (for clients with new or revised plans, 1997-2004). Among the findings that suggest problems are the continued tendency of FSP clients to be unrepresentative of nonindustrial forestland owners in important respects and, also, the substantial decreases—between the two surveys—in the percentage of program participants who obtained cost-share assistance for implementing their stewardship plans. However, since cost-share funding is not a component of the FSP, improvements in that valuable input for forestry management will require increased resources for other programs.

Performance Indicators

The Drop-out Rate. As with the first national FSP survey, the second one found a very low drop-out rate. At the time of being interviewed or filling out mailed-back questionnaires, only 5% of all responding owners had decided never to implement their stewardship plans or to discontinue their use (Table 5.1). The comparable rate for the first study was 8%.

Starting to Implement Plans. Conversely, the percentages of total respondents who reported having started to carry out management activities recommended in their plans were high: 84% in the first survey and 80% in the second (Table 5.1). Although in both studies, relatively few owners reported harvesting trees from their land for sale, the rate increased somewhat, from 30% to 34% of total surveyed owners, with all the change occurring in the Pacific and Mountains/Plains regions (Table 3.5).

Following a Multi-resource Approach to Managing Forestland. One of the explicit goals of the FSP has been to encourage owners to manage their land from a “multi-resource” perspective (USDA Forest Service, 2005, p. 1). Rather than focusing on one resource, like timber for sale or forested areas as attractive scenery, the planning process can help owners to identify multiple and, in many cases complementary objectives. An example of the latter would be thinning both to improve the health of tree

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Table 5.1. Performance indicators: Comparisons between two national surveys of Forest Stewardship Program participants: those receiving stewardship plans between 1991 and 1997 and those with new or revised plans written between 1997 and 2004: Percent of respondents (in the weighted national sample) by performance indicator		
Program Performance Indicators	First Survey %	Second Survey %
Drop-out rate: Percent of total surveyed forestland owners who said that they had dropped out of the program or decided never to begin applying their plans	8	5
Starting to implement: Percent of total surveyed owners who reported applying at least one of their plan-recommended management activities	84	80
Following a multi-resource approach to managing forest land: Percent of total surveyed owners who applied plan-recommended activities to achieve <i>two or more</i> separate management objectives.....	62	63
Percent applied recommended activities for <i>three or more</i> objectives.....	39	39
Spending significant amounts of own money: the average dollars spent per year by current program participants on plan implementation since their plans were written	\$756	\$996
Innovating: Percent of total surveyed owners who used recommended activities that were new to them (“an activity that you had never done before”)	55	54
Intending to seek professional advice: Percent of current program participants believing there were “very likely” to seek professional advice in next two years	48	42
Total number of surveyed owners who received stewardship plans	1,220	1,281
Number of respondents who were current participants (i.e., classified selves as still participating in the FSP)	1,120	1,214

stands and to leave piles of branches for wildlife habitat.

In fact, across all four regions the most commonly reported combination of two separate objectives being actively pursued was: (1) growing or caring for trees and (2) improving wildlife habitat. From 45% of the surveyed current program participants in the Northern States to 64% in the Pacific States said that they were carrying out at least one plan-recommended activity to achieve each of these two objectives (Table 3.16). At the national level, 62% of the total respondents in the first survey and 63% in the second were applying activities for some combination of two or more management objectives, while 35% in the first and 39% in the second reported pursuing at least three objectives (Table 5.1).

Owners Spending Significant Amounts of Un-reimbursed Money on Plan Implementation. A frequently sought effect of government grants is to leverage private investment in the same purpose as the grants seek to achieve, like a community’s economic development.⁴⁸ With forestry technical assistance, the investment might consist exclusively of labor from the owner and family. However, in addition or

⁴⁸ The Minnesota Investment Fund, *Minnesota Statutes, 2004*, Chapter 116J.8731

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alternatively, the owner might hire a private or public forester, as well as buy equipment, seedlings, and other goods, the purchase of which benefits the vendors, their employees, and other participants in the local and broader community.

Both national surveys on the FSP found this kind of positive program outcome. In the first survey, the un-reimbursed owner expenditure on stewardship plan implementation averaged an estimated \$690 per year since the plan was written. By the time of the second survey, the average spent had risen to \$944, an increase that was greater than the 18% consumer price inflation during the six-year interval and that also exceeded the likely random variation due to sampling error.

Owners Adopting Management Practices that Were New to Them. While technical assistance may encourage forestland owners to continue or expand management practices they currently use or previously applied, perhaps more impressive is when program clients are introduced to and decide to carry out activities that are entirely new to them. This survey question was asked about each of seven major types of management objectives (see Table 3.4): “Which, if any of them [plan-recommended activities the owners had started to implement to achieve that objective] was new to you, that is, an activity that you had never done before your first or only Forest Stewardship Plan was written?”

Fifty-five percent of the total respondents to the first survey and 54% in the second reported carrying out new activities for at least one separate management objective (e.g., caring for trees’ health or protecting wildlife habitat--Table 5.1). The corresponding measures for new practices directed towards achieving at least *two* different objectives were 30% and 31%, respectively (Table 4.1).

Seeking Professional Advice in the Future. The technical challenges of combating tree pests, reducing the risk of forest fires, negotiating profitable timber sales, and realizing other management purposes are great enough that many owners need on-going access to professional advice. In both national surveys more than four in ten of the respondents—48% in the first and 42% in the second—believed that they were “very likely” in the next two years to “seek advice about your forestland from a professional in managing forests” (Table 5.1). Nineteen percent of the second study’s current program participants said they were even “very likely” to pay for it (Table 4.9).⁴⁹

Client Traits Associated with Desirable Management Behavior

While these just-discussed performance indicators tend to be impressive both in their levels (42%, 54%, 63%, 80%, etc.) and in their relatively stability across the two surveys separated by six years, how can the program nevertheless be improved? We used regression analysis⁵⁰ to identify traits—of the FSP participants’ personal backgrounds, their forestland holdings, and any experience with technical or cost-share assistance--that are associated with desirable management behavior. If more or less of a trait (e.g., educational attainment) relates significantly to using a multi-resource approach to forest

⁴⁹ This question was not asked in the first national survey.

⁵⁰ Logistical regression (Menard, 2000).

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management or carrying out other good stewardship practices, especially when possible rival causes have been taken into account (as regression analysis can do), program decision makers could decide to target outreach efforts to forestland owners with relatively more of such traits.

Prior Experience with a Management Plan. Like many programs the FSP has a target clientele—the owners of nonindustrial private forestland who need advice in order to manage their land more actively. Such need may be evidenced if the owners have never previously possessed written management plans. In both national surveys most respondents reported not having such plans before they signed up for the FSP. But significant minorities did--something less than 31% in the first and 39% in the second (Table 2.5).

This percentage increase in FSP participants with prior plans has mixed implications. On the one hand, we found through statistical analysis that, other things being equal, the participants reporting previous plans were more likely to:

- start implementing their current stewardship plans,
- carry out plan-recommended activities for at least two separate forest management objectives, and
- apply activities for three or more different objectives (tables 3.10, 3.17, and 3.18).

There may have been some learning experiences or predisposition associated with those earlier plans that led to more active implementation of the FSP plans. On the other hand, nationwide in 2003 only 3% of “family forest” owners were estimated to have written forest-management plans (USDA Forest Service Press Release, June 19, 2005). An important policy question is therefore: *Should the FSP be helping many already experienced-with-plans owners to do better than the novices, or should it concentrate largely on the novices?*

The program’s revised *National Standards and Guidelines* (October 2005) would seem to accommodate both types of clients. That document calls for targeting both landowners in high-priority “forest resource areas” and to “those new to, or in the early stages of managing their land in a way that embodies multi-resource stewardship principles.”⁵¹ While owners without prior written plans fit in the second category, those with pre-FSP plans might contribute significantly to improved management in the priority areas.

Educational Level and Number of Forestland Acres Owned. Both the first and second FSP surveys found the program’s participants to have more resources than the generality of NIPF owners. For example, while the 2004 National Woodland Owner Survey recorded only 27% of owners to have bachelors or higher degrees (Butler and Leatherberry, 2005), our 51% of the weighted national sample in our second study reported that level of education (Table 2.12). Also, among our respondent, the median-sized forestland ownership, by region, exceeded the median found in the 2003 Woodland Owner Survey by six to 11 times (Table 2.15).

⁵¹ USDA Forest Service, 2005. *Forest Stewardship Program: National Standards and Guidelines*, 9 pp.

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According to our statistical analysis of potential causal traits, other things being equal, the higher the educational attainment, the greater the likelihood that the surveyed FSP participants were to:

- start implementing their FSP plans (Table 3.10),
- have spent at least a thousand un-reimbursed dollars on applying the plans (Table 3.22),
- carry out at least one plan-recommended management activity that was new to them (Table 4.5), and
- believe that they were “very likely” to seek management advice from a forestry professional sometime in the next two years (Table 4.10).

Also, the more forestland acres owned, the more likely the respondent was to spend at least \$1,000 on plan implementation and to predict he/she would seek professional advice. So, again policy makers may ask: *Should we be helping a number of relatively well-resourced owners to manage their forestland better than others can who are less advantaged?* This question begs a second one that our survey data cannot answer. Some kind of on-the-ground monitoring would be needed to judge whether the better educated and/or larger owners happened both (1) to own environmentally or commercially important forestland and (2) to be managing it very effectively. If both conditions were found together, such forestland owners’ relatively greater representation in the FSP clientele may be well justified.

The revised *National Standards and Guidelines* (cited earlier) offer a solution in their “special attention to landowners in important forest resource areas” (p. 1). Such targeting would replace a largely first-come, first-served basis for providing technical assistance, a basis that—as our surveys have found—has attracted disproportionately high numbers of well-educated clients and those with large ownerships. The revised *Guidelines* call on each state to:

Describe and spatially define important forest resource areas where program outreach and activity will be emphasized. The establishment of these program focus areas is intended to enable the efficient, strategic use of limited resources where they will address current State resource management priorities and produce the most benefit in terms of important forest resource values (p. 3).

Frequency of Physically Being on the Land. Another set of potentially policy-shaping findings from the recent FSP survey derives from the amount of time owners are physically on their forestland. Sixty-two percent of the surveyed current participants for the second study lived on forestland covered by their FSP plans at least one month of the year, while another 20% visited from 15 to 20 days during the previous year (Table 2.6).

We hypothesized that the more days the owners spent on the subject land, the more time they had to carry out recommended activities, themselves, or to hire and encourage someone to do work for them. Regression analysis supported the hypothesis. Other variables held constant, the more days they lived on or visited their FSP land, the more likely owners were to:

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- start to implement their plans (Table 3.10),
- carry out plan-recommended activities for at least two separate forest management objectives (Table 3.17),
- apply activities for three or more objectives (Table 3.18),
- have spent at least a thousand un-reimbursed dollars on plan implementation, and
- have begun at least one management activity that was new to them. (Table 4.5).

Figure 5.1 illustrates the differences among four groups of respondents (in the weighted national sample): those reporting no days spent in the last year on any of their forestland covered by the plan, those who visited from one to 14 days, the group visiting from 15 to 29 days, and lastly—those who said they lived on the land for at least one month. For the first three types of decisions, the chart indicates substantial differences—20 percentage points or more—between surveyed owners spending no days on their land and those with 15 or more days of visiting. For example, while among the owners reporting no time on their land, 47% said they had begun to apply activities to achieve at least two separate management practices, 71% did so among the respondents visiting from 15 to 29 days and 68% among those spending at least a month on their land. For the fourth and last decision in the graph—to spend at least \$1,000 on plan implementation, that difference is only 8 points (33% versus 41%).⁵²

Given these findings, *should the FSP discourage applicants who know that they are likely to visit their forestland only rarely.* In the second survey, 14% of the national sample's current program participants reported being on their land zero to 14 days in the previous year (Table 2.6). Some of the surveyed owners who had not yet started to implement any part of their stewardship plans explained that they lived too far away to provide needed effort of their own or guidance to whomever they might hire to do the work (Table 3.3).

⁵² Figure 5.1 suggests that plan implementation may be greater among owners on their land from 15 to 29 days compared to those living on it for at least a month each year. The percentages for the former group are 2 to 4 percentage points greater than those for the latter, but only the first of these differences (about starting to implement the plans) is statistically significant, that is, greater than sampling error alone can explain.

Figure 5.1. Relationship between Management Decisions and Days on the Land

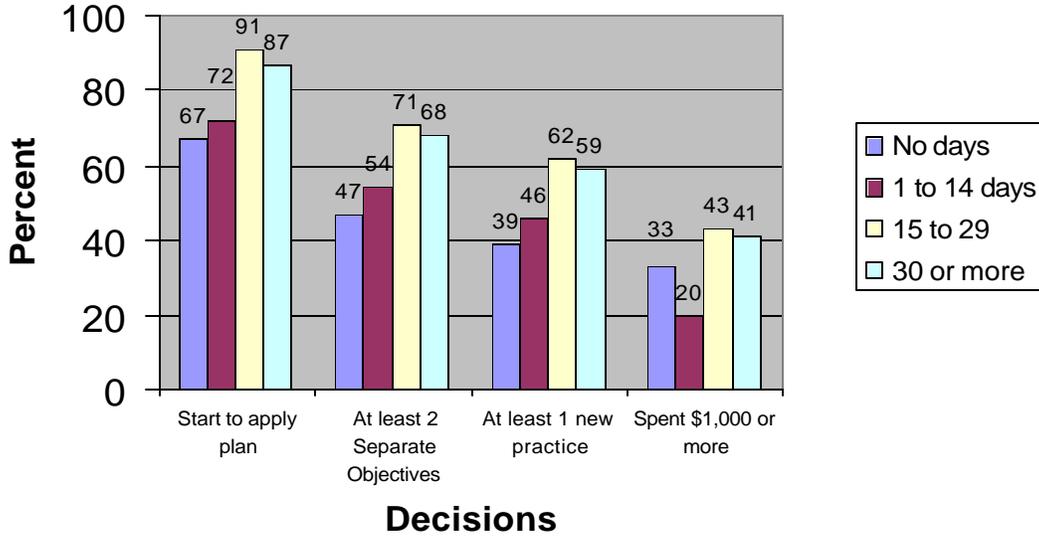
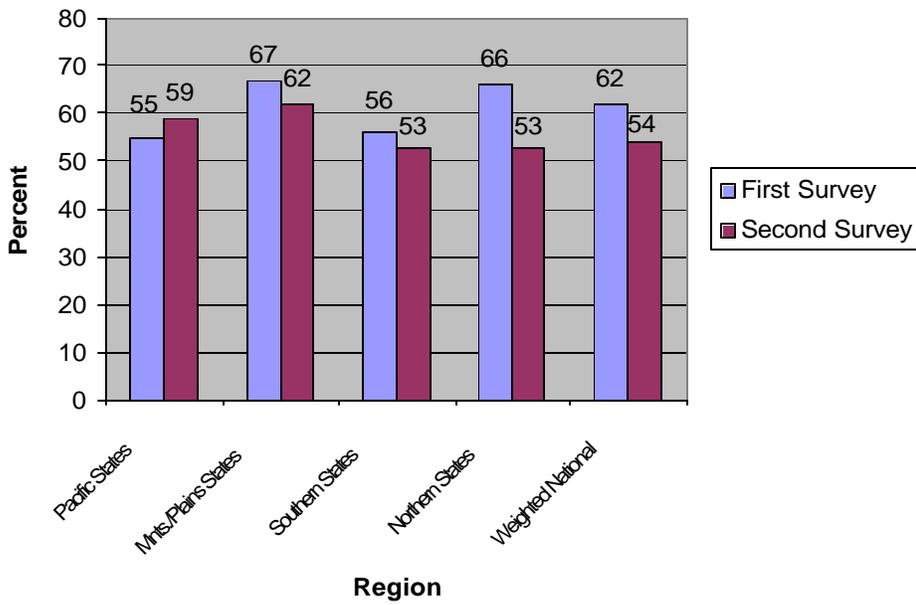


Figure 5.2. Percent of Current FSP Participants Who Received Follow-up Technical Assistance



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Receipt of Follow-up Technical and/or Cost-share Assistance. Also associated with several desirable aspects of plan implementation was receipt of follow-up assistance. The second national FSP survey defined *technical assistance* of this kind as: “After receiving their Stewardship Plan, some owners request a forester, wildlife biologist, or other professional in forest management to visit their land to give follow-up technical advice on carrying out the plan’s recommendations.” A similar definition was used in the first survey.⁵³ In the second survey, from 53% of the Northern States’ sample to 62% among the Mountains/Plains States’ respondents reported having received technical assistance (Figure 5.2).

When asked the source of the aid, from 52% in the Pacific Sample to 81% of the relevant owners in the Mountains/Plains region chose the response option, “from a public agency like USDA, your state’s forestry department, or your local conservation district” (Table 5.2). Across the four regional samples, 10% to 23% selected “from a private agency like a forestry consulting firm or forest products firm,” while 7% to 24% chose “from both public and private agencies” (Table 5.2).

Response	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample %
Public agency like USDA, your state’s forestry dept., or your local conservation district	52	81	76	65	68
Private agency like a forestry consulting firm or forest products firm	23	10	12	22	19
From both public and private agencies	24	7	12	12	12
Not sure	1	2	0	1	1
Recipients of follow-up technical aid	181	178	153	173	651

Regression analysis found that, other things being equal, program clients with follow-up technical assistance were more likely to have:

- started to implement their plans—in three of the four regions (except the Pacific) as well as in the weighted national sample (Table 3.10),
- carried out plan-recommended activities to achieve at least two separate management objectives—in all four regions and at the national level (Table 3.17),
- applied such activities to realize three or more objectives—in two regional samples as well as the national one (Table 3.18),

⁵³ “[H]ave you received any follow-up technical assistance in the sense of some specialist in forest management having visited your land after the Stewardship Plan was approved to give you advice on how to carry out your plan’s recommendations?”

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- spent at least \$1,000 dollars on plan implementation that would not be reimbursed—in two regions and at the national level (Table 3.22), and
- adopted at least one management activity that was new to them—also in two regions as well as in the national sample (Table 4.5).

Cost-share assistance was defined in the two surveys as grants to help pay for the activities recommended in the stewardship plans. For example, under the federal FLEP program (Forest Land Enhancement Program), Iowa's Department of Natural Resources has offered to pay 75% of the cost (though no more than \$600 per acre) for "Tree Planting/Direct seeding," whether for reforestation or afforestation.⁵⁴

In the second national FSP survey, from 26% of the surveyed current FSP participants in the Northern States' sample to 53% in the Pacific cases received cost-share assistance to help cover the costs of plan implementation (Figure 5.3). Across the four regions, when these recipients were asked the source of the funds, from 93% to 95% choose the response option, "from a public agency like USDA, your state forestry agency, or a local government." Figure 5.3 shows that in each region the percentage of cost-share recipients identified in the first national survey was higher: 8 points greater in the Pacific States (61% compared to 53%), 24 points in the Mountains/Plains States (65% versus 41%), 22 points in the South (52% rather than 30%), and an impressive 30-point difference in the Northern region (56% compared to 26%).

Table 5.3 suggests at least a partial explanation for these decreases in cost-share assistance for nonindustrial private forestland. The 2002 Farm Bill repealed two federal sources available in the 1991-1997 period: the Stewardship Incentive Program and the Forestry Incentives Program. Then the program that was supposed to replace them, the Forest Land Enhancement Program, has been starved for funds (Table 5.3).

⁵⁴ Iowa Department of Natural Resources, *Forest Land Enhancement Program Practices and Components in Iowa*, p. 1, <http://www.iowadnr.com/forestry/pdf/FLEP%20Rates.pdf>. [accessed September 11, 2005].

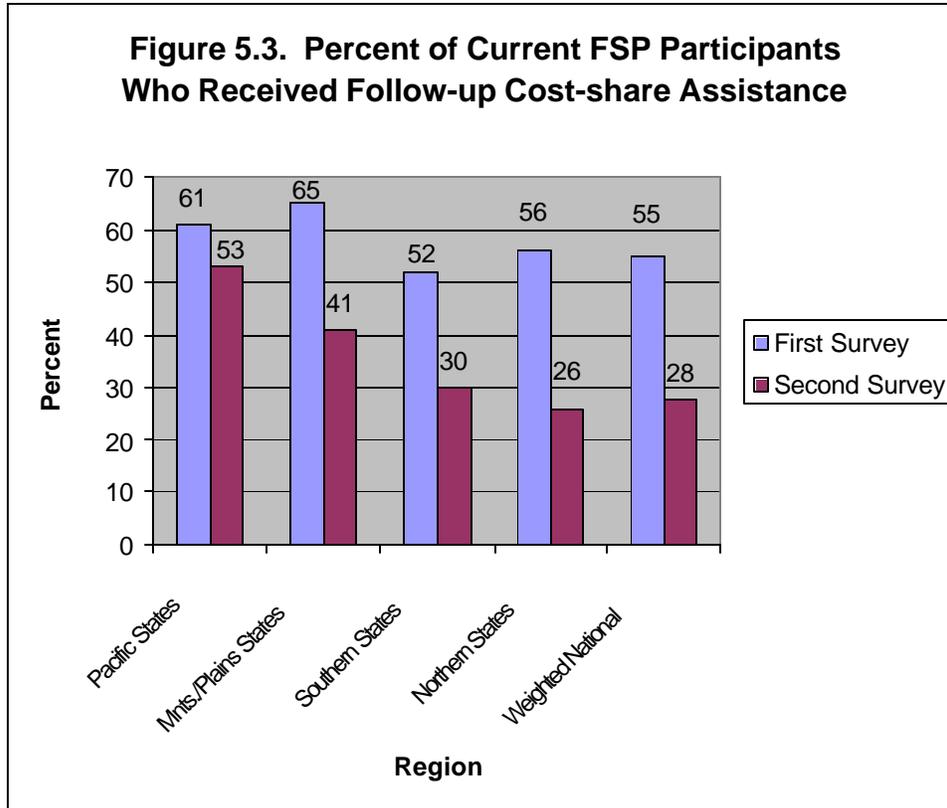


Table 5.3. Major federal sources of cost-share assistance for implementing Forest Stewardship Program Plans: Authorized funds in millions of dollars, FY 1993 through FY 2005

Fiscal Year	Stewardship Incentive Program*	Forestry Incentives Program*	Forest Land Enhancement Program**
1993	\$17.8 million	\$12.4 million	Authorized by the 2002 Farm Bill
1994	17.9	12.8	
1995	18.2	6.6	
1996	4.5	6.3	
1997	4.5	6.3	
1998	6.5	6.3	
1999	0.0	16.3	
2000	0.0	5.4	
2001	0.0	6.8	
2002	3.0	6.8	
2003	Repealed by the 2002 Farm Bill	Repealed by the 2002 Farm Bill	\$20.0 m. that might have been allocated also used for fire fighting
2004	--	--	\$5.0 m. released for use
2005	--	--	\$20.0 m. cancelled

*Source: USDA Forest Service, unpublished tables.

**USDA Forest Service, State and Private Forestry, Cooperative Forestry, 2005, *Forest Land Enhancement Program: Briefing Paper*, March 31, 2005, 2 pp. (<http://www.fs.fed.us/spf/coop/library/flepbriefing.pdf> [accessed September 11, 2005]).

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Our statistical analysis for the second FSP national survey suggests that these losses have lowered the frequencies of desirable management activities below what they would have been if cost-share assistance had continued at the previous levels. Other things being equal, surveyed program participants (in the second study) who reported cost-share grants were more likely to have:

- started to implement their plans—in three of the four regions (except the Mountains/Plains states) as well as in the weighted national sample (Table 3.10),
- carried out plan-recommended activities to achieve at least two separate management objectives—in the national sample and also among the Pacific States' respondents (Table 3.17), and
- spent at least \$1,000 dollars on plan implementation that would not be reimbursed—in three regions (again with the Mountains/Plains states being the exception) and at the national level (Table 3.22).

Moreover, although compared to other forms of follow-up assistance, relatively fewer surveyed FSP participants received cost-share support, they tended to value it more highly. The second national survey included a question after each of three forms of assistance, “Looking at what you have done so far in carrying out the activities recommended in your current Stewardship Plan, would you have done as much *without that . . .* [form of assistance].” The three forms were:

- “a workshop or other educational meeting in which groups of forestland owners were given advice on how to carry out their Stewardship Plan”;
- “a visit and follow-up advice” from “a forester, wildlife biologist, or other professional in forest management”; and
- “cost-share money from a public or private agency to help pay for the activities recommended in your Stewardship Plan.”

Table 5.4 indicates that rather few participants attended any follow-up group meeting—20% to 24% across the four regions. Nevertheless, from 52% (in the Northern States) to 65% (Pacific) of these attendees believed that they would not have done as much with their stewardship plans without the information (and, perhaps, the encouragement from peers) that they gained at the meetings.⁵⁵ The corresponding evaluations given to follow-up technical assistance were not much different, except in the Northern region, where 61% of the recipients of technical assistance said they would not have achieved as much without it. In all four regions, the highest marks by this indicator were given to follow-up cost-share assistance. From 66% in the Northern States to an impressive 79% of the Pacific States' respondents who received cost-share grants believed that it was necessary to what they achieved in plan implementation.

⁵⁵ However, in our statistical analyses of possible associations between landowner traits and six different aspects of their implementation of stewardship plans (e.g., starting to apply the plan, using recommended activities to achieve at least two separate management objectives, etc.), attendance at one of these group meetings was not associated with any of them in a statistically significant sense.

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Table 5.4. Among current FSP participants whose stewardship plans were written, 1997-2004, the percentages who had one or more of three types of follow-up assistance and their opinions of each type's effect on their plan implementation efforts: Educational workshops, technical assistance, and cost-sharing for applying the recommended practices: By Region					
Types of Follow-up Assistance	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample %
Attended a workshop or other educational meeting on plan implementation	24	24	20	20	20
Among those attending such workshops or meetings, the percent saying they would <i>not</i> have done as much plan implementation without attending	65	64	59	52	55
Received follow-up technical advice from a professional	59	62	53	53	54
Among those receiving such advice, the percent saying they would <i>not</i> have done as much plan implementation without that advice.	58	60	56	61	60
Received cost-share money to apply plan-recommended practices	53	41	30	26	28
Among those receiving cost-share money, the percent saying they would <i>not</i> have done as much plan implementation without it	79	75	68	66	68
Total respondents	308	289	288	324	1,214

Awareness of Cost-share Assistance Currently Available

The FSP participants responding to the second national survey were not very optimistic about obtaining cost-share money for their plans. When asked, “If you were interested now in obtaining cost-sharing money to carry out your Stewardship Plan, do you happen to know of any program that has money for which you could apply?” From only 16% in the Northern States to 27% in the Mountains/Plains region answered “yes” (Table 5.5). Then when these 268 respondents (the total across the four regional samples who replied “yes”) were asked in a follow-up question, “What program or programs do you have in mind,” most could not identify specific programs:

- 44% named an agency (like their state’s Department of Natural Resources or their local soil and water conservation district) but not a program within the agency that they believed made cost-share grants.

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- 12% could not recall either a source agency or a program.
- Regarding relevant USDA programs,
 - 7% of the 268 cited FLEP (the Forest Land Enhancement Program)
 - 4%, EQIP (the Environmental Quality Incentives Program)
 - 3%, the CRP (the Conservation Reserve Program),
 - 2%, CREP (the Conservation Reserve Enhancement Program),
 - 2%, WHIP (the Wildlife Habitat Improvement Program), and
 - 2%, WRP (the Wetlands Reserve Program).

Do these findings suggest outreach problems? Should more of our respondents have been made aware of existing cost-share programs to implement their stewardship plans? Or are the “pickings” really so slim that the high percentages of “no” answers in Table 5.5 and the lack of specificity in the follow-up responses from the “yes” owners reflect the programmatic realities in the regions?

Table 5.5. Among current FSP participants who received new or revised stewardship plans, 1997-2004, the percent who knew of programs from which they could obtain cost-share money to carry out their Stewardship Plans: By Region					
Response	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample %
Yes, know of such a program	25	27	21	16	18
No	69	69	71	79	76
Not sure	6	4	8	5	6
Total respondents	308	289	288	324	1,214

Program Participants’ Willingness to Recommend the FSP to Other Forestland Owners

Additional information about the importance of cost-share and technical assistance was provided by answers to two questions asked towards the end of the interviews. The first was:

If any of your family members or friends had land suitable for the Program [the immediately previous short-answer question had used the full title, “Forest Stewardship”], would you:

1. recommend participating in it
2. recommend it with reservations
3. not recommend participation in the program at all.

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Table 5.6. Among current FSP participants who stewardship plans were written, 1997-2004, the percent, willing to recommend participation in the Forest Stewardship Program to family members or friends with “land suitable for the program”: By region						
Response Options	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %	Weighted National Sample % 1997-2004*	Weighted National Sample % 1991-1997**
Recommend participation	73	83	85	76	78	94
Recommend with reservations	23	14	11	18	16	
Not recommend at all	3	2	2	2	2	4
Don't know/Won't say	1	1	2	4	4	2
Total respondents	308	289	288	324	1,214	1,120

***Text of question in second national survey:** “If any of your family members or friends had land suitable for the Program would you: recommend participating in it, recommend it with reservations, [or] not recommend participation in the program at all.”

****Text of question in first national survey:** “Would you recommend to friends or family members that they participate in the Forest Stewardship Program if they had land suitable for it? Would you recommend it strongly, recommend it, or not recommend it at all?”

Across the four regional samples, from 73% of the respondents in the Pacific States to 85% in the Southern region recommended participation without reservations (Table 5.6). From 11% in the South to 23% in the Pacific States chose the response option, “recommend it with reservations,” while only 2% to 3% would “not recommend participation in the program at all.” The first national FSP survey asked a question sufficiently different in its wording so that the only plausible comparison is on the “not recommend at all” response. Those measures were not much different—4% in the first study rather than 2% in the second (Table 5.6).

The question was worded differently in the second survey because we wanted the surveyed owners with criticisms of the program to express them. Therefore, those who chose the second or third response option were asked this open-ended follow-up question: “Why would you not recommend participation at all, or what are your reservations?” Table 5.7 summarizes the reasons offered by both groups. Since there were only 27 respondents who did not recommend the program “at all,” we decided to combine their answers with those of the larger group of 212 “with reservations.”

Among these 239 participants who would not recommend the program or only with reservations, the most common type of criticism in all four regions was that the stewardship plans were flawed. From 20% of such surveyed forestland owners in the Mountains/Plains states to 42% in the North complained that their plans had been difficult to understand, were unduly restrictive of their freedom to manage their land, or offered unsatisfactory management advice in other respects (Table 5.7). The most frequent “other” criticism was that the plans were too general, e.g., lacking in detail, looking like one written for a thousand other owners rather than fitting the owner’s particular forestland.

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Table 5.7 Among current FSP participants whose plans were written, 1997-2004, and who would not recommend the program to family or friends, either at all or only with reservations, the percentages giving the indicated reasons for their positions: By region				
Most Frequent Types of Reasons	Pacific States %	Mountains and Plains States %	Southern States %	Northern States %
Plans are flawed —such as plans are too general, have too many rules, their requirements are difficult to understand, they provide unsatisfactory advice	26	20	28	42
Program requires too much time —such as in dealing with red tape, doing the required cutting and hauling wood, or finding a good forester to help	19	20	15	16
Financial expense for the owner is excessive: the investment of time and money doesn't pay; not cost effective (Respondent specifically complains about the lack or inadequacy of cost-share assistance)	30 (16)	27 (14)	20 (13)	9 (6)
Absence of or inadequate follow-up technical assistance	6	16	10	10
Depends on the type of forestland you have and the owner's knowledge base and motivation—don't bother if have small parcel, if it's not environmentally sensitive, if you intend to sell it soon, if want to develop it, if you are well versed in forestry practices	9	0	18	13
Number of participants who would not recommend the program or only with reservations	81	49	40	69

Another not infrequent criticism—from 15% to 20%, depending on the region—was that participation required too much time, whether in filling out forms or doing the work of plan implementation (e.g., hauling wood, splitting, chain-sawing—Table 5.7). Several critics urged potential program clients to do research ahead of time to determine if they had the time, physical vigor, and other resources needed to carry out plans.

A third type of grievance—from 9% to 30% across the four regions--was the perception of excessive financial cost for carrying out plans. Most of this group of critics (see the percentages in parenthesis) specifically mentioned the lack of adequate cost-share assistance. For example, one forestland owner said, “The whole program was misrepresented to us.... There was no money to follow any recommendations.” Another warned, “I wouldn't recommend it unless they are going to restore the cost-sharing.”

Other critics focused on what they thought was inadequate technical assistance after the stewardship plans were received. They comprised 6% to 16% of those who had reservations or would not recommend the program at all (Table 5.7). For example, one

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respondent complained of “the lack of follow up and of continual contact.” Another said, “They give you the plan, and they won’t assist you in making the plan work.” A third believed, “Landowners need more hands-on help as to where to acquire labor and materials.”

Of course, these cases comprise relatively few from a group that, in itself is small—18% of the weighted national sample (Table 5.6). However, they add to the plausibility of the statistical analyses presented indicating that the receipt of cost-share and/or technical assistance makes a positive difference in forestland owners’ management decisions (tables 3.10, 3.17, 3.18, 3.22, 4.5, and 4.10). Other studies have found these relationships (Royer, 1987; Esseks and Moulton, 2000).

If the appropriations authorities had to make a choice between more generous funding of follow-up technical assistance versus cost-share, do our findings give them any guidance? The findings are mixed.

- On the one hand, proportionally more recipients of cost-share assistance reported that it enabled them to do more plan implementation than if they had not obtained it, compared to the respondents with technical assistance asked the same kind of question (Table 5.4). Moreover, the relevant percentage-point differences (between the two kinds of assistance) shown in that table were statistically significant in three of the four regional samples (excepting the Northern States).
- On the other hand, Table 5.8 below shows that, in regression analyses which take into account potentially competing variables (including the other type of follow-up aid), the unique contribution to owner decision-making that is estimated for technical assistance tends to be greater. For example, while receipt of cost share is estimated to increase the likelihood (or chances) of starting to implement one’s stewardship plan by 1.8 times, the corresponding estimate for follow-up technical assistance is 3.0 times. Statistical analysis found that technical assistance increased the chances of all six types of management decisions covered in the table, while cost-share made a statistically significant difference in three of the six. For those three types of decisions, technical assistance’s estimated impact was substantially greater in one case, a lot less in a second, and about the same as cost-share’s in the third instance.

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Table 5.8. Among current FSP participants whose plans were written, 1997-2004, the estimated change in the likelihood (or chances) of selected management decisions being made if the participants have received follow-up technical or cost-share assistance, when other potentially causal variables in the analysis are taken into account*		
Management Decision	Estimated change if owner receives <i>technical assistance</i>	Estimated change if owner receives <i>cost-share assistance</i>
To start implementing one's stewardship plan	The likelihood increases by 3.0 times	The likelihood increases by 1.8 times
To begin to carry out plan-recommended activities for achieving at least <i>two</i> separate management practices	+ 3.2 times	+ 3.1 times
To begin to carry out plan-recommended activities for achieving at least <i>three</i> separate management practices	+ 1.9 times	Effect on likelihood is not statistically significant.
To spend at least \$1,000 in un-reimbursed funds to implement one's stewardship plan	+ 2.1 times	+ 4.5 times
To begin carrying out at least one plan-recommended management activity that was new to the owner	+ 1.7 times	Not statistically significant.
To be "very likely" to seek management advice from a forestry professional sometime in the next two years	+ 2.3 times	Not statistically significant.

*The analytical tool is logistic regression.

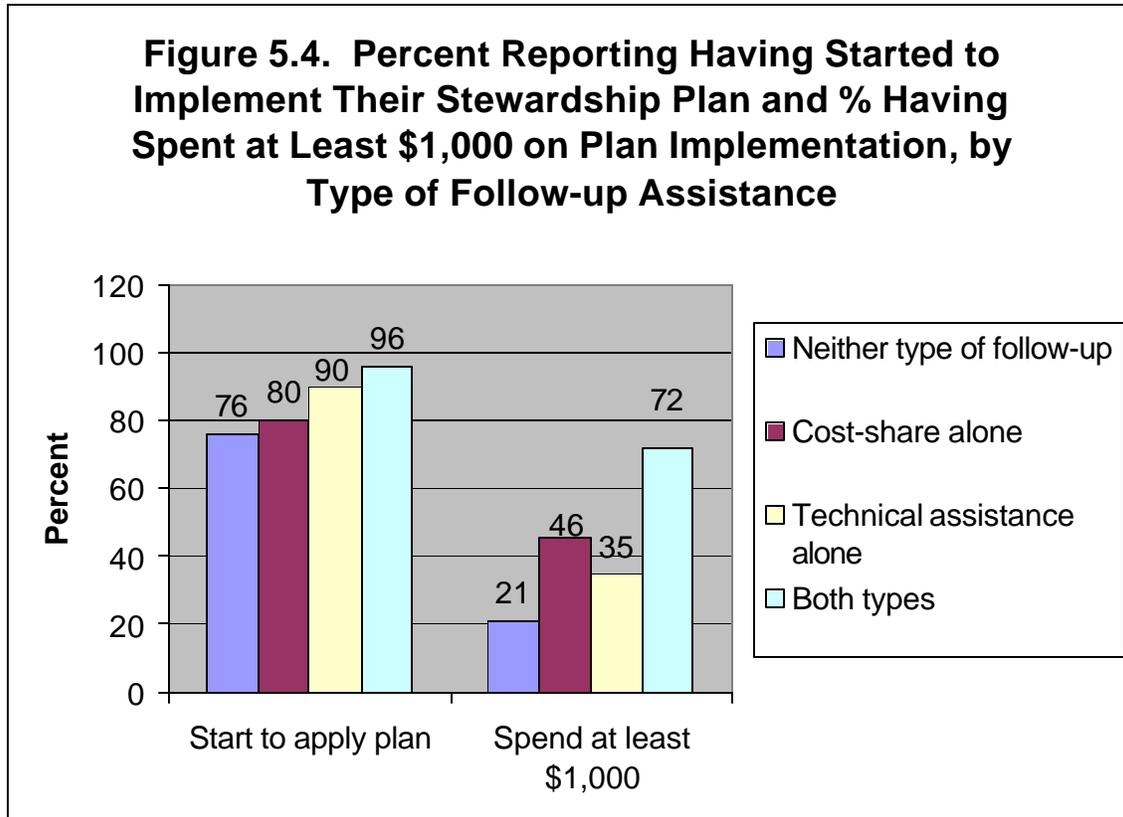
Providing Both Kinds of Assistance. As suggested by figures 5.4 to 5.6 below, providing both types of follow-up help tends to enable better stewardship plan implementation than either cost-share or technical assistance alone.

- For example, among the 103 owners in the weighted national sample who received only cost-share help, 80% reported having *begun to implement their plans*. The corresponding measure for the 408 who received only follow-up technical assistance was 90%. Among the 239 respondents who benefited from both types of aid, 96% reported having carried out some part of their plans (Figure 5.4). The six percentage-point difference between that group and the technical-assistance-only group is statistically significant.⁵⁶
- Also greater than the likely effect of sampling error is the difference between (a) the percentage of cost-share only respondents—46%-- who reported *spending at least \$1,000 of un-reimbursed money on their plans* and (b) those who received both cost-share and technical help—72% (Figure 5.4).

⁵⁶ At the .001 level in a *t* test of the difference between two sample proportions.

A skeptic might argue that owners who seek cost-share or technical assistance would have started to implement their stewardship plans anyway because of their motivation to do something as evidenced by the request for help. But that desire to act might have never led to action without the assistance already being received or promised.

Cost-share grants' effect on owner expenditures is more straightforward. The assistance agreement provides for the owner to bear a set percentage of the total cost of carrying out recommended practices.⁵⁷ Without the commitment of 50% or some other percentage of the estimated total, no private investment may occur.



Among the four remaining management decisions that are the subjects of figures 5.5 and 5.6, the bar graphs for two show significant combined effects of cost-share and technical assistance.

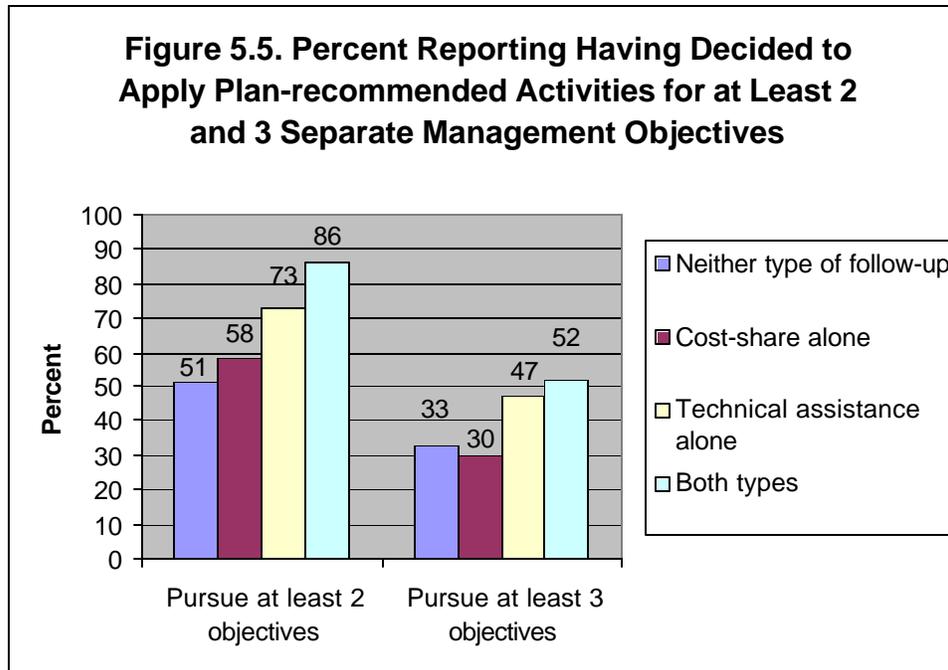
- Statistically significant are (a) the 13-point difference between the percent (73%) of technical-assistance-only recipients who applied activities for at least two separate management practices and the percent (86%) of owners who had both types. Also significant is the 28-point difference between the latter (86%) and cost-share-only recipients (58%).—Figure 5.5).

⁵⁷ See for example, Iowa Dept. of Natural Resources, Forestry, *Cost-Share Programs Available for Private Landowners in Iowa*. <http://www.iowadnr.com/forestry/costshare.html> [accessed September 19, 2005].

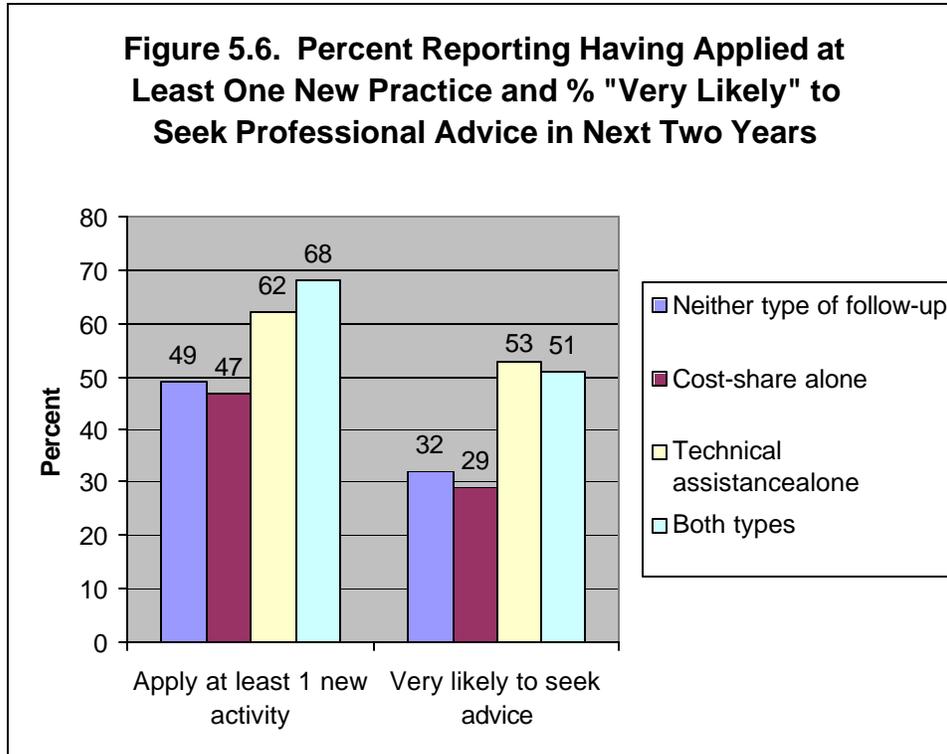
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- Significant as well are the corresponding differences regarding whether the owner carried out *one or more activities new to him/her* (Figure 5.6).⁵⁸

All six bar graphs illustrate what the related regression analyses found (tables 3.10, 3.17, 3.18, 3.22, 4.5 and 4.10)—that desirable forest management decisions were more likely if owners with stewardship plans received follow-up technical assistance or cost-share grants or both.



⁵⁸ The difference in proportions regarding at least one new activity was significant at the .06 level.



Summary

The forgoing rather lengthy analysis of the positive impacts of follow-up technical and cost-share assistance should not diminish attention to the report’s central findings. The performance indicators for FSP participants in the 1997-2004 period are essentially as good as those for the first study period, 1991-1997 (see the first three pages of this chapter). The reported program drop-out rate was again low—just 5%. Eighty percent of the total surveyed participants had begun to implement their stewardship plans. Sixty-three percent were following a multi-resource management approach in the sense of applying practices to achieve at least two separate management objectives. Thirty-nine percent were pursuing at least three objectives. The un-reimbursed money spent by owners on plan implementation increased at a rate greater than general inflation. Fifty-four percent of the total respondents reported applying management activities that were new to them.

The decline in the availability of cost-share assistance suggests that program performance might have been even better without that decrease. The positive effects we identified for follow-up technical assistance suggest that any significant reduction in that input for FSP participants would also diminish desirable management activity.

The increase between the two national surveys in the proportion of FSP participants who had prior experience with written plans presents a dilemma. On the one hand, the program was designed to help primarily owners lacking such plans. However, our analysis showed that the owners experienced with plans tended to do a better job of implementing their Forest Stewardship plans.

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Other likely causal factors we identified (both in the weighted national sample and some or all the regional samples) included the positive relationships between (a) management performance and (b) both owners' years of formal education and their frequency of living on or visiting the forestland subject to the plans. Favoring owners with higher education is probably not feasible or desirable. But the program's service deliverers may choose either to discourage applicants who expect to spend little if any time on the subject forestland or to help them arrange for surrogates who will put in the necessary time on site.

References

- American Association for Public Opinion Research [AAPOR], 2004. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, 42 pp. http://www.aapor.org/pdfs/standarddefs_ver3.pdf (accessed May 28, 2005).
- Anderson, Steven, and Ron Masters, no date. *Riparian Forest Buffers* (Water Quality Series, Oklahoma Cooperative Extension Service, F-5034), 7 pp. (<http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2227/F-5034web.pdf> [accessed September 22, 2005]).
- Baughman, Melvin J., Juan Carlos Cervantes, and David M. Rathke, no date. *Reaching Minnesota's Private Forest Landowners* (St. Paul, MN: University of Minnesota, Department of Forest Resources), 5 pp. (<http://www.cnr.umn.edu/FR/publications/proceedings/papers/Baughman-Duluth.pdf> [accessed September 20, 2005]).
- Birch, Thomas W., and Robert J. Moulton, 1997. "Northern Forest Landowners: A Profile," *National Woodlands*, January (reprint, no pages).
- Bourke, Lisa, and A.E. Luloff, 1994. "Attitudes toward the Management of Nonindustrial Private Forest Land," *Society and Natural Resources*, 7: 445-457.
- Butler, Brett J., and Earl C. Leatherberry, 2004a. "Family Forest Owners," *Journal of Forestry*, Oct.-Nov.: 4-9.
- Butler, Brett J., and Earl C. Leatherberry, 2004b. *USDA Forest Service, Forest Inventory & Analysis, National Woodland Owner Survey 2003, Preliminary Results* (unpublished, but cited with permission).
- Butler, Brett J., and Earl C. Leatherberry, 2005. *USDA Forest Service, Forest Inventory & Analysis, National Woodland Owner Survey 2004, Preliminary Results* (unpublished, but cited with permission).
- Egan, Andre, David Gibson, and Robert Whipkey, 2001. "Evaluating the effectiveness of the Forest Stewardship Program in West Virginia," *Journal of Forestry*, March: pp. 31-36.
- Esseks, J. Dixon, and Robert J. Moulton, 2000. *Evaluating the Forest Stewardship Program through a National Survey of Participating Forest Land Owners* (De Kalb, IL: Center for Governmental Studies, Northern Illinois University), 113 pp.

- Folz, David H., 1996. *Survey Research for Public Administration* (Newbury Park, CA: Sage Publications), 207 pp.
- Fowler, Floyd J., Jr., 1993. *Survey Research Methods*, 2nd ed. (Newbury Park, CA: Sage Publications), 156 pp.
- Harris-Kojetin, Brian, 2004. *OMB Guidance on Nonresponse for Household Surveys, Statistical and Science Policy* (Washington, DC: Office of Management and Budget, NSTAT Seminar).
- Henley, Russell K., Paul V. Ellefson, and Melvin J. Baughman, 1988. *Minnesota's Private Forestry Assistance Program: An Economic Evaluation* (Minnesota Agricultural Experiment Station, University of Minnesota, Miscellaneous Publication 58-1988), 59 pp.
- Hosmer, David W., and Stanley Lemeshow, 1989. *Applied Logistic Regression* (New York: John Wiley & Sons), 307 pp.
- Hubbard, William, G., and Robert C. Abt, 1989. "The effect of timber sale assistance on returns to landowners," *Resource Management and Optimization*, 6 (3): 225-234.
- Jennings, Brian M., 2003. *Implementation of Recommended Forest Stewardship Program Practices in West Virginia—Ten-year Assessment* (Morgantown, WV: West Virginia University), 100 pp. Unpublished Masters Thesis.
- Johnson, Tony G., John S. Vissage, and Daniel P. Stratton, 2001. "The United States," a chapter in *United States Timber Industry—An Assessment of Timber Product Output and Use, 1996*, Tony G. Johnson, editor (Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station, Gen. Tech. Rep. SRS-45), pp. 1-16.
- Menard, Scott, 2002. *Applied Logistic Regression Analysis* (Thousand Oaks, CA: Sage Publications), 111 pp.
- Moulton, Robert J., and Thomas W. Birch, 1995. "Southern Private Forest Landowner: A Profile," *Forest Farmer*, 54(5): 44-46.
- Moulton, Robert J., and Thomas W. Birch, 1996. "Western Forest Landowners: A Profile," *National Woodland*, July: 14-16.
- National Research Council, 1998. *Forested Landscapes in Perspective* (Washington, DC: National Academy Press), 249 pp.
- Romm, Jeff, Raul Ruazon, and Courtland Washburn, 1987. "Relating forestry investment to the characteristics of nonindustrial private forestland owners in Northern California," *Forest Science*, 33 (1): 197-209.

- Royer, Jack P., 1997. "Determinants of reforestation behavior among Southern landowners," *Forest Science*, 33 (3): 654-667.
- Russell, D. Ramsey, Jr., and Susan Stein, 2002. *Planning for Forest Stewardship: A Desk Guide* (Washington, DC: USDA Forest Service, FS-733): 34 pp.
- Sampson, R. Neil, and Lester A. DeCoster. 1997. *Public Programs for Private Forestry: A Reader on Programs and Options* (Washington, D.C.: American Forests), 100 pp.
- Smith, W. Brad, Patrick D. Miles, John S. ViSSage, and Scott A. Pugh, 2003. *Forest Resources of the United States, 2002* (St. Paul, MN: North Central Research Station, USDA Forest Service, General Technical Report NC-241), 137 pp.
- Theoe, Donald R., and Arno W. Bergstrom. 1996. "Forest Stewardship Coached Planning Program Evaluation: A Survey to Determine Outcomes," pp. 377-385 in Melvin J. Baughman and Nancy Goodman, eds., *Proceedings: Symposium on Nonindustrial Private Forests* (St. Paul, MN: Minnesota Extension Service).
- Tourangeau, Roger, 2004. "Survey Research and Societal Change," *Annual Review of Psychology*, 55:775-801.
- USDA Forest Service, 1998. *1997 Report of the Forest Service*. Tables. URL=http://www.fs.fed.us/pl/pdb/97/report.tables/1997_36.spf.
- USDA Forest Service, 2005. *Forest Stewardship Program: National Standards and Guidelines* (Washington, DC), 8 pp.
- Young, Robert A., and Michael R. Reichenbach, 1987. "Factors Influencing the Timber Harvest Intentions of Nonindustrial Private Forest Owners," *Forest Science*, 33 (2): 381-393.