

Landowners' Educational Needs *and How Foresters Can Respond*

A study of nonindustrial private forest landowners in Utah and Indiana—states with different ownership characteristics and numbers—reveals that direct, simple, flexible educational methods like newsletters and personal assistance are preferred over workshops and high-tech methods. Landowners with large parcels tend to know more about forestry, but the increasing fragmentation of forestland and the diversity of forest landowners mean that foresters must fit the message to new and different audiences. Because timber production is not important to many landowners, stewardship programs should address the benefits that people do derive from their land.

By Michael R. Kuhns, Mark W. Brunson, and Scott D. Roberts

The need to educate the public about forests and forestry is a perennial call to action in the Society of American Foresters and other organizations. Effective education, however, requires that teachers understand their students, and foresters have typically operated with inadequate understanding of the public. That perhaps is not surprising, considering American citizens' diversity and lack of forestry orientation. However, we have not fared much better in understanding and educating forest landowners.

Nonindustrial private forest (NIPF) owners are a diverse group with small individual impacts but a large collective impact on forests and forestry. They generally lack expertise in forestry, yet they control 59 percent of US timberland (Powell et al. 1993). They are a difficult group to reach because their numbers are growing and they are becoming more diverse (Sampson and DeCoster 1997). Birch (1996a) reports a 28 percent increase in the number of private forest landowners in the United States, from 7.8 million in 1978 to 9.9 million in 1994. Numbers of forest landowners in the West increased even more rapidly, from 618,000 in 1978 to just over a million in 1994, an increase of 67 percent.

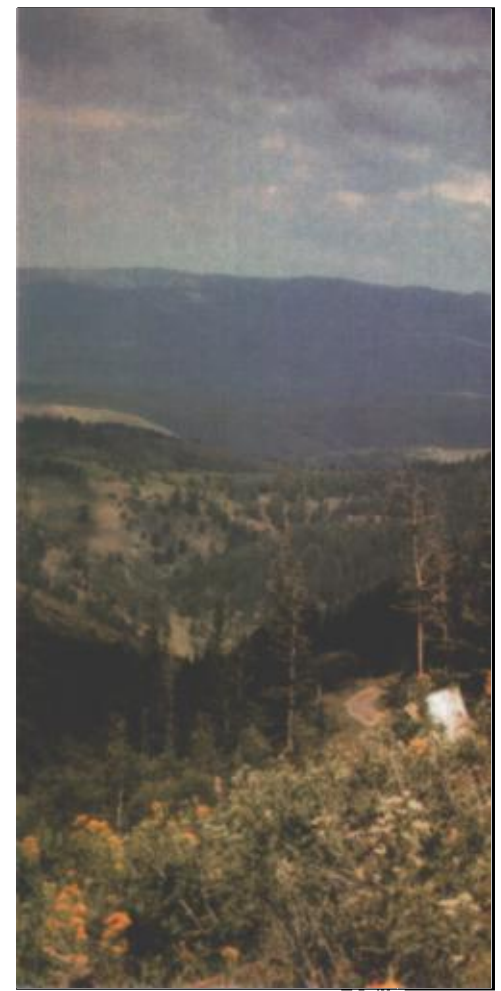
More forest landowners means increased fragmentation of the NIPF land base: 95 percent of NIPF landowners in the United States own less than 100 acres, and 60 percent own less than 10 acres. In the Rocky Mountain states the figures are 92 percent and 55 percent, respectively, and in the Midwest, 94 percent and 47 percent, using Birch's individual ownership category as an approximation of NIPF acreage (Birch 1996a). A large proportion of NIPF acreage, however, is concentrated in the hands of a small number of landowners,

with 10 percent holding 75 percent of the land (Powell et al. 1993). Educational approaches designed for large landowners might not work with small landowners and vice versa because the groups own and manage land in different ways for different reasons (Blatner et al. 1991; Force and Lee 1991; Moulton and Birch 1996; Sampson and DeCoster 1997).

The information reported here was part of a larger study of NIPF landowners' knowledge of and attitudes toward ecosystem management in several US regions; the full report and a detailed description of our methods are included in Brunson et al. (1996).

Methods

We designed our survey to reveal NIPF owners' demographics, landownership characteristics and management practices, and their attitudes, knowledge, and beliefs about ecosystem management and partnerships. Questions about landowners' general and forestry-related educational background were included; respondents were asked where they got information about forest management and how





Foresters take a group of NIPF landowners on a tour of a Douglas-fir clearcut east of Ogden, Utah, that has failed to regenerate. Landowners prefer personal contact with a forester and receipt of printed materials over classroom instruction and use of electronic media as means to learn more about how to manage their land.

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they preferred to learn more.

Utah and Indiana were chosen for this study as representing public forest and private forest states, respectively. Utah's 16 million acres of forest and woodland (30 percent of the state) is owned primarily by the federal government; about 3 million acres belongs to 2,700 NIPF owners. Forests are mostly at high elevations, where few people live, and are used much more for recreation and grazing than for timber harvesting. Indiana has about 4.4 million acres of forest (20 percent of its area) with little federal ownership; 3.8 million acres is held by 151,000 private owners (Birch 1996b). These forestlands are scattered throughout the state within a matrix of agricultural land. Nearly half the owners harvest timber, but recreation is a dominant use.

Questionnaires were sent in summer 1994 to 750 NIPF owners each in Indiana and Utah. Reminder postcards and a followup mailing to all nonrespondents were sent to increase returns and minimize nonresponse bias. Usable responses totaled 554 in Indiana (78 percent response rate) and 334 in Utah (54 percent response

rate). Indianans' response may be higher because the sample frame included only landowners enrolled in a state incentive program, which may have influenced not only their willingness to respond but also some of their educational practices and preferences. These landowners, who must have an approved management plan with an occasional site visit by a state service forester, are likely more knowledgeable about forestry than the general forest landowner in Indiana.

Results

Here we present important characteristics of the landowners in our study and explore how their educational practices and preferences varied with these characteristics.

Landownership size, resident status, and benefits derived. Most respondents in both states owned 10 to 1,000 acres:

	Utah	Indiana
10–99 acres	43%	37%
100–999	35	59
1,000–9,999	17	4
10,000+	3	0

Utahns were much more likely to be

absentees, living away from their land, than Indiana respondents (89 percent in Utah versus 49 percent in Indiana). Benefits derived from their forestlands were similar, with such noncommodity benefits as enjoying scenery, viewing wildlife, and hiking rated highest (table 1, p. 40). Relatively few landowners rated income as an important reason for owning forested land, though 44 percent of Utahns reported grazing and 45 percent of Indianans reported timber income as benefits.

Landowner education. Respondents' general education levels were higher in Utah than in Indiana and were higher than the general public's education levels as indicated by census data (Day and Curry 1997). Only 6 percent of respondents in Indiana and 4 percent in Utah had not finished high school, compared with 16 percent and 9 percent for the overall population of those states. College graduation rates were especially high, with 43 percent of Indiana respondents and 50 percent of Utah respondents having at least a bachelor's degree, compared with 16 percent and 26 percent for the general public age 25 or older in those states in 1996.

Most respondents categorized their previous forestry education as moderate (50 percent in Utah and 61 percent in Indiana). Twenty percent in Utah and 15 percent in Indiana felt they knew very little about forests; 20 percent in both states felt they had learned a lot about forests, though not from formal forestry courses. At least some forestry-related college coursework was reported by 10 percent of NIPF owners in Utah and 5 percent in Indiana.

Larger landowners (1,000 acres or more) reported a level of knowledge about forestry that was significantly higher than that reported by landowners who owned less acreage ($\chi^2 = 19.7$, $P = 0.032$). In Utah 25 percent of the respondents owning 1,000 acres or

Table 1. Benefits derived from forested land owned by respondents.

"What benefits do you derive from your forestland?"	Indiana	Utah
Amenity benefits		
Scenic enjoyment	69%	64%
Wildlife appreciation	70	49
Observing flowers, trees	66	44
Nonincome personal benefits		
Camping	13%	45%
Walking, hiking, skiing	48	43
Firewood for home use	55	40
Personal hunting	42	35
Horseback riding	7	30
Personal residence	22	14
Income-related benefits		
Grazing, pastureland	6%	44%
Investment property	35	27
Hunting lease income	1	7
Timber income	45	5
Firewood sales income	5	3
Christmas tree income	4	2

Table 2. Information sources used by respondents, overall and by ownership size.

"Where do you get your information about managing your wooded land?"	Indiana		Utah	
	Overall	By acreage (0-99, ≥ 100 acres)	Overall	By acreage (0-99, 100-999, ≥ 1,000 acres)
Newspaper or magazine articles	52%	51, 54%	54%	58, 48, 54%
Extension brochures or booklets	56	53, 59	39	34, 34, 56%†
USDA Forest Service	45	42, 47	36	34, 36, 38
Advice from friends or relatives	17	15, 18	30	27, 30, 38
Advice from extension agent	34	38, 32	29	22, 27, 49†
Broadcasts on radio or TV	10	11, 9	29	31, 31, 20
State and university specialists	49	42, 53*	21	14, 15, 46†
Books from library	10	12, 9	16	20, 16, 10
Textbooks from classes	8	8, 9	11	10, 11, 13

Note: Significant differences between owners with different ownership sizes within a state for a given method are indicated by * $p \leq 0.05$ or † $p \leq 0.01$ (chi-square test).

Table 3. Information sources used by respondents, by reported forestry education level.

"Where do you get your information about managing your wooded land?"	By reported forestry education level: little, some, a lot (informal), college					
	Indiana			Utah		
Newspaper or magazine articles	33	56	58	61%†	39	59
Extension brochures or booklets	39	57	67	75†	16	37
USDA Forest Service	36	46	53	29*	11	37
Advice from friends or relatives	18	19	12	11	34	26
Advice from extension agent	26	35	43	18*	11	29
Broadcasts on radio or TV	8	11	9	11	25	31
State and university specialists	28	47	63	82†	7	17
Books from library	5	8	17	18*	9	13
Textbooks from classes	3	5	9	54†	0	7

Note: Significant differences between owners reporting different forestry education levels within a state for a given method are indicated by * $p \leq 0.05$ or † $p \leq 0.01$ (chi-square test).

more felt they had a lot of informal knowledge about forests, and 19 percent had taken college courses, compared with 18 percent and 4 percent for those owning less than 100 acres. Results were similar for Indiana landowners, with 30 percent of those owning 1,000 acres or more reporting a lot of informal knowledge about forests and 10 percent having some college courses, compared with 17 percent and 5 percent for those owning less than 100 acres.

Education and information practices

Newspapers and magazines were the most-used sources of information about managing wooded lands in both states (table 2). Extension publications and agent advice also were highly used, especially in Indiana. The largest landowners were more likely to use extension publications and agents in Utah and state or university forestry specialists in both states. Otherwise, information sources used by landowners varied little by size of ownership.

Landowners in both states who reported a higher level of forestry education used a wider variety of information sources than those who reported less forestry education (table 3). Those reporting more forestry education were much more likely to use state or university forestry specialists, and those who had taken college forestry courses were more likely to use textbooks. However, in Indiana those with college forestry education were considerably less likely to use extension and the USDA Forest Service as an information source than those with less forestry education. The most-used methods for landowners who reported little forestry education varied by state: extension publications, newspaper and magazine articles, and the Forest Service were used more in Indiana, and newspaper and magazine articles, friends' or relatives' advice, and radio and TV were used more in Utah.

Absentee landowners generally differed little from resident landowners in the information sources they used. In both states, however, resident landowners more commonly used extension publications; in Utah they also turned to state and university experts and the Forest Service.

Education and information prefer-

ences. Preferred methods for learning more about forestry (table 4) generally followed current practices; desire for newer, nontraditional methods is fairly low. In both states NIPF owners strongly preferred printed information—newsletters, brochures—and personal contact with a forester. Preferences for classes or workshops were higher than for videoconferences but still lower than for personal assistance and all print methods except library books. Five of the six least-preferred educational methods were electronic technologies: on-line computer connections, videoconferences, videotapes, radio, and television.

Large landowners in Utah were

much more likely to prefer personal assistance and less likely to rely on radio, TV, or library books for information. Ownership size in Indiana had no significant effect. Forestry education level affected certain preferences (table 5), with personal assistance from a forester more popular among college-educated (forestry) landowners in Utah and all but the little-educated landowners in Indiana. Those who reported more forestry education in Indiana were more likely to prefer classes or workshops, videoconferences, library books, and computer bulletin boards, with most of the preference for workshops and bulletin boards expressed by those who were college educated.

Absentees differed little from residents in their information preferences in Indiana (data not shown). In Utah, resident landowners showed a much higher preference than absentees for newsletters (69 percent versus 47 percent), classes and workshops (47 percent versus 24 percent), and personal assistance (72 percent versus 41 percent).

Discussion

Education levels of our respondents were higher than those of the general public and higher than have been reported for NIPF owners in several other studies. Bliss et al. (1994) found that among forest owners in the mid-South, half had a high school education or less—as did most non-forest owners. Baldwin and Haymond (1994) reported that 46 percent of NIPF owners in the Southeast had a high school education or less; the figure in Washington state was 41 percent (Blatner et al. 1991). This compares with 31 percent of Indianans and 18 percent of Utahns in our study who had a high school education or less.

The higher education levels of respondents in Indiana and Utah may be an artifact of our lengthy mail survey, which tended to exclude people with poor reading skills and lower education levels. However, several authors describe NIPF owners as a well-educated group who are becoming better educated and wealthier (Jones et al. 1995; Birch 1996a; Sampson and DeCoster 1997). Birch (1996a) reported in a national study that although the percentage of white-collar private forest landowners changed little from 1978 to 1994 (from 33 percent to 32 percent), they owned a greater proportion of forestland in 1994 (25 percent of the land in 1978 and 29 percent in 1994). The proportion of blue-collar forest landowners, on the other hand, decreased greatly between 1978 and 1994 (from 25 percent to 16 percent of all private forest landowners), and they owned only 9 percent of the acreage in 1994, compared with 18 percent in 1978. Though this implies a better-educated and perhaps wealthier group of forest landowners on average, forest ownership by retired persons and those working in service industries increased

Table 4. Educational methods preferred by respondents, overall and by ownership size.

"Which of the following educational methods would you prefer to use for learning more about your wooded land?"	Indiana			Utah		
	Overall	By acreage (0-99, ≥100 acres)		Overall	By acreage (0-99, 100-999, ≥1,000 acres)	
Brochures, booklets, fact sheets	60%	61, 60%	60%	64, 56, 58%		
Periodic newsletters	63	66, 62	49	52, 47, 50		
Personal assistance from forester	64	63, 64	44	35, 42, 68†		
Newspaper or magazine articles	33	31, 33	34	34, 31, 38		
Classes or workshops	21	22, 20	29	25, 27, 30		
Videotapes of videoconferences	14	15, 13	21	21, 16, 30		
Broadcasts on radio or TV	11	10, 11	21	25, 22, 10*		
Books from library	12	15, 10	15	22, 11, 8*		
Other educational videotapes	15	16, 15	14	13, 13, 15		
Videoconferences held near home	8	11, 7	13	9, 16, 18		
Computer bulletin boards	3	4, 3	4	5, 5, 2		

Note: Significant differences between owners with different ownership sizes within a state for a given method are indicated by * $p \leq 0.05$ or † $p \leq 0.01$ (chi-square test).

Table 5. Educational methods preferred by respondents, by reported forestry education level.

"Which of the following educational methods would you prefer to use for learning more about your wooded land?"	By reported forestry education level: little, some, a lot (informal), college					
	Indiana			Utah		
Brochures, booklets, fact sheets	53, 60, 65, 79%	51, 60, 69, 57%				
Periodic newsletters	58, 67, 55, 71	40, 52, 52, 50				
Personal assistance from forester	49, 66, 69, 68*	35, 42, 47, 75†				
Newspaper or magazine articles	22, 34, 37, 39	24, 35, 36, 50				
Classes or workshops	13, 21, 23, 54†	26, 26, 29, 36				
Videotapes of videoconferences	9, 16, 10, 18	24, 21, 22, 25				
Broadcasts on radio or TV	9, 9, 15, 14	18, 24, 21, 18				
Books from library	4, 11, 20, 18†	15, 12, 19, 21				
Other educational videotapes	10, 15, 20, 25	15, 15, 10, 14				
Videoconferences held near home	4, 8, 10, 21*	11, 15, 14, 11				
Computer bulletin boards	3, 2, 6, 14†	6, 4, 3, 7				

Note: Significant differences between owners reporting different forestry education levels within a state for a given method are indicated by * $p \leq 0.05$ or † $p \leq 0.01$ (chi-square test).

greatly during this period. Relative education and income levels of these two groups are not readily apparent.

Though most landowners in our study were well educated, they likely could benefit by knowing more about their forests and about sources of expert assistance. Egan and Jones (1993) found a strong positive correlation between Pennsylvania landowners' forest stewardship knowledge and the condition of their forestland after timber harvest, and an even stronger correlation with landowners' use of expert assistance and the subsequent condition of their land. In our study, close to three quarters of respondents characterized their forestry knowledge as moderate or less. One fifth of the respondents in a study of Idaho NIPF owners did not know where they could get expert forestry assistance (Force and Lee 1991).

We found that large landowners appeared to be more knowledgeable about forestry than small landowners, based on self-assessment and college coursework. This suggests that forestry educators may be reaching the group that controls the most acreage. However, though we have no indication of a trend in ownership size from our study, Birch (1996a) reported that nationwide the number of private forest landowners increased and average ownership size decreased from 1978 to 1994, with 90 percent of private ownerships now having less than 100 acres each but controlling an aggregate 30 percent of all private forestland. Most of the increase in the proportion and number of small ownerships is coming in the 10- to 49-acre category, with the biggest decreases in acreage in the 100- to 499-acre and 500- to 999-acre categories. This increased fragmentation is coupled with a fairly short ownership tenure: 40 percent of today's landowners acquired their forestland since 1978 (Birch 1996a).

Indications for the Future

Ownership fragmentation and turnover will make education much more difficult because a growing number of landowners may know less about forestry and have different motivations and different educational needs than past owners. Bliss et al. (1994) found

that most NIPF owners in the Tennessee Valley region did not see themselves as part of a forestry community or feel a connection to the practice of forestry or harvesting timber. Rather, they were much like the general public in their environmental orientation, supporting forest management only if it is carried out with a commitment to environmental protection. NIPF owners' general low priority for harvesting timber from their land was confirmed in this study and has been reported by others (Force and Lee 1991; Jones et al. 1995; Birch 1996a; Sampson and DeCoster 1997).

We found that NIPF owners use and prefer publications and personal contact with an expert but have less interest in meetings. Similar results have been reported in Washington (Blatner et al. 1991) and the Southeast (Baldwin and Haymond 1994), although Force and Lee (1991) found that 40 percent of NIPF owners in Idaho were interested in attending meetings near their homes to learn about forest care and management. Though we don't know from our study what it is about a particular educational method that landowners like or dislike, it appears that methods that tie people to a certain location or time, such as workshops and live videoconferences at a central location, are less preferred. Methods that can work anywhere, anytime—such as publications—are much preferred. Personal assistance from a forester may not be so convenient, but perhaps its value to landowners outweighs any inconvenience.

Though our respondents had very little interest in using what we called computer bulletin boards, communications technology has changed so much in the four years since our survey that this likely is not a good indicator of current preferences. Accessing information on World Wide Web home pages is convenient for people with Internet connection, regardless of their proximity to their land or the source of assistance. Whether forest landowners will use the Internet is unknown, however, although the authors' recent experiences suggest that many will.

Convenience and flexibility of delivery and use may be especially important for educational programs and media

aimed at absentee landowners. Newsletters and fact sheets can be mailed to them, and they can get information on the Internet at their convenience. Workshops and one-on-one assistance are much less effective with absentee owners, though well-advertised and appropriately timed workshops may be useful in urban areas, where many of these absentee landowners live.

We see educational opportunities but also new challenges with small forest landowners, whose increasing numbers are taxing the limited staffs of extension forestry, state forestry, and other agencies and groups. These owners may be less amenable to forestry education in general; in our study they indicated lower use and less preference for most educational methods or sources (*tables 2 and 4*). Though reaching these landowners with a workshop or one-on-one consultation might be ideal, their numbers, scattered locations, and possible lack of interest make these options difficult. As with absentee landowners, small landowners and those with less forestry education may best be reached through mass mailings of newsletters and fact sheets.

Mass media techniques can be used to reach large numbers of small landowners and scattered absentee landowners. Newspapers and magazines show moderately high use and preference by small and large landowners at most forestry education levels. Radio and television were used and preferred less, though in Utah these media were preferred more by small landowners than by large. The advantage of radio and television is the potential to reach large numbers of people at any location. Disadvantages include the costs of video production and buying air time, difficulty in getting free air time on commercial stations, and short time slots. Public television and radio may allow longer programs. Although their acceptance by forest landowners is low (*tables 4 and 5*), programs delivered through satellite conferencing and other distance-learning techniques are becoming more available, especially within cooperative extension, and they may become more popular as people become more familiar with them.

Educational techniques must be se-

lected to fit the message as well as the audience. Mass media communication is good for building awareness but usually must lead to personal contact if change is to occur (Muth and Hendee 1980; Tyson et al. 1998). A television public service announcement about good forest management may catch a landowner's interest, but the landowner will need one-on-one assistance or more information from publications or workshops to implement management changes.

In forestry, good educational programs and materials presuppose thorough knowledge of landowners' educational practices and preferences, as well as their demographics, attitudes, and motivations. Landowners' education, parcel size, and reasons for owning land all affect their information and assistance preferences and practices and should be considered when designing educational programs. Those who choose to be educated will pursue education and assistance in areas where they have an interest. To be relevant, forestry agencies and groups must deliver a message that addresses landowners' interests, while spreading the word about good forest management.

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