

Small-scale Forest Economics, Management and Policy, 2(1): 49-61, 2003

Use and Effectiveness of Washington State's Extension Forest Stewardship Program

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This paper describes the use by family forest landowners of educational programs provided by Washington State University Cooperative Extension (WSUCE), and the associated use of technical assistance programs provided by state and federal agencies and the private sector. Approximately 100,000 family forest owners controlled 19% or over 1.2 M ha of Washington's forestland and accounted for 29% of the timber harvested in the state on a volume basis in 1998. A variety of public and private assistance and education programs are available to encourage and help family forest owners manage their forests. In 1999 a mail survey was conducted to evaluate use and effectiveness of Washington's family forest assistance and education programs. Over half of the 872 responding family forest landowners had contact with an extension educator, program or educational material, and about three quarters of these respondents gave an overall rating of the usefulness of extension programs and materials as good or excellent. Respondents attending WSUCE forestry educational programs have larger median land ownership size, are older, have owned their forests longer, have a higher rate of absentee ownership, and are better educated than non-users. They are more likely to actively manage their forests for timber production and exhibit a clearer understanding of the multiple-use capabilities of their forests.

INTRODUCTION

This paper presents a summary of extension education programs in Washington State and examines results of a recently completed survey of family forest landowners. The survey was conducted in part to develop an updated profile of family forest landowners in the state of Washington and identify their use of forestry education and assistance programs. This paper focuses on the use by family forest landowners of educational programs provided by Washington State University Cooperative Extension (WSUCE), and the associated use of technical assistance programs provided by state and federal agencies and the private sector.

Some Background to Extension Forestry in the United States

Extension forestry in the United States is the lead organization providing educational programs to the nation's nonindustrial private forest landowners. Extension forestry is a relatively small component of the Cooperative Extension system which offers educational programs in four major areas: Agriculture and Natural Resources, Community Resource Development, 4-H and Youth Development, and Home Economics and Human Nutrition. To help improve nonindustrial private forestry, extension programs target: 1) public awareness, 2) policy education, 3) program coordination, 4) professional education, and 5) forestland management practices.

To understand Extension in the U.S., two aspects are particularly important: 1) extension is unique among public natural resource programs because it considers the objectives of the individual forest owner before all others. It works with the owner to identify management alternatives that are in his or her best interests, recognizing that the side benefits will be more productive farms and forest resource bases, and a stable raw material supply for generations. 2) Extension in the U.S. is administered at the state level by land-grant universities. This means that most Extension professionals are members of an academic institution rather than a straight-line government agency. Extension forestry in all other countries is administered by a government agency such as a national forestry agency.

FAMILY FORESTS IN WASHINGTON STATE

With the dramatic reductions in federal timber harvests in the USA Pacific Northwest during the 1990s and the rise of numerous environmental and development issues in the state, Washington's family-owned forests have become the subject of considerable interest by policy analysts, the forest industry, and environmental groups.

Family forestlands in Washington State comprise 1.2 M ha, or over 19%, of the commercial forestland in Washington State. Recent harvest restrictions on federal forestlands intended to protect endangered species have resulted in lower timber harvests on public lands in the Pacific Northwest. Since 1987, timber harvests have declined 95% on federal lands and 57% on state lands in Washington. Consequently, private landowners who are under a different set of state regulations are experiencing increasing pressures to harvest timber for commercial sale. Nearly 2.8 Mm³ were harvested off family-owned forests in 1998, accounting for 29.3% of the timber harvest in the state on a volume basis (Larsen 2000). However, the increasing interest in Washington's private lands goes far beyond their role in providing raw material for the state's solid wood and pulp and paper products sectors. Privately owned lands provide critically important environmental and recreational values to their owners and to the people of the state. In addition, rapidly growing rural development increased pressure on these landowners for commercial and development rights of their properties (Blatner *et al.* 1991, Thorud 2000). Washington State is covered by over 8.5 M ha of forest (MacLean *et al.* 1992, McKay *et al.* 1995), yet the population is growing rapidly. Higher wages are creating opportunities for urban expansion into rural areas (Sims 2000). With continued reductions in Washington State's timber resources, natural resource agencies needed to encourage small forest landowners to keep their lands in forest.

A variety of public and private assistance and education programs are available to encourage and help family forest owners manage their forests and meet the challenges of forest management in an increasingly complicated regulatory environment. The Forest Stewardship Program (FSP) was developed in 1990 as a new focus of educational and technical assistance provided to forest landowners by WSUCE and the Washington State Department of Natural Resources (DNR), with support from the USDA Forest Service Cooperative Programs. WSUCE provides the educational component of the FSP that includes classes in forest ecology and management, forest tours, natural resource focused publications, and advice from extension foresters, and is the non-regulatory 'branch' of the FSP. The Washington DNR provides the technical expertise to help landowners develop and implement their forest management plans, while remaining in compliance with state and federal regulations. Other programs associated with FSP include conservation planning provided by the federal Natural Resource Conservation Service (NRCS) and private forestry consultant services. Collectively, these programs provide private landowners with an entire educational and assistance system to help them manage their forests in a manner that is sustainable and ecologically sound.

In the next section, the forestry education programs provided by Washington State University are outlined. The results of a survey of forest land owners about use of extension services and forest management practices are then presented and interpreted. Concluding comments follow.

OVERVIEW OF WSUCE FORESTRY EDUCATION PROGRAMS

The Washington State University Cooperative Extension Forestry Program is administered by Washington State University, which is located in Pullman, Washington. Fifteen WSUCE faculty and professional staff devote 10 full-time equivalent positions in support of family forestry educational programming. Ten extension educators are located in counties and have local or area-specific responsibilities, while five extension educators have statewide responsibilities and subject matter leadership. The affiliation of Extension with Washington State University provides forest owners with access to the resources of the university and research-based information.

WSUCE has an extensive network of partners. A partial list includes, Washington State Department of Natural Resources; Forest Stewardship Program and Small Landowner Office; University of Washington, College of Forest Resources; Rural Technology Program; USDA-Natural Resources Conservation Service; USDA-Forest Service – State and Private Forestry; Washington Farm Forestry Association; Washington Contract Loggers Association; and the Washington Forest Protection Association.

Coached Planning

Since the Forest Stewardship Program's inception, many family forest landowners requested educational programs that would assist them to develop, with some professional coaching, their own Forest Stewardship Plans. Starting in the fall of 1992 classes were offered that culminate with landowner developed Forest Stewardship Plans. These 'Coached Planning' courses consist of several evening

sessions plus a field day that follows a set curriculum. Family forest landowners who have attended these classes have developed approximately 1,000 Family Forest Stewardship Plans, representing approximately 20,000 ha.

Forest Stewardship Education Classes and Publications

The Forest Stewardship Calendar is distributed to about 20,000 NIPF landowners. In the year 2001, the forest stewardship team conducted 95 forestry, wildlife and water-related educational events. The forest stewardship team also develops extension bulletins, publications, websites and other popular press information sheets on diverse topics, such as silviculture, resource measurements, forest roads, ecology and wildlife.

Regional Field Days

A total of over 3,000 non-industrial private forest (NIPF) landowners, large and small-scale, as well as the general public have attended 11 field days since their inception in 1996. Field day events are designed to introduce new family forestry landowners and others to practical forestry practices and to the technical and educational assistance programs available. Regional field days are held once or twice annually on a Saturday at different locations around the state, usually at an exemplary family forestry owner's property with ample parking and demonstration sites.

Forest Stewardship Newsletter

Most forest owners make forestry decisions infrequently, but when they do, the effects can be highly important and long lasting. Owners come from many walks of life and vary greatly in their knowledge of forest management. Many are absentee owners living elsewhere in Washington, other states, and foreign countries. Because of the large number of owners, absentee ownership, and property turnover, *Forest Stewardship Notes* was developed to reach these owners with timely information and to direct them to appropriate sources of help. *Forest Stewardship Notes* is mailed twice yearly to about 20,000 landowners.

Forest Stewardship on the Internet

WSUCE maintains a web site (located at *ext.nrs.wsu.edu*) so that landowners can obtain forestry information at home through their personal computers. On the extension page landowners are able to learn about, upcoming educational programs; technical information on subjects such as forest health and forest management; locations and contact information for Extension Foresters, DNR Stewardship Foresters, Consulting Foresters and other technical assistance; financial incentives and forest taxes; forestry and other natural resources publications; and links to related forestry web pages, and other related stewardship information.

Ecology and Silviculture for Loggers

Excellent logging practice is an integral part of forestland stewardship. Unfortunately, many loggers lack the education necessary to make decisions that can have considerable effect on public resources such as fish and wildlife habitats. Also, many landowners seek advice from loggers. WSU in collaboration with the Washington Contract Loggers Association (WCLA) offers a series of lectures

addressing ecology and silviculture for loggers as part of the WCLA's Accredited Logger Program. Over 900 loggers have participated in these interactive classes during the past seven years.

Watershed Management and Restoration

WSUCE offers educational programs designed to support the cooperative efforts of landowners, forest and rangeland advisors, and regulatory personnel with an understanding of watershed-scale systems linking upland management efforts with riparian area and stream channel response. These watershed management and watershed restoration courses support the technical education of watershed councils in several Washington watersheds towards an understanding of human influences on the hydrologic, geomorphic, and ecologic characteristics of water and watersheds.

THE LANDHOLDER SURVEY AND RESEARCH FINDINGS

In 1999 a survey was conducted to evaluate use and effectiveness of Washington's family forest and assistance education programs. A random sample of 1,600 owners was mailed a questionnaire during early fall of 1999 by the Washington State University Social and Economic Sciences Research Center (SESRC). The response rate was 54%, and the overall completion rate was 49%. SESRC compiled and verified the data and the authors completed subsequent data analysis.

Overall Use of Assistance and Education

Out of 872 respondents, over one-half (54%) have had contact with an extension person, program or educational material, 22% had attended a forestry class or tour, 28% had requested advice from a forestry extension agent, 34% had read the WSUCE forestry newsletter *Forest Stewardship Notes*, 34% had used extension forestry publications, and 25% had used extension wildlife publications (Table 1). Only 9% of all respondents indicated use of the WSU Natural Resource Sciences Extension web site. Seventy-three percent of those respondents using WSUCE educational classes or materials rated them as excellent or good, and 30% said they would continue to use the information provided by WSUCE. Regarding landowner use of technical assistance from federal, state and private sources, 24% of respondents had requested assistance from the WA-DNR, 15% from the NRCS/CD and 22% from a private consulting forester. Over 65% of respondents rated the assistance from these sources as excellent to good, with 48% indicating continued use of the DNR and 15% continued use for both NRCS and private consulting foresters (Table 1).

Private forest landowners often draw from a combination of educational and assistance sources. Table 2 provides a breakdown of requests from each source and the additional requests for assistance from the other sources. Bold values on the diagonal represent the total number of requests for that particular agency or organization. The values off the diagonal represent the percentage of individuals requesting assistance from an agency, who also requested assistance from the other sources. For example, reading down the first column of Table 2, of the 217 respondents who requested assistance from the WA-DNR, 38% also requested assistance from the NRCS/CD, 50% from WSU extension agents, and so on. This

Table 1. NIPF use of educational and assistance programs

Assistance or education source	Respondent usage (%)	Usefulness of assistance received (% who rated excellent or good)	Respondent plans for future usage (Yes, %)
DNR – technical assistance	24	77	48
NRCS/CD – conservation planning	15	69	15
Private forestry consultant	22	72	15
Extension advice/programs			
All programs	54	73	30
Forestry classes or tours	22		
WSUCE extension agent advice	28		
Stewardship Notes Newsletter	34		
Forestry publications	34		
Wildlife publications	25		
WSU natural resource extension web site	9		

Table 2. Requests for assistance and advice based on 872 survey responses from NIPF landowners in Washington State

Source of advice	Source of advice								
	WA-DNR	NRCS and/or CD	Extension tours, classes	Extension agent advice	Forest Notes Newsletter	Forestry pubns.	Wildlife pubns.	Cost-share money	Private consultant
WA-DNR	217*	64%**	57%	44%	51%	46%	50%	65%	48%
NRCS/CD	38%	129	34%	30%	30%	28%	31%	43%	31%
WSU extension tours/classes	50%	51%	192	52%	56%	54%	61%	45%	49%
WSU extension agent advice	51%	58%	68%	250	60%	58%	62%	43%	52%
Forest Notes Newsletter	69%	70%	87%	71%	296	78%	82%	65%	63%
Forestry pubns.	69%	69%	90%	75%	85%	322	95%	65%	67%
Wildlife pubns.	48%	53%	69%	54%	60%	65%	219	47%	48%
Cost-share money	53%	60%	42%	30%	39%	36%	38%	178	36%
Private consultant	43%	46%	50%	40%	41%	40%	42%	40%	195

table illustrates the importance of the systems approach to helping landowners with forest management issues. Many times two or more organizations will collaborate on a single program, or perhaps an individual landowner will initially seek advice from an extension agent who will then refer that person to the DNR, and visa versa.

Users versus Non-users of WSUCE Educational Classes

Respondents were classified as users or non-users of WSUCE based on attendance at forestry educational classes and tours. The average ages of users and non-users were 59 and 56, respectively (Table 3.) Average length of ownership for users was 29 years and for non-users 22 years. Median land ownership area for users was 32 ha, over twice the median ownership of 16 ha for non-users. Only 42% of users reside on their land, compared with 51% of non-users. Absentee landowners using WSUCE live closer to their forest, an average of 143 km away, compared with 356 km for non-users. A higher percentage of respondents using WSUCE programs had attended college and postgraduate school. The average annual household income for both groups was about \$50,000.

Table 3. Characteristics of both users and non-users of WSU Cooperative Extension forestry education classes and tours ¹

Characteristic	Users	Non-users
Acreage		
Median area owned	32 ha	16 ha
Average length of ownership	29 years	22 years
Residency		
Permanent residence on forest property	42%	51%
Absentee landowner	58%	49%
Average of residence from forestland	143 km	356 km
Landowner average age	59 years	56 years
Last educational level completed		
High school	19%	28%
Trade school	4%	9%
4 year college	42%	39%
Post-graduate school	26%	17%
Employment status		
Self employed (including farmer or rancher)	27%	24%
Employed full time	19%	33%
Employed part time	1%	3%
Retired	40%	31%
Average annual household income	\$50,000	\$50,000

¹ Percentages do not necessarily total to 100 due to non-responses and missing data.

Reasons for Ownership

Respondents were asked to rate a wide variety of land ownership objectives using a four-point scale ranging from very important to very unimportant without the option of a 'no opinion' midpoint. Percentages of respondents ranking each objective as 'very important' or 'somewhat important' are reported in Table 4. Of those respondents who attended WSUCE classes, 94% placed 'satisfaction from owning land' in this upper importance category. The next most frequently rated reason was 'sentimental attachment to the land'. Non-users also ranked these two reasons highly, together with 'privacy'. These results indicate that Washington's family forest landowners feel a sense of stewardship towards their forestlands. A large proportion of both users and non-users identified several non-monetary values of land ownership, including familial legacies, scenic beauty and the opportunity to contribute to fish and wildlife conservation. These results are consistent with findings from similar studies undertaken in other regions of the USA (e.g. Blatner *et al.* 1991, Brunson *et al.* 1996, Rickenbach *et al.* 1998). Recreational opportunities were not particularly important for most respondents, nor was additional income gained through hunting leases or eventual commercial development or resale. Where users and non-users differed dramatically, however, was in the importance of 'income from timber'. Users of WSUCE classes and tours identified this as being a much more important element of land ownership than non-users (80% and 49% respectively). What this suggests is that users of extension are more likely to participate in more active forest management, and may have a clearer understanding of the multi-use capabilities of their forests.

Table 4. Relative frequencies of high importance rankings of forestland ownership for users versus non-users of WSUCE forestry education classes and tours ²

Reason for ownership	Users of WSUCE (% placing high importance rating)	Non-users of WSUCE (% placing high importance rating)
Privacy	84	88
Satisfaction from owning land	94	88
Sentimental attachment to land	92	87
Scenic beauty and aesthetics	83	85
Provide wildlife habitat	84	80
A legacy for my children	82	78
Protect fisheries and wildlife	76	72
Let nature take its course	55	67
A place to hike or camp	57	57
Income from timber	80	49
Investment for future resale of land	38	43
A place to hunt and fish	30	33
Access to nearby recreation	26	32
A place to ride snowmobiles, etc.	15	16
Eventual commercial development	15	14
Income from hunting leases	4	7

² Percentage of respondent ranking reason from very important to somewhat important.

Timber Harvest Behaviour

Past timber harvest behaviour of users and non-users of WSUCE classes or tours were identified (Table 5). Seventy-two percent of extension program users had harvested timber for commercial sale, compared with only 52% of non-users. Past studies have indicated that landowners of larger forests tend to be more interested in timber management (Blatner *et al.* 1991). Furthermore, some agencies restrict their harvesting cost-share programs to forest holdings of 8 ha or more, thus reducing the ability of smaller landowners to benefit from assistance. But this study found no significant differences between ownership size and timber harvest interest, which suggests that the financial benefits of owning forestland may become greater for landowners as they learn more about forest management. Partial-cut harvest practices, such as thinning, were cited as the most often used silvicultural methods by both groups, but more non-users of extension sought advice from a logger prior to harvest, rather than from a public agency forester or a private consultant.

Table 5. Timber harvest behavior of users and non-users of WSUCE forestry education classes and tours

Activity		Users (%)	Non-users (%)
Harvested timber for sale		72	52
Harvest practices used	Clear cut	33	22
	Partial cut	73	73
Advice sought prior to harvest	Private consulting forester	40	30
	Public agency forester	12	7
	Logger	17	31
	Neighbour	3	1
	Other	2	3
None		20	21

Approximately 20% of both users and non-users did not seek any advice prior to timber harvest. The reasons for this are unclear. Education does not seem to be a factor – 37% have a high school level education and 40% have completed college – and there were no significant differences with regards to employment status, length of ownership or number of hectares owned.

Forest Management Activities

Respondents were asked to choose the number of forest land-use activities that they had completed within the last 10 years from a list of activities provided in the survey. Overall, respondents who had used WSUCE forestry extension classes and tours had completed more activities (Table 6). Over 80% of all users had participated in reforestation activities and had thinned their trees, and at least 85% had retained snags or downed logs for wildlife. Of non-users, less than 60% had performed four of the six activities listed, and although over 70% had provided snags or logs for wildlife, this does not necessarily imply active management. Once again, there is an indication that the users of forestry extension programs take a more active and multi-use approach to their forestlands.

Table 6. Activities completed during the past 10 years (1989-1999) by users and non-users of WSUCE forestry education classes and tours

Forest management activity	Users (%) (n=192)	Non-users (%) (n=637)
Plant trees for reforestation	82	56
Thin trees (other than Christmas trees)	80	56
Fertilize forest trees	26	9
Prune trees (other than Christmas trees)	69	42
Retain snags or leave trees for wildlife	85	71
Leave dead and down logs for wildlife	87	77

Landowner Interests

Survey respondents were asked to identify topics for which they would like additional information. Users of WSUCE indicated a greater desire for more information overall, then did non-users; including topics dealing with active forest management, such as brush control, thinning, reforestation, and forest inventory (Table 7). Again, this suggests that respondents who have used forestry extension programs and resources are more likely to take an active approach towards managing their forests. Although to lesser percentages, non-users expressed interest in the same topics as users. It appears more can be done to create awareness and find methods to reach and assist the non-users. Whether for lack of extension personnel, the need for different educational approaches, or other reasons, there is opportunity to help non-users improve the care and management of their forests. Better understanding of non-users is a subject that deserves more attention. It is likely that additional educational and technical staffing would allow for more landowner assistance; yet there may be more effective ways to utilize existing resources.

CONCLUSIONS

Washington State's family-owned forests play an important role in the state's economy. It is vital that private landowners are provided with the information necessary to make sustainable management decisions (Blatner *et al.* 1991). The results of this survey strongly suggest that use of educational programs offered by WSU Cooperative Extension is positively associated with the number of forest management practices completed, and although timber harvest was cited as very important by extension program users, both users and non-users identified many personal reasons for land ownership, which suggests an overall sense of stewardship by all respondents.

Over one-half (54%) of responding family forest landowners had contact with an extension educator, program or educational material; 73% of these respondents rated usefulness of extension education and assistance as good or excellent. Respondents using WSUCE forestry educational programs and materials have larger median property sizes, are older, have owned their forests longer, are more likely to be absentee owners, and are better educated than non-users. They are more likely to actively manage their forests and exhibit a clearer understanding of the multiple-use capabilities of their forests.

Table 7. Topics of interest of users versus non-users of WSU Cooperative Extension forestry education classes and/or tours

Topic of interest	Users of WSU Cooperative Extension (%)	Non-users of WSU Cooperative Extension (%)
Brush control	70	49
Reforestation	68	48
Thinning	73	52
Forest soils/fertilization	61	39
Road construction	45	27
Streamside vegetation	47	35
Hardwood management	54	32
Conversion of brush to forest	49	30
Taxes and record keeping	71	39
Harvesting/selling timber	69	37
Forest estate planning	68	45
Forest insects and diseases	78	56
Animal damage control	60	39
Forest inventory	70	41
Nontimber forest products	52	39
Wildlife habitat enhancement	61	50
Fisheries enhancements	37	29
Grazing management	28	24
Water quality	55	48
Forest recreation	26	26
Fire protection	75	59
Tree/plant identification	59	51
Wildlife identification	49	42
Forest practice laws	75	53
Ecosystem management	59	47

Note: Percent of respondent ranking from very important to somewhat important.

Washington State has some of the most stringent state forest practice laws in the USA and the challenges for family forests are great. There is a desire by federal and state agencies, as well as environmental organizations, to keep the forested areas of Washington in forest. WSU Cooperative Extension forestry programs provide unbiased, research-based information to help landowners better understand their forests and the regulations that govern their activities. Extension educational programs, in combination with state, federal, and private technical assistance programs, seem to offer an effective strategy for helping landowners manage their forests. Over half of the forest landowners in Washington State are benefiting from existing programs. However, an important challenge for forestry education is to better understand and work with those forest owners not availing themselves of

these educational and technical assistance programs, and to find ways to more effectively extend these programs to reach more forest owners.

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