Photos by Paul Adams

NIPF
Landowners' View of Regulation

By Rebecca L. Johnson, Ralph J. Alig, Eric Moore, and Robert J. Moulton

As awareness and concern regarding the environmental consequences of forest practices have increased, new or amended forest regulations have been placed on nonindustrial private forestlands (NIPF) in the Pacific Northwest (Salazar and Cubbage 1990; Quigley 1992). Debates over whether forest practice regulations are providing public benefits or preventing public harm are intensifying (Ellefson et al. 1995), and forest landowners are finding their bundle of rights diminished by stricter forest practices legislation. Against this backdrop, NIPF harvest levels in the region have more than doubled since 1976 (Haynes et al. 1995). Some people speculate, based mostly on anecdotal evidence, that anticipation of future regulation has spurred the accelerating harvests (Plummer 1993). To see whether this was true, we conducted a survey of owners.

Previous studies have explored the relationships between NIPF landowners' harvest behavior and forest, owner, and economic characteristics (Fecso et al. 1982; Blatner et al. 1991; Cleaves and Bennett 1995; Rutledge 1989; Moulton and Birch 1995; Adams et al. 1992; Bliss 1993; Jones et al. 1995). Relatively little, however, has been reported on whether concerns about future regulations affect private forest management and harvest practices. Cleaves and Bennett (1995) found that 11 percent of private forest landowners in western Oregon felt that "avoiding potential future restrictions on harvesting" was an important reason for past harvests. These landowners accounted for 15 percent of the total timber volume sold and

Riparian regulations have become more stringent. Although the new rules in Oregon are complex—covering width of the riparian buffer zone, the number and size of conifers that must remain, even snag and down wood retention—most forest owners say they did not harvest early to avoid compliance. The regulations are intended to preserve water quality, provide wildlife habitat, and maintain scenic values (top left). Earlier regulations allowed harvest along some streams (right).

12 percent of the acres harvested from the survey sample. No study has determined which landowners—those with larger holdings, for example, or those with greater financial motivations—were most likely to alter their management practices. Findings from previous research indicate that NIPF owners hold and manage forestland for a variety of reasons within a context of diverse market conditions, social settings, and policy options. Analysts must therefore be careful in attempting to isolate determinants of NIPF behavior.

Objectives

We report the results of a case study in western Oregon and Washington that surveyed NIPF owners and examined their behavior in the context of the regulatory climate in which they operated. In this study NIPF owners own one or more acres of land classified as forestland in tax records, do not own wood-processing facilities, and do not include corporations actively involved in forest-related businesses.

Three types of possible future forestry regulations that could affect NIPF owners were considered: (1) revised harvest regulations for riparian zones; (2) a log export ban for private timber; and (3) harvest restrictions on private forestland under the Endangered Species Act (ESA) or a modified version of that act. These issues are important to both professional foresters and the general public in the western United States and elsewhere. Our primary objectives were the following:

- Describe the general characteristics and behavioral tendencies of NIPF owners.
- Determine whether recent harvest decisions were influenced by anticipated changes in regulations.
- Determine whether future harvest decisions are likely to be influenced by anticipated changes in regulations.
- Evaluate landowners' willingness to accept certain harvest restrictions in exchange for compensation.

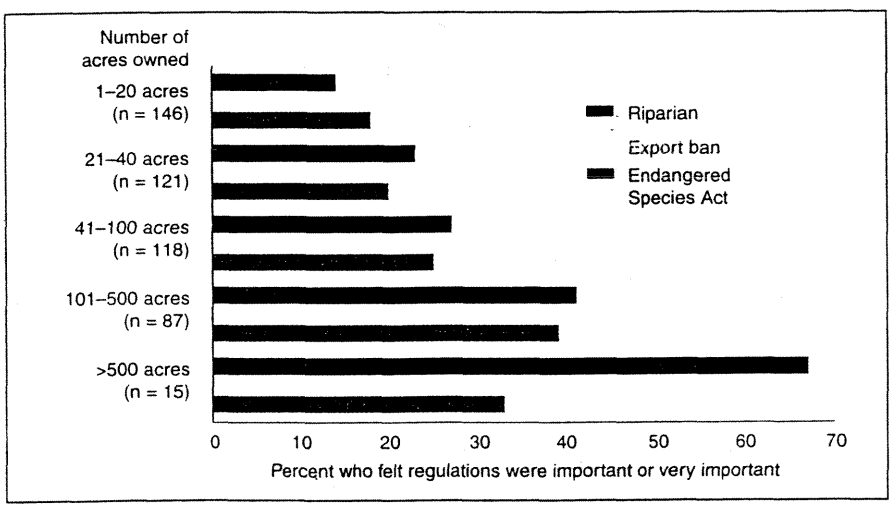

Figure 1. Impact of regulations on past harvests by ownership size.

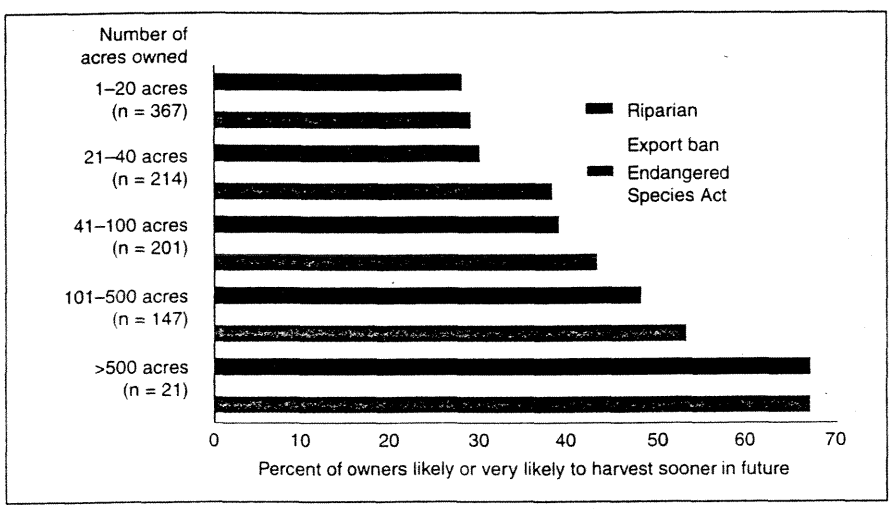

Figure 2. Impact of proposed regulations on future harvests by ownership size.

Methods

NIPF owners from all westside counties in Oregon and Washington were identified by county tax assessors. The sample randomly drawn from each county was proportionately weighted for the percentage of NIPF land in each county. Trained phone interviewers from the Oregon State University Survey Research Center used a list of names and phone numbers from each county, drawing names randomly until the target number of usable surveys (approximately 1,000 for all counties combined) was reached. The survey was first tested with NIPF owners and reviewed by representatives of state agencies and other professionals with previous NIPF survey experience. The average interview time was 20 minutes. A total of 1,731 NIPF owners were called and 1,004 usable surveys were obtained (a 58 percent response rate).

The survey covered a number of topics (Johnson et al., forthcoming), but this paper focuses on the impact of proposed harvest restrictions. Two question formats were used:

1. In an open-ended format, respondents were asked for the three most important reasons for their most recent harvest decision.

2. In a closed-ended format, respondents were asked whether each of the three proposed regulations had influenced their most recent harvest decision.

The open-ended question was asked first to minimize bias from knowing the three proposed regulations. The closed-ended response format was then used again to ask whether the proposed regulations would affect *future* harvest decisions. Response choices for the closed-

ended questions were along a five-point Likert scale from "not at all important" to "very important."

Finally, we assessed what compensation levels might alter landowners' intentions. Royer and Moulton (1987) found that NIPF owners in the South made use of tax credits, which in many cases complement other government-funded costsharing. We asked whether landowners would (1) "use only selective harvest methods on their representative stand in order to improve wildlife habitat," (2) "forgo harvesting timber," and (3) "forgo harvesting within 200 feet of a riparian area" if given an annual federal income tax reduction for 10 years. Each respondent received a hypothetical offer of a single tax reduction ranging from $25 to $2,000 per acre per year; we made no attempt to estimate mean willingness to accept a tax reduction.

Results

Characteristics of Oregon and Washington NIPF owners and land. Like NIPF owners in other areas of the United States (Alig et al. 1990; Jones et al. 1995), owners in the Pacific Northwest come from older age groups (41 percent were over 60), have above-average incomes (mean income was $61,000 a year), and receive most of their income from sources other than NIPF land (only 8 percent said NIPF land was their primary source of income). Unlike owners in other regions of the country, 24 percent had occupations related to the forest industry. Much of their land had been in the same family for many years, with an average tenure of 27 years.

The average number of acres owned was 83, with a range from 1 acre to 2,600 acres, and a median size of 30 acres. We hypothesized that large-acreage owners might manage their lands differently than small-acreage owners and have different opinions about future forestry regulations. Accordingly, many of the results distinguish between owners with an arbitrary cutoff of less than 100 acres (81 percent, n = 812) and those who owned 100 acres or more (19 percent, n = 192). Small-acreage owners in the sample held a total of 23,355 acres and large-acreage owners held a total of 57,265 acres.

Motivations for owning forestland were similar to those found in previous studies (e.g., Blatner et al. 1991). "Enjoyment of owning green space" was cited as important or very important by 73 percent of the owners and as the *primary* reason for owning forestland by 20 percent—higher than for any other reason. "Timber production" was cited as the primary reason by 9 percent of the owners, and as important or very important by 55 percent. The analysis investigates whether these owners are more likely to be affected by future regulations than the 36 percent who said that timber production was unimportant or not at all important.

The distribution of responses for five of the motivations was significantly different ($p<0.05$) for the two types of landowner. The financial motivations of land investment and timber production, along with having an estate for future generations, were more important for large-acreage owners; the motivations of owning green space and having timberland as part of their property were more important for small-acreage owners. Timber production was unimportant or not at all important for 41 percent of the small-acreage owners. When asked for their *primary* reason for owning forestland, large-acreage owners cited timber production (22 percent cited this compared with 6 percent of small-acreage owners). These differences between small- and large-acreage owners are consistent with the findings in Moulton and Birch (1996) for western forest landowners.

Impact of proposed regulations on most recent harvest. At some time during their ownership, 50 percent of owners had harvested; significantly more large-acreage owners (60 percent) had done so than small-acreage owners (49 percent). Had possible future forest regulations influenced the most recent decision to harvest? In response to an open-ended question, "avoid possible harvest restrictions" was noted as one of the three most important reasons for harvesting by 6 percent of the owners. Other owners offered more specific answers related to restrictions. Avoiding "revised riparian restrictions" and avoiding a "possible log export ban for private timber" were noted as one of the three most important reasons for harvesting by 3 percent and 2 percent of the owners, respectively. These latter two answers were significantly more likely to be stated by large-acreage owners than small, but the number of owners who gave the more general statement—"avoid possible harvest restrictions"—was not significantly different between the two groups.

When asked in a closed-ended format about the importance of each possible future forest regulation, 25 percent or less of the owners stated that the proposed regulations were important or very important in their most recent decision to harvest *(table 1)*. As might have been expected, when prompted

Table 1. Importance of specified regulations in landowners' most recent harvest decision.

	Percent of owners and *Percent of acres*										
Specified regulations	Not at all important		Unimportant		Neither important nor unimportant		Important		Very important		n
Possible revised riparian harvest restrictions	**44%**	*28%*	**21%**	*16%*	**10%**	*9%*	**11%**	*12%*	**14%**	*35%*	506
Possible log export ban for private timber	**48**	*25*	**24**	*37*	**10**	*11*	**9**	*17*	**9**	*10*	506
Possible harvest restrictions for private forestland under ESA	**44**	*26*	**22**	*34*	**10**	*12*	**11**	*10*	**13**	*19*	506

about the regulations in this format, the percentage of owners stating that they were important increased, yet regulations were still not one of the top three reasons for harvesting. In any case, the results from both formats lead to the same general conclusion: a large majority of landowners did *not* say that the proposed regulations were important in their most recent decision to harvest.

The proposed regulations were cited as important or very important reasons for the past harvest by significantly more large-acreage owners; all three regulations were not important for 80 percent of small-acreage owners. That large-acreage owners have proportionately more acres affected by the proposed regulations would explain their greater concern. The owners who had harvested at some time owned, collectively, 49,894 acres in the sample, nearly half (47 percent) of which were owned by respondents who felt that possible riparian restrictions were important or very important in their most recent decision to harvest; 29 percent by respondents who felt that possible restrictions under the ESA were important or very important; and 27 percent by those who felt a possible log export ban was important or very important *(table 1)*. *Figure 1* (p. 24) breaks down ownership sizes further to show the relationship between acres owned and concern about regulations.

Differences between large- and small-acreage owners are also reflected in their attitudes. Of small-acreage owners, 48 percent agreed with the statement, "There should be additional riparian harvest restrictions on private lands to protect riparian ecosystems"; only 28 percent of large-acreage owners agreed *(table 2)*. Results were similar for restrictions regarding endangered species. A majority of all owners, however, would be willing to alter the amount and timing of their harvest if it was necessary to maintain a healthy ecosystem.

Of owners who had harvested their forestland, the 12 percent (n = 61) whose primary interest was timber production were significantly more likely to say that a given regulation was an important or very important factor in their most recent decision to harvest than were those who owned forestland primarily for other reasons. However, more than 55 percent of those who had harvested and owned land primarily for timber production did not feel that the regulations were an important factor.

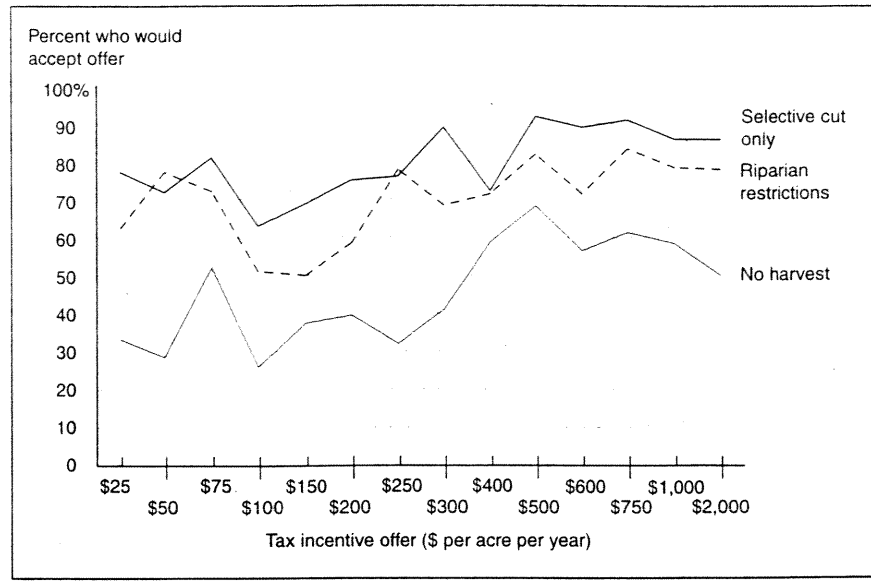

Figure 3. Willingness to accept tax break for 10 years in exchange for harvest restrictions.

There were additional ownership characteristics significantly associated with a higher likelihood of being affected by possible forest practice regulations:

- The owner derived a majority of income from the sale of timber.
- The owner had timber in a harvestable age class (more than 40 years).
- The owner held forestland for a longer time.

This suggests that owners who have a bigger financial stake have more concern about possible forest regulations—consistent with the earlier results showing that large-acreage owners are more concerned.

Impact on future harvest behavior. For future harvest decisions, a majority of owners would not be likely to harvest sooner if any of the regulations were enacted within five years *(table 3)*. However, a sizable minority of owners suggested that "private harvest restrictions under the Endangered Species Act" (39 percent) or "more restrictive riparian harvest restrictions" (35 percent) were likely or very likely to make them harvest sooner. More owners were likely to harvest sooner because of increased regulation than said regulations were important in past decisions *(tables 1 and 3)*.

A significantly greater percentage of large-acreage owners were likely or

Table 2. Attitudinal differences between owners of small and large acreages.

Statement	Percent responding Agree or Strongly Agree: Small acreage	Large acreage	n
There should be additional riparian harvest restrictions on private lands to protect riparian ecosystems.	48%	28%	924
Harvest should be restricted on private land to protect endangered species.	33	22	944
I would be willing to alter the amount and time of my harvest if it is necessary to maintain a healthy ecosystem.	70	58	903

NOTE: Distributions of responses were significantly ($p < .05$) different between small and large acreages. Small and large acreages are defined as those less than and greater than or equal to 100 acres, respectively.

Table 3. Percent of landowners who would harvest sooner if regulations were implemented within five years.

Proposed regulation	Percent of owners and *Percent of acres*										n
	Not at all likely		Unlikely		Neither likely nor unlikely		Likely		Very likely		
More restrictive riparian harvest regulations	**34%**	*20%*	**19%**	*17%*	**12%**	*12%*	**16%**	*17%*	**19%**	*34%*	981
Log export ban for private timber	**36**	*23*	**25**	*25*	**12**	*11*	**12**	*12*	**15**	*30*	908
Private harvest restrictions under ESA	**29**	*16*	**23**	*20*	**10**	*10*	**16**	*18*	**23**	*36*	888

very likely to harvest sooner if regulations were enacted in the future. As a result, proportionately more acres are represented by those who are likely to harvest sooner. For possible riparian harvest restrictions, half the acres in the sample were owned by respondents who were likely or very likely to harvest sooner; 48 percent and 37 percent, respectively, were owned by those likely or very likely to harvest sooner given private harvest restrictions under the Endangered Species Act and a log export ban for private timber. *Figure 2* (p. 24) breaks down ownership sizes further to show a consistent relationship between number of acres and concern about future regulation.

Owners of forestland used primarily for timber production (9 percent of total sample; n = 87) were also significantly more likely to harvest sooner because of possible regulations than were those who had other reasons for ownership. A majority who own forestland primarily for timber production would harvest sooner because of each possible regulation. More than two-thirds would harvest sooner if private harvest restrictions under the ESA were implemented within five years.

Willingness to accept compensation for harvest restrictions. Much of the debate surrounding forest regulations centers on who should pay for environmental protection or degradation. If forest landowners are compensated for their losses, then it is implied that the public must "buy" the environmental protection from them. We asked landowners whether they would forgo some of their rights in return for compensation—in this case, a tax break.

A majority of landowners were willing to modify their harvest in some way for an annual federal income tax break over the next 10 years *(figure 3)*. For those planning to harvest within the next 10 years, a large majority would be willing to improve wildlife habitat by using only partial harvest methods. Even for respondents who received an annual tax incentive of only $25 per acre (n = 44), 77 percent were willing to accept the hypothetical tax break and give up their right to clearcut for the 10-year period.

Landowners were less willing to forgo harvesting timber altogether. Even for relatively high tax breaks, more than 30 percent were not willing to forgo harvesting. Finally, 50 percent or more who planned to harvest in the next 10 years would forgo harvesting within 200 feet of a riparian area if given an annual federal income tax reduction for 10 years. More small-acreage owners were willing to modify their harvest behavior in return for compensation than were large-acreage owners.

Discussion and Conclusions

Responses to public intervention are shaped by the owners' objectives, and intended versus actual outcomes of public programs may not match if owners' motivations are not sufficiently factored into intervention planning. Despite the speculation in the West that many NIPF owners are harvesting sooner because of increasing

regulation, our survey showed that a majority did *not* say that possible future regulations were important in their most recent harvest decisions. Although NIPF harvest levels in this region have more than doubled in the last 10 years, a combination of factors is likely at work. Our survey suggests that fear of regulations is not a dominant factor, and this calls for future research into the response of owners to market dynamics and other factors.

A minority of owners felt that possible regulations would cause them to harvest sooner in the future, but the percentage was larger than the percentage who felt those regulations were important in past decisions. This may indicate that NIPF owners are becoming more sensitive to increasing regulation—important information for policymakers as they seek to enhance environmental protection on private lands.

Many significant differences between large- and small-acreage owners showed up in our study. The large-acreage owners were more likely to own forestland for timber production and therefore have a bigger financial stake in their land. It is not surprising, then, that they are also more likely to harvest sooner because of proposed regulations. Regulation modifies the market signals perceived by these landowners by increasing the risk and associated cost of holding uncut timber. This suggests that policymakers must consider the interaction between their policies and market signals.

The differences between large- and small-acreage owners found in this study are not in agreement with Jones et al. (1995), who assert that those differences are mostly a "myth." Although their findings from eastern landowners showed that large-acreage owners are more timber oriented, they concluded that "large landowners hold views that differ little from those held by smaller landowners" (p. 43). Our contrary conclusion may reflect differences between western and eastern landowners, or it may be a result of our focus on regulations instead of more general attitudes.

Future research should integrate information on NIPF owner characteristics, behavior, and condition of their forest properties, including effects of risk, uncertainty, and dynamic processes. It should study responses to proposed incentives or disincentives to practice ecosystem management for a mixture of public and private land. There is also a need to monitor what actually happens on the ground to supplement surveys of stated behavioral intentions. JOF

Literature Cited

ADAMS, D.M., R.J. ALIG, D. ANDERSON, J. CHMELIK, and J. STEVENS. 1992. *Prospects for western Washington's timber supply.* Institute of Forest Resources Contribution Number 74. Seattle: University of Washington, College of Forest Resources.

ALIG, R.J., K.J. LEE, and R.J. MOULTON. 1990. *Likelihood of timber management on nonindustrial private forests: Evidence from research studies.* General Technical Report SE-60. Asheville, NC: USDA Forest Service, Southeastern Forest Experiment Station.

BLATNER, K., D. BAUMGARTNER, and L. QUACKENBUSH. 1991. NIPF use of landowner assistance and education programs in Washington State. *Western Journal of Applied Forestry* 6(4): 90–94.

BLISS, J. 1993. *Alabama's NIPF owners: Snapshots from a family album.* ANR-788. Auburn: Auburn University, Alabama Cooperative Extension Service Center.

CLEAVES, D., and M. BENNETT. 1995. Timber harvesting by nonindustrial private forest landowners in western Oregon. *Western Journal of Applied Forestry* 10(2):66–71.

ELLEFSON, P.V., A.S. CHENG, and R.J. MOULTON. 1995. *Regulation of private forestry practices by state governments.* State Bulletin Sb0605-1995. St. Paul: University of Minnesota, Agriculture Experiment Station.

FECSO, R.S., H.F. KAISER, J.P ROYER, and M. WIEDENHAMER. 1982. *Management practices and reforestation decisions for harvested southern pinelands.* Staff Report No. AGE5821230. Washington, DC: US Department of Agriculture, Statistical Reporting Service.

FOREST ECOSYSTEM MANAGEMENT ASSESSMENT TEAM. 1993. *Forest ecosystem management: An ecological, economic, and social assessment.* Report of the Forest Ecosystem Management Team. Washington, DC: US Government Printing Office.

HAYNES, R., D. ADAMS, and J. MILLS. 1995. *The 1993 RPA timber assessment update.* General Technical Report RM-259. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station.

JOHNSON, R., R. ALIG, P. BETTINGER, T. STONE, and R. MOULTON. Forthcoming. NIPF land and landowner description: Western Oregon and Washington. *FRL Bulletin,* Oregon State University.

JONES, S.B., A.E. LULOFF, and J.C. FINLEY. 1995. Another look at NIPFs: Facing our "myths." *Journal of Forestry* 93(9):41–44.

MOULTON, R.J., and T.W. BIRCH. 1995. Southern forest private landowners: A profile. *Forest Farmer* 54(5):44–46.

PLUMMER, M. 1993. No birds: The perverse economics of endangered species. Paper presented at Western Forest Economists meeting, May 1993, Welches, OR.

QUIGLEY, T.M. 1992. *Forest health in the Blue Mountains: Social and economic perspectives.* PNW-GTR 296. Portland, OR: USDA Forest Service, Pacific Northwest Research Station.

ROYER, J.P., and R.J. MOULTON. 1987. Reforestation incentives: Tax incentives and cost-sharing in the South. *Journal of Forestry* 85(8):45–47.

RUTLEDGE, W. 1989. Oregon woodland owner survey. Report to the Oregon Department of Forestry, Salem.

SALAZAR, D., and F. CUBBAGE. 1990. Regulating private forestry in the West and South. *Journal of Forestry* 88(1):14–17, 19.

ABOUT THE AUTHORS

Rebecca L. Johnson is associate professor of forest resources, Oregon State University, Peavy Hall A108, Corvallis 97331; Ralph J. Alig is research forester, USDA Forest Service, Pacific Northwest Research Station, Corvallis, Oregon; Eric Moore is employment economist, Oregon Employment Department, Portland; Robert J. Moulton is economist, USDA Forest Service, State and Private Forestry, Research Triangle Park, North Carolina.