

## Clearcutting and Forest Regulation in the “New” Forestry: Views from Professional Foresters in the Northeast US

Andrew F. Egan  
University of Maine -- Orono  
Maine, USA

### ABSTRACT

In the past ten years in North America there has been much attention focussed on a so-called “new” forestry paradigm, placing emphasis on what some have described as a more holistic approach to forest management. Will the debate contribute to changes in the conduct of forest operations, particularly clearcutting? How will forest policies that will define the role of forest operations in the region be formulated?

A survey of both public and private sector foresters in the northeastern US was conducted that was designed to solicit their opinions on the future of forest practices in the region. Multiple survey mailings revealed that forestry in the region is entering a period of increasing regulation and that environmental groups will play a more important role in defining these regulations. Although most respondents did not favor banning the practice of clearcutting, there were significant differences in responses from USFS foresters and private sector foresters on issues related to whether fewer foresters will be involved in the management of forests and whether the size of clearcuts should be limited. Implications of these results for the forest engineering/operations community are explored.

**Keywords:** *forest practices, new forestry, clearcutting, mail survey, Northeast USA.*

There has been considerable upheaval in North America’s forestry community that has been manifested in often divisive debates about the existence of a “new” forestry, a metamorphosis of forestry language, and a shifting forest management paradigm. These efforts seem to coincide with a broader interest in articulating and defining “new” forestry language, paradigms, concepts, and ethics. However, there is some disagreement as to the value of such discourse. O’Keefe [20] suggested that most of what is considered “new” forestry is not much different from the traditional concept of multiple-use forest management. He argued that terms such as “holistic forestry” may be

nothing more than a public relations gimmick. Clark and Stankey [6] also questioned whether initiatives like “new perspectives” and “new forestry” represented fundamental changes or fads. Conversely, Franklin [13] viewed “new forestry” as an innovative philosophy that considers both ecological and commodity values, although conceding that some of what had been referred to as “new” forestry practices resembled more traditional ones [14].

From a pragmatic viewpoint, at the heart of much of the debate is the role of timber harvesting, its effects on ecosystem and landscape-level forest values, and its compatibility with public values. Along with road building and the use of pesticides, timber harvesting, and particularly clearcutting, has been one of forestry’s most controversial practices. For many citizens clearcutting evokes images of a devastated landscape, exposed to soil erosion, water pollution, and the destruction of wildlife habitat [10]. These images are often at odds with the notion of the practice held by many in the forestry community, who may recognize clearcutting as an opportunity for forest renewal and potential wildlife habitat enhancement. Moreover, the common notion that the clear felling of trees – unconfounded by poor road location, construction, and retirement – is a source of significant erosion and sedimentation is largely unsubstantiated [7, 18, 21].

Often under pressure from the general public and environmental interest groups, many states and municipalities are addressing policy options, including restricting the amount, type, and location of harvest activity, abandoning clearcutting on public forests, and limiting the size of clearcuts on all forestlands. Moreover, through the American Forest and Paper Association’s Sustainable Forestry Initiative (SFI), forest industry appears to be advocating a proactive, albeit somewhat controversial, approach to regulating itself, perhaps as a way of preempting future, more restrictive regulation. On the subject of clearcutting, for example, the SFI’s Implementation Guidelines call for restricting the average size of individual clearcuts to no more than 50 ha [1]. In addition, there may be evidence to suggest that the focus of US Forest Service (USFS) policy has evolved from traditional forest management tenets [e.g., multiple use, sustained yield] to those often associated with ecosystem management (e.g., landscape level management) [22]. However, it is less clear whether a forest management paradigm shift has occurred within the professional forestry community [11], and what, if anything, this may mean to the practice of clearcutting and future regulation on National Forests.

The purpose of this study was to solicit professional foresters’ views on the practice of clearcutting and the formulation of forest policy in the northeastern US. Bor-

rowing from previous research, this study investigated variables such as respondent's age, gender, political orientation, and education in explaining these views. In addition, given controversies surrounding the harvesting of timber on National Forests [9], the views held by public forestland managers who were employed by the USFS with those held by private sector foresters were compared.

## BACKGROUND

The views on timber harvesting held by various stakeholders have been described in the forestry literature. Clearcutting, perhaps the most controversial harvesting/silvicultural practice, has been described as the "preeminent issue today in Forest Service policy" [9]. Court decisions (e.g., *West Virginia Division of the Izaak Walton League of America, Inc. v. Butz*, 1973), federal legislation (e.g., the *National Forest Management Act* of 1976), statewide referenda and forest practices acts, as well as local ordinances that address clearcutting attest to both the evolution of concern about, and the controversial nature of, the practice. Although little has been written about the views of the broad professional forestry community on clearcutting, there have been studies of the attitudes of employees of the USFS [19, 23], the general public (e.g., 4, 5, 17, 24) and nonindustrial private forest (NIPF) owners (e.g., 4, 5, 10) toward the practice. Kline and Armstrong [17] for example, found greatest support among Oregon's more urban and educated voters for a failed initiative that would have restricted the practice of clearcutting and the use of pesticides. Similarly, the strongest opposition to a forest practices referendum in Maine was from those living in rural areas [27]. However, despite the failure of several state referenda that would have restricted forest practices, Bliss [3] speculated that public opposition to clearcutting is widespread, deep, and "symptomatic of public alienation from forestry in general" (p. 5). He suggested an improved dialogue between the forestry community and the general public, and for foresters to obtain a better understanding of public values.

Recently, several investigators have attempted to elucidate the attitudes of USFS employees toward clearcutting. For example, Mohai and Jakes [19] found that 60 percent of survey respondents considered clearcutting to be an acceptable management practice, although over two-thirds considered the practice overused on national forests. In another study of Forest Service officials, Sabatier *et al.* [23] found that the "timber religion" of professional foresters "no longer constituted a coherent ideology for the Forest Service" (p. 44), and that the policy attitudes of the USFS — particularly toward timber harvesting — have changed over the past 10 to 20

years. That there had been an institutional pro-timber bias within the USFS is supported by Twight and Lyden [26]. To what extent socio-demographic and professional shifts within the agency [25] have influenced changes is unknown.

Comparing the attitudes of West Virginia's foresters and Tree Farmers (a formal designation for those forestland owners who have enrolled in the Tree Farm Program), Egan *et al.* [10] found agreement between the two populations on general questions related to timber harvesting. Comparable percentages appeared to favor a general utilitarian approach to forest ownership and management. However, the authors also found that a vast majority of forester-respondents and less than half of the Tree Farmers disagreed with the statement "The general practice of clearcutting should be banned." In addition, Tree Farmers and foresters differed significantly on their perceptions of likely outcomes of timber harvesting, including loss of wildlife habitat and soil erosion, with greater percentages of landowners responding that negative effects would result.

In their study of the attitudes of Pennsylvania forest landowners and general public toward forest management, Bourke and Luloff [5] found that most respondents in both groups agreed that clearcutting should be banned. Although Bliss *et al.* [4] found that 70 percent of survey respondents from the Tennessee Valley region agreed that trees should be harvested and replanted, only 14 percent felt that clearcutting was appropriate on government owned forestland.

Egan *et al.* [11] recently investigated professional foresters' views on "new" forestry jargon and concepts, and found significant differences between USFS and private sector forest managers on their day-to-day application and interpretation of concepts related to the term "ecosystem management" (e.g., landscape-level management). However, on several questions related to timber harvesting, the authors found some similarities between the two groups. For example, 24 percent of USFS foresters and 21 percent of private sector foresters agreed that clearcutting should always play a role in ecosystem management; and 46 percent of USFS and 39 percent of private sector foresters indicated that timber harvesting should always play a role in ecosystem management.

## METHODS

A survey was developed and mailed in the fall, 1997, to foresters employed by the USFS as well as a sample of private sector foresters in the northeastern US. In order to assure that potential respondents would be com-

portable with the language of the survey, questions were developed by a team of researchers that included two foresters employed by the USFS, a former industry forester with experience in the northeast US, and a research associate. Lists of names and addresses of professional foresters employed in the private sector from the thirteen state northeastern region extending from Maine to Ohio and West Virginia were collected from several sources, including forestry services directories compiled by various state entities (e.g., State of New Jersey List of Approved Foresters, West Virginia Consulting Forester Directory, and State of New Hampshire Board of Licensure for Foresters Roster). In the fall, 1997, a survey was mailed to every fourth entry on these lists. In all, 226 private sector foresters received the survey and 147 responded (response rate = 65 percent). In addition, those USFS professionals from five National Forests within the 13 state study region – the Allegheny, Green Mountain, Monongahela, Wayne, and White Mountain National Forests — with some forest management responsibility were also mailed the survey. “Forest management responsibility” was determined from the titles (e.g., “forester,” “timber management specialist,” and “forest technician”) included alongside the names of each employee on the Forest Service lists. These titles were double-checked on the survey through the inclusion of two questions – one that asked the respondent to indicate his/her job title, and another that asked the respondent to briefly describe his/her job responsibilities. Of the 200 surveys mailed to this group, 120 (60 percent) were completed and returned. For both populations, two survey mailings were used to both increase response rates and facilitate analysis of bias due to nonresponse.

Borrowing in part from a previously published work on landowner attitudes toward forestry practices [5, 10], the following explanatory variables were identified: respondent gender, age, level of education, and political orientation (liberal, conservative, or other), as well as USFS vs. private sector forestry. Dependent variables were responses on a 5-point Likert scale (from strongly disagree to strongly agree) to statements addressing (a) the practice of clearcutting, and (b) the formulation of future forest management policies.

## RESULTS AND DISCUSSION

Overall, the “typical” forester-respondent was 44 years old, male (86 percent of respondents), politically conservative (59.6 percent), spent about half (50.9 percent) of the work day in the field, and had a minimum of a BS degree (84.7 percent) (Table 1). Compared to their Forest Service counterparts, private sector foresters were more likely to be male (95 percent of private vs. 75 percent of

public sector foresters), were slightly older (45 vs. 43 years old), spent a greater proportion of their work day in the field (56 vs. 44 percent), and were more politically conservative (70 vs. 44 percent). Of the private sector foresters, 90 percent were consulting foresters, 8 percent were procurement foresters, and 2 percent managed forest industry land. One respondent worked as a forester for a utility company. US Forest Service professionals included those describing themselves as foresters (33 percent), forest technicians (29 percent), Timber Sale Administrators (9 percent), District Rangers (7 percent), Assistant Rangers (5 percent), Team Leaders (5 percent), silviculturists (5 percent), forest ecologists (2 percent), and Forest Supervisors (1 percent).

Table 1. Attributes of survey respondents (n = 267).

	USFS	Private	Combined
Age [years]	44.9	43.4	44.2
	(percents)		
Gender			
Male	74.7	94.6	86.0
Female	25.3	5.4	14.0
Highest level of education			
High school diploma	4.4	0	1.8 <sup>1</sup>
AAS or some college	20.0	9.3	13.7
BS	57.8	76.0	68.5
MS or higher	17.8	14.7	16.0
Politics			
Liberal	41.1	19.2	28.6
Conservative	43.2	72.0	59.5
Other	15.8	8.8	11.8

<sup>1</sup> These respondents described their job title as “forest technician” and their responsibilities as timber marking and other harvesting-related duties. In several northeastern states (e.g., Maine, New Hampshire), foresters who do not hold a BS degree can qualify as licensed foresters, and therefore no distinction was made in this study between professional foresters and forest technicians.

Extrapolation methods were used to estimate nonresponse bias [2]. A sample of 50 (the first 25 USFS and 25 private sector) survey participants responding to the first mailing ( $n_1=50$ ) was compared to a sample of the last 25 USFS and 25 private sector survey participants responding to a second survey mailing ( $n_2=50$ ). Chi-square analysis revealed no significant differences ( $\alpha = 0.05$ ) between these two groups of respondents in (a) any of the categorical variables that described the survey par-

ticipants, including respondent age, gender, and political identity; and (b) their responses to questions on either limiting the size of or banning clearcutting.

Whether a respondent was employed by the USFS or private industry was the only factor studied that was related to respondents' agreement/disagreement with policies to limit the size of clearcuts. Although half of the respondents agreed that the size of clearcuts should be limited (Table 2), contingency table analyses revealed significant differences between USFS (58 percent in favor) and private sector foresters (43 percent) on this policy (chi-square = 15.5;  $p = 0.004$ ) (Table 3). None of the variables studied was significant in explaining respondents' opinions about banning clearcutting on any forestland (public or private). Indeed, only 2 percent of respondents thought that clearcutting should be banned completely, while a large majority (over 93 percent) of respondents were opposed to banning clearcutting. This result agrees closely with those reported by Egan *et al.* [10] for West Virginia consulting foresters, in which 96 percent of respondents were opposed to banning the practice. However, this is in contrast with results reported by Bourke and Luloff [5], who found that 59 percent of Pennsylvania's general public and 57 percent of its NIPF owners agreed that clearcutting should be banned. In addition, the Bourke and Luloff results for NIPF owners agreed closely with those from Egan *et al.* [10], who showed that 55 percent of West Virginia certified Tree Farmers thought the practice should be banned. Moreover, Bliss *et al.* [4] reported that less than half of the Tennessee Valley region survey respondents felt that clearcutting should be allowed on land owned by individuals.

Most respondents (75 percent and 70 percent, respectively) agreed that forestry is entering a period of increasing regulation, and that environmental groups will play a greater role in defining forest policy (Table 2), although none of the factors studied was statistically significant in explaining responses related to these policies. Interestingly, almost one-third thought that fewer professional foresters will be involved in the management of forests. Whether a forester was employed by the USFS or the private sector, as well as the respondent's political identity were significant factors in explaining this opinion. While 49 percent of USFS foresters agreed that this would be a trend, only 17 percent of private sector foresters agreed. Indeed, 46 percent of private sector foresters "strongly" disagreed that this trend would occur and contingency table analysis indicated that there was a statistically significant (chi-square = 41.5;  $p < 0.001$ ) difference between responses from the two employment groups (Table 3).

Table 2. Percentages of respondents responding to questions on policies related to clearcutting and the formulation of future forest management policies (percentages do not add to 100 due to a "neutral" or "no opinion" category).

	Percent Agree	Percent Disagree
Policies related to clearcutting		
Banning clearcutting only on public land	4.0	86.6
Limiting the size of clearcuts	49.6	24.3
Banning clearcutting on any forestland	2.2	93.4
Policies related to the formulation of forest management regulation		
Forest management will be practiced in a more regulated environment	74.8	7.0
Environmental groups will play a greater role in defining future forest policy	69.9	10.5
Fewer professional foresters will be involved in the management of forests	31.3	50.9

More politically liberal (38 percent) than conservative (28 percent) or "other" (27 percent) thought that fewer foresters would be involved in the management of forests. However, further analysis suggested that, at the alpha level set for this study ( $\alpha = 0.05$ ), liberal respondents were no more likely to agree or disagree with this policy than conservative or "other" respondents (chi-square = 14.3;  $p = 0.074$ ).

## CONCLUSIONS

This research has measured some professional opinions related to clearcutting and the regulation of forest practices, and raised questions about the future of the practice. While it is clear that a vast majority of foresters in the Northeast are opposed to banning clearcutting, even on public lands, many foresters feel that policies limiting their size are appropriate. In addition, among the respondents to this survey there is an expectation of both more forest practices regulations, as well as an increased

Table 3. Comparison of survey responses from USFS and private sector foresters.

	USFS		Private Sector	
	Agree	Disagree	Agree	Disagree
	(percents)			
<b>Policies related to clearcutting</b>				
Banning clearcutting only on public land	2.0	87.0	5.6	86.3
Limiting the size of clearcuts	58.0	23.0	43.1	25.4 <sup>a</sup>
Banning clearcutting on any forestland	3.0	93.1	1.5	93.8
<b>Policies related to the formulation of forest management regulation</b>				
Forest management will be practiced in a more regulated environment	71.3	6.9	77.5	7.0
Environmental groups will play a greater role in defining future forest policy	70.6	7.8	69.3	12.6
Fewer professional foresters will be involved in the management of forests	49.0	31.4	17.2	66.4 <sup>a</sup>

<sup>a</sup> Chi-square analysis indicated that responses on this item were dependent on whether the survey participant was a USFS or private sector forester ( $\alpha = 0.05$ ).

role for environmental groups in defining forest policy. Indeed, five private sector foresters wrote the word “unfortunately” beside the survey statement “environmental groups will play an increasingly important role in developing forest policy,” indicating a level of resignation by these respondents to this apparent trend. This attitude appears to be consistent with published work on the public regulation of private forestry [12], in which the authors stated that the substitution of “standardized rules for professional education, on-the-ground experience, and informed judgement can be disturbing” for forestry professionals. Others have agreed that regulation of forestry practices — including logging — in the eastern US [8] and Canada [15] was increasing.

Although there appeared to be many similarities between the two groups on several questions, some differences between USFS and private sector foresters, particularly on the issues of limiting the size of clearcuts (58 percent vs. 43 percent) and whether fewer foresters will be involved in the management of forests in the future (49 percent vs. 17 percent), raise some questions regarding the differing philosophies of public and private forestry. The question was posed in such a way as to probe the respondent’s view of general forestry-related

policies, not simply those policies within his/her own agency or company. This applies as well to the question on limiting the size of clearcuts – a question for which there was some disparity between USFS and private sector foresters’ responses.

Importantly, the apparent disconnects between professional foresters and the general public [5], as well as between foresters and forestland owners [10], on whether clearcutting should be banned may be unsettling to proponents of the practice. That many certified Tree Farmers – landowners who have demonstrated a commitment to forest management – see the practice as destructive may be particularly unsettling to those in favor of maintaining clearcutting as a silvicultural option.

Although there was much agreement on several issues across all explanatory variables studied, there is apparent lack of unity, particularly between USFS and private sector foresters, on both whether clearcut size should be limited, as well as the perceptions of the future role of foresters in the management of forests. What this may portend for future forest practices regulations, particularly as they pertain to clearcutting, is unclear. But if the respondents to this survey are correct, in the northeast

US (a) clearcutting will continue to be favored by a large majority of foresters as a viable silvicultural tool, although the size of clearcuts may diminish; and (b) there will be more forest practices regulations, increasingly influenced by environmental interests.

Finally, for forest engineers, and those who work and perform research in the broad area of forest operations science, it is critical to understand [perhaps even influence] the environment within which forest engineering is practiced. This environment is increasingly being shaped by so-called environmental interests, as well as the general public. Indeed, many outside of the forestry community appear unwilling to accept forestry practices based solely on scientific justifications [3], demanding that their forest values [often at odds with those of professional foresters [7]] be considered in the shaping of forest policy.

Without some appreciation for the political and social environment within which forest operations are practiced, predictions about the nature of future forest harvesting technologies and practices would appear to be extremely tenuous. Recent published work has attempted to describe the future of logging methods in Canada [15] and Finland [16], but were careful to do so in the context of the potential future social, political, economic, and silvicultural constraints. Indeed, it would be both unfortunate and short-sighted for the forest engineering/operations community to ignore the dynamics and dimensions of the public values that both define and constrain forest practices through political processes. Obviously, public concern over forest practices is not a strictly North American phenomenon. The current controversy in Finland surrounding the harvest of old growth trees and the impact of forest practices on threatened or endangered species, for example, could result in policies that will shape the future of forest operations and harvesting technology in that country.

#### **AUTHOR CONTACT**

Professor Egan can be reached by email at --  
andy\_egan@umenfa.maine.edu

#### **REFERENCES**

- [1] American Forest and Paper Association. 1995. Sustainable Forestry Principles and Implementation Guidelines. American Forest and Paper Association, Washington, DC.
- [2] Armstrong, J.S. and T.S. Overton. 1977. Estimating nonresponse bias in mail surveys. *J. Marketing Res.* Vol. XIV:396-402.
- [3] Bliss, J. 2000. Public perception of clearcutting. *J. For.* 98(12):4-9.
- [4] Bliss, J.C., S.K. Nepal, R.T. Brooks, and M.D. Larsen. 1994. Forestry community or granfalloon. *J. For.* 92(9):6-10.
- [5] Bourke, L. and A. E. Luloff. 1994. Attitudes toward the management of nonindustrial private forest land. *Society and Natural Resources.* 7:445-457.
- [6] Clark, R. and G. Stankey. 1991. New forestry or new perspectives? The importance of asking the right questions. *Forest Perspectives.* 1(1):9-13.
- [7] Corbett, E.S., J.A. Lynch, and W.E. Sopper. 1978. Timber harvesting practices and water quality in the eastern United States. *J. For.* 8(80):484-488.
- [8] Cabbage, F.W. and W.C. Siegel. 1988. State and local regulation of private forestry in the East. *N.J. App. For.* 5:103-108.
- [9] Cabbage, F.W., J. O'Laughlin, and C.S. Bullock. 1993. *Forest Resource Policy.* John Wiley and Sons, Inc. New York. 562 p.
- [10] Egan, A., J. Rowe, D. Peterson, and G. Philippi. 1997. West Virginia Tree Farmers and Consulting Foresters: Views on Timber Harvesting. *N.J. App. For.* 14(1):16-19.
- [11] Egan, A., K. Waldron, J. Raschka, and J. Bender. 1999. Ecosystem management in the northeast: A forestry paradigm shift? *J. For.* 97(10):24-30.
- [12] Ellefson, P.V. and A.S. Cheng. 1994. State forest practice programs. *J. For.* 92(5):34-37.
- [13] Franklin, J. 1989. Toward a new forestry. *American Forests.* December 1989:37-44.
- [14] Franklin, J. F. 1992. Forest stewardship in an ecological age. The Ninth Annual C. E. Farnsworth Memorial Lecture. Faculty of Forestry Misc. Pub. No. 27. Syracuse: SUNY College of Environmental Science and Forestry.
- [15] Guimier, D.Y. 1999. Canadian forestry operations in the next century. *J. For. Eng.* 10(1):7-12.

- [16] Harstela, P. 1999. The future of timber harvesting in Finland. *J. For. Eng.* 10(1):33-36.
- [17] Kline, J. D. and C. Armstrong. 2001. Autopsy of a forestry ballot initiative. *J. For.* 99(5):20-27.
- [18] Kochenderfer, J.N. 1970. Erosion control on logging roads in the Appalachians. USDA For. Serv. NE For. Exp. Stn. Res. Pap. NE-158.
- [19] Mohai, P. and P. Jakes. 1996. The Forest Service in the 1990s — Is it headed in the right direction? *J. For.* 94(1):31-37.
- [20] O'Keefe, T. 1990. Holistic [new] forestry: Significant difference or just another gimmick? *J. For.* 88(4):23-24.
- [21] Patric, J.H. 1976. Soil erosion in the eastern forest. *J. For.* October 1976:671-677.
- [22] Phillips, C.G. and J. Randolph. 1998. Has ecosystem management really changed practices on the National Forest? *J. For.* 96(5):40-45.
- [23] Sabatier, P., J. Loomis, and C. McCarthy. 1996. Policy attitudes and decisions within the Forest Service: Is there a connection. *J. For.* 94(1):42-46.
- [24] Shindler, B., P. List, and B.S. Steel. 1993. Managing federal forests: public attitudes in Oregon and nationwide. *J. For.* 91(7):36-43.
- [25] Thomas, J.C. and P. Mohai. 1995. An analysis of racial, gender, and professional diversification in the USDA Forest Service from 1983-1992. *Policy Studies Journal.* 23(2):296-309.
- [26] Twight, B.W. and F.J. Lyden. 1989. Measuring Forest Service bias. *J. For.* 87(5):35-41.
- [27] Young, S. 2000. Forestry referendum rejected for third time. *Bangor Daily News*, November 8.