AN ASSESSMENT OF MISSISSIPPI´S NONINDUSTRIAL PRIVATE FOREST LANDOWNERS' KNOWLEDGE OF FORESTRY BEST MANAGEMENT PRACTICES

Andrew James Londo and John Benkert Auel[1]

Abstract—This study examined the knowledge levels of Mississippi nonindustrial private forest (NIPF) landowners relative to best management practices (BMPs) for water quality. Data were collected through surveys of participants in BMP programs held in conjunction with County Forestry Association (CFA) meetings throughout Mississippi during 2001-02. Ten CFAs participated in this study. Participants were asked several demographic and BMP-related questions prior to a presentation. Results showed that participants owned an average of 280 (n = 213) acres, whereas the average Mississippi NIPF landowner owns 50 acres (n = 360,000). Responses to BMP-related questions reveal that Mississippi NIPF landowners have a low level of knowledge concerning BMPs. This situation is likely similar to other States in the Southeastern United States. These results may overestimate the BMP knowledge level of forest landowners in Mississippi if it can be assumed that CFA members are more active and informed about managing their forest land. Improved educational programs for NIPF landowners, along with better communication between foresters, loggers, and NIPF landowners, is needed if BMPs are to be used effectively in Mississippi and across the Southeastern United States.

INTRODUCTION

The quality of water produced from forested watersheds is generally high (NCASI 1994). However, forest management activities have the potential to disturb the soil, which can lead to erosion and decreases in long-term site productivity and water quality (Aust and others 1998, Londo and Mroz 2001). Passage of the Water Quality Act of 1987 established that programs for the control of nonpoint sources of pollution be implemented by the States. Nonpoint sources have no specific point of entry into a watercourse and, as such, can not be defined. To reduce the impact of forest management activities on nonpoint source pollution, all States have developed a set of Forestry Best Management Practices (BMPs) in order to be in compliance with the Water Quality Act of 1987 (Lickwar and others 1990). BMPs can be defined as a collection of practices that limit the displacement of soil during and after forestry operations and maintain water quality (Shuler and Briggs 2000). Various studies have been conducted to determine the effectiveness of BMPs around the country (Adams 1998, Briggs and others 1998, Seyedbagheri 1996).

Educational programs have been conducted nationwide for loggers and foresters (Schaffer and Meade 1997), many in conjunction with the Sustainable Forestry Initiative (SFI). One of the main goals of SFI has been to educate foresters and loggers about the effects of forest management on water quality. Much less attention, however, has been given to educating nonindustrial private forest (NIPF) landowners about BMPs. This is especially problematic in the Southeastern United States where most of the forest land is owned by NIPF landowners (Arano and others 2002). NIPF landowners have control over practices and activities conducted on much of the productive forest land in the southern region. To ensure that water and site quality are protected on these land holdings, it is critical that landowners know about the importance and use of BMPs. This study was part of an NIPF BMP educational program held across Mississippi. In conjunction with the educational programs, NIPF participants were surveyed to determine their knowledge level of BMPs. The goal of this study was to quantify landowner characteristics and BMP knowledge levels. This information was then used to refine the educational programs provided in Mississippi. The study can also be used for developing similar programs across the southern region.

METHODS

BMP Surveys

Surveys (n = 313) were given to participants prior to BMP educational programs held across the State of Mississippi. Participants were members of County Forestry Associations (CFAs). CFAs were chosen because members are typically active in forest management, and they provide a ready audience for forestry education activities. Participants were asked a number of demographic questions including: age, gender, and the number of forested acres owned. These data were important for the characterization of participants so that comparisons could be made with other landowners in Mississippi.

The following BMP-related questions were asked:

1. What are BMPs?
2. Are BMPs voluntary in Mississippi?
3. What kind of pollution are BMPs designed to prevent?
4. What is a Streamside Management Zone (SMZ)?
5. Can you harvest within an SMZ?

Ten CFAs from across Mississippi participated in this study. One of the CFAs, the Tate/Desoto CFA was a combination of two counties. These CFAs were evenly distributed across the State to provide a representative sample. A map showing the location of participating counties can be found in figure 1.

[1]Assistant Professor and Extension Associate, Department of Forestry, Mississippi State University, Box 9681, Mississippi State, MS 39762, respectively.

Citation for proceedings: Connor, Kristina F., ed. 2004. Proceedings of the 12th biennial southern silvicultural research conference. Gen. Tech. Rep. SRS–71. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 594 p.

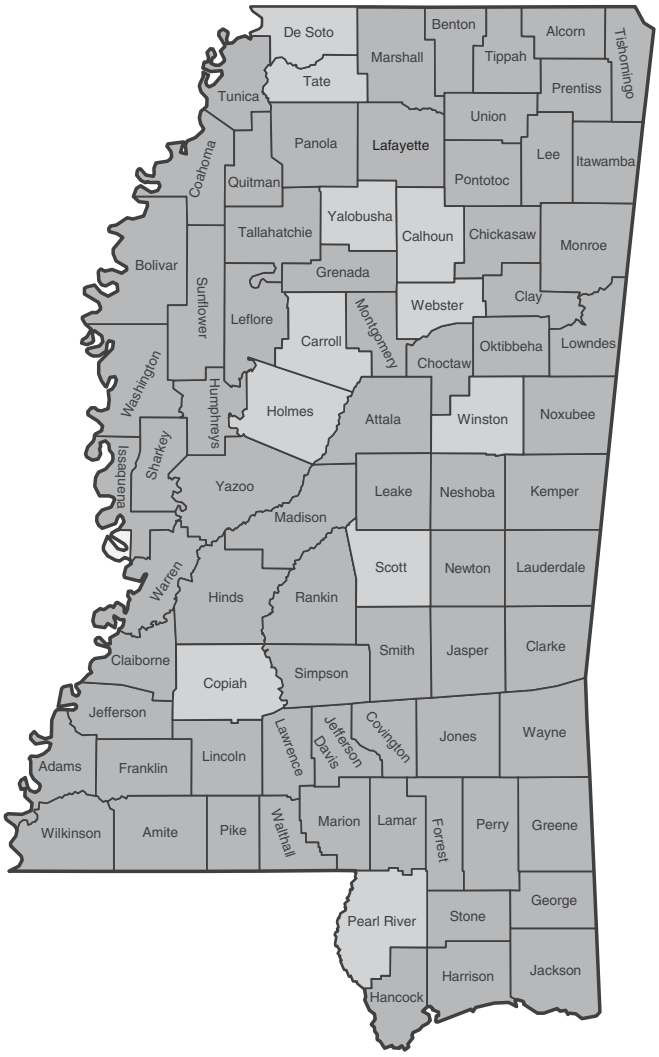

Figure 1—Locations of County Forestry Associations participating in the NIPF landowner BMP program in Mississippi.

All surveys were distributed prior to the presentation of a BMP educational program to ascertain participants' knowledge levels. The BMP program consisted of an hour-long presentation outlining the Mississippi forestry BMP guidelines. All program participants were provided copies of the Mississippi BMP guidelines as well other related publications. Attempts were made to distribute identical surveys at the end of each program; however, there was limited participation because most attendees departed without completing the second survey.

Data Analysis

Data were summarized by CFA, with overall statewide values presented. BMP questions were evaluated as either being correct, incorrect, or having no response. In most cases, 'textbook' answers were not provided by participants. However, answers were considered correct if participants had functional knowledge of what was being asked.

RESULTS AND DISCUSSION

Characteristics of Participants

There were a total of 213 participants in this study. A summary of participant characteristics can be found in table 1. Males comprised 82 percent (n = 175) of participants, owned an average of 294 acres of forest land, and averaged 51 years of age. Female participants comprised 18 percent (n = 38), owned an average of 214 acres, and averaged 61 years of age.

The large landholding size of participants may be somewhat misleading. There are approximately 386,000 landowners in Mississippi owning, on average, 50 acres (Londo 2000). It could be assumed that NIPF landowners with larger land holdings may be more interested and knowledgeable about forest management than those with smaller land holdings. This may also indicate why they are CFA members.

Table 1—Characteristics of participants in Mississippi NIPF best management practices education project acquired from surveys given in 2001–2002

Gender			Mean age	Mean acres owned (total acres)
	no.	*%*		
Male	175	(82)	51	294 (51,463)
Female	38	(18)	61	214 (8,118)
Total	213		53	280 (59,581[a])

[a] Approximately 0.5 percent of NIPF owned forest lands in Mississippi.

What Are BMPs?

Landowners were asked to define BMPs. Of the responses, 29 percent (n = 61) correctly defined what BMPs were, 28 percent (n = 60) provided incorrect responses, and 43 percent (n = 92) did not respond to the question (table 2). Many replies were given including: practices designed to increase forest productivity (n = 20), activities that maximize the good of the forest (n = 12), activities intended to improve wildlife habitat (n = 8), and rules that loggers follow to reduce water, air, and soil pollution (n = 1). The variety of responses illustrates part of the problem with BMPs and forest landowners: the term does not portray a clear idea about its meaning. The statement that BMPs "are rules that loggers follow to reduce water, air pollution" shows that there is miscommunication between the forest products industry and forest landowners. BMPs are important to all parties involved, not only the loggers. Landowners also need to realize that they are ultimately responsibile to ensure that BMPs are followed on their property.

Are BMPs Voluntary in Mississippi?

Participants were asked if BMPs were voluntary in Mississippi. Of the responses, 58 percent (n = 123) stated that BMPs are voluntary, 11 percent (n = 23) said they

Table 2—Responses to BMP questions by the 213 participants in the Mississippi NIPF best management practices education project acquired from surveys given in 2001-2002

Question	Yes	No	Did not answer
What are BMPs?	61	60	92
Are BMPs voluntary in Mississippi?	123	23	67
BMPs are designed to control what kind of pollution?	108	20	85
What are streamside management zones (SMZs)?	87	36	90
Can you harvest within an SMZ?	84	65	74

BMPs = best management practices.

were not voluntary, and 31 percent (n = 67) did not respond (table 2). Forestry BMPs in Mississippi are technically voluntary. During programs, many attendees expressed resistance to voluntary or compulsory compliance. NIPF landowners need to realize that whereas BMPs are technically voluntary, compliance with the State and Federal Water Quality Acts is mandatory, and the best way to be in compliance is to follow BMPs. The maintenance of water quality benefits everyone and supersedes individual landowner rights in many instances.

BMPs Are Designed to Reduce What Kind of Pollution?

Landowners were asked what kind of pollution BMPs were designed to reduce. Of the responses, 5 percent (n = 10) identified nonpoint source pollution and 46 percent (n = 98) identified water or soil pollution. Nine percent (n = 20) answered incorrectly, and 40 percent (n = 85) did not respond (table 2). Many alternative answers were given including no answer (n = 15), air pollution (n = 7), and the ozone layer (n = 1). The fact that so many replied that no pollution was generated by forestry operations puts the purpose and effectiveness of BMP implementation in question. Once again, landowners need more information and education concerning BMPs and their use. Foresters also have a responsibility to inform landowners about BMPs and their importance.

What Are Stream Side Management Zones (SMZs) and Can You Harvest Within Them?

Participants were asked to define SMZs. Of the responses, 41 percent (n = 87) identified an SMZ, 17 percent (n = 36) answered incorrectly, and 42 percent (n = 90) did not respond (table 2). When asked if harvesting was permitted within SMZs, 34 percent (n = 74) identified harvesting was permitted within SMZs, 32 percent (n = 65) answered incorrectly, and 34 percent (n = 74) did not respond. The number of incorrect replies and nonresponses is problematic.

An issue raised by several participants was the loss of productive timberland to the SMZ. For example, SMZs were found to remove 6.3 percent of forest land from productivity in Arkansas (Kluender and others 2000). Another concern raised about SMZs and BMPs in general are the implementation costs. Lickwar and others (1992) found that implementing BMPs cost an average of 2.9 percent of the timber sale revenue. In another study, Aust and others (1996) found that Virginia forest landowners pay much of the cost of implementing BMPs. Also, they concluded that much of the costs associated with BMPs are from opportunity costs associated with the loss of productive lands.

Whereas the costs of such activities will continue to be a problem, NIPF landowners need to be aware of the benefits of leaving the SMZ, including a reduction in sediment entering into water bodies, maintenance of stream temperature, and corridors for wildlife (Belt and O'Laughlin 1994, Harper 1978) and that those benefits extend far beyond their property boundaries.

CONCLUSIONS

NIPF landowners control approximately 12 million acres (62 percent) of the forest land in Mississippi (Londo 2000). They have great control over water-quality issues derived from forested lands. Grado and others (2002) reported that 67 percent of Mississippi NIPF landowners associated with CFAs were familiar with BMPs. The data presented here are much lower (table 2). Reasons for this discrepancy may include a smaller sample size and different study methodologies. Both studies, however, show the need for more education of NIPF landowners concerning BMPs and water-quality issues.

Increased BMP educational opportunities need to be directed towards NIPF landowners in Mississippi and around the southern region. This can be accomplished through formal educational programs and by loggers and foresters communicating more clearly with the landowners on whose land they are working. NIPF landowners in Mississippi and across the southern region need to realize the importance and role of BMPs in forest management and water quality as well as their own responsibility in ensuring that BMPs are followed on their land.

ACKNOWLEDGMENTS

This project was made possible by a Section 319(H) grant obtained through the Mississippi Department of Environmental Quality. Georgia-Pacific Corp., Plum Creek Timber Co., and Weyerhaeuser Co. also provided support for this project. Drs. Laura Grace and Emily Schultz of the Department of Forestry at Mississippi State provided reviews of this manuscript. Approved for publication as Article No. FO 227 of the Forest and Wildlife Research Center, Mississippi State University.

LITERATURE CITED

Adams, T.O. 1998. Implementation monitoring of forestry best management practices for site preparation in South Carolina. Southern Journal of Applied Forestry. 22(2): 74-80.

Arano, K.G.; Cushing, T.L.; Munn, I.A. 2002. Forest management expenses of Mississippis nonindustrial private forest landowners. Southern Journal of Applied Forestry. 26(2): 93-98.

Aust, W.M.; Burger, J.A.; Carter, E.A. [and others]. 1998. Visually determined soil disturbance classes used as indices of forest harvesting disturbance. Southern Journal of Applied Forestry. 22(4): 245-250.

Aust, W.M.; Shaffer, R.M.; Burger, J.A. 1996. Benefits and costs of forestry best management practices in Virginia. Southern Journal of Applied Forestry. 20(1): 23-29.

Belt, G.H.; O'Laughlin, J. 1994. Buffer strip design for protecting water quality and fish habitat. Western Journal of Applied Forestry. 9(2):41-45.

Briggs, R.D.; Cormier, J.; Kimball, A. 1998. Compliance with forestry best management practices in Maine. Northern Journal of Applied Forestry. 15(2): 57-68.

Grado, S.C.; Measells, M.K; Habig, R.B.; Capella, L.M. 2002. Values,attitudes, and perceptions of forest industry constituency groups. Research Bulletin FO 211. Mississippi State, MS: Forest and Wildlife Research Center, Mississippi State University. 22 p.

Harper, W.C. 1978. Best management practices for silviculture. IN: Loeher, R.C.; Haith, D.A.; Walter, M.F.; Martin, C.S., eds. Proceedings of the 1978 Cornell agricultural waste management conference. Ann Arbor, MI: Ann Arbor Science Publishers, Inc.: 263-270.

Kluender, R.; Weigh, R.; Corrigan, M.; Pickett, J. 2000. Assessing the operational cost of streamside management zones. Forest Products Journal. 50(2):30-34.

Lickwar, P.M.; Cubbage, F.W.; Hickman, C.A.1990. Current southern state programs for control of forestry nonpoint source pollution. Southern Journal of Applied Forestry. 14: 64-69.

Lickwar, P.; Hickman, C.; Cubbage, F.W. 1992. Costs of protecting water quality during harvesting on private forest lands in the Southeast. Southern Journal of Applied Forestry. 16(1): 13-20.

Londo, A.J. 2000. The effects of forest fragmentation on forest management for Mississippi private non-industrial forest landowners. In: Decoster, L.E., ed. Proceedings of the forest fragmentation 2000 conference. Alexandria, VA: Sampson Group, Inc.: 125-134.

Londo, A.J.; Mroz, G.D. 2001. Bucket mounding as a mechanical site preparation technique in wetlands. Northern Journal of Applied Forestry. 18(1): 7-13.

Mississippi Forestry Commission. 2000. Mississippi's best management practices for forestry. Publication 107. Jackson, MS: Mississippi Forestry Commission. 36 p.

NCASI. 1994. Forests as non-point sources of pollution, and effectiveness of best management practices. Technical Bulletin No. 672. New York, NY: National Council of the Paper Industry for Air and Stream Improvement. 57 p.

Schaffer, R.M.; Meade, G.S. 1997. Evaluation of harvest planning training. Forest Products Journal. 47(7/8): 69-71.

Schuler, J.L.; Briggs, R.D. 2000. Assessing application and effectiveness of forestry best management practices in New York. Northern Journal of Applied Forestry. 17(4): 125-134.

Seyedbagheri, K.A. 1996. Idaho forestry best management practices: Compilation of research on their effectiveness. Gen. Tech. Rep. INT-339. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 89 p.