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Major problems associated with the West Virginia forest sector as perceived by West Virginia Division of Forestry Service foresters

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Major Problems Associated with the West Virginia Forest Sector as Perceived by
West Virginia Division of Forestry Service Foresters

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Thesis submitted to the
Davis College of Agriculture, Forestry, and Consumer Sciences
at West Virginia University
in partial fulfillment of the requirements
for the degree of

Master of Science
in
Agricultural Education

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Division of Resource Management

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2001

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This study was designed to identify problems facing the forest sector in West Virginia as perceived by West Virginia Division of Forestry Service Foresters.

The descriptive method of research using questionnaire techniques was utilized in the study. Data were obtained from 48 service foresters (73% response).

Overall means were determined for each statement. The population was assumed a sample of service foresters at a point in time, thus the use of inferential statistics. Statistical procedure used for analyzing the data was analysis of variance statistical tests.

The results show that 4 of the 48 problem statements were rated as severe problems with a mean between 3.51 and 4.00. The highest ranked problem statement was “worker’s compensation rates that border on being prohibitive,” with a mean ranking of 3.72. “Negative publicity aimed at forestry practices from uninformed sources” received the second highest ranking with a mean of 3.57. The third highest ranked statement “poor harvesting techniques with little regard for desired future conditions” received a mean of 3.55. “The over use of diameter-limit cutting that takes faster growing higher value hardwoods and leaves the undesirable species and cull trees in the stand” ranked fourth and received a score of 3.51. Of the 48 statements identified, 28 were rated as moderate problems, 15 were rated as slight problems and one was rated as not a problem.

West Virginia Service Foresters consider the major problem in the forestry sector in West Virginia to be workers compensation rates that border on being prohibitive. There is a perceived lack of service foresters and a perceived shortfall in landowner education concerning forest management and timber harvesting.

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CHAPTER I

INTRODUCTION

West Virginia is a unique state known nationwide for its extensive forestland. Timber harvesting has been an essential part of West Virginia's history, culture, and economy since the late 1800s. In his article (Lewis, 1996) states, that as late as 1880, when timber extraction began in earnest, two-thirds of the state was still covered by ancient forest growth. The demand for timber in the expansion of America was satisfied partly with trees harvested in West Virginia. The fact that West Virginia had been almost completely denuded of virgin forest by the end of the 1920s is a measure of how swiftly the transformation to an industrial economy came (Lewis, 1996). Due to the resiliency of West Virginia hardwood forests, the vast tracts of timber that were cutover in this intensive industrial period are now replenished and are again a key part in the country's timber supply. Today approximately 80% of West Virginia is forested, and much of this land is held by private landowners (WV Forestry Associations Landowner Education Committee and WVU Extension Service, 1999).

As a new century begins, it is very important for landowners, foresters, and the logging industry to properly manage the forestland for the future. In just the past ten years, forestry practice on public land has experienced a revolution. The emphasis has shifted from timber production to protecting forest ecosystems. Although the cause is not clear for this radical departure from traditional forestry with its emphasis on wood production, a heightened awareness of forest values among the general public, coupled with new science, has changed the way we operate (McEvoy, 1998).

West Virginia forestry agencies offer assistance and programs to help woodland owners in managing their forest. Forestry services that are available to forest landowners in West

Virginia are management plans, timber sale assistance, timber stand improvement, tree planting, insect and disease control, urban forestry, education and information. Woodland owners should obtain help from professional foresters to manage and grow their forest (Appalachian Hardwood Center, 1999), to insure that future generations have the benefits of having a healthy forest. It is important in the new century to protect the environment, future timber stands, and natural resources of West Virginia. Protection of the environment is accomplished through the use of Best Management Practices (BMPs) and the Logging Sediment Control Act (LSCA). BMPs are used to minimize erosion and sedimentation that can accompany timber-harvesting operations. Passage of the Federal Water Pollution Control Act Amendments of 1972 required use of BMPs to control nonpoint-source water pollution from forestry activities. By controlling water pollution from logging jobs, loggers and foresters can help preserve and protect the streams for wildlife and future generations.

Despite application of past research and BMPs, and the goals of present day forest managers to sustain and protect the site productivity, critics of current timber harvesting operations sometimes equate them with less careful logging operations of the past. Thus, it is important to demonstrate the improvements of current logging and BMPs in terms of protecting soil and water resources (Kochenderfer, Hornbeck, 1999).

Change in the forest sector is inevitable. The changes in harvesting techniques, landowner objectives, lack of funding, lack of education, and failure to comply with laws and regulations, may have contributed to problems encountered by service foresters in the West Virginia Division of Forestry.

Statement of Problem

Many changes have occurred in the forest sector in recent years that may have created difficulties in the management of forestland. This study was designed to identify problems facing the forest sector in West Virginia as perceived by West Virginia Division of Forestry Service Foresters. This study aims to identify the problems facing the forest sector in West Virginia so steps can be taken to improve the forest for future generations.

Purpose and Objectives of the Study

The purpose of this study was to identify problems in the forest sector in West Virginia so service foresters and forestry educators can use this information to manage problems that occur in the forest sector in West Virginia.

The objectives of the study were:

1. To identify major problems service foresters of the West Virginia Division of Forestry service are currently encountering in the course of their jobs.
2. To rank and identify problems as to their perceived importance.
3. To compare (on a quantitative basis) responses among different physical areas (districts) and administrative levels (district vs. county).

Operational Definitions

Best Management Practices (BMPs)- A set of voluntary guidelines established by the state of West Virginia that need to be followed during logging operations. BMPs deal with the control of water runoff and improvement of water quality.

Certified Logger Program- A program ran by the West Virginia Division of Forestry for loggers in West Virginia. The program gives loggers training in BMPs, logger safety, first aid,

and other related areas. Each logging crew is required to have a certified logger present at the logging job.

County Forester- A service forester employed by the State of West Virginia Division of Forestry who has county responsibilities.

District Forester- A service forester employed by the State of West Virginia Division of Forestry who has district responsibilities.

Forest Sector- Includes the harvesting, processing, and production of forest products. It includes state, federal and private foresters, landowners, loggers, mill operators and anyone dealing with the production of forest products.

Infra-Structure- the existing transportation system that is in an area that is required for the transportation of logs and finished timber products from their source to their market or production areas.

State Forester- A service forester employed by the State of West Virginia Division of Forestry who has state responsibilities.

Timber Industry- Includes the logging, hauling, production, and selling of timber products in West Virginia. Timber industry can be used to refer to loggers, sawmills, flooring plants, production plants, and other business that is involved in the primary production of timber products.

Timber Management- The management of forestland for the production of timber and other forest resources. Timber management also involves managing the forestland for future timber harvesting and use.

The West Virginia Division of Forestry is separated into six districts, with every county in West Virginia being placed into a district. Figure 1 shows the district breakdown for West

Virginia. District 1 includes: Barbour, Brooke, Hancock, Harrison, Marion, Marshall, Monongalia, Ohio, Preston, Taylor, Tucker, and Wetzel counties. District 2 includes: Berkeley, Grant, Hampshire, Hardy, Jefferson, Mineral, Morgan, and Pendelton counties. District 3 includes: Braxton, Clay, Lewis, Nicholas, Pocahontas, Randolph, Upshur, and Webster counties. District 4 includes: Fayette, Greenbrier, McDowell, Mercer, Monroe, Raleigh, Summers, and Wyoming counties. District 5 includes: Boone, Cabell, Kanawha, Lincoln, Logan, Mason, Mingo, Putnam, and Wayne counties. District 6 includes: Calhoun, Doddridge, Gilmer, Jackson, Pleasants, Ritchie, Roane, Tyler, Wirt, and Wood counties.

Figure 1

CHAPTER II

REVIEW OF LITERATURE

A review of the literature revealed significant research involving areas in forestry that can be contributing to the difficulties service foresters are facing in the forest sector in West Virginia. The literature reviewed in this chapter looks at problem areas that can be related to forestry problems in the timber industry in West Virginia. It is important to start with, an overview of current West Virginia forest resources to establish how important the forest sector is to West Virginia.

West Virginia's land area is comprised mainly of forestland that is owned by private landowners who have various objectives for their land. In the early nineties it was reported that 83% of the forestland and 80% of the wood volume in West Virginia belong to private landowners (White, 1993). West Virginia's total forestland is approximately 10,745,000 acres of which 8,130,000 is owned by non-industrial private landowners (NIPF), 1,606,000 acres is owned by corporations and 1,009,000 acres are owned by the forest industry (Fraser and Magill, 2000).

Forests are a very vital part of West Virginia's economy. In many areas of West Virginia the forest provides jobs and forest products that benefit the communities and the state. According to a 1995 survey, the timber industry and related business's in West Virginia contributed \$3.2 billion to the state's economy (Greenstreet and Caldwell, 1997).

Best Management Practices

To identify the value of properly using BMPs it is needed to look at (Kochenderfer and Hornbeck, 1999). The comparison of watersheds logged with and without BMPs clearly demonstrates their values. Logging without BMPs on watershed one involved steep roads located

close to streams, with no attempt to control water and revegetate the roads after logging. The results were significant erosion and sedimentation with increased stream temperatures. The Haddix watershed is located in Tucker County West Virginia on the Fernow Experimental Forest. Careful adherence to West Virginia's BMPs when logging Haddix watershed, resulted in only minor changes in sediment and water temperature. The changes were within background levels, clearly illustrating that harvesting operations utilizing BMPs will protect water quality.

The 1972 Federal Water Pollution Control Act Amendments emphasized the need to protect and maintain the quality of the nation's water resources through various means. Best Management Practices (BMPs), developed to control nonpoint- source pollution arising from forestry activities now are included as an integral part of governmental and private forest management procedures (Kochenderfer, Edwards and Woods, 1997).

The ability to comply with BMPs may vary with terrain, soil type, weather, and equipment. The focus of Egan's study was to determine the relationship between compliance with West Virginia BMPs and two factors that reflect a landowner's preparedness to harvest timber: the involvement of a professional forester in the timber sale, and a timber sale contract that included provisions for BMPs. Results of the study shows that landowners who hired a professional forester to conduct their timber sales had a higher level of compliance with forestry BMPs (Egan, 1999) than landowners who did not have professional foresters help with their timber sale.

Forestry activities, particularly harvesting, can have serious consequences on soil and water quality that include soil erosion, sedimentation, soil compaction, and increased stream temperature. The purpose of implementing BMPs is to minimize soil movement, particularly movement into a stream. Good planning is the best tool in implementation of BMPs. Proper

planning and scouting will provide information about potential trouble areas. A good plan will avoid duplication efforts, overly steep road designs, and improper combinations of road, slope, and water. Although improving water quality and providing dry, well designed roads, a good plan will be more work and expense up front, but overall can make the job easier, more efficient, and more accessible to the logger in the long run (Belt, 2000).

Forester Assistance/ Public Relations

Landowners benefit greatly from having a professional forester assist with the sale and administration of their timber. Those benefits typically include a well-planned and therefore environmentally friendly harvesting operation, utilization of better forest management practices, and higher sale price. Professional forestry assistance with timber sales can be obtained from several sources. They include West Virginia Division of Forestry service foresters, industrial landowner assistance program (LAP) or cooperative forest management (CFM) foresters, private consulting foresters, and industrial procurement foresters. Different landowners may have different needs and therefore need different professional forestry assistance (Appalachian Hardwood Center, 1999).

The fact that 80% of West Virginia is forested and much of this forestland is privately owned creates concern for many landowners regarding a fair price for the quality and quantity of timber on their land. The landowner needs to understand what he or she needs and where to obtain assistance. A written contract is important in ensuring that the seller and the buyer both perform all expected tasks. The purpose of the contract is to detail the responsibilities of each party involved in the timber harvest, thus protecting both the landowner and the timber buyer. Terms concerning protection of the land, residual timber, regeneration, or improvements generally should be decided with advice of a forester familiar with the property and with local

practices and customs (West Virginia Forestry Association's Landowner Education Committee, 1999).

The relevance to practicing foresters of (a) NIPF research whose focus has shifted from a preoccupation with timber supply to a recognition of landowners diverse forest ownership preferences and attitudes, and (b) government sponsored programs whose objectives have evolved from addressing timber shortages to enhancing the stewardship of an array of forest resources. The professional forestry community needs to adjust to these changes in both the ways it educates prospective foresters and the approaches used by practicing foresters to engage landowners in the overall management of their forestlands. Forestry faculty needs to consider integrating information on the social dimensions of forest resource management into current courses, including attempts to understand the forest ownership preferences and objectives of NIPF owners (Egan, 1997).

Any national vision must apply to both public and private forests if it is to have meaning for the future management of our forest. We as foresters have a responsibility to help the American people articulate a national vision on forest and create policies that will serve human values. We can then work to incorporate those objectives into a national forest policy that implements a new paradigm. It is time for the nation to have a new vision for its forest and it is up to today's professional foresters to create and nurture this vision (Gordon, 1994).

Management/ Sustainable Forestry

In 1994 the National Woodland Owners Association (NWOA) launched a Private Property Responsibility Initiative for nonindustrial private forestlands. It is a statement of private property rights built on the assertion that these rights do not stem from the Constitution but are

earned through responsible forestry practices that are beneficial to landowners and acceptable to the general public.

Woodland owners agree to:

1. Follow best management practices when harvesting trees.
2. Show practical concern for other resources.
3. We will share our knowledge of good forestry with others.
4. We will use only “certified loggers” when available.
5. At our discretion we will allow hunting and other public uses on our lands.
6. We will manage our forest resources in a way that benefits many people.

The central theme of this initiative is to demonstrate to the public that private woodland owners accept a responsibility code (Argow, 1994).

Criteria for success in managing forest landscapes do not exist currently, but can be established through further research and professional debate. Sustainable forestry can be defined as harmonizing ecological, social, and economic objectives: but we are a long way from national or professional consensus of forest health and other possible criteria of sustainability (Lucier, 1994).

Landowners who are more informed about forests and forestry have more favorable harvesting outcomes: less erosion and sedimentation, better-quality roads, better residual stand quality, and less damage to residual trees. If education can ensure private forest sustainability, how can foresters best educate landowners? Forest stewardship demonstration areas are a valuable educational tool that can contribute to landowners’ knowledge and understanding of forest and timber harvesting beyond that achieved by just an indoor training session. The field demonstration provides landowners the opportunity to see alternative timber harvesting practices

and reevaluate their views about them. Training sessions for service foresters, consulting foresters and extension agents need to be created to show them how to establish and use demonstration areas to teach and encourage stewardship (Harmon, Jones, Finley, 1997).

The concept of “sustainable forestry” is gradually replacing “sustained yield” as the primary goal of good forest management. If a practice is not sustainable-ecologically, economically, and socially—then the practice should be avoided. Wood yield by itself is no longer an adequate measure of good forestry. For some managers- even those with college textbooks no older than the mid 1970s- weaned on “sustained yield,” sustainable forestry is a radically new idea (McEvoy, 1998).

The American Forest & Paper Association (AF&PA) is committed to growing America’s forests for future generations. The Sustainable Forestry Initiative (SFI) is a comprehensive program of forestry and conservation practices designed to ensure that future generations of Americans will have the same abundant forests and wildlife we enjoy today. Sustainable Forestry means managing all our forests to meet the needs of the present without compromising the ability of future generations to meet their own needs. It involves practicing a land stewardship ethic that integrates the growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, and wildlife and fish habitat (Garland, 1996).

Utilization

Nearly half of the lumber produced in West Virginia that is destined to be kiln dried is dried in other state. Shifting this manufacturing process to West Virginia firms requires developing markets for kiln dried lumber, custom drying services, or increasing the volume of products manufactured in West Virginia from kiln dried lumber. West Virginia’s forest products

industries need to aggressively attack the market place and not wait for it to come to us (Armstrong, 1987).

In the early days of logging, when only making the most money mattered, the best logs were taken, leaving the rest in the woods. Today, no part of the log is without value. Trees may supply the following primary products: pulpwood bolts, sawlogs, veneer logs, poles, and piling. It may also supply energy fiber, sawdust, chips and bark for secondary products. Complete utilization means achieving maximum value from the tree by using as much of the tree as possible (Conway, 1982).

CHAPTER III

METHODOLOGY

The purpose of this study was to identify problems in the forest sector in West Virginia, so service foresters and forestry educators can use this information to manage problems that occur in the forest sector in West Virginia.

The objectives of the study were:

1. To identify major problems service foresters of the West Virginia Division of Forestry are currently encountering in the course of their jobs.
2. To rank and identify problems as to their perceived importance.
3. To compare (on a quantitative basis) responses among different physical areas (districts) and administrative levels (district vs. county).

Methods and Procedures

The descriptive method of research was used in this study. Descriptive data can be collected using observation, interviews, or questionnaires. Descriptive studies range from simple surveys that do little more than ask questions and report answers about the status quo to studies that present explicit statements about relationships between variables which approach the level of the explanatory hypotheses one finds in experimental research (Van Dalen, 1979).

Every method of research that is used has its strengths and weaknesses. Strengths of descriptive research include: relatively easy to conduct, its possible to collect a wide variety of information from a large population, and this research method deals with data collected from individuals who are being surveyed in real life situations. Weaknesses of descriptive research include that the researcher is largely limited to descriptive and exploratory statements, and the researcher is unable to make predictive or cause effect statements.

The population of this study consisted of West Virginia Division of Forestry service foresters who have county, district, and state responsibilities. Their names and addresses were obtained from the West Virginia Division of Forestry employee list (2001). Frame error was avoided to the extent possible by reviewing the list with a district forester. This was to insure that the list of service foresters used was accurate and free from duplication.

A two-part mail questionnaire was used to gather responses for the study. In order to develop a valid survey instrument, a letter of introduction and explanation was mailed to all service foresters (N= 56) with county or district responsibility, along with a request that each service forester identify the five major problems facing the forest sector in West Virginia. A copy of the questionnaire can be found in Appendix B. A stamped return-addressed envelope was enclosed with the first part of the questionnaire to facilitate feedback.

A panel of experts, composed of four faculty members and a graduate student, reviewed, combined, and sorted the comments received; and wherever necessary, edited statements without changing their original meaning. The statements were derived from the questionnaire that had a 32% response rate. The statements were used to construct a survey instrument that consisted of 48 problem statements (Appendix D). Methodology employed to identify problems ensured that each statement included in the survey was considered by at least one respondent as a major problem in the forest sector in West Virginia.

A cover letter, which acknowledged participants for their responses to the first phase of the study, accompanied the survey instrument, which was sent to the service foresters (N=66) with county, district or state responsibility. The instructions in the survey directed the foresters to rate each statement according to a Likert- type scale: 1- not a problem, 2- slight problem, 3- moderate problem, and 4- severe problem (Tuckman, 1999). A second letter and survey

instrument was mailed to those who had not yet returned their survey instruments three weeks after the first survey was mailed.

Post hoc tests using Cronbach's alpha was used to measure reliability. The Cronbach alpha estimate of instrument reliability was found to be $r = .97$. The study was limited to service foresters who had county, district, or state responsibilities with the West Virginia Division of Forestry as of the 2001 calendar year.

Data Analysis

Analysis was conducted using the SPSS PC software. Overall, means and standard deviations were determined for each statement. Responses were compared to each other based on whether the service forester had county, district, or state responsibilities. A total of 66 foresters were surveyed with 10 being state foresters, 18 being district foresters, and 38 being county foresters. Responses were also compared between the six districts that make up the Division of Forestry in West Virginia. Measures of association were calculated using Tukey HSD. The population was assumed a sample of service foresters at a point in time, thus allowing the use of inferential statistics.

CHAPTER IV

PRESENTATION AND INTERPREDATION OF DATA

The purpose of this study was to identify problems in the forest sector in West Virginia, so service foresters and forestry educators can use this information to address problems that occur in the forest sector in West Virginia.

The objectives of the study were:

1. To identify major problems service foresters of the West Virginia Division of Forestry are currently encountering in the course of their jobs.
2. To rank identified problems as to their perceived importance.
3. To compare (on a quantitative basis) responses among different physical areas (districts) and administrative levels (district vs. county).

The descriptive method of research was used to conduct this study. Data presented in this chapter were obtained through a survey technique consisting of two different mail questionnaires.

The first questionnaire (Appendix B) asked a question designed to obtain a broad range of responses from the study population composed of West Virginia Division of Forestry service foresters with county and district responsibilities. Specifically, the population was requested to identify the five major problems they encountered with the forest sector in West Virginia.

Upon return of the questionnaires, a panel of experts consisting of four faculty and a graduate student reviewed and combined like statements: and wherever necessary, edited the statements for clarity without altering their original meanings. Seven categories were developed by grouping statements of apparent similarity: division of forestry management and organization; education/ training; equipment damage/ miscellaneous; management practices; public relations/ relations in the industry; regulations/ licensing/ workers compensation; and forest stewardship

program (FSP). The statements were compiled to form a 48-question survey instrument (Appendix D), which was administered to West Virginia Division of Forestry service foresters who have county, district, or state responsibilities. The survey recipients were asked to rate the statements numerically on the following scale: 1= not a problem, 2= slight problem, 3= moderate problem, and 4= severe problem.

The SPSS PC program was used to analyze the data for the survey. Overall means and standard deviations were determined for each statement. Analysis of variance (F-Value) was utilized to test differences in the level of importance of each statement among districts and jurisdictions. Jurisdictions are based on whether the service forester has county, district, or state responsibilities.

Forty-eight of the sixty-six surveys were returned (73% response) and used in the data analysis. The breakdown for surveys returned was county- 30/38 (79% response), district- 13/18 (72% response), and state- 5/10 (50% response). Two groups of respondents were characterized as early and late respondents. Late respondents are similar to nonrespondents; therefore, it is possible to estimate the type of nonrespondent's replies through late respondent replies (Goldhor, 1972). The survey received 48 responses of which 38 were early responses and 10 were late responses. An analysis of variance found a significant difference ($p > .05$) in the rating of categories of importance to this study between early and late respondents. Thus, we could not assume that there were no differences among early respondents, late respondents, and non-respondents. Therefore results of this study will only be generalized to the responding population of West Virginia Division of Forestry service foresters.

Ranking of Problem Statements

The results show that 4 of the 48 problem statements were rated as severe problems with a mean between 3.51 and 4.00. The highest ranked statement was “workers compensation rates that border on being prohibitive,” with a mean ranking of 3.72. “Negative publicity aimed at forestry practices from uninformed sources” received the second highest ranking with a mean of 3.57. The third highest ranked statement “poor harvesting techniques with little regard for desired future conditions” received a mean ranking of 3.55. “The over use of diameter-limit cutting that takes faster growing higher value hardwoods and leaves the undesirable species and cull trees in the stand” ranked fourth with a mean score of 3.51.

The data analyzes show that 28 of the 48 problem statements were ranked as a moderate problem with a mean between 2.51 and 3.5. The highest ranked moderate problem was “the lack of silvicultural prescriptions on private property” with a mean ranking of 3.43.

The survey results show that 15 of 48 problem statements were ranked as a slight problem with a mean between 1.51 and 2.5. The highest ranked slight problem was “the destruction of county roads by logging trucks and increased mud on the road from logging trucks” with a mean of 2.47.

The results of the survey indicates that over 80% of service foresters did not perceive the statement “WVDOF does not appear to work well with private landowners and independent loggers”, as a problem with a mean of 1.21.

Problem Categories in West Virginia Forestry Sector

Division of Forestry Management and Organization. This problem area contains 7 of the 48 problem statements. Table 1 contains the total mean, total standard deviation, jurisdiction mean and district mean for the problem statements. Overall, 4 of the 7 statements had a mean

rating over 3.00. The statement “an overload of work for current West Virginia Division of Forestry service foresters”, received the highest rating with a mean of 3.34. Overall, 3 of the 7 statements had mean ratings less than 2.00. The statement “WV Division of Forestry does not appear to work well with private landowners and independent loggers”, received the lowest rating with a mean of 1.21. The overall frequencies for how the service foresters rated each question can be found in Appendix F.

Table 1 denotes the ranking by jurisdiction for the problem statements. Table 1 shows that the service foresters with county, district, or state responsibility rated the statements in a similar fashion. County service foresters rated the statement “timber regulation should be done by an independent agency”, with a mean of 1.93, which is significantly higher than what the district ($\bar{M}$ = 1.17), and state ($\bar{M}$ = 1.07), rated the problem. Table 1 shows that the three jurisdictions agree that four of the seven problem statements in this section are at least moderate problems. The overall standard deviations for the jurisdiction rankings can be found in Appendix G.

Table 1 contains the rankings by district for the problem statements. District 2 was eliminated from the district comparisons because of small cell size. Data from district two is used in all other comparisons. Table 1 shows that the five districts agree that four of the seven problem statements are moderate problems. The use of the Tukey HSD comparison shows there is a significant difference in the ratings among districts and to the statement “lack of West Virginia Division of Forestry employees”. The comparison shows that district five rated the statement at 3.75, where district six rated the statement at 2.44. The overall standard deviations for the district rankings can be found in Appendix H.

Table 1

Ranking for Division of Forestry Management and Organization

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
An overload of work for current West Virginia Division of Forestry service foresters.	3.34	.81	3.31	3.60	3.31	.2749	3.44	3.58	3.14	3.25	3.00	.775
Lack of West Virginia Division of Forestry employees. ¹	3.23	.79	3.21	3.60	3.15	.6163	3.33	3.33	3.43	3.75	2.44	3.30*
Ability to retain competent and conscientious employees in the WVDOF. ²	3.17	.89	3.17	3.20	3.15	.0048	2.56	3.58	3.43	3.50	2.78	2.73
WV DOF operates in a reactive mode rather than proactive mode.	3.06	.99	3.24	2.60	2.85	1.358	3.11	3.08	3.14	3.00	3.22	.041
Timber regulation should be done by an independent agency.	1.70	1.02	1.93	1.80	1.17	2.461	1.56	1.82	1.83	1.25	1.88	.340
The timber industry (forester, loggers, manufactures) is tied too closely to the WV DOF (the regulator).	1.65	.79	1.86	1.20	1.38	2.658	1.78	1.42	1.43	2.00	2.25	1.73
WV Division of Forestry does not appear to work well with private landowners and independent loggers.	1.21	.46	1.24	1.00	1.23	.5817	1.56	1.08	1.14	1.25	1.22	1.37

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem

Tukey HSD Comparisons

¹D6< D5²none

Education/ Training. This problem area contains 4 of the 48 problem statements. Table 2 contains the total mean, total standard deviation, jurisdiction mean, and district mean for the problem statements. The service foresters rated three of the four statements at a moderate problem ranking of 2.70 and higher. The statement “shortfall in landowner education concerning forest management and timber harvesting”, received the highest ranking with a mean of 3.32. The statement “shortfall of trained timber cutters and equipment operators”, received the lowest problem rating with a mean of 2.41 for a slight problem rating. The overall frequencies for how the service foresters rated each question can be found in Appendix F.

Ranking by jurisdiction for education/training is located in Table 2. Service foresters with state jurisdiction rated three of the four problem statements higher than the other two jurisdictions. Service foresters with county jurisdiction rated the problem statement “the WVU Division of Forestry and WV DOF lack the programming in promoting hands on training for everyone involved in forestry”, the highest with a mean of 2.83. Tukey HSD shows a significant difference between the ranking for the statement “shortfall of trained timber cutters and equipment operators”. For this statement, county foresters ranked it with a mean of 2.17 compared to a 3.00 mean ranking by state foresters. The overall standard deviations for the jurisdiction rankings can be found in Appendix G.

Table 2 shows the ranking by district for education/ training. District 2 was left out of the district comparison because of small cell size. District 2 is included in all other comparisons. District 1 ranked the statement “shortfall of trained timber cutters and equipment operators”, the highest with a mean of 2.56. District 1 and 5 rated the statement “shortfall in landowner education concerning forest management and timber harvesting”, as a severe problem with a ranking over 3.51. District 1, 4 and 5 rated the statement “the WVU DOF and WV DOF lack the

programming in promoting hands on training for everyone involved in forestry” with a high ranking of 3.00. The overall standard deviations for the district rankings can be found in Appendix H.

Equipment Damage/ Miscellaneous. This problem area contains 4 of the 48 problem statements. Table 3 contains the total mean, total standard deviation, jurisdiction mean, and district mean for the problem statements. Service foresters ranked 3 of the 4 problem statements as moderate problems with a mean ranking of 2.51 or higher. The statement “operating when weather conditions are poor” received the highest mean ranking of 3.17. The statement “the destruction of county roads by logging trucks and increased mud on the road from logging trucks”, received a slight problem ranking of 2.47. The overall frequencies for how the service foresters rated each statement can be found in Appendix F.

Table 3 shows the ranking by jurisdiction for equipment damage/ miscellaneous problem area. County service foresters rated three of the four-problem statement the highest. The Tukey HSD comparison shows significant difference in the ranking of the statement “increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage”. County service foresters rated the statement with the mean of 3.17 (moderate problem), compared to state service foresters mean ranking of 2.20 (slight problem). The Tukey HSD comparison shows a significant difference in the ranking of the statement “the destruction of county roads by logging trucks and increased mud on the road from logging trucks”. County service foresters rated the statement with a mean of 2.66 (moderate problem), compared to district foresters mean ranking of 2.08 (slight problem). The overall standard deviations for the jurisdiction rankings can be found in Appendix G.

Table 2

Ranking for Education/ Training

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
Shortfall in landowner education concerning forest management and timber harvesting.	3.32	.69	3.21	3.80	3.38	1.682	3.56	3.17	3.00	3.75	3.11	1.29
The WVU Division of Forestry and WV DOF lack the programming in promoting hands on training for everyone involved in forestry.	2.79	.83	2.83	2.60	2.77	.1576	3.00	2.50	3.00	3.00	2.78	.690
Corporate forest products firms have traditionally left any education of the public concerning forestry matters to state and federal agencies and the West Virginia Forestry Association. They need to get their message out as an industry.	2.70	.86	2.55	3.00	2.92	1.189	2.56	2.58	3.00	2.75	2.67	.319
Shortfall of trained timber cutters and equipment operators. ¹	2.41	.78	2.17	3.00	2.77	4.508*	2.56	2.33	2.43	2.50	2.11	.408

Scale: 1= Not a problem: 3= Moderate problem: 4= Severe problem

Tukey HSD Comparison

¹county< district< state

Table 3

Rankings for Equipment Damage/ Miscellaneous

Statement	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
Operating when weather conditions are poor.	3.17	.70	3.28	3.20	2.92	1.14	3.56	3.00	3.14	3.25	3.11	.827
Increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage. ¹	2.96	.86	3.17	2.20	2.77	3.51*	3.33	3.33	2.86	3.00	2.78	1.080
Small independent loggers are falling thru the cracks (going out of business).	2.81	.88	2.93	2.60	2.62	.733	2.44	2.67	3.14	3.25	2.89	1.004
The destruction of county roads by logging trucks and increased mud on the road from logging trucks. ²	2.47	.65	2.66	2.40	2.08	3.99*	2.22	2.33	2.71	2.50	2.78	1.132

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem

Tukey HSD Comparison

¹state< county

²district<county

Table 3 denotes the ranking by district for equipment damage/ miscellaneous. District 2 has been left out of the district comparison because of small cell size. The five districts rated the statement “increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage”, as a moderate problem area with the lowest mean of mean of 2.78, and the highest mean rating of 3.33. District 1 rates the statement “operating when weather conditions are poor”, as a severe problem with a mean rating of 3.56. District 1, 3, and 5 ranks the statement “the destruction of county roads by logging trucks and increased mud on the road from logging trucks”, as a slight problem. District 3, 4, 5, and 6 rates the statement “small independent loggers are falling thru the cracks”, as a moderate problem area. The overall standard deviations for the district rankings can be found in Appendix H.

Management Practices. This problem area contains 9 of the 48 problem areas. Table 4 contains the total mean, total standard deviation, jurisdiction mean, and district mean for the problem statements. Service foresters rated 6 of the 9 problem statements in this section as moderate or severe problems. The statement “poor harvesting techniques with little regard for desired future conditions” was rated as a severe problem with a mean ranking of 3.55, the highest for this section. Foresters rated the statement “the over use of diameter-limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand”, as a severe problem with a mean ranking of 3.51. Four statements in this section received a moderate problem ranking with the statement “the lack of silvicultural prescriptions on private property”, the highest with a mean of 3.43. Three of the nine statements were rated as slight problems with the statement “the need for protecting wildlife and their habitat”, ranked the lowest with a 1.87 mean. The overall frequencies for how service foresters rated each question can be found in Appendix F.

Table 4

Ranking for Management Practices

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
Poor harvesting techniques with little regard for desired future conditions.	3.55	.62	3.66	3.40	3.38	1.031	3.67	3.75	3.29	3.75	3.44	.799
The over use of diameter-limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand.	3.51	.72	3.59	3.80	3.23	1.592	3.67	3.75	2.86	3.50	3.33	2.032
The lack of silvicultural prescriptions on private property.	3.43	.68	3.48	3.60	3.23	.7849	3.56	3.58	3.14	3.50	3.33	.583
The need for early planning of permanent road systems (road location, reclamation, gravel, bridges, etc.) before actual cutting takes place.	3.15	.72	3.21	3.40	2.92	1.034	3.00	3.33	2.86	3.25	3.22	.587
More emphasis needed on regeneration potential before harvesting.	3.02	.94	3.17	2.40	2.92	1.563	3.11	3.58	2.57	2.75	3.11	1.615
The need of an extensive pre-harvest management plan that would address wildlife, insects and disease, erosion and water pollution from silvicultural activities.	2.72	.97	2.76	3.20	2.46	1.098	2.44	3.08	2.00	3.00	2.78	1.604
The need for more clear-cutting and less partial cutting.	2.36	1.01	2.59	2.40	1.85	2.584	2.33	2.33	2.14	2.50	2.44	.100

Table 4 (Continued)

Ranking for Management Practices

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
The need to re-evaluate minimum product size.	2.23	.81	2.28	1.80	2.31	.7966	2.33	2.42	1.86	2.00	2.56	.935
The need for protecting wildlife and their habitat.	1.87	.74	1.93	1.60	1.85	.4263	1.89	1.75	1.71	1.75	2.33	.968

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem.

Table 4 contains the ranking by jurisdiction for management practices. State service foresters ranked “the lack of silvicultural prescription on private property: as a severe problem with a mean of 3.60. The statement “poor harvesting techniques with little regard for future conditions” was ranked as a severe problem by county service foresters with a mean of 3.66. District foresters ranked the statement “the need of an extensive pre-harvest management plan that would address wildlife, insect and disease, erosion and water pollution from silvicultural activities”, as a slight problem with a mean of 2.46. The statement “the need for more clear-cutting and less partial cutting”, was ranked as a moderate problem by county service foresters with a mean of 2.59. State foresters ranked the problem “the need for more clear-cutting and less partial cutting”, was ranked as a moderate problem by county service foresters with a mean of 2.59. State foresters ranked the problem “more emphasis on regeneration potential before harvesting: as a slight problem with a mean of 2.40. The statement “the over use of diameter-limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand” was ranked as a severe problem by county service foresters ($\underline{M}$ = 3.59), and state service foresters ($\underline{M}$ = 3.80). The overall standard deviations for the jurisdiction ranking can be found in Appendix G.

Table 4 denotes the ranking by district for management practices. District 2 was not included in the district comparison because of small cell size. Districts 1, 3, and 5 ranked the statement “poor harvesting techniques with little regard for desired future conditions “as a severe problem area. The statement “the need of an extensive pre-harvest management plan that would address wildlife, insect and disease, erosion and water pollution from silvicultural activities” was ranked as a slight problem area by districts 1 and 4. District 6 ranked the statement “the need to re-evaluate minimum product size specifications”, as a moderate problem with a mean of 2.56.

The statement “more emphasis needed on regeneration potential before harvesting” was ranked by District 3 as a severe problem with a mean of 3.58. The overall standard deviations for district rankings can be found in Appendix H.

Public Relations/ Relations in the Industry. The problem area contains 5 of the 48 problem statements. Table 5 contains the total mean, total standard deviation, jurisdiction mean, and district mean for the problem statements. The statement “negative publicity aimed at forestry practices from uninformed sources” was ranked as a severe problem area with a mean of 3.57. The four other problem statements in this area were rated as moderate problems. The highest moderate problem ranking was “the need to enhance the image of loggers to the general public”, with a mean of 3.30. The lowest moderate problem was “lack of willingness by corporate forest product firms to open and maintain talks with groups opposed to logging and good forestry practices” with a mean of 2.55. The overall frequencies for how the service foresters rated each question can be found in Appendix F.

Table 5 shows the ranking by jurisdiction for public relations/ relations in the industry. State service foresters ranks the statement “the need to enhance the image of loggers to the general public” as a severe problem with a mean of 3.60. County, district, and state service foresters agreed “negative publicity aimed at forestry practices from uninformed sources” was a severe problem area. County foresters ranked the statement “lack of willingness by corporate forest product firms to open and maintain talks with groups opposed to logging and good forestry practices” as a moderate problem with a ranking of 2.66. The overall standard deviations for the jurisdiction ranking can be found in Appendix G.

Table 5 denotes the ranking by district for public relations/ relations in the industry. District 2 was not included in the district comparison because of small cell size. The Tukey HSD

Table 5

Rankings for Public Relations/ Relations in the Industry

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
Negative publicity aimed at forestry practices from uninformed sources.	3.57	.62	3.52	4.00	3.54	1.359	3.44	3.58	3.57	3.50	3.44	.094
The need to enhance the image of loggers to the general public. ¹	3.30	.62	3.17	3.60	3.46	1.674	3.22	3.08	3.57	4.00	2.89	3.645*
Large timber companies are shifting responsibility to the small contract logger.	2.91	.91	2.93	2.60	3.00	.3423	2.75	3.08	2.86	3.00	3.11	.252
The timber industry shortfall in not taking responsibility for logging practices, environmental aspects of logging, road layout, and ineffective reclamation.	2.89	.89	3.00	2.60	2.77	.5950	3.00	2.75	2.86	3.25	3.11	.339
Lack of willingness by corporate forest products firms to open and maintain talks with groups opposed to logging and good forestry practices.	2.55	.80	2.66	2.20	2.46	.7962	2.56	2.58	2.57	2.75	2.67	.054

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem.

Tukey HSD Comparisons

¹ D6< D5

comparison shows a significant difference between district 5 and 6 for the statement “the need to enhance the image of loggers to the general public”. District 6 ranked this statement with a mean of 2.89, compared to district 5 with a mean of 4.00. District 3 and 4 ranked the statement “negative publicity aimed at forestry practices from uniformed sources” as a severe problem. The five districts agreed for ranking the other problem statements. The overall standard deviations for the district rankings can be found in Appendix H.

Regulations/ Licensing/ Workers Compensation. The problem area contains 10 of the 48 problem statements. Table 6 contains the total, jurisdiction, and district means for the problem statements. The statement “workers compensation rates that border on being prohibitive” was ranked the highest as a severe problem with a mean of 3.72. The statement “the need for minimum standards concerning BMPs to minimize forester’s interpretation of what the BMPs are” was ranked the lowest as a slight problem with a mean of 2.28. The majority of the problem statements for this area, 8 of 10 were ranked as moderate problems. The statement “the lack of penalties in BMP violations and LSCA matters” was the highest moderate problem ranking with a mean of 3.23. Appendix F shows the frequency for which service foresters ranked each statement.

Table 6 exams the ranking by jurisdiction for regulations/ licensing/ workers compensation. State service foresters rank “the timber industry does not appear to be fully committed to using the Logging Sediment Control Act”, as a slight problem with a mean of 2.40. State service foresters ($\bar{M}$ = 2.40) and district service foresters ($\bar{M}$ = 2.31) rank “foresters are enforcing LSCA laws in different manners”, as a slight problem. Loggers are not paying worker compensation rates” was ranked as a moderate problem by district service foresters with a mean of 3.00. State and district service foresters rank “the increase in timber trespass complaints” as a

Table 6

Rankings for Regulations/ Licensing/ Workers Compensation

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
Workers compensation rates that border on being prohibitive.	3.72	.54	3.79	3.60	3.58	.7528	3.75	3.75	3.86	3.25	3.78	1.043
The lack of penalties (civil or criminal) in BMP violations and LSCA matters.	3.23	1.03	3.21	2.80	3.46	.7693	3.33	3.08	3.00	3.75	3.44	.513
The lack of enforcement powers by the state to enforce LSCA laws.	3.20	1.00	3.32	3.00	3.00	.5518	3.38	2.92	2.86	3.75	3.67	1.378
The non-payment of severance taxes and high estate taxes.	2.76	.91	2.68	2.20	3.17	2.409	2.71	2.58	2.43	3.75	3.11	1.855
Foresters are enforcing LSCA laws in different manners.	2.72	.93	2.97	2.40	2.31	2.815	2.56	2.75	2.43	2.50	3.44	1.609
The timber industry does not appear to be fully committed to using the LSCA.	2.72	.95	2.83	2.40	2.62	.5386	2.78	2.25	2.43	3.50	3.44	3.740
Large companies are buying and selling timber from loggers without proper licenses. ¹	2.61	1.08	2.82	2.20	2.31	1.419	2.50	1.75	2.86	3.50	3.44	5.41*
Loggers are not paying workers compensation rates.	2.60	.84	2.50	2.20	3.00	2.266	2.57	2.50	2.14	3.25	3.00	1.626
The increase in timber trespass complaints.	2.57	.83	2.45	3.60	3.58	1.042	2.67	2.75	2.00	2.50	2.78	1.141
The need for minimum standards concerning BMPs to minimize forester's interpretation of what BMPs are.	2.28	.99	2.59	1.60	1.85	2.337	2.44	2.42	1.71	2.25	2.89	1.551

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem. Tukey HSD Comparisons -- ¹D3< D5< D6

severe problem with means of 3.60 and 3.58 respectively. The standard deviations for jurisdiction rankings can be found in Appendix G.

Table 6 denotes the ranking by district for regulations/ licensing/ workers compensation. District 2 was not included in the district comparison because of small cell size. Districts 1, 5 and 6 rank “the timber industry does not appear to be fully committed to using the Logger Sediment Control Act” as a moderate problem with means of 2.78, 3.50, and 3.44 respectively. The Tukey HSD comparison documents a significant difference between the ranking of district 3 ($\bar{M}$ = 1.75), district 5 ($\bar{M}$ = 3.50), and district 6 ($\bar{M}$ = 3.44) for “large companies are buying and selling timber from loggers without proper licenses”. District 5 and 6 ranked “the lack of enforcement powers by the state to enforce LSCA laws” as a severe problem. District 5 ranks “the lack of penalties in BMP violations and LSCA matters” as a severe problem with a mean of 3.75. District 1, 3, 4, and 6 rank “worker compensation rates that border on being prohibitive” as a severe problem with a mean between 3.75 and 3.86. District 5 ranks “the non-payment of severance taxes and high estate taxes” as a severe problem with a mean of 3.75.

Forest Stewardship Program (FSP). This area contains 9 of the 48 problem statements. Table 7 shows the total, jurisdiction, and district means for the problem area. The table shows that 2 Of the 9 statements were ranked as moderate problems. The statement “number of landowners actually implementing plan activity recommendations” was rated the highest with a mean of 3.36. The table denotes that 7 of the 9 statements were ranked as slight problems. The statements “statewide opportunities for landowners without plans to learn more about the program” and “lack of private landowner demand for plans” were rated the highest with a mean of 2.21. Appendix F provides the frequency for which the service foresters ranked each statement.

Table 7

Rankings for Forest Stewardship Program (FSP)

Statements	<u>M</u>	<u>SD</u>	Jurisdictions				District					
			County	State	District	F	1	3	4	5	6	F
Number of landowners actually implementing plan activity recommendations.	3.36	.74	3.41	3.20	3.31	.2212	3.56	3.42	3.29	3.75	3.22	.514
Shortfall in personnel to check forestry practice implementation.	2.77	.81	2.72	2.80	2.85	.1018	2.89	3.17	2.43	2.75	2.44	1.46
Lack of private landowner demand for plans.	2.21	.83	2.24	1.80	2.31	.7073	2.44	2.33	2.14	2.50	2.11	.299
Statewide opportunities for landowners without plans to learn more about the program.	2.21	.83	2.17	2.20	2.31	.1146	2.22	2.17	1.71	2.75	2.33	1.07
Adequate funding to write plans.	2.02	1.01	1.86	2.60	2.15	1.309	1.67	2.08	1.71	2.25	2.00	.409
Availability of foresters to write plans.	1.83	.94	1.69	2.00	2.08	.8480	2.00	1.75	1.57	2.25	1.56	.649
Access to information regarding the FSP for Service Foresters.	1.70	.75	1.66	1.60	1.85	.335	1.33	1.83	1.43	2.25	1.89	1.64
Quality of plan writer training sessions.	1.66	.89	1.66	1.00	1.92	2.023	1.78	1.92	1.57	1.50	1.78	.225
Number of required plan writing training sessions.	1.66	.76	1.59	1.20	2.00	2.509	1.89	1.75	1.43	2.25	1.44	1.09

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem.

Table 7 provides the ranking by jurisdiction for the stewardship program. State service foresters ranked “adequate funding to write plans” as a moderate problem with a mean of 2.60. The statement “quality of plan writer training sessions” was ranked as not a problem with a mean of 1.00. State service foresters ranked “number of required plan writing sessions” as not a problem with a mean of 1.20. The standard deviations for jurisdiction rankings can be found in Appendix G.

Table 7 identifies the ranking by district for the FSP program. District 2 was not included in the district comparison because of small cell size. Districts 3, 5, and 6 rank “access to information regarding the FSP for service foresters” as a slight problem with means of 1.83, 2.25, and 1.89 respectively. District 5 ranks “statewide opportunities for landowners without plans to learn more about the program” as a moderate problem with a mean of 2.75. Districts 1 and 5 ranks “number of landowners actually implementing plan activity recommendations” as a severe problem with a mean ranking of 3.56 and 3.75, respectively. The standard deviations for district rankings can be found in Appendix H.

CHAPTER V

SUMMARY, CONCLUSIONS, AND, RECOMMENDATIONS

Summary

This study was conducted to determine the major problems encountered in the West Virginia forestry sector as perceived by West Virginia Division of Forestry Service Foresters.

The descriptive method of research using survey techniques was utilized in this study. Data were obtained from 48 service foresters (73% response). Because of differences between early and late respondents, the results of this study cannot be generalized for the entire population of the West Virginia Division of Forestry.

The findings of the study are summarized as follows.

1. Of the 48 statements rated, 4 were rated as severe problems with a mean between 3.51 and 4.00.
2. The most serious problem identified by service foresters, with an overall mean of 3.72, was that worker's compensation rates border on being prohibitive.
3. Two of the top four statements were related to management practices, the other high-ranking statements dealt with the public relations/ relations in the industry problem area, and the regulations/ licensing/ workers compensation problem area.
4. Of the 48 statements rated, 28 were rated as moderate problems with a mean between 2.51 and 3.5. The top rated moderate problem was the lack of silvicultural prescriptions on private property with a mean of 3.43, which is a management practice problem area.
5. Of the 48 statements rated, 15 were rated as slight problems with a mean between 1.51 and 2.5. The top rated slight problem was the destruction of county roads by

- logging trucks and increased mud on the road from logging trucks with a mean of 2.47, which is an equipment damage/ miscellaneous problem.
6. Of the 48 statements rated, only one was not identified as a problem with a mean less than 1.50. The statement WVDOF does not appear to work well with private landowners and independent loggers was not a problem with a mean of 1.21, which is a division of forestry management and organization problem.
 7. Four of the seven major problem statements in the division of forestry management and organization category received a mean over 3.00. The highest-ranking problem was an overload of work for current West Virginia Division of Forestry service foresters with a mean of 3.34.
 8. The major education/ training problem was the shortfall in landowner education concerning forest management and timber harvesting with a mean of 3.32.
 9. The major equipment damage/ miscellaneous problem was operating when weather conditions are poor, with a mean of 3.17.
 10. Five of the nine major problem statements in the management practices category received a mean over 3.00. The highest-ranking problem was poor harvesting techniques with little regard for future conditions, with a mean of 3.55.
 11. Two of the five major problem statements in the category of public relations/ relations in the industry received a mean over 3.00. The highest-ranking problem was negative publicity aimed at forestry practices from uninformed sources, with a mean of 3.57.

12. Three of the ten major problem statements in the category of regulations/ licensing/ workers compensation received a mean over 3.00. The highest-ranking problem was workers compensation rates that border on being prohibitive, with a mean of 3.72.
13. The major forest stewardship program (FSP) problem was number of landowners actually implementing plan activity recommendations, with a mean of 3.36.

Conclusions

1. West Virginia Service Foresters consider the major problem in the forestry sector in West Virginia to be workers' compensation rates that border on being prohibitive.
2. There is a perceived lack of service foresters, which increases the workload of current employees.
3. The West Virginia Division of Forestry operates in a reactive mode instead of a proactive mode.
4. There is a perceived shortfall in landowner education concerning forest management and timber harvesting.
5. The increased size of equipment used is affecting timber-harvesting operations.
6. Loggers operating in poor weather conditions are effecting timber harvesting.
7. Service foresters perceive a lack of silvicultural prescriptions on private property and poor harvesting techniques with an emphasis on diameter-limit cutting.
8. Service foresters perceive a need for early planning of road systems and more emphasis on regeneration potential.
9. The public needs to be educated in forest harvesting and timber management.
10. Service foresters perceive negative publicity aimed at forestry practices from uninformed sources is damaging the image of the forestry sector.

11. Service foresters perceive a lack in enforcement powers and penalties for BMP violations and LSCA matters.
12. Worker compensation rates that border on being prohibitive are affecting timber crews.
13. Service foresters perceive there is a lack of landowners actually implementing plan activity recommendations for the Forest Stewardship Program (FSP).
14. District 3 and 5 ranked many of the problem statements as moderate or severe problems.

Recommendations

This study was conducted to identify major problems in the forest sector in West Virginia as perceived by West Virginia Division of Forestry service foresters.

Analysis of the data obtained reveals many suggestions, which will help service foresters in managing the problems in the forest sector. The most significant are condensed and presented here in the form of recommendations.

1. State service foresters need to study the staffing issues and formulate strategies to better manage each forester's workload and explore areas for new employees.
2. The WVDOP needs to form a committee to address current and possible future problems affecting the state's forestry sector before they become major problems.
3. New programs are needed to educate landowners on forest management and timber harvesting so they can be more informed in the management of their forest resources.
4. Develop educational sites in each district that demonstrate the different types of harvesting techniques used, how they are performed, ways to increase regeneration, and that reinforce the benefits of BMPs.

5. Management plans need to include an in-depth layout of permanent road systems on harvest sites.
6. The need to educate landowners and foresters in not using diameter-limit cutting, and why it is detrimental for the forest stand.
7. The State Division of Forestry and the timber industry need to work together to enhance the image of the timber industry and provide positive publicity about forestry practices.
8. The WVDOF needs to establish a better system for identifying and enforcing BMP violations.
9. The WVDOF and the timber industry needs to work with the state government to address worker compensation rates so smaller loggers have an opportunity to compete in the work force.
10. Establish a program to help landowners implement recommendations on their land and show how it can be beneficial to them.
11. Further research needs to be conducted to further describe the difference of opinion in different categories and relationships with one-another.
12. District 3 and 5 need assistance based on their ranking of many of the problem statements as moderate or severe problems.

The West Virginia Division of Forestry is currently considering a comprehensive strategic plan, which may address many of the issues raised in the study.

REFERENCES

- Appalachian Hardwood Center. (1999). Selecting the right professional forester (on-line).
<http://www.wvu.edu/~agexten/forestry/selforst.htm>
- Armstrong, J.P. (1987). Opportunities for forest products development in West Virginia: Potential for increased levels of kiln drying. West Virginia Cooperative Extension Service. Fact Sheet.
- Argow, K.A. (1994). Stewardship begins at home: The private property responsibility initiative. Journal of Forestry, 92(5), 14-17.
- Belt, K. (2000). Best Management Practices—Soil and water conservation (on- line).
<http://www.wvu.edu/~agexten/forestry/bestprac.htm>
- Conway, S. (1982). Logging Practices: Principles of Timber Harvesting Systems. San Francisco, CA: Miller Freeman Publications, Inc.
- Egan, A.F. (1999). Do foresters and logging contracts matter. Journal of Forestry, 97(8), 36-39.
- Egan, A.F. (1997). From timber to forest and people: A view of Nonindustrial private forest research. Northern Journal of Applied Forestry, 14(4), 189-193.
- Fraser, R., Magill, D. (2000). Training and assistance of forestland owners in West Virginia. Fragmentation 2000 Conference . Proceedings.
- Garland, J.J. (1996). Sustainable forestry: Best management practices to protect water quality. American Forest & Paper Association. Publication.
- Gordon, J.C. (1994). From vision to policy: A role for foresters. Journal of Forestry, 92(7), 17-19.

Greenstreet, D., Caldwell Jr., R. (1997). Economic Impact of the Wood Products Industry. West Virginia University, WV: Bureau of Business and Economic Research.

Harmon, A.H., Jones, B.J., Finley, J.C. (1997). Encouraging private forest stewardship through demonstration. Journal of Forestry, 95(6), 21-25.

Kochenderfer, J.N., Edwards, P.J., Wood, F. (1997). Hydrologic impacts of logging an Appalachian watershed using West Virginia best management practices. Journal of Forestry, 14(4), 207-218.

Kochenderfer, J.N., Horbeck, J.W. (1999). Contrasting timber harvesting operations illustrate the value of BMPs. Proceedings, 12th central hardwood forest conference. Department of Agriculture, Forest Service, Southern Research Station.

Lewis, R.L. (1996). Gutting West Virginia's virgin forest. West Virginia University Alumni Magazine, 10-13.

Lucier, A.A. (1994). Criteria for success in managing forested landscapes. Journal of Forestry, 92(7), 20-24.

McEvoy, T.J. (1998). Legal aspects of owning and managing woodlands. Washington, D.C.: Island Press.

Ruark, G.A. (1999). Agroforestry and sustainability: Making a patchwork quilt. Journal of Forestry, 97(8), 56.

Tuckman, B.W. (1999). Conducting Educational Research. (5th ed.). New York: Harcourt Brace College Publishers.

VanDalen, B.D. (1979). Understanding educational research, an introduction. (4th ed.). New York: McGraw- Hill.

West Virginia Forestry Association's Landowner Education Committee. (1999). Contract Important in Timber Sales (on-line). <http://www.wvu.edu/~agexten/forestry/contract.htm>

West Virginia Division of Forestry. (2001). Employee list. Charleston, WV

White, D. (1993). West Virginia's Second Forest. (22nd ed.). West Virginia University, WV: Agriculture and Forestry Experimental Station.

APPENDICES

Appendix A

Cover Letters

February 12, 2001

«FName» «LName»
«Title»
«OAddress»
«City», «State» «Zip»

Dear «FName»:

My undergraduate degree in Forest Resource Management and my employment last summer as a Forestry Aid have played a major role in selecting a topic for my masters thesis. Serving as a forestry aid in District III provided me with some basic insights to a few of the problems facing the timber industry.

Realizing that my perceptions of the problems were somewhat limited we have decided to conduct a thesis study to *identify the major problems* encountered by *district foresters* in the *timber industry* in West Virginia. This information may be useful in addressing the problems of the timber industry in West Virginia on the local and state levels. The results of the research could impact the offering of workshops and seminars that would benefit the industry.

Participation in this study, while voluntary, will take only a few minutes of your time. On the enclosed form, please list the five major problems you are currently encountering as a district forester in West Virginia. A postage paid self addressed return envelope is provided for your convenience in returning your list. Your statements will be combined with those of other district foresters across West Virginia. An edited list will then be sent to you for evaluation and rating of each problem identified.

Your response will be kept strictly confidential. Participation and **return** of the list **by February 28, 2001** will be greatly appreciated.

Sincerely,

Michael A. Westfall
Graduate Student

Stacy A. Gartin
Professor

February 12, 2001

«FName» «LName»
«Title»
«OAddress»
«City», «State» «Zip»

Dear «FName»:

My undergraduate degree in Forest Resource Management and my employment last summer as a Forestry Aid have played a major role in selecting a topic for my masters thesis. Serving as a forestry aid in District III provided me with some basic insights to a few of the problems facing the timber industry.

Realizing that my perceptions of the problems were somewhat limited we have decided to conduct a thesis study to *identify the major problems* encountered by *service foresters* in the *timber industry* in West Virginia. This information may be useful in solving the problems of the timber industry in West Virginia on the local and state levels. The results of the research could impact the offering of workshops and seminars that would benefit the industry.

Participation in this study, while voluntary, will take only a few minutes of your time. On the enclosed form, please list the five major problems you are currently encountering as a service forester in West Virginia. A postage paid self addressed return envelope is provided for your convenience in returning your list. Your statements will be combined with those of other service foresters across West Virginia. An edited list will then be sent to you for evaluation and rating of each problem identified.

Your response will be kept strictly confidential. Participation and **return** of the list by **February 28, 2001** will be greatly appreciated.

Sincerely,

Michael A. Westfall
Graduate Student

Stacy A. Gartin
Professor

Appendix B

Initial questionnaires

MAJOR PROBLEMS FACING THE TIMBER INDUSTRY
IN WEST VIRGINIA AS PERCEIVED BY
WEST VIRGINIA DIVISION OF FORESTRY
DISTRICT FORESTERS

Please list below the **five major problems** you are currently encountering in the Timber Industry at either the *county* or *state* level.

1.

2.

3.

4.

5.

Please return this form in the enclosed return envelope by February 28, 2001.
I thank you again for your cooperation.

MAJOR PROBLEMS FACING THE TIMBER INDUSTRY
IN WEST VIRGINIA AS PERCEIVED BY
WEST VIRGINIA DIVISION OF FORESTRY
SERVICE FORESTERS

Please list below the **five major problems** you are currently encountering in the Timber Industry at either the *county* or *state* level.

1.

2.

3.

4.

5.

Please return this form in the enclosed return envelope by February 28, 2001.
I thank you again for your cooperation.

Appendix C

Cover Letter

Date

Dear:

A few weeks ago we asked you to identify the five major problems you are currently facing in the timber industry as service foresters in your area. Response to the request was outstanding! Thanks for the cooperation!

Items listed in the original survey have been combined, edited and condensed into statements appearing in the enclosed survey form. Please evaluate and rate each statement according to your experiences with regard to the timber industry in West Virginia.

Responses will be analyzed and will provide information that may be useful in helping professional foresters and educators to understand and solve the problems facing the timber industry today. Your response will be treated with complete confidentiality.

Thanks again for your cooperation. Please return the completed form by (Date).

Sincerely,

Michael Westfall

Graduate Student

Appendix D

Major Survey Instrument

**Major Problems with the Forestry Sector in West Virginia as Perceived by West Virginia
Division of Forestry Service Foresters**

Instructions:

Code: _____

Regarding the current problem severity that you as a state service are experiencing with the forestry sector in West Virginia, please **circle** the number that corresponds with that problem level.

**1= Not a problem
2= Slight problem
3= Moderate problem
4= Severe problem**

Division of Forestry Management and Organization

1. Lack of West Virginia Division of Forestry employees	1 2 3 4
2. An overload of work for current West Virginia Division Forestry service foresters.	1 2 3 4
3. Ability to retain competent and conscientious employees in the West Virginia Division of Forestry.	1 2 3 4
4. West Virginia Division of Forestry operates in a reactive mode rather than proactive mode.	1 2 3 4
5. WV Division of forestry does not appear to work well with private landowners and independent loggers.	1 2 3 4
6. The timber industry (foresters, loggers, primary manufactures) is tied too closely to the West Virginia Division of Forestry (the regulator).	1 2 3 4
7. Timber regulation should be done by an independent agency.	1 2 3 4

Education/ Training

8. Shortfall of trained timber cutters and equipment operators.	1 2 3 4
9. Shortfall in landowner education concerning forest management and timber harvesting.	1 2 3 4
10. The WVU Division of Forestry and WV DOF lack the programming in promoting hands on training for everyone involved in forestry.	1 2 3 4
11. Corporate forest products firms have traditionally left any education of the public concerning forestry matters to state and federal agencies and the West Virginia Forestry Association. They need to get their message out as an industry.	1 2 3 4

Please turn page over for Page 2

1= Not a problem
2= Slight problem
3= Moderate problem
4= Severe problem

Equipment Damage/ Miscellaneous

12. Increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage.	1	2	3	4
13. Operating when weather conditions are poor.	1	2	3	4
14. The destruction of county roads by logging trucks and increased mud on the road from logging trucks.	1	2	3	4
15. Small independent loggers are falling thru the cracks (going out of business).	1	2	3	4

Management Practices

16. The lack of silvicultural prescriptions on private property.	1	2	3	4
17. Poor harvesting techniques with little regard for desired future conditions.	1	2	3	4
18. The need for early planning of permanent road systems (road location, reclamation, gravel, bridges, etc.) before actual cutting takes place.	1	2	3	4
19. The need of an extensive pre- harvest management plan that would address wildlife, insect and disease, erosion and water pollution from silvicultural activities.	1	2	3	4
20. The need for protecting wildlife and their habitat.	1	2	3	4
21. The needs to re- evaluate minimum product size specifications.	1	2	3	4
22. The need for more clear-cutting and less partial cutting.	1	2	3	4
23. More emphasis needed on regeneration potential before harvesting.	1	2	3	4
24. The over use of diameter- limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand. ³	1	2	3	4

Please continue on Page 3

1= Not a problem
 2= Slight problem
 3= Moderate problem
 4= Severe problem

Public Relations/ Relations in the Industry

25. The need to enhance the image of loggers to the general public.	1	2	3	4
26. Negative publicity aimed at forestry practices from uninformed sources.	1	2	3	4
27. Lack of willingness by corporate forest products firms to open and maintain talks with groups opposed to logging and good forestry practices.	1	2	3	4
28. The timber industry shortfall in not taking responsibility for logging practices, environmental aspects of logging, road layout, and ineffective reclamation.	1	2	3	4
29. Large timber companies are shifting responsibility to the small contract logger.	1	2	3	4

Regulations/ Licensing/ Workers Compensation

30. The timber industry does not appear to be fully committed to using the Logging Sediment Control Act.	1	2	3	4
31. The need for minimum standards concerning BMPs to minimize forester's interpretation of what the BMPs are.	1	2	3	4
32. Large companies are buying and selling timber from loggers without proper licenses.	1	2	3	4
33. The lack of enforcement powers by the state to enforce LSCA laws.	1	2	3	4
34. Foresters are enforcing LSCA laws in different manners.	1	2	3	4
35. The lack of penalties (civil or criminal) in BMP violations and LSCA matters.	1	2	3	4
36. Loggers are not paying workers compensation rates.	1	2	3	4
37. Workers compensation rates that border on being prohibitive.	1	2		4
38. The increase in timber trespass complaints.	1	2	3	4
39. The non-payment of severance taxes and high estate taxes.	1	2	3	4

Please turn page over for Page 4

1 2 3 4

1= Not a problem
2= Slight problem
3= Moderate problem
4= Severe problem

Forest Stewardship Program (FSP)

40. Access to information regarding the FSP for Service Foresters	1	2	3	4
41. Statewide opportunities for landowners without plans to learn more about the program.	1	2	3	4
42. Adequate funding to write plans.	1	2	3	4
43. Availability of foresters to write plans.	1	2	3	4
44. Lack of private landowner demand for plans.	1	2	3	4
45. Quality of plan writer training sessions.	1	2	3	4
46. Number of required plan writer training sessions.	1	2	3	4
47. Shortfall in personnel to check forestry practice implementation.	1	2	3	4
48. Number of landowners actually implementing plan activity recommendations.	1	2	3	4

Comments:

***We thank you for taking time to share your perceptions with us
in the hopes of making a positive difference.***

Appendix E

Follow up Letter to Major Survey Instrument

July 9, 2001

«FName» «LName»
«Title»
«OAddress»
«City», «State» «Zip»

Dear «FName»:

A few weeks ago, we sent you a letter and a survey form requesting you to evaluate and rate a number of statements according to your experiences with regard to the problems facing the forestry sector in West Virginia. If you have not already done so, please complete the form and put it into the mail today. When responses have been received, they will be analyzed to provide information that may be helpful in solving the problems facing the forestry sector in West Virginia. To be of most value, we need responses from every forester.

Thanks again for your cooperation.

Sincerely,

Michael A. Westfall
Graduate Student

Stacy A. Gartin
Professor

Appendix F
Frequency Table

Appendix F

Total Ranking for Major Survey Instrument

Statements	<u>M</u>	<u>SD</u>	None		Slight		Moderate		Severe	
			<u>f</u>	%	<u>f</u>	%	<u>f</u>	%	<u>f</u>	%
Workers compensation rates that border on being prohibitive.	3.72	.54	0	0	2	4.3	9	19.1	35	74.5
Negative publicity aimed at forestry practices from uninformed sources.	3.57	.62	0	0	3	6.4	14	29.8	30	63.8
Poor harvesting techniques with little regard for desired future conditions.	3.55	.62	0	0	3	6.4	15	31.9	29	61.7
The over use of diameter-limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand.	3.51	.72	0	0	6	12.8	11	23.4	30	63.8
The lack of silvicultural prescriptions on private property.	3.43	.68	0	0	5	10.6	17	36.2	25	53.2
Number of landowners actually implementing plan activity recommendations.	3.36	.74	1	2.1	4	8.5	19	40.4	23	48.9
An overload of work for current West Virginia Division of Forestry service foresters.	3.34	.81	1	2.1	7	14.9	14	29.8	25	53.2
Shortfall in landowner education concerning forest management and timber harvesting.	3.32	.69	0	0	6	12.8	20	42.6	21	44.7
The need to enhance the image of loggers to the general public.	3.30	.62	0	0	4	8.5	25	53.2	18	38.3
The lack of penalties (civil or criminal) in BMP violations and LSCA matters.	3.23	1.03	4	8.5	8	17.0	8	17.0	27	57.4
Lack of West Virginia Division of Forestry employees.	3.23	.79	1	2.1	7	14.9	19	40.4	20	42.6
The lack of enforcement powers by the state to enforce LSCA laws.	3.20	1.00	4	8.5	7	14.9	11	23.4	24	51.1
Ability to retain competent and conscientious employees in the West Virginia Division of Forestry.	3.17	.89	2	4.3	9	19.1	15	31.9	21	44.7
Operating when weather conditions are poor.	3.17	.70	1	2.1	5	10.6	26	55.3	15	31.9
The need for early planning of permanent road systems (road location, reclamation, gravel, bridges, etc.) before actual cutting takes place.	3.15	.72	1	2.1	6	12.8	25	53.2	15	31.9
West Virginia Division of Forestry operates in a reactive mode rather than proactive mode.	3.06	.99	3	6.4	12	25.5	11	23.4	21	44.7

Appendix F (Continued)

Total Ranking for Major Survey Instrument

Statements	<u>M</u>	<u>SD</u>	None		Slight		Moderate		Severe	
			<u>f</u>	%	<u>f</u>	%	<u>f</u>	%	<u>f</u>	%
More emphasis needed on regeneration potential before harvesting.	3.02	.94	3	6.4	11	23.4	15	31.9	18	38.3
Increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage.	2.96	.86	4	8.5	6	12.8	25	53.2	12	25.5
Large timber companies are shifting responsibility to the small contract logger.	2.91	.91	2	4.3	15	31.9	14	29.8	15	31.9
The timber industry shortfall in not taking responsibility for logging practices, environmental aspects of logging, road layout, and ineffective reclamation.	2.89	.89	2	4.3	15	31.9	16	34	14	29.8
Small independent loggers are falling thru the cracks (going out of business).	2.81	.88	5	10.6	8	17.0	25	53.2	9	19.1
The WVU Division of Forestry and WV DOF lack the programming in promoting hands on training for everyone involved in forestry.	2.79	.83	3	6.4	13	27.7	22	46.8	9	19.1
Shortfall in personnel to check forestry practice implementation.	2.77	.81	2	4.3	16	34.0	20	42.6	9	19.1
The non-payment of severance taxes and high estate taxes.	2.76	.91	3	6.4	16	34.0	15	31.9	11	23.4
The need of an extensive pre-harvest management plan that would address wildlife, insect and disease, erosion and water pollution from silvicultural activities.	2.72	.97	6	12.8	12	25.5	18	38.3	11	23.4
The timber industry does not appear to be fully committed to using the Logger Sediment Control Act.	2.72	.95	5	10.6	14	29.8	17	36.2	11	23.4
Foresters are enforcing LSCA laws in different manners.	2.72	.93	4	8.5	16	34.0	16	34.0	11	23.4
Corporate forest products firms have traditionally left any education of the public concerning forestry matters to state and federal agencies and the West Virginia Forestry Association. They need to get their message out as an industry.	2.70	.86	3	6.4	17	36.2	18	38.3	9	19.1
Large companies are buying and selling timber from loggers without proper licenses.	2.61	1.08	7	14.9	18	38.3	7	14.9	14	29.8

Appendix F (Continued)

Total Ranking for Major Survey Instrument

Statements	<u>M</u>	<u>SD</u>	None		Slight		Moderate		Severe	
			<u>f</u>	%	<u>f</u>	%	<u>f</u>	%	<u>f</u>	%
Loggers are not paying workers compensation rates.	2.60	.84	4	8.5	16	34.0	19	40.4	6	12.8
The increase in timber trespass complaints.	2.57	.83	3	6.4	21	44.7	16	34.0	7	14.9
Lack of willingness by corporate forest products firms to open and maintain talks with groups opposed to logging and good forestry practices.	2.55	.80	3	6.4	21	44.7	17	36.2	6	12.8
The destruction of county roads by logging trucks and increased mud on the road from logging trucks.	2.47	.65	1	2.1	26	55.3	17	36.2	3	6.4
Shortfall of trained timber cutters and equipment operators.	2.41	.78	5	10.6	20	42.6	18	38.3	3	6.4
The need for more clear-cutting and less partial cutting.	2.36	1.01	11	23.4	15	31.9	14	29.8	7	14.9
The need for minimum standards concerning BMPs to minimize forester's interpretation of what BMPs are.	2.28	.99	12	25.5	16	34.0	13	27.7	6	12.8
The need to re-evaluate minimum product size.	2.23	.81	8	17.0	23	48.9	13	27.7	3	6.4
Statewide opportunities for landowners without plans to learn more about the program.	2.21	.83	10	21.3	19	40.4	16	34.0	2	4.3
Lack of private landowners demand for plans.	2.21	.83	9	19.1	22	46.8	13	27.7	3	6.4
Adequate funding to write plans.	2.02	1.01	18	38.3	15	31.9	9	19.1	5	10.6
The need for protecting wildlife and their habitat.	1.87	.74	15	31.9	24	51.1	7	14.9	1	2.1
Availability of foresters to write plans.	1.83	.94	22	46.8	14	29.8	8	17.0	3	6.4
Access to information regarding the FSP for service foresters.	1.70	.75	21	44.7	20	42.6	5	10.6	1	2.1
Timber regulation should be done by an independent agency.	1.70	1.02	26	55.3	10	21.3	3	6.4	5	10.6
Quality of plan writer training sessions.	1.66	.89	26	55.3	14	29.8	8	17.0	3	6.4
Number of required plan writing training sessions.	1.66	.76	23	48.9	18	38.3	5	10.6	1	2.1
The timber industry is tied too closely to the West Virginia Division of Forestry.	1.65	.79	24	51.1	15	31.9	6	12.8	1	2.1
WVDOF does not appear to work well with private landowners and independent loggers.	1.21	.46	38	80.9	8	17.0	1	2.1	0	0

Scale: 1= Not a problem: 2= Slight problem: 3= Moderate problem; 4= Severe problem.

Appendix G
Jurisdiction Table

Appendix G

Total Ranking by Jurisdiction for Major Survey Instrument

Statements	County		State		District		F
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Workers compensation rates that border on being prohibitive.	3.79	.41	3.60	.89	3.58	.67	.7528
Negative publicity aimed at forestry practices from uninformed sources.	3.52	.63	4.00	.00	3.54	.66	1.359
Poor harvesting techniques with little regard for desired future conditions.	3.66	.55	3.40	.55	3.38	.77	1.031
The over use of diameter-limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand.	3.59	.68	3.80	.45	3.23	.83	1.5922
The lack of silvicultural prescriptions on private property.	3.48	.63	3.60	.55	3.23	.83	.7849
Number of landowners actually implementing plan activity recommendations.	3.41	.57	3.20	.84	3.31	1.03	.2212
An overload of work for current West Virginia Division of Forestry service foresters.	3.31	.81	3.60	.89	3.31	.85	.2749
Shortfall in landowner education concerning forest management and timber harvesting.	3.21	.77	3.80	.45	3.38	.51	1.682
The need to enhance the image of loggers to the general public.	3.17	.60	3.60	.55	3.46	.66	1.674
The lack of penalties (civil or criminal) in BMP violations and LSCA matters.	3.21	1.05	2.80	1.30	3.46	.88	.7693
Lack of West Virginia Division of Forestry employees.	3.21	.77	3.60	.55	3.15	.90	.6163
The lack of enforcement powers by the state to enforce LSCA laws.	3.32	.94	3.00	1.22	3.00	1.08	.5518
Ability to retain competent and conscientious employees in the West Virginia Division of Forestry.	3.17	.85	3.20	.84	3.15	1.07	.0048
Operating when weather conditions are poor.	3.28	.65	3.20	.45	2.92	.86	.33
The need for early planning of permanent road systems (road location, reclamation, gravel, bridges, etc.) before actual cutting takes place.	3.21	.73	3.40	.55	2.92	.76	1.034
West Virginia Division of Forestry operates in a reactive mode rather than proactive mode.	3.24	.83	2.60	1.14	2.85	1.21	1.3584
More emphasis needed on regeneration potential before harvesting.	3.17	.89	2.40	.89	2.92	1.04	1.563
Increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage.	3.17	.76	2.20	.84	2.77	.93	.04
Large timber companies are shifting responsibility to the small contract logger.	2.93	.88	2.60	1.34	3.00	.85	.3423

Appendix G (Continued)

Total Ranking by Jurisdiction for Major Survey Instrument

Statements	County		State		District		F
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
The timber industry shortfall in not taking responsibility for logging practices, environmental aspects of logging, road layout, and ineffective reclamation.	3.00	.93	2.60	.89	2.77	.83	.5950
Small independent loggers are falling thru the cracks (going out of business).	2.93	.88	2.60	.89	2.62	.87	.49
The WVU Division of Forestry and WV DOF lack the programming in promoting hands on training for everyone involved in forestry.	2.83	.85	2.60	1.14	2.77	.73	.1576
Shortfall in personnel to check forestry practice implementation.	2.72	.80	2.80	.84	2.85	.90	.1018
The non-payment of severance taxes and high estate taxes.	2.68	.94	2.20	.45	3.17	.83	2.409
The need of an extensive pre-harvest management plan that would address wildlife, insect and disease, erosion and water pollution from silvicultural activities.	2.76	1.09	3.20	.45	2.46	.78	1.098
The timber industry does not appear to be fully committed to using the Logger Sediment Control Act.	2.83	.97	2.40	1.14	2.62	.87	.5386
Foresters are enforcing LSCA laws in different manners.	2.97	.94	2.40	.55	2.31	.85	2.815
Corporate forest products firms have traditionally left any education of the public concerning forestry matters to state and federal agencies and the West Virginia Forestry Association. They need to get their message out as an industry.	2.55	.87	3.00	1.00	2.92	.76	1.189
Large companies are buying and selling timber from loggers without proper licenses.	2.82	1.02	2.20	.84	2.31	1.25	1.419
Loggers are not paying workers compensation rates.	2.50	.92	2.20	.45	3.00	.60	2.266
The increase in timber trespass complaints.	2.45	.41	3.60	.89	3.58	.67	1.042
Lack of willingness by corporate forest products firms to open and maintain talks with groups opposed to logging and good forestry practices.	2.66	.90	2.20	.84	2.46	.52	.7962
The destruction of county roads by logging trucks and increased mud on the road from logging trucks.	2.66	.67	2.40	.55	2.08	.49	.03
Shortfall of trained timber cutters and equipment operators.	2.17	.66	3.00	.82	2.77	.83	4.508
The need for more clear-cutting and less partial cutting.	2.59	1.02	2.40	.89	1.85	.90	2.584

Appendix G (Continued)

Total Ranking by Jurisdiction for Major Survey Instrument

Statements	County		State		District		F
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
The need for minimum standards concerning BMPs to minimize forester's interpretation of what BMPs are.	2.59	1.02	1.60	.89	1.85	.69	4.337
The need to re-evaluate minimum product size.	2.28	.84	1.80	.84	2.31	.75	.7966
Statewide opportunities for landowners without plans to learn more about the program.	2.17	.80	2.20	.84	2.31	.95	.1146
Lack of private landowners demand for plans.	2.24	.79	1.80	.84	2.31	.95	.7073
Adequate funding to write plans.	1.86	.99	2.60	1.14	2.15	.99	1.309
The need for protecting wildlife and their habitat.	1.93	.80	1.60	.55	1.85	.69	.4263
Availability of foresters to write plans.	1.69	.76	2.00	1.41	2.08	1.12	.8480
Access to information regarding the FSP for service foresters.	1.66	.67	1.60	.89	1.85	.90	.3335
Timber regulation should be done by an independent agency.	1.93	1.07	1.80	1.30	1.17	.58	2.4612
Quality of plan writer training sessions.	1.66	.90	1.00	.00	1.92	.95	2.023
Number of required plan writing training sessions.	1.59	.68	1.20	.45	2.00	.91	2.5094
The timber industry is tied too closely to the West Virginia Division of Forestry.	1.86	.85	1.20	.45	1.38	.65	2.6586
WVDOP does not appear to work well with private landowners and independent loggers.	1.24	.51	1.00	.00	1.23	.44	.5817

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem.

Appendix H
District Tables

Appendix H

Total Ranking By District for Major Survey Instrument

Statements	1		3		4		5		6	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Workers compensation rates that border on being prohibitive.	3.75	.46	3.75	.45	3.86	.38	3.25	.96	3.78	.44
Negative publicity aimed at forestry practices from uninformed sources.	3.44	.73	3.58	.51	3.57	.79	3.50	.58	3.44	.73
Poor harvesting techniques with little regard for desired future conditions.	3.67	.71	3.75	.62	3.29	.49	3.75	.50	3.44	.73
The over use of diameter-limit cutting that takes faster growing higher value hardwood and leaves the undesirable species and cull trees in the stand.	3.67	.71	3.75	.62	2.86	.69	3.50	.58	3.33	.87
The lack of silvicultural prescriptions on private property.	3.56	.53	3.58	.67	3.14	.69	3.50	1.00	3.33	.71
Number of landowners actually implementing plan activity recommendations.	3.56	.73	3.42	.90	3.29	.49	3.75	.50	3.22	.67
An overload of work for current West Virginia Division of Forestry service foresters.	3.44	.73	3.58	.51	3.14	.90	3.25	.96	3.00	1.12
Shortfall in landowner education concerning forest management and timber harvesting.	3.56	.53	3.17	.72	3.00	.82	3.75	.50	3.11	.78
The need to enhance the image of loggers to the general public.	3.22	.67	3.08	.67	3.57	.53	4.00	.00	2.89	.33
The lack of penalties (civil or criminal) in BMP violations and LSCA matters.	3.33	.87	3.08	1.08	3.00	1.15	3.75	.50	3.44	1.13
Lack of West Virginia Division of Forestry employees.	3.33	.71	3.33	.65	3.43	.79	3.75	.50	2.44	.88
The lack of enforcement powers by the state to enforce LSCA laws.	3.38	.92	2.92	1.08	2.86	1.21	3.75	.50	3.67	.71
Ability to retain competent and conscientious employees in the West Virginia Division of Forestry.	2.56	.88	3.58	.79	3.43	.53	3.50	.58	2.78	1.09
Operating when weather conditions are poor.	3.56	.53	3.00	.95	3.14	.38	3.25	.50	3.11	.78
The need for early planning of permanent road systems (road location, reclamation, gravel, bridges, etc.) before actual cutting takes place.	3.00	.71	3.33	.65	2.86	.38	3.25	.50	3.22	1.09

Appendix H (Continued)

Total Ranking By District for Major Survey Instrument

Statements	1		3		4		5		6	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
West Virginia Division of Forestry operates in a reactive mode rather than proactive mode.	3.11	1.17	3.08	.90	3.14	.90	3.00	1.15	3.22	1.09
More emphasis needed on regeneration potential before harvesting.	3.11	.78	3.58	.79	2.57	.98	2.75	1.26	3.11	.93
Increased size of equipment, leading to more disturbed areas for roads, landings, and increased residual stand damage.	3.33	.50	3.33	.98	2.86	.38	3.00	.00	2.78	.97
Large timber companies are shifting responsibility to the small contract logger.	2.75	1.04	3.08	.67	2.86	.90	3.00	1.15	3.11	1.27
The timber industry shortfall in not taking responsibility for logging practices, environmental aspects of logging, road layout, and ineffective reclamation.	3.00	.87	2.75	.87	2.86	.69	3.25	.50	3.11	1.27
Small independent loggers are falling thru the cracks (going out of business).	2.44	1.13	2.67	.78	3.14	.38	3.25	.96	2.89	.93
The WVU Division of Forestry and WV DOF lack the programming in promoting hands on training for everyone involved in forestry.	2.56	.53	2.58	.90	3.00	1.15	2.75	.50	2.67	1.00
Shortfall in personnel to check forestry practice implementation.	2.89	.93	3.17	.72	2.43	.79	2.75	.50	2.44	.88
The non-payment of severance taxes and high estate taxes.	2.71	1.11	2.58	.90	2.43	.98	3.75	.50	3.11	.78
The need of an extensive pre-harvest management plan that would address wildlife, insect and disease, erosion and water pollution from silvicultural activities.										
The timber industry does not appear to be fully committed to using the Logger Sediment Control Act.	2.78	.67	2.25	.97	2.43	.79	3.50	.58	3.44	.88
Foresters are enforcing LSCA laws in different manners.	2.56	.88	2.75	1.06	2.43	.79	2.50	1.29	3.44	.73
Corporate forest products firms have traditionally left any education of the public concerning forestry matters to state and federal agencies and the West Virginia Forestry Association. They need to get their message out as an industry.	2.56	.53	2.58	.90	3.00	1.15	2.75	.50	2.67	1.00

Appendix H (Continued)

Total Ranking By District for Major Survey Instrument

Statements	1		3		4		5		6	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Large companies are buying and selling timber from loggers without proper licenses.	2.50	.76	1.75	.87	2.86	1.21	3.50	1.00	3.44	.88
Loggers are not paying workers compensation rates.	2.57	.79	2.50	.90	2.14	.69	3.25	.50	3.00	1.00
The increase in timber trespass complaints.	2.67	1.00	2.75	.75	2.00	.58	2.50	1.29	2.78	.67
Lack of willingness by corporate forest products firms to open and maintain talks with groups opposed to logging and good forestry practices.	2.56	.73	2.58	.90	2.57	.79	2.75	.50	2.67	1.00
The destruction of county roads by logging trucks and increased mud on the road from logging trucks.	2.22	.44	2.33	.78	2.71	.76	2.50	.58	2.78	.67
Shortfall of trained timber cutters and equipment operators.	2.56	.53	2.33	.89	2.43	.79	2.50	.58	2.11	.93
The need for more clear-cutting and less partial cutting.	2.33	1.12	2.33	1.07	2.14	1.07	2.50	1.29	2.44	1.01
The need for minimum standards concerning BMPs to minimize forester's interpretation of what BMPs are.	2.44	1.13	2.42	.90	1.71	.76	2.25	.50	2.89	1.05
The need to re-evaluate minimum product size.	2.33	1.00	2.42	.79	1.86	.69	2.00	.00	2.56	.88
Statewide opportunities for landowners without plans to learn more about the program.	2.22	.67	2.17	.94	1.71	.95	2.75	1.26	2.33	.50
Lack of private landowners demand for plans.	2.44	1.01	2.33	.78	2.14	.90	2.50	1.29	2.11	.33
Adequate funding to write plans.	1.67	.50	2.08	1.24	1.71	1.11	2.25	1.26	2.00	.87
The need for protecting wildlife and their habitat.	1.89	.93	1.75	.62	1.71	.76	1.75	.50	2.33	.87
Availability of foresters to write plans.	2.00	1.00	1.75	.87	1.57	.79	2.25	1.26	2.00	.87
Access to information regarding the FSP for service foresters.	1.33	.71	1.83	.72	1.43	.53	2.25	1.26	1.89	.60
Timber regulation should be done by an independent agency.	1.56	1.01	1.82	1.08	1.83	1.33	1.25	.50	1.88	.99
Quality of plan writer training sessions.	1.78	.67	1.92	1.16	1.57	.79	1.50	1.00	1.78	.97
Number of required plan writing training sessions.	1.89	.78	1.75	.97	1.43	.53	2.25	.96	1.44	.53
The timber industry is tied too closely to the WVDOP.	1.78	.67	1.42	.67	1.43	.53	2.00	.82	2.25	1.16
WVDOP does not appear to work well with private landowners and independent loggers.	1.56	.73	1.08	.29	1.14	.38	1.25	.50	1.22	.44

Scale: 1= Not a problem; 2= Slight problem; 3= Moderate problem; 4= Severe problem.

VITA

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