Forestry and Forest Industry: A Fish and Wildlife Agency's Current Perspective

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Abstract: In recent years, conflicting viewpoints on natural resource management in Mississippi have existed between the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) and forest industry. The continuing success of commercial forestry as a leading economic activity in Mississippi depends, in part, on a successful communication and education program by the forestry community (e.g., large private corporations, smaller firms, public agencies and organizations, non-governmental organizations, and universities) targeted to constituency groups such as MDWFP and the general public. Our study developed a foundation for this task. Our objective was to determine the values, attitudes, and perceptions of MDWFP's administration, technical staff, and conservation officers regarding Mississippi's forest industry. We conducted focus groups to collect qualitative information and develop survey questions and then mailed a survey measuring MDWFP personnel's values, attitudes, perceptions, and needs regarding the forest industry. Survey results indicated agency personnel had differing attitudes concerning forest industry ($P = 0.000$). There were significant differences in the attitudes of the technical staff and administration, both of which tended to be slightly more negative toward forestry and forest industry ($P = 0.382$) than conservation officers. Administrators had mixed attitudes towards forest industry in general, and were in favor of receiving information if it was on a local level. The technical staff had more negative attitudes towards industry, particularly in regard to environmental issues. Conservation officers had significantly more favorable attitudes toward forestry and forest industry than the technical staff and administrators ($P = 0.000$, $P = 0.001$, respectively) and wanted to receive additional information. Although the agency is willing to work with forest industry and the forestry community on wildlife issues affected by forest management activities, there needs to be a well-planned, good faith communication and education effort on both sides addressing the needs of each.

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Forestry and forest industry currently face public relations challenges including forestry practices, construction of roads, water quality, and implications of forest management on wildlife. For instance, some harvesting practices have been halted

and completely eliminated in some regions of the United States (Graham 2001). Mississippi's forestry community has realized proactive communication and educational activities are needed to prevent regulated control or reduction of forestry activities. The continued success of forestry and forest industry as a leading economic entity in Mississippi depends in part on communication and educational activities developed and supported by the forestry community (e.g., large private corporations, smaller firms, public agencies and organizations, non-governmental organizations, and universities). Properly communicating benefits of forestry to the public and shaping explanations requires an understanding of the background and beliefs of the participants. This study developed a foundation for this task.

A number of studies have looked at the relationship between constituency or special interest groups and forestry. Research has shown a significant difference between forest industry and special interest groups in their perception of forestry (Heissenbuttel 1996). They found industry attributed a lack of public knowledge to a communication problem, whereas interest groups believed industry has engaged in less than desirable forest practices. The Sustainable Forestry Initiative (SFI), a forest certification process geared primarily for forest industry, was developed after a series of group discussions (Heissenbuttel 1996). Other studies included Yarrow and Guynn (1995) who pointed to differences between the South and elsewhere concerning uniform guidelines and priorities for forest management and related communications issues.

Hubbard (1995) indicated that professionals attending a natural resource management workshop identified a broad range of relevant constituencies including nonindustrial private forest landowners, urban dwellers, loggers, farmers, Christmas tree growers, policy makers, agency members, the general public, industry personnel, educators, ethnic groups, school children, scouts, and summer campers. The Georgia Forestry Association's (GFA) Public Relations Program focused on legislative committees, the environmental community, the media, forest products industry personnel, metropolitan general publics, GFA members, and elementary school-age children (GFA 1998). The Wisconsin Paper Council also included new media, legislators, and the public as key constituencies (Schmidt 1998). Although a number of these studies and programs examined specific constituency groups that included public agencies and political officials, few studies have specifically targeted state-level and national resource agencies.

Mississippi Forestry Association's (MFA) SFI State Implementation Committee (SIC) wanted to determine the awareness, values, attitudes, perceptions, and needs of Mississippi's citizens and constituency or special interests groups toward forestry and forest industry. They also wanted to improve public views of forestry and forest industry in Mississippi. The SIC was intent on reaching constituency groups who contact or influence large numbers of citizens in Mississippi or who have an influence on forest policies in the state. These constituency groups included teachers, public agencies (e.g., MDWFP), loggers, private nonindustrial forest landowners, conservation/environmental groups, bankers, and legislators (Measells 2001).

The focus of this study was the MDWFP, which is an important and influential agency for forestry in Mississippi. Its mission is to conserve and enhance Mississip-

pi's natural resources, provide recreational opportunities, maintain ecological integrity and aesthetic quality of the resources, and to ensure educational and economic opportunities for its citizens (MDWFP 2001). The MDWFP technical staff (e.g., wildlife biologists) provides information to landowners and hunting clubs about wildlife management on their lands, and agency administrators are influential in political issues concerning wildlife and forestry. Therefore, forest industry needs to effectively communicate and educate MDWFP personnel on the importance of forestry and forest industry to society, Mississippi's economy, the environment, and their agency. The values, attitudes, and perceptions of the MDWFP personnel relative to Mississippi's forest industry were largely unknown.

Our objective was to provide the forestry community, in particular forest industry, a better understanding of MDWFP's values, attitudes, and perceptions toward forestry-related issues. We also investigated communication methods and media topics MDWFP personnel prefer when communicating or receiving information pertaining to forestry or forest industry.

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Methods

Our research design consisted of a 2-step methodology using focus groups followed by a mail survey. Focus groups are methods of collecting qualitative data using moderated group discussion generally requiring 6 to 12 individuals from the population of interest (Betts et al. 1996, Minnis et al. 1997). Focus groups are valuable for investigating natural resource topics (Duda 1992, Bissell and Duda 1993) and have been used to investigate attitudes and values of forest landowners (Kingsley et al. 1988), public perceptions (Miles et al. 1995, Calif. For. Products Comm. 1998) and classroom needs (Bowyer 2000). Another purpose for using focus groups is to collect the necessary information needed in the development of high-quality, quantitative survey instruments (Betts et al. 1996, Morgan 1997). Surveys have been used extensively in the natural resource field to gather information on various issues (Shindler et al. 1993, Manning et al. 1996). They can be conducted through telephone, mail surveys, person to person, or over the Internet and can be used to collect both qualitative and quantitative data.

We used 3 focus group sessions. This number of focus groups is adequate for exploratory research when trying to understand group perspectives for a somewhat homogenous study population (Morgan 1997) like MDWFP personnel. Recruitment of individuals into focus groups was purposeful and based on job descriptions that included administrators, technical staff, and conservation officers. We selected these

Table 1. Focus group questions asked of employees of the Mississippi Department of Wildlife, Fisheries and Parks during February, March, and September 2000.

Focus group questions
1. What thoughts come to mind when you hear the term "forest industry?"
2. What components make up the forest industry in terms of specific industries and types of workers?
3. What perceptions towards the forest industry do you have?
4a. What sort of perceptions do your peers have about the forest industry?
4b. Do they have a positive or negative perception of the industry?
4c. Why do you believe they have this perception?
5. What forest-based activities do you believe the forest industry does well?
6. What forest-based activities do you believe the forest industry needs to improve upon?
7. Are there any environmental problems you associate with the forest industry? If yes, identify and describe.
8. What forest products do you associate with forest industry?
9. Are you directly or indirectly affected by the forest industry in your daily life? If so, how?
10a. Have you ever heard of the term Sustainable Forestry Initiative (SFI)? If yes, how did you hear about SFI?
10b. What do you believe are the goals of SFI?
10c. Do you believe the forest industry is currently meeting these SFI guidelines?
11. What could be done to improve the public's knowledge of the forest industry?
12. Do you think it would be beneficial to relate the "forest industry" side of the issues to the MDWFP?
13. In the past, have you received information on forestry and the forest industry (both professionally and privately)? If yes, how and from whom?
14a. What forms of communication media would you prefer when receiving information pertaining to forestry and the forest industry?
14b. Describe why you prefer this type of media.
15. Would you be willing to participate in some type of educational workshop or industrial tour that relates to forestry and the forest industry? If you already have, what were the pluses or minuses of doing so?
16. Overall, what do you recommend the forest industry do to improve its public perception?

job types to reflect the diversity of target populations throughout the agency. We contacted leaders for each job description to invite all individuals, for their respective job types, to participate in the focus groups. We requested between 6 and 12 individuals per session. We did not offer cash incentives as state employees are prohibited from this activity but did provide refreshments.

We selected a paid, independent, professional moderator based on the protocol of Krueger and Casey (2000). We developed discussion questions and other focus group procedures following methods outlined by Krueger and Casey (2000). We used expert review to refine and achieve face validity of discussion questions and we developed 16 open-ended questions for all focus group sessions (Table 1). We encouraged participants to provide feedback and amend or confirm the information, therefore verifying data reliability.

We conducted the focus groups during February 2000 (technical staff), March

2000, (conservation officers), and September 2000 (administration). We recorded each session with 2 cassette recorders to capture the data. Once each session was completed, 2 researchers independently reviewed and transcribed the audiotapes. We used content analysis to identify, code, and categorize primary themes. We identified themes, trends, and issues within and across questions.

The second step of the methodology was development and administration of the survey instrument. We used responses to each question during the focus group sessions and professional judgment on the part of the research team to provide the content for the survey instrument. We asked 32 questions to collect demographic information and measure attitudes (using a Likert scale) and preferred communication methods.

The mail survey was distributed to all MDWFP administrators, technical staff, and conservation officers identified on the agency mailing list ($N = 382$). We used a modified tailored design method for mail surveys (Dillman 1999) in the survey implementation. We sent a survey, a cover letter, and a self-addressed, stamped business reply envelope to each individual in November 2000. We assured individuals of the confidentiality of their responses and that their name would not be associated with the survey.

We analyzed mail survey responses using the Statistical Package for the Social Sciences (Norusis 2000). The majority of data collected was nominal. Therefore, we used simple frequencies to describe responses to each question. We accounted for response rate bias by comparing the first 50 surveys returned with the last 50 returned. To assess bias, we compared age, ethnic background, and attitudes toward forestry and forest industry. Significance testing was conducted using the chi-square statistic.

Due to the homogenous nature of this agency, we limited cross-tabulations on gender and ethnic background to key issues to determine agency relationships. We measured job descriptions against individual attitudes and SFI awareness. Additionally, we measured forest-based activities and environmental problems MDWFP personnel associated with forest industry by job descriptions.

Results

Focus Group and Survey Response Rates

Focus groups were attended by administrators ($N = 8$), technical staff ($N = 9$), and conservation officers ($N = 11$). Each focus group lasted approximately 2 hours; more than 60 total pages of transcriptions were captured. We sent a total of 382 surveys to MDWFP personnel in November 2000. Two surveys were undeliverable. Of the remaining 380 surveys, 236 were returned for a response rate of 62% (65% of administrators, 100% of technical staff, and 56% of conservation officers).

We did not analyze non-response bias due to the homogeneity of the agency and the high survey response rate. We accounted for item response rate bias by comparing key issues from the first 50 mail surveys returned with the last 50 returned surveys. At the 95% confidence level, there was no significant difference in age between

the first (avg. = 42.6) and the last 50 surveys (avg. = 46.1) returned ($P = 0.208$). At the 95% confidence level, there was no significant difference in ethnic background between the first and last 50 surveys returned ($P = 0.057$). Most respondents for both the first (72%) and the last 50 surveys (76%) returned were Caucasian. Two African Americans returned the survey in the last batch as compared to 7 during the first 50. At the 95% confidence level, there was a significant difference in attitudes toward forest industry between the first and the last 50 surveys returned ($P = 0.037$). Specifically, attitudes for the first 50 returned surveys were positive ($N = 15$), somewhat positive ($N = 8$), neutral ($N = 13$), somewhat negative ($N = 11$), negative ($N = 2$), and 1 no response. The attitudes in the last 50 were positive ($N = 10$), somewhat positive ($N = 13$), neutral ($N = 17$), somewhat negative ($N = 6$), and negative ($N = 4$). The attitudes of the last 50 surveys were centered on the neutral category. We felt that based on an examination of the frequencies of the attitudinal responses this did not present a meaningful difference.

Respondent Characteristics

Job descriptions were reported by 235 individuals (99%). Fifteen (6%) were administrators, 40 (17%) technical staff, and 180 (77%) were conservation officers. Years of employment with MDWFP were reported by 235 individuals (99%) and ranged from less than 1 year to 39 years (avg. = 13 years, median = 12 years, mode = 15 years).

Ages ranged from 23 to 64 years old ($N = 214$, 91% response rate, avg. = 43.8 years, median = 44 years). Of the responses on ethnicity ($N = 216$, 92%), 183 (85%) were Caucasian, 16 (7%) were African American, 15 (7%) were Native American, 1(<1%) was Asian or Pacific Islander, and 1 (<1%) responded as "other." Gender was reported by 218 individuals (92% response rate) whereby 4 (2%) were female and 214 (98%) male.

Perceptions

Of the 233 individuals (99% response rate) who expressed their personal attitude toward forest industry, 27% ($N = 64$) had a positive attitude (Table 2). Sixty individuals had a somewhat positive attitude (26%), 59 a neutral attitude (25%), 34 a somewhat negative attitude (15%) and 16 had negative attitudes (7%). Conservation officers had significantly more favorable attitudes toward forestry and forest industry than the technical staff and the administration ($P = 0.000$, $P = 0.001$, respectively). However, there were significant differences in the attitudes of the technical staff and administration, both of which tended to be slightly more negative toward forestry and forest industry ($P = 0.382$).

The term "Sustainable Forestry Initiative" was recognized by 63 individuals (28%). Thirty-four of 180 conservation officers (19%) were aware of SFI, while 23 of 40 technical staff (58%) and 6 of 15 administrators (40%) were aware. The remaining 162 were not aware of SFI (72%). Of the 63 individuals aware of SFI, 19 believed industry was currently meeting SFI goals (30%), 1 felt industry was somewhat meeting the goals (2%), and 5 did not respond. (8%). Thirty-eight felt the industry

Table 2. Attitudes (number of responses) toward forestry and forest industry in Mississippi by job description, by employees of the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) as determined from a mail survey sent to all employees of the MDWFP during November 2000.

Job description	Positive	Somewhat positive	Neutral	Somewhat negative	Negative	No response	Totals
Administration[a,b]	3	1	7	1	2	1	15
Technical staff [a,b]	7	4	9	13	5	2	40
Conservation officers[b]	54	54	43	20	9	0	180
No response	0	1	0	0	0	0	1
Totals	64	60	59	34	16	3	236

a. There were significant differences in attitudes of the technical staff and administration, both of which tended to be slightly more negative than the conservation officers toward forestry and forest industry ($P = 0.382$).

b. Conservation officers had significantly more favorable attitudes toward forestry and forest industry than the technical staff and the administration ($P = 0.000$, $P = 0.001$, respectively).

was not meeting the goals (60%). Of those 38, 18 were technical staff (47%); 17, conservation officers (45%); and 3, administrators (8%).

All 236 individuals reported forest-based activities they believed forest industry does well and those they felt needed improvement. The top 3 activities for the former included replanting/regeneration ($N = 163$, 69%), harvesting ($N = 146$, 62%), and timber management ($N = 143$, 61%). Fifteen individuals did not respond (6%). The top 3 activities for the latter included hardwood management ($N = 177$, 75%), wildlife management ($N = 153$, 65%), and erosion ($N = 151$, 64%). Three individuals did not respond (1%).

All 236 individuals reported opinions regarding environmental problems associated with forest industry. The top 4 included erosion ($N = 167$, 71%), habitat degradation ($N = 163$, 69%), species diversity reduction ($N = 116$, 49%), and water pollution/quality ($N = 100$, 42%). Fourteen individuals did not respond (6%).

Communication Methods and Messages

Of the 236 respondents, 219 felt it would be beneficial for forest industry to communicate their timber and wildlife management practices to the MDWFP (93%). All 15 administrators reported it would be beneficial while 37 technical staff (93%), and 166 conservation officers (92%) also believed so.

Personnel indicated industry should use communication methods and activities such as educational programs/materials ($N = 131$, 56%), partnerships with the MDWFP ($N = 130$, 55%), workshops ($N = 126$, 53%), and presentations ($N = 93$, 39%) to communicate with the MDWFP on a professional level (Table 3). Respondents also identified their personal preferences for receiving information pertaining to forestry and forest industry (Table 3). The top 4 methods were workshops ($N = 101$, 43%), meetings ($N = 99$, 42%), presentations ($N = 94$, 40%), and newsletters/other mail ($N = 90$, 38%).

Respondents indicated the topics they believed forest industry should incorporate into education and communication activities (Table 4). The top media topics rec-

Table 3. Professional and personal communication preferences for forestry or forest industry information in Mississippi, by job description, by employees of the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) as determined from a mail survey sent to all employees of the MDWFP during November 2000.

	Professional preferences by job description				Personal preferences by job description			
	Educational programs	MDWFP partnerships	Work-shops	Presen-tations	Work-shops	Meetings	Presen-tations	Newsletters/ Other mail
Administration	7	7	6	5	4	5	4	5
Technical staff	18	25	17	14	19	20	22	15
Conservation officers	105	97	103	74	77	74	68	70
No response	1	1	0	0	1	0	0	0
Totals	131	130	126	93	101	99	94	90

Table 4. Preferred media topics related to forestry and forest industry in Mississippi, by job description, by employees of the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) as determined from a mail survey sent to all employees of the MDWFP during November 2000.

Job description	Wildlife habitat	Wildlife	Environment	Harvesting
Administration	15	13	8	5
Technical staff	37	27	26	18
Conservation officers	168	149	97	75
No response	0	1	1	1
Totals	220	190	132	99

ommended by MDWFP personnel were wildlife habitat (N = 220, 93%), wildlife (N = 190, 81%), the environment (N = 132, 56%), and harvesting (N = 99, 42%).

Personnel also reported organizations or agencies they felt were credible sources of information pertaining to forestry or forest industry. Twenty-one respondents indicated the Mississippi Forestry Commission (MFC) was a credible source (9%). The U.S. Forest Service (USFS) was referred to by 17 individuals (7%) followed by county agents (N = 14, 6%), MSU (N = 12, 5%), and forest industry companies (N = 12, 5%). The MFC was cited the most credible source by administrators (N = 4) and conservation officers (N = 16) while the technical staff (N = 6) listed the USFS. The majority of individuals (N = 147, 62%) did not respond.

Discussion

Attitudes and opinions expressed in the focus group sessions were, for the most part, verified in the mail survey results. The administrators reported mixed feelings in

both venues. Technical staff members were more negative toward industry than other groups in the focus group session and the mail survey. Conservation officers reported more positive attitudes toward forest industry in the survey results whereas they expressed mixed attitudes in the focus group session. One major difference between focus group and mail survey results was that in the technical staff focus group session, they did not believe it would be beneficial for forest industry to communicate with them. However, mail survey results indicated that the majority of technical staff members (93%) felt it would be beneficial for forest industry to communicate with MDWFP. This illustrates the benefit of quantifying, through a mail survey, attitudes and opinions expressed by individuals in the focus groups. Mail survey results more adequately represent the range of attitudes and opinions of all agency personnel.

Agency personnel reported few activities they believed the forest industry did well. They felt industry did well in replanting, harvesting, and timber management. However, MDWFP personnel voiced many areas of concern with forest industry's management practices. As expected, they were concerned over activities that have a perceived direct and indirect negative impact on wildlife. Key areas of concern for the agency were hardwood management, wildlife management, erosion, SMZs habitat degradation, and buffer zones. This supported Heissenbuttel's (1996) contention that while constituency groups believed forest industry performed well in replanting trees, protecting air quality, and recycling paper, they rated the industry poorly in protecting wildlife habitat, protecting wilderness and other special areas, and protecting lakes and streams. It is important for the forest industry to consider these other areas if relations with MDWFP are to improve. By improving relationships with the agency, issues such as those related to water quality or wildlife habitat where research has shown they are not a problematic as the agency believes can be resolved. However, the MDWFP has to be receptive to information supplied by the forestry community. By engaging the agency as suggested by this study, perhaps this will occur.

Radio and television were preferred as an information source by $<15\%$ and $<30\%$ of MDWFP personnel, respectively. MDWFP personnel were discouraged by past radio and television advertisements used by forest industry. Respondents stated that such advertisements were not believable. For example, they doubted the wildlife-related activities that forest industry promoted in these ads. Agency members believe that future advertisements should include messages on wildlife habitat and wildlife that are more truthful and meaningful. This response was similar to the Yarrow and Guynn (1995) study of constituency groups in 9 southern U.S. states where only 9% of respondents indicated a preference for information via radio or television.

SFI is an example of where the relationship between forest industry and the agency has been inadequate at best. It is apparent that forest industry has not been effectively communicating with the MDWFP regarding the SFI Program and industry's willingness to voluntarily implement it. The mail survey revealed that few MDWFP personnel were aware of SFI. Of these, the majority did not believe the industry was currently meeting what they felt were SFI goals. It appears that forest industry needs to more effectively communicate the goals and principles of SFI with this agency and improve their on the ground performance.

There have been a number of tangible results directly emanating from this project. First, the MDWFP was given a third party assessment of how their own employees feel about important issues relating to forestry. Second, the MFA has hired a communications coordinator who will support efforts to reach out to constituency groups like the MDWFP. Third, 1 of 3 competitive grants recently received, based on the methodology and success of this research project, is geared toward instructing key forestry agencies, associations, and universities in the other southern states on how to implement a similar research program and outreach strategies. Last, a technical staff member of the MDWFP has taken a permanent seat on the MFA's SIC for the SFI and its Communication committees.

Conclusions

MDWFP is willing to work with forest industry and the forestry community on areas relating to wildlife issues and forest management activities. Forest industry needs to communicate and work with the MDWFP to improve the relationship. This could potentially involve changes in forest-based activities affecting wildlife and communicating and educating MDWFP personnel to address perceptions that industry negatively affects wildlife habitat. It is hoped that each will gain a better understanding of each other and the limitations imposed by their differing goals.

Our project provided a methodology and baseline information for determining MDWFP personnel values, attitudes, and perceptions by job description toward forestry and forest industry. If the survey results of this study are implemented, then follow-up is needed. Future studies should be conducted periodically to determine effectiveness of communication and education activities for improving attitudes toward forestry and relationships between the agency and forest industry. These studies will allow forest industry and the forestry community to constantly tailor their communication and education activities, in-field performance, and research programs to meet needs and issues of constituents like the MDWFP. For example, there may be differences in attitudes by age-classes within job descriptions and this can then be tracked over time with follow-up surveys. Future surveys can also query MDWFP personnel on information relating to forestry and forest industry to provide a better understanding of their knowledge levels. This will permit a better comparison between what is perceived relative to reality.

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