

AN EVALUATION OF MISSISSIPPI GAME AND FISH COMMISSION I & E PROGRAMS WITH REFERENCE TO DEER HUNTING

DAVID C. GUYNN, Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, MS 39762

T. M. LOWE, Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, MS 39762

H. A. JACOBSON, Department of Wildlife and Fisheries, Mississippi State University, Mississippi State, MS 39762

Abstract: As part of a mail survey of Mississippi deer hunters, specific questions were addressed to participants concerning their exposure to various I & E media of the Mississippi Game and Fish Commission and their attitudes toward hunting antlerless deer. Fifty-five percent of the respondents had read the agency magazine, 83.1% had viewed the agency TV series, 78.1% had heard or seen radio or TV spots, 11.7% had attended a public hearing and 51.3% had read agency newspaper releases. Associations between exposure to the magazine, TV series and public hearings and attitude toward hunting antlerless deer were significant ($p < 0.06$). Exposure to the magazine and public hearings had positive associations with attitudes, but as exposure to the TV series increased, the proportion of those favoring antlerless hunting decreased.

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Wildlife managers are confronted with 3 major considerations in essentially all management problems—people, land and wildlife (Hendee and Schoenfeld 1973). Increased public awareness of and involvement in management decisions have required a shifting of emphasis from the considerations of land and wildlife to that of people. This has been particularly true with the management of white-tailed deer (*Odocoileus virginianus*). Conceptions and traditions established during the restoration of deer herds have created many problems confronting present-day biologists. In many states deer are managed more for social and political than for biological reasons.

The presence of a communication problem between professional wildlife managers and society is obvious. In response to this problem, some state agencies have intensified Information and Education (I & E) efforts to explain management policy to the public, especially harvest of antlerless deer. Unfortunately, it is difficult to evaluate the effectiveness of such efforts and, with the present budgetary restrictions of many agencies, needed support for effective programs has been lacking.

A mail survey of licensed deer hunters conducted in Mississippi during 1976 provides a means of evaluating current I & E programs of the Mississippi Game and Fish Commission. The study examined exposure of deer hunters to the media of television, radio, newspaper, the agency magazine and public hearings. The effectiveness of these media in influencing attitudes toward hunting antlerless deer is also examined.

METHODS

As part of a mail survey of Mississippi deer hunters, questions were addressed to participants concerning their exposure to various I & E media of the Mississippi Game and Fish Commission and their attitudes toward hunting antlerless deer. The names and addresses of 6085 deer hunters were selected at random from license files of 201,785 deer tags sold during the 1976-77 season. The questionnaire was mailed on 1 June 1977 and remainder mailings were sent to non-respondents on 15 June, 20 June and 13 July 1977. First-class mail was used in all mailings. Responses received on or prior to 3 August 1977 were included in the analyses.

Responses were analyzed using the Statistical Package for the Social Sciences (Nie et al. 1970). Chi-square tests for differences in probabilities (Conover 1971) were used to determine if attitudes toward antlerless hunting were associated with exposure to the various I & E media.

RESULTS AND DISCUSSION

A total of 4777 usable questionnaires was obtained from the mailings. Mailings to 623 (10.2%) individuals were returned by the Postal Service as undeliverable. The first mailing yielded 1920 responses, the second mailing 1321 responses, the third mailing 1166

responses and the fourth mailing 370 responses. When considering only the questionnaires delivered, the returns represent an effective response rate of 87.5%.

Mississippi Game and Fish is a bimonthly magazine published by the Mississippi Game and Fish Commission and is free to Mississippi residents upon request. During 1976-77, the circulation of the magazine was approximately 30,000. When asked how often they read the magazine, 922 individuals (20.8%) responded they read it every 2 months; 226 (5.1%), once every 4 months; 1277 (28.8%), a couple of times a year; and 1645 (37.1%) reported they had never read the magazine. Three hundred sixty-four (8.2%) respondents indicated they used to read the magazine but don't anymore. Thus, over 45% of those surveyed did not read the magazine during the period of the survey. In a related question, 3177 respondents (73%) indicated they would be willing to pay a subscription fee of \$3.00 or less per year for the magazine while 1170 (27%) indicated they would not.

The Mississippi Game and Fish Commission sponsored television show, "Mississippi Game and Fish," is a 15 minute weekly series. The show has no commercial sponsors and is shown primarily as a public service at non-prime times before 0800 hours or after 2200 hours. Eight hundred fifty-four (19.4%) respondents viewed the show weekly, 444 (10.1%), every other week; 1074 (24.4%), once a month; 910 (20.7%), once every two months, 374 (8.5%), once every six months; and 744 (16.9) had never viewed the show. The Commission also airs 1-2 minute spots on television and radio that primarily discuss regulations and news items. A total of 3499 (78.1%) reported seeing or hearing one of these spots while 982 (21.9%) indicated they had never seen or heard one of the announcements.

The Mississippi Game and Fish Commission holds public hearings in locations throughout the state at various times to allow the public to voice opinions concerning proposed regulations and policy. Even though the hearings are well publicized over the mass media, only 559 (11.7%) of the respondents indicated they had ever attended a public hearing.

The Commission frequently distributes news releases to newspapers throughout the state. Once the releases reach the newspaper offices, they are printed at the discretion of the editor. They are often edited and included in outdoor columns which may make no reference to the Game and Fish Commission. Therefore, many people may read the news release without realizing its source. When questioned as to how often they read Mississippi Game and Fish Commission news releases, 578 respondents (14.0%) answered a month; 375 (8.4%), more than once a month; 1275 (28.9%), less than once a month; and 2188 (48.7%) had never read a news release.

The magazine, TV show and public hearings have been used extensively for educating the public as to the role of antlerless deer harvest as a management tool in Mississippi. The TV and radio spots and the newspaper releases generally pertain to regulations or news items and offer little educational information that might influence attitudes toward antlerless harvest. The magazine and public hearings have consistently provided information explaining deer biology and the role of antlerless hunting in management. The TV show generally addresses antlerless hunting at least 2 or 3 times annually, and 1 show is devoted entirely to the need for antlerless hunting in areas of overpopulation.

Exposure to the magazine was significantly ($p < 0.001$) associated with attitudes toward antlerless deer hunting (Table 1). Approximately 69% of the respondents who read the magazine every two months favored hunting antlerless deer as compared with 60% of these who had never read the magazine. The proportion of respondents who opposed hunting antlerless deer varied little with exposure to the magazine, but the proportion of those not sure showed a decreasing trend as exposure to the magazine increased. Those who read the magazine on a regular basis (every 2 months) are generally older, have more income and a better education than those who did not read the magazine or who read it less frequently (Table 2). The fact that they read the magazine indicates they are more receptive to I & E programs than those who do not.

Table 1. Contingency table for testing the hypothesis that there is no association between exposure to the Mississippi Game and Fish Commission magazine and attitude toward hunting antlerless deer.

Exposure to Magazine	Do you feel that antlerless deer hunting in Mississippi is desirable in areas where there is not enough food for existing deer populations?			
	Yes	No	Not Sure	Total
Once Every Two Months	547 (.69) ^a	140 (.18)	108 (.13)	795
Once Every Four Months	127 (.66)	40 (.21)	24 (.13)	191
A Couple of Times a Year	692 (.63)	209 (.19)	195 (.18)	1096
Used to Read it, But Don't Any More	204 (.65)	65 (.21)	44 (.14)	313
Never	847 (.60)	276 (.20)	286 (.20)	1409
Total	2417 (.64)	730 (.19)	657 (.17)	3804

$X^2 = 26.59$ w/8 d.f. $p < 0.001$

Missing values = 350

^aNumbers in parenthesis are the proportion of respondents.

Table 2. Age, income, community size and education characteristics (percentage of respondents) of respondents compared to exposure to the Mississippi Game and Fish Commission magazine, TV show and public hearings.

	Age (years)				Income		Community Size		Education (years)			
	20 or Under	21-30	31-50	51 and Over	\$0-5,999	\$6,000-11,999	0-9,999	10,000 or more	<12	12	>12	
Magazine (all) ^a	26.8	31.7	29.2	12.5	32.4	31.8	35.8	68.4	31.6	34.4	27.5	38.1
Every 2 Months	23.7	25.3	34.4	16.6	29.6	26.8	43.6	70.0	30.0	30.9	26.3	42.8
Every 4 Months	30.0	34.7	26.3	8.9	36.0	31.7	32.3	68.1	31.9	36.1	23.9	40.0
Couple of Times/Year	29.7	36.4	25.6	8.3	33.3	35.1	31.6	65.9	34.1	34.6	28.9	36.5
Used to Read it	22.1	29.8	29.8	18.3	33.8	33.1	33.1	72.9	27.1	41.6	27.7	30.7
Never	24.2	33.2	30.2	12.4	36.2	34.1	29.7	71.8	28.2	43.3	28.4	28.3
TV Show (all) ^a	25.9	32.8	29.1	12.1	33.9	33.2	32.8	70.1	29.9	38.7	28.4	32.9
Every Week	28.2	25.9	26.5	19.4	45.0	32.0	23.0	76.0	24.0	56.1	26.9	16.9
Every Other Week	34.6	31.1	25.1	28.5	42.1	33.4	24.5	72.6	27.4	48.9	26.9	24.2
Once a Month	25.7	33.3	29.2	11.8	32.8	33.8	33.2	69.0	31.0	36.0	23.6	34.4
Once Every 2 Months	21.4	38.5	31.1	9.0	24.1	33.7	49.2	65.9	34.1	26.2	30.2	43.7
Once Every 6 Months	28.6	28.9	30.3	12.2	25.5	32.7	41.8	67.2	32.8	25.7	26.0	48.3
Never	28.5	28.9	30.6	12.0	36.3	27.5	36.2	68.1	31.9	34.7	25.9	39.4
Public Hearings (all) ^a	22.7	25.7	34.1	17.1	27.5	33.3	39.2	70.4	29.6	28.3	30.8	40.9
Yes	22.7	25.7	34.1	17.1	27.5	33.3	39.2	70.4	29.6	28.3	30.8	40.9
No	26.2	32.9	29.0	11.8	34.6	32.4	32.9	69.6	30.4	39.1	27.7	33.2
All Respondents	25.4	31.4	29.6	13.7	34.2	32.6	33.2	70.0	30.0	38.3	20.8	33.7

^aExcludes those respondents who answered never or no.

Attitude toward hunting antlerless deer was significantly ($p < 0.001$) associated with exposure to the television show (Table 3). As exposure to the TV show increased, the proportion of respondents favoring hunting antlerless deer decreased. This result was quite unexpected and 3-dimensional analyses were conducted to control for variables of age, income, community size and education (Table 4). In most cases the negative association was significant ($p < 0.05$) even when exposure and attitude were controlled for these characteristics. Characteristics of those who view the TV series regularly indicate that they are older, have less income, are more rural and have less education than those who regularly read the magazine (every 2 months) or attend public hearings (Table 2). These observations concerning regular viewers also apply when considering the characteristics of all respondents to the survey.

Attitude toward hunting antlerless deer was positive associated ($p = 0.06$) with attendance at public hearings (Table 5). Those attending public hearings were older, had more income and a higher educational attainment than other respondents to the survey (Table 2).

Table 3. Contingency table for testing the hypothesis that there is no association between exposure to the Mississippi Game and Fish Commission television show and attitude toward hunting antlerless deer.

<i>Exposure to TV</i>	<i>Do you feel that antlerless deer hunting in Mississippi is desirable in areas where there is not enough food for existing deer populations?</i>			<i>Total</i>
	<i>Yes</i>	<i>No</i>	<i>No Opinion</i>	
Every Week	417 (.58) ^a	192 (.27)	113 (.15)	722
Every Other Week	219 (.58)	95 (.25)	66 (.17)	380
At Least Once a Week	600 (.65)	158 (.17)	160 (.17)	918
Once Every Couple of Months	527 (.67)	117 (.15)	144 (.18)	788
Once Every Six Months	226 (.70)	43 (.13)	54 (.17)	323
Never	409 (.64)	120 (.19)	112 (.17)	641
Total	2398	725	649	3772

$X^2 = 54.23$ w/10 d.f. $p < 0.001$

Missing values = 382

^aNumbers in parenthesis are the proportion of respondents.

Table 4. Summary of 3-dimensional contingency table analysis testing for negative association between exposure to the Mississippi Game and Fish television series and attitudes toward hunting antlerless deer controlling for age, education, income and community size characteristics.

<i>Characteristic</i>	<i>X² Value</i>	<i>df</i>	<i>level</i>
Age			
20 and under	14.52	10	0.15
21-30	30.34	10	<0.01
31-50	21.17	10	0.02
51 and older	19.00	10	0.04
Education			
<12 years	35.13	10	<0.01
12 years	24.66	10	<0.01
>12 years	7.69	10	0.66
Income			
\$ 0- 5,999	22.08	10	<0.01
6,000-11,999	17.53	10	0.06
12,000 or more	13.76	10	0.18
Community Size			
0.999	46.36	10	0.01
10,000 or more	15.68	10	0.11

CONCLUSIONS AND RECOMMENDATIONS

The agency magazine, *Mississippi Game and Fish*, is an effective means of communicating with Mississippi deer hunters and has positively influenced attitudes toward hunting antlerless deer. However, the small readership of the magazine restricts its potential usefulness. Only 21% of those surveyed indicated they read the magazine on a regular basis and over 45% indicated they do not currently read the magazine at all. Because respondents indicated they would be willing to pay a subscription fee of \$3.00 or less for the magazine, we suggest that the distribution of the magazine could easily be increased. Subscription information should be made available at locations where licenses are sold and included in all hunting regulation pamphlets. Charging a subscription fee should be considered as this could provide additional agency funding for I & E efforts.

Table 5. Contingency table for testing the hypothesis that there is no association between attendance at public hearings and attitude toward hunting antlerless deer.

<i>Have you ever attended a public hearing held by the Mississippi Game and Fish Commission?</i>	<i>Do you feel that antlerless deer hunting in Mississippi is desirable in areas where there is not enough food for existing deer populations?</i>			<i>Total</i>
	<i>Yes</i>	<i>No</i>	<i>Not Sure</i>	
<i>Yes</i>	319 (.67) ^a	95 (.20)	64 (.13)	478
<i>No</i>	2151 (.63)	659 (.19)	606 (.18)	3416
<i>Total</i>	2470	754	670	3894

$X^2 = 5.63$ w/2 d.f. $p = 0.06$

Missing values = 260

^aNumbers in parenthesis are the proportion of respondents.

Approximately 30% of those surveyed view the agency TV show weekly or every other week and over 50% watch it at least once a month. Only 17% of the respondents had never viewed the show. Thus, the TV series is an efficient means of communicating with Mississippi deer hunters even though it is not shown at prime times. However, the negative effect that exposure to the show appears to have on attitude toward antlerless hunting is disturbing. The content and method of presentation of shows pertaining to antlerless hunting should be carefully reviewed and consideration should be given to audience characteristics. Age, income, community size and educational characteristics of respondents who regularly view the TV show appear to be different than those who regularly read the magazine or attend public hearings. Since the TV show has a large viewership, programs affecting attitudes toward hunting antlerless deer should be given high priority and careful editorial consideration.

Public hearings appear to be an effective means of affecting attitudes toward antlerless hunting. However, the proportion of deer hunters that attend public hearings is small and those that do attend are probably more receptive to hunting antlerless deer than the general deer hunting public. It would be difficult to increase the number of public hearings since qualified personnel needed to conduct these hearings are already overworked. This problem could be alleviated if competent county conservation officers could be used in the conduct of public hearings. Attendance at public hearings could possibly be increased by intensive advertising on radio, TV and through newspaper releases.

Although the TV and radio spots and newspaper releases are not currently used as a means of educating the public to the reasons for antlerless hunting, the proportion of deer hunters exposed to these media suggests they could be used effectively. This is particularly true of the TV and radio spots where 78% of all respondents had been exposed to these media. The effectiveness of the newspaper releases could be increased by encouraging editors to publish the releases without editing and under a Mississippi Game and Fish byline. These media could provide valuable reinforcement to educational materials presented through the magazine, TV series and public hearings.

In this paper we have evaluated the association between public exposure to 3 different I & E media and the response to a critical management issue, that of antlerless deer hunting. Although our results suggest public exposure to I & E programs is high, the effectiveness of these programs in favorably changing public attitude appears to have been limited. Less than a 10% difference in public attitude was associated with any one I & E medium and, in the case of the Commission sponsored television series, there was a negative association between exposure and a favorable attitude toward this issue. Because of the importance of public support of wildlife and fisheries management programs, we recommend a system for regularly monitoring the effectiveness of I & E programs be established by state agencies. One possible tool for use in such a system is the identification of controversial management issues and establishing the relationship between exposure to I & E efforts and public response to the issue.

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