INVOLVING SPORTSMEN IN DEER MANAGEMENT ON PRIVATE LANDS IN MISSISSIPPI

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Abstract: A cooperative program involving sportsmen and Mississippi Game and Fish personnel was developed to monitor herd health of white-tailed deer (*Odocoileus virginianus*) on private lands in Mississippi. Organized hunting clubs and private landowners collected biological data which were analyzed by wildlife biologists. Based on this information, antlerless harvest strategies were developed to accomplish specified management objectives. The system was tested in Kemper and Noxubee Counties, Mississippi, during the 1977-78 season and was evaluated by participants and agency personnel. The program not only provides a means of gathering extensive biological data but also affords opportunities to educate sportsmen through direct observation and by working with professional biologists.

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American sportsmen have historically been the cornerstone of wildlife conservation. Sportsmen of the late Nineteenth Century concerned with diminishing game populations originated the conservation movement that has evolved into the present realm of wildlife management and general environmental concern (Reiger 1975). Their political and financial support have fostered the enactment of legislation regulating the taking of wildlife, establishment of state game and fish agencies, preservation of habitat and establishment of refuges, initiation of wildlife research and conduct of educational programs.

During the first 4 decades of this century the wildlife conservation movement led to a great alliance between sportsmen and wildlife professionals. In addition to providing financial and political support, sportsmen were directly involved in raising and releasing of game, winter feeding, predator control and protection. This alliance was essential to the restoration of many species. Hunting ethics and sporstmanship were paramount during this period. Since that time management techiques have changed greatly as our knowledge of wildlife biology has increased. With this increase in management knowledge, however, has been the general trend of decreasing involvement in actual management by sportsmen. The only direct involvement the profession now actively seeks from the sportsman is that of harvester. Kozicky (1977) discussed how this had led from the sportsmanship and hunting ethics common prior to 1940 to the present emphasis on gadgets and technology by today's sportsmen.

The Mississippi Game and Fish Commission is attempting to re-establish such an alliance with sportsmen in a unique program to improve the management of white-tailed deer on private lands in Mississippi. Much of Mississippi's deer habitat is directly controlled by private individual or groups. Of the 12.3 million ha of land in Mississippi, 8 million ha can be considered deer habitat (Noble 1974). Less than 1 million ha are open to public hunting with most of the remainder being posted, primarily by private hunting clubs. These club lands contain some of the best habitat and highest concentrations of deer in the Southeast. Because of the vastness and complexity of private landholdings in Mississippi, an adequate data base for monitoring and managing deer makes the involvement of responsible sportsmen in the data collection process a necessity. Involving sportsmen not only provides an extensive manpower force for collecting data, but more importantly provides a means of educating the sportsman and including him in the decision making that directly affects his individual hunting experience.

It was with these goals in mind that the Mississippi Game and Fish Commission began establishment of a system in 1977 to collect baseline data and subsequently to manage deer on private lands in Mississippi. The system was applied as a pilot study

in a 2 county area during the 1977-78 season and will be continued during the 1978-79 season. Results of the first year of this trial and potential application of the system on a statewide basis are presented.

METHODS

A survey of state wildlife management agencies was conducted to determine systems in use during 1976 for collecting deer management data. Based on these results (Guynn et al. 1977) and the commitment to devise a system providing the necessary data for sound management decisions and direct involvement by sportsmen, a Cooperative Deer Research Project was developed and implemented in Kemper and Noxubee Counties, Mississippi, during the 1977-78 season.

Biological data were collected by hunting clubs or private landowners. Participants were recruited by writing holders of 1976-77 Deer Camp Permits in Kemper and Noxubee Counties, newspaper releases and announcements at hunting club meetings. Data collected on all deer harvested included sex, weight, number of antler points, occurrence of lactation and the incisors. In designing procedures of data collection, a prime consideration was the convenience, ease and time necessary for collecting data. For this reason, incisors instead of jaws were collected for age determination. The incisors were placed in a coin envelope (6.4 cm x 10.8 cm) and all other data recorded on a form printed on the same envelope. Those clubs which were interested in more detailed data were instructed on aging deer by tooth replacement and wear (Severinghause 1949) and asked to collect jaws and female reproductive tracts. All data were analyzed by personnel of the Department of Wildlife and Fisheries, Mississippi State University, and the Mississippi Game and Fish Commission. Average weight and average number of antler points by age class, age structure of bucks harvested, and percentage spikes in total buck harvest were determined for each participant.

It had been intended to age deer by sectioning the incisors and counting dental cementum annuli as described by Low and Cowan (1963). However, experience with the technique in a related study by the authors indicated the procedure yielded questionable results for white-tailed deer in Mississippi. For this reason, deer were aged into 4 classes, fawns, 1½ years, 2½ years and 3½ years or older, based on the size, structure and degree of crown wear on the incisors as suggested by Brown and Peabody (1972). This technique must be used with caution as considerable experience is necessary to separate deer into 2½ and 3½ or older year classes.

Harvest was used as the primary management tool for achieving the specified goals of individual participants. A questionnaire was administered to each participant prior to the hunting season to determine the size and location of the area, habitat composition, the previous year's harvest, methods of hunting and management objectives. This information in conjunction with the biological data mentioned previously was utilized to determine the number of antlerless deer that should be harvested. Data on 1½ year old bucks were used as the primary means of judging the general herd health and deciding if the herd should be reduced, maintained at the current level or allowed to increase. Buck harvest and the desired percentage of antlerless deer in the total harvest were used to derive the numbr of antlerless deer to be harvested as described by Hayne and Gwynn (1977). Special permits allowing the harvest of antlerless deer during the second firearms season (26 December- 15 January) were issued for this number of antlerless deer. The number of permits issued set the maximum antlerless harvest. The permits were non-reusable and valid only on lands included in the Cooperative Deer Research Project.

During the first year of the program, data collected during the archery season (1 October 18-November 1977) and the first firearms season 19 November-1 December were used to determine antlerless harvest strategy. To be eligible for the antlerless permits, participants were required to submit data on or before 7 December 1977. The antlerless permits were mailed on 21 December 1977. In future years, for participants who have been in the programs for one or more years, recommendations will be made based on the previous season's biological data and harvest.

At the conclusion of the second firearms season, participants submitted data collected during that season and the primitive weapons season 10-21 December 1977). All data collected were compiled and a season summary prepared for participants who submitted the required data. A summary of vital statistics for all participants in the project and a

questionnaire to evaluate the program were mailed along with the season summary to all participants on 15 March 1977. A reminder letter was mailed to those not returning the questionnaire on 1 May 1977. A copy of the summary of vital statistics and a questionnaire to evaluate administrative problems were mailed to Mississippi Game and Fish Cmmission personnel working in the two county areas on 15 March 1977.

RESULTS

A total of 59 hunting clubs and 32 landowners participated in the program during the 1977 season. Land holdings varied from 32 to 4407 ha in size and averaged 920 ha per participant. The total area in the county area included in the project was 83,743 ha. The 91 participants involved approximately 2000 sportsmen. The total reported harvest by participants during the 1976-77 season was 1320 antlered and 334 antlerless deer.

Seventy participants submitted appropriate data to qualify for antlerless permits. The number of permits issued varied from 2 to 30 and totaled 707 permits. The number of permits issued varied from 2 to 30 and totaled 707 permits. It was stressed at the time the permits were issued that the number of permits set the maximum antlerless harvest and that the actual number harvested was the decision of the participant. Participants were responsible for issuing permits to individual hunters.

Forty-five participants submitted information for calculation of basic statistics and preparation of a season summary. The summary contained number harvested, average weight, and average number of antler points by age class for bucks harvested during the 1977-78 seasons. The percentage of 1½ year old bucks in the total adult male harvest was interpreted as an estimate of the total annual mortality rate of antlered bucks. Average dressed weight and number of antler points were used as indicators of herd health. Data for the 1½ year old class provided a means to interpret the balance between population size and habitat. This age class usually contains the majority of bucks harvested and is sensitive to changes in habitat or population size. The summary also included similar statistics for spike antlered and forked antlered 1½ year old bucks as an indicator of trophy management potential. Several clubs had expressed interested in "culling" spike bucks from their herd to improve genetic character as outlined by Brothers and Ray (1975). A pamphlet explaining these concepts accompanied the season summary.

A summary of vital statistics which described general herd conditions for all clubs and landowners participating in the project was distributed to all participants. The percentage of total buck harvest comprised of yearlings and percentage spikes, average dressed weight and average number of antler points of yearling bucks were statistics presented. In total, these 45 participants submitted age, weight and antler data for 530 bucks and age and weight data for 92 does.

Fifty-two of the 91 respondents (57%) completed and returned the questionnaire evaluating the project. Responses to all questions except 6 and 9 are summarized in Table 1. The responses have been segregated into participants who were included in the season summaries and those who failed to return data for these reports. Over 92% of all participants indicated that neither the data collection or the use of antlerless permits created unreasonable inconvenience. One of the participants included in the summaries who indicated the data collection caused inconvenience wrote, "but well worth it", by response. Those not included in the summaries were slightly less favorable toward these questions than those included in the summaries.

Three questions allowed participants to evaluate the policy of harvesting antlerless deer by permit over an extended season. The responses to the question referring to type of antlerless deer hunting regulations were almost identical for the 2 groups. Approximately 87% of the respondents favored the permit system with a stated goal for antlerless harvest. However, 6.5% preferred the 1-3 day special antlerless system used in previous years which had no implied goal for harvest. Sixty-eight percent of those included in the summaries favored the extended season as compared to 93% of those who were not included. Several of the participants who were included in the summaries felt that some clubs abused the use of the permits by not tagging animals and hunting on lands not covered by the permits. Responses to the question concerning the number of permits issued were similar for both groups where approximately 80% of all participants expressed confidence in biologist's antlerless harvest recommendations.

Confidence in the biologist's antlerless recommendations was also indicated by the participant's estimates of needed antlerless harvest. The number of permits issued was

within 3 permits of their estimate in 25 (56%) cases, greater than 3 in 11 cases (24%) and less than 3 in 9 cases (20%).

Questions 7 and 8 were intended to measure participants' overall satisfaction with the program. Responses to these questions were similar for both groups where 96% of all respondents felt that their cooperation in the project would benefit management of their herds and 4% had no opinion. Forty-eight (92%) of the respondents indicated they desired to continue participation in the project during the 1978-79 season, 1 individual (2%) did not wish to continue participation and 3 (6%) were undecided.

Question 9 allowed participants to make any criticisms or suggestions about the project. Suggestions included more personal contact with participants by biologists, simplification of the data forms, and recommended length of the antlerless season. Respondents were about equally divided into those favoring a longer season and a shorter season. Those favoring a shorter season were concerned with abuse of the permits and overharvest of does, while those favoring a longer season were concerned that sufficient time be allowed to harvest the desired number of antlerless deer.

Of the questionnaires mailed to 6 Mississippi Game and Fish personnel working in Kemper and Noxubee Counties, 4 (67%) were returned. All respondents felt that most deer hunting clubs in Kemper and Noxubee Counties wanted to improve deer hunting on their lands and 3 (75%) felt that hunting clubs were interested in the Cooperative Deer Research Project. However, only 1 (25%) respondent felt that most clubs who participated in the project well understood the objectives and value of the program. This was reiterated by 3 (75%) of the respondents who felt educational materials were needed to help answer questions concerning the program. Suggestions for topics to be covered included general deer biology specific to Kemper and Noxubee Counties, antler development, results from the first year of the project, deer foods, carrying capacity and problems associated with over-population. Of important significance was that none of the respondents felt that the program created any law enforcement problems. All respondents indicated they favored the permit system as conducted during 1977-78, but 1 favored a shorter season length. All felt the project should be continued in Kemper and Noxubee Counties during the 1978-79 season. Suggestions regarding conduct of the project included increasing personal contact with participants by Commission and University biologists, improved newspaper and radio exposure and requiring participants to verify lease rights and acreages. These suggestions and those of participants will be incorporated into next year's program where feasible.

DISCUSSION AND CONCLUSIONS

The Cooperative Deer Research Project was well received by sportsmen and agency personnel during its first year. Participants felt that the data collection was not unreasonably inconvenient, favored establishing a goal for antlerless harvest, and believed that deer management on their land holdings would be improved by involvement in the project. Game and Fish personnel thought the program would improve deer management in the 2 county area and found no increase in law enforcement responsibilities due to the program. The program provides the Mississippi Game and Fish Commission with biological data necessary for monitoring herd welfare on an area-specific basis. Such a data base could not be easily collected on private lands in Mississippi in other ways.

Both participants and Game and Fish personnel felt that communication between participants and biologists should be increased through personal visits, media exposure and educational materials. Educational materials are being developed that address the conduct of the project, deer biology and various aspects of management. These materials will be presented in the form of slide-sound presentations, pamphlets and some will be published in the agency magazine, *Mississippi Game and Fish.*

The results and acceptance of the project dring its first year in Kemper and Noxubee Counties are encouraging, and it is hoped that the program can be expanded to other areas of the state. Several clubs from outside the 2 county study area have already inquired about enrolling in the program and have been assisted as much as possible. The major difficulty in expanding the program on a statewide basis is the large time commitment required of biologists. Mississippi currently has only 1 biologist assigned to each of 6 districts which encompass the entire state, and this program could require the majority of a biologist's time in some districts. Currently, the only feasible approach for expanding the program is for each biologist to set a quota of clubs that he can work

with during a given time period. After working with a club for 3 or 4 years, the members should be able to conduct the program almost entirely on their own with only brief consultation by biologists. When a participant reaches this stage, the biologists could begin working with a new participant. To realize the full potential of the program, however, it will be necessary for the Mississippi Game and Fish Commission to increase the number of biologists employed.

Table 1. Responses to questions 1, 2, 3, 4, 5, 7 and 8 of the questionnaire for partcii-pant evaluation of the Cooperative Deer Research Project in Kemper and Noxubee Counties, Mississippi (1977-78 season).

Question	*Participants included in summaries*	*Participants not included in summaries*	*All Participants*
1. Did collection of data cause unreasonable inconvenience?			
Yes	2 (05)	2 (13)	4 (08)
No	35 (95)	13 (87)	48 (92)
2. Did special antlerless permits cause unreasonable inconvenience?			
Yes	2 (05)	1 (07)	3 (06)
No	35 (95)	14 (93)	49 (94)
3. Which type of antlerless deer hunting regulations do you prefer?			
Permit System	35 (86)	13 (87)	45 (87)
Special Antlerless Season	5 (14)	1 (6.5)	6 (12)
No Opinion	0	1 (6.5)	1 (02)
Other	0	0	0
4. Do you favor harvesting antlerless deer by permit during an extended season?			
Yes	25 (68)	14 (93)	39 (75)
No	11 (30)	1 (07)	12 (23)
No Opinion	1 (02)	0	1 (02)
5. How do you feel about the number of antlerless permits issued?			
Too Low	4 (11)	2 (14)	6 (12)
About Right	29 (81)	12 (80)	41 (80)
Too High	3 (08)	1 (07)	4 (08)
7. Do you feel participation in the project will improve deer hunting and management on your lands?			
Yes	36 (97)	14 (93)	50 (96)
No	0	0	0
No Opinion	1 (03)	1 (07)	2 (04)
8. Do you wish to continue participation in the project?			
Yes	34 (92)	14 (93)	48 (92
No	1 (03)	0	1 (02)
Undecided	2 (05)	1 (07)	3 (06)

[a]Numbers in parenthesis are are percentages of total response.

The Cooperative Deer Research Project is creating a strong alliance between sportsmen and state biologists, and together they can make great strides in improving deer management in Mississippi. The program not only provides detailed biological data but places much of the responsibility of management decisions with sportsmen. The link with professionals afforded by the program allows the sportsman to successfully accept these responsibilities by the learning process of direct involvement and direct observation. Hopefully, this involvement will result in increased sportsmanship and enriched recreational experiences as well as improved management of deer herds.

LITERATURE CITED

Brown, W., and W. Peabody. 1972. Modification and field use of the incisor annuli count technique for deer. Presented First Prairie Deer Workshop, Rapid City, SD. 16 pp.

Brothers, A., and M. Ray. 1975. Producing quality whitetails. 2nd Ed. Fiesta Publ. Co. Laredo, TX. 244 pp.

Guynn, D., H. Jacobsen and W. Mitchell. 1977. Deer data collection systems used by state wildlife management agencies. Proc. 1st NE-SE Deer Study Group Meeting. (In Press)

Hayne, D., and J. Gwynn. 1977. Percentage does in total kill as a harvest strategy. Proc. 1st NE-SE Deer Study Group Meeting. (In Press)

Kozicky, E. 1977. Tomorrow's hunters—gadgeteers or sportsmen? Wildl. Soc. Bull. 5(4): 175-178.

Low, W., and E. Cowan. 1963. Age determination of deer by annular structure of dental cementum. J. Wildl. Manage. 36(1):466-471.

Noble, R. 1974. Reproductive characteristics of the Mississippi white-tailed deer. Miss. Game & Fish Comm. 58 pp.

Reiger, J. 1975. American sportsmen and the origins of conservation. Winchester Press, New York. 316 pp.

Severinghaus, C. 1949. Tooth development and wear as criteria of age determination in white-tailed deer. J. Wildl. Manage. 13(2):195-216.