

Mississippi Deer Management Assistance Program Cooperators' Satisfaction with and Attitudes toward Program Success and Service Quality

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Abstract: We used a self-administered mail questionnaire to investigate Deer Management Assistance Program (DMAP) cooperators' understanding of and satisfaction with this program to identify possible improvements in the quality of educational and technical assistance. Since statewide program inception in 1983, no effort had been made to evaluate the program from a customer's perspective prior to our study. We sent questionnaires to 618 DMAP cooperators immediately after the close of the 2004–05 deer hunting season in Mississippi. We received 391 useable questionnaires. When non-deliverables ($N = 57$) were excluded from consideration, we achieved an effective response rate of 74.9%. Results indicated that cooperators generally understood why they collect biological samples but were less understanding of overall program goals. Cooperators were generally satisfied with their participation in DMAP and their biologist, but performance fell below expectations on some aspects of program delivery and all aspects of service delivery. Strongest correlates for satisfaction with program and service delivery indicate that biologists need to better understand how cooperators define quality deer populations and quality deer. This most likely could be achieved with increased face-to-face interactions between biologists and cooperators. Increased contact between agency personnel and program cooperators could help to increase cooperators satisfaction with the program, and help to recruit new individuals or clubs into the program.

Key words: White-tailed deer, wildlife assistance programs, DMAP, *Odocoileus virginianus*, service quality, satisfaction, survey research

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Conservation efforts in place since the early 1900s have brought white-tailed deer (*Odocoileus virginianus*) populations back from an estimated 500,000 animals nationwide to a present total of nearly 24 million (Decker et al. 2001). Concomitantly, deer have become the nation's number one game species in terms of hunter effort and expenditures (U.S. Department of the Interior and U.S. Department of Census 2001). However, this conservation success story has created some unintended consequences. First, because harvest of female deer was initially restricted to maximize population growth, generations of hunters "learned" that shooting females was detrimental to deer populations (Decker et al. 2001). Second, conservation efforts have been so successful that today's population levels are too high in many areas, creating damage to habitat for other species and agricultural crops (Guynn 1983, Conover 2001). Additionally, urbanization has presented deer with ideal browsing habitat in suburban and urban yards and gardens, and vehicle collisions with deer are continually rising, cost-

ing insurance companies from US \$1 billion to \$3 billion annually (Conover 2001). With deer populations at record levels and hunting participation declining rapidly, society is in a quandary regarding management of burgeoning deer populations (McShea et al. 1997).

Scholars and managers have long extolled hunting as an effective way to manage deer populations, including harvest of female deer (Decker et al. 2001). Increased female harvest benefits both hunters and the general public. For hunters, increased female harvest helps maintain populations, thus leading to healthier animals, higher sustained harvest, and greater opportunity for quality deer management (McCullough 1984). For the general public and agricultural producers, increased doe harvest can help reduce agriculture damage and vehicle collisions (West and Parkhurst 2002). Nevertheless, convincing generations of hunters to change their ways has been a difficult endeavor; they can not be told to just harvest more females, they need to have the reasons behind this

explained, and more importantly, see results in the field. That often takes some conservation-oriented hunters and private landowners to take the first corrective step. Various management programs such as the Deer Management Assistance Program (DMAP) offered by some states (Alabama, Louisiana, North Carolina, Mississippi, and Virginia) or Quality Deer Management (QDM; Woods et al. 1996) programs are designed to facilitate hunters and landowners in taking that first corrective step.

The Mississippi Department of Wildlife, Fisheries and Parks' (MDWFP) Wildlife Bureau implemented DMAP statewide in 1983 after seven years of research and test areas in the then-called Mississippi Cooperative Deer Management Program (MCDMP; Gynn et al. 1983). The original MCDMP program objectives were to 1.) develop a system for collection, analysis, and reporting of harvest data, 2.) actively involve sportsmen in management processes, 3.) reduce deer density and crop depredation, and 4.) increase the quality of the deer herd (Jacobson et al. 1983). The current goals of DMAP are to 1.) involve hunters in deer management on private land by keeping accurate records, and providing biologists with information and samples from harvested deer so they can determine population health, 2.) based on collected information, assist biologists in developing biologically-based and optimal harvest plans for landowners that are consistent with their desires and habitat availability, 3.) transfer management responsibility to the landowner or club, and 4.) increase participation in the program through association management (adjacent landowners see benefits of DMAP, enroll, and expand the sphere of proper management; Bill Lunceford, MDWFD, personal communication).

As of the 2003–04 hunting season, 693 cooperators were involved in DMAP in Mississippi, down from a high of almost 1,200 in 1994 (Castle and Lunceford 2001). Whereas much of the recent decrease in cooperators was attributed to liberalized season structure and bag limits instituted by the Mississippi Legislature in the mid-1990s, exact reasons for the decline are still unclear. Also, with one of the goals of the program to increase participation, this is not a desirable trend. Further, despite apparent success of DMAP in involving hunters in deer management in Mississippi, no studies have been conducted to document cooperator attitudes, perceptions, opinions, perceived program successes and failures, and perceptions of service quality they receive from DMAP biologists (agency or private). This study was undertaken at the request of MDWFP to help them identify possible ways to improve and expand the program.

Our objectives were to determine 1.) extent to which DMAP cooperators understood the goals of DMAP and why they collect specific information, 2.) cooperator overall satisfaction with

DMAP in general and with their assigned biologist (agency or private) specifically, 3.) how well DMAP has performed in relation to cooperator expectations, 4.) how well biologists have performed in relation to cooperator vision of an excellent DMAP biologist (i.e., service delivery), and 5.) which aspects of performance of DMAP and service delivery were strongest correlates with program satisfaction.

Methods

Our sampling frame for this study included the property or club owner for the 693 active DMAP properties listed in the MDWFP 2003–04 data base. Of these, we identified 618 non-biologists (property or club owner) as the contact person for the respective property. Only the property or club owner was desired because the survey was designed, in part, to evaluate biologist performance. Having a biologist evaluate him/herself obviously would have biased results. Any listed contact who was the designated DMAP biologist for the property was called prior to the study and encouraged to voluntarily provide the name and address of the property's owner, but this effort met with little success. Each of the 618 cooperators was sent a self-administered mail questionnaire. We designed the survey to address the five objectives of this paper and other biological, social, and economic information beyond the scope of this paper. We developed questions in close consultation with MDWFP Wildlife Bureau staff and incorporated similar questions/ideas from previous cooperator studies conducted in Alabama, Louisiana, and Virginia. All questions and research procedures were approved by the Mississippi State University Institutional Review Board's Committee for the Protection of Human Subjects (Docket #03-162).

To determine extent to which cooperators understood goals of DMAP and why they collected certain information from harvested deer, we asked them to indicate extent to whether they agreed or disagreed with seven items on a five-point, Likert-type scale. Response format was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. We asked DMAP cooperators if they completely understand "the goals of DMAP," "antlerless deer harvest is just one aspect of deer management," "the reason why we collect harvest information on the number of does and bucks killed on our property," "the reason why we collect jaw bones from deer harvested on our DMAP property," "the reason why we collect lactation information from does harvested on our DMAP property," "the reason why we collect the weight of harvested deer on our DMAP property," and "the reason why we collect antler measurements from bucks harvested on our DMAP property." We also asked cooperators to provide an overall measure of satisfaction with their participation in DMAP and how satisfied they were with

their DMAP biologist on a five-point satisfaction continuum. Response format was 1 = not at all satisfied, 2 = slightly satisfied, 3 = moderately satisfied, 4 = very satisfied, and 5 = extremely satisfied.

To determine reasons why cooperators joined DMAP, we asked them to indicate how important each of 15 items was in their decision to join DMAP on a five-point importance continuum. Response format was 1 = not at all important, 2 = slightly important, 3 = moderately important, 4 = very important, and 5 = extremely important. We asked cooperators if they wanted “to produce more quality bucks,” “to produce more trophy bucks,” “to receive additional doe tags,” “to reduce deer damage to crops on the property,” “to reduce the size of the deer population on the property,” “to develop a better relationship with MDWFP,” “to learn more about the deer population on the property,” “to learn more about deer management,” “to receive professional habitat surveys,” “to receive harvest reports,” “to receive analysis and management recommendations,” “to produce a better quality hunting experience,” “to improve the quality of the deer herd (both does and bucks),” “to become more actively involved in management,” and “to better document deer harvest.” From this point forward these items are referred to as importance items. After completing the importance items, cooperators were asked the extent to which they agreed or disagreed with how effective DMAP had been in addressing importance items on a five-point, Likert-type scale. Response format was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Exact wording of these questions are listed in Table 3 of Results. From this point forward these items are referred to as DMAP performance items.

To determine what cooperators' expectations were for an excellent DMAP biologist, they were asked the extent to which they agreed or disagreed with 16 items on a five-point, Likert-type scale. Response format was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Cooperators were asked to indicate whether they believed an excellent DMAP should “let me know when and where they want deer data delivered,” “make an annual on-site visit to my DMAP property,” “make presentations to you or your club on an annual basis,” “make sure DMAP recommendations are understood,” “respond to inquiries in a timely fashion,” “make sure me or my club completely understand why we collect the information we do from harvested deer,” “never be too busy to respond to me or my club's requests,” “show a sincere interest in my DMAP property,” “show a sincere interest in solving our problems with the DMAP property,” “insist on error free records by our club,” “tell you exactly when reports and management plans will be delivered,” “always be willing to help you,” “instill confidence in you enough to make decisions regarding your property,” “have the knowledge to answer my or my club's questions,” “should

understand my or my club's deer management objectives,” and “should have my or my club's best interest at heart.” From this point forward these items are referred to as expectations.

After completing the expectations items, cooperators were asked the extent to which they agreed or disagreed with how effective their DMAP biologist was at achieving those expectations on a five-point, Likert-type scale. Response format was 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Exact wording of these questions are listed in Table 4 of Results. From this point forward, these items are referred to as service performance items.

We requested data between February-April 2005 from each selected DMAP cooperator. We based survey procedures on the Total Design Method developed by Dillman (1978). We personalized the survey to enhance response rate and stressed confidentiality of responses. Letters were hand-signed by the Director of the Human Dimensions and Conservation Laboratory at Mississippi State University (MSU). Additionally, instead of using mailing labels, we printed addresses directly on envelopes to simulate a first class mailing and sent surveys via first-class U.S. mail. We sent three personalized mailings to each cooperator as necessary with a reminder/thank you postcard 10 days after the first mailing. To further assure confidentiality of responses, we provided cooperators with a postage-paid business reply envelope addressed to MSU. We coded data from useable questionnaires, and entered them into a Microsoft Access database using a data entry screen identical to the questionnaire. This data base had built in codes to warn if erroneous values were entered to further reduce input errors. We then transferred data to a SAS Version 9.1 (SAS 2003) data set. We generated frequency distributions as a final check against errors.

We calculated frequencies and means for each variable. We calculated “gap scores” for importance/performance and “difference scores” for expectations/performance items based on expectancy disconfirmation theory. According to the expectancy disconfirmation paradigm, people compare their perceptions of actual performance against a standard of performance (Parasuraman et al. 1988, Burns et al. 2003, Niedrich et al. 2005). Positive disconfirmation occurs when reality is better than expectations, confirmation occurs when reality equals expectations, and negative disconfirmation occurs when reality is worse than expectations (Oliver 1980). Thus, we subtracted a measure of item importance from a measure of item performance to derive a gap score for each variable related to reasons for joining DMAP (performance – importance = gap score). Similarly, we calculated difference scores for each item related to service delivery from the DMAP biologist by subtracting item expectations from item performance (perfor-

mance – expectation = difference score). We then classified gap and difference scores as either positive disconfirmation, confirmation, or negative disconfirmation based on 95% confidence intervals around the mean gap/difference score. We used gap scores instead of importance-performance analysis (IPA; Martilla and James 1977) because gap scores are able to detect service shortfalls when IPA may erroneously tell managers to “keep up the good work” in some instances (Burns et al. 2003).

Because measurement scales were ordinal, we used Spearman’s rho (Schlotzhauer and Littell 1997) to determine which items from DMAP performance correlated greatest with an overall evaluation of satisfaction with cooperator’s participation in DMAP. We also used Spearman’s rho to determine which items from the biologist service delivery performance correlated greatest with cooperator’s overall evaluation of satisfaction with their DMAP biologist.

Results

We received 391 useable questionnaires from DMAP cooperators. An additional 29 questionnaires were returned but were not useable because the respondent declined to participate. A total of 141 cooperators did not respond to the survey. When we excluded non-deliverables (*N* = 57) from consideration, we achieved a response rate of 74.9%.

Most (>90%) cooperators agreed or strongly agreed that they completely understood reasons behind collecting biological information from harvested deer (Table 1). Only 75% of cooperators agreed or strongly agreed that they completely understood goals of DMAP whereas about 7% disagreed or strongly disagreed with this statement and 18% were neutral (Table 1).

Overall, DMAP cooperators were satisfied with their participation in DMAP and with their assigned DMAP biologist. Over 65% of cooperators were very or extremely satisfied with their participation in DMAP, about 25% were moderately satisfied, and about 10% were only slightly or not at all satisfied (Table 2). Over 66% of cooperators were very or extremely satisfied with their DMAP biologist, about 19% were moderately satisfied, and about 15% were only slightly or not at all satisfied with their DMAP biologist (Table 2).

Positive disconfirmation (expectations exceeded) occurred on nine out of 15 items related to performance of DMAP (Table 3). Positive disconfirmation was highest for items related to reducing deer numbers or deer property damage. Confirmation (expectations met) occurred for one of the 15 items related to performance of DMAP, while negative disconfirmation (expectations not met) occurred for five items. Most items with negative disconfirmation were related to quality deer or deer hunting. Negative disconfir-

Table 1. Frequencies (%) and overall means for items related to a cooperator’s understanding of the Mississippi Deer Management Assistance Program in 2005; ranked by mean score. Each statement started with an “I” if the cooperator was the landowner or “We” if the cooperator represented a club.

Item	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Mean ^a
Completely understand the reason why we collect jaw bones from deer harvested on our DMAP property (<i>N</i> = 374)	0.8	1.6	4.0	56.2	37.4	4.28
Completely understand antlerless deer harvest is just one aspect of deer management (<i>N</i> = 375)	0.3	2.1	3.7	58.7	35.2	4.26
Completely understand the reason why we collect the weight of harvested deer on our DMAP property (<i>N</i> = 375)	0.8	2.4	2.9	58.4	35.5	4.25
Completely understand the reason why we collect antler measurements from bucks harvested on our DMAP property (<i>N</i> = 375)	0.5	2.4	3.7	58.2	35.2	4.25
Completely understand the reason why we collect harvest information on the number of does and bucks killed on our property (<i>N</i> = 375)	0.5	2.7	5.3	58.7	32.8	4.21
Completely understand the reason why we collect lactation information from does harvested on our DMAP property (<i>N</i> = 375)	0.8	4.0	4.5	55.2	35.5	4.21
Completely understand the goals of DMAP (<i>N</i> = 374)	0.8	6.2	18.2	54.5	20.3	3.87

a. Responses were measured on a scale where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

Table 2. Frequencies (%) and mean score for items related to a cooperator’s satisfaction with the Mississippi Deer Management Assistance Program in 2005; ranked by mean score.

Item	Not at all satisfied (%)	Slightly satisfied (%)	Moderately satisfied (%)	Very satisfied (%)	Extremely satisfied (%)	Mean ^a
Overall, how satisfied are you with your DMAP biologist? (<i>N</i> = 366)	4.9	9.6	19.4	40.2	25.9	3.73
Overall, how satisfied are you with your participation in DMAP? (<i>N</i> = 367)	2.7	7.1	24.8	48.2	17.2	3.70

a. Responses were measured on a scale where 1 = not at all satisfied, 2 = slightly satisfied, 3 = moderately satisfied, 4 = very satisfied, 5 = extremely satisfied.

Table 3. Mean importance of various items as reasons for cooperator's joining the Mississippi Deer Management Assistance Program, mean performance on those items, and gap scores indicating the difference between importance and performance scores in 2005. Items were classified as positive disconfirmation, confirmation, or negative disconfirmation based on 95% confidence intervals around the mean gap score ($N = 376$); see text for definitions of confirmation and disconfirmation terms). Each DMAP performance item started with an "I" if the cooperator was the landowner or "We" if the cooperator represented a club.

Disconfirmation performance item	Mean importance ^a	Mean performance ^b	Mean gap score ^c
Positive Disconfirmation (expectations exceeded)			
received a sufficient number of additional doe tags	2.44	3.67	1.22
reduced deer damage to crops on the property	1.85	2.98	1.14
reduced the size of the deer population on the property	2.53	3.32	0.79
have developed a better relationship with MDWFP	3.10	3.77	0.68
have received harvest reports	3.86	4.31	0.44
have better documented our deer harvest	3.98	4.38	0.42
have learned more about the deer population on the property	3.83	4.03	0.20
have learned more about deer management	4.01	4.13	0.13
have become more actively involved in management	4.08	4.16	0.09
Confirmation (expectations met)			
have received professional habitat surveys	3.55	3.63	0.09
Negative Disconfirmation (expectations not met)			
have produced more trophy bucks since joining DMAP	3.92	3.74	-0.16
have received adequate analysis and management recommendations	4.11	3.88	-0.21
have produced more quality bucks since joining DMAP	4.27	4.03	-0.24
have produced a better quality hunting experience	4.41	4.08	-0.33
have improved the quality of the deer herd (both does and bucks)	4.55	4.08	-0.46

a. Responses were measured on a scale where 1 = not at all important, 2 = slightly important, 3 = moderately important, 4 = very important, 5 = extremely important.
 b. Responses were measured on a scale where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.
 c. Means may be different than arithmetically subtracting the mean performance from the mean expectation because of missing values in the data set (performance - importance = gap score).

mation occurred for all 16 items related to biologists' service delivery (Table 4). Greatest levels of disconfirmation occurred with items related to making personal contact with the landowner or club members.

When performance scores from items in Table 3 were correlated with the overall evaluation of satisfaction with DMAP in Table 2, each item was significantly related ($P < 0.001$). We found strongest correlations with items: I or my club "have received adequate analysis and management recommendations" ($\rho = 0.5453$), "have improved the quality of the deer herd (both does and bucks)" ($\rho = 0.5365$), "have produced a better quality hunting experience" ($\rho = 0.5186$), "have produced more quality bucks since joining DMAP" ($\rho = 0.4977$), and "have become more actively involved in management" ($\rho = 0.4774$).

When the performance scores from items in Table 4 were correlated with the overall evaluation of satisfaction with their DMAP biologist in Table 2, each item was significantly related

($P < 0.001$). Among the strongest correlates were with the items: "Shows a sincere interest in solving our problems with the DMAP property" ($\rho = 0.7467$), "Shows a sincere interest in my DMAP property" ($\rho = 0.7459$), "Is always willing to help me" ($\rho = 0.7297$), "Understands my or my club's deer management objectives" ($\rho = 0.7144$), "Has my or my club's best interest at heart" ($\rho = 0.7097$), "Never is too busy to respond to me or my club's requests" ($\rho = 0.7044$), and "Has the knowledge to answer my or my club's questions" ($\rho = 0.7017$).

Discussion

DMAP cooperators in Mississippi appear to be knowledgeable about the data they collect from harvested deer and its importance to proper management. This is probably a result of a DMAP manual that is distributed to each cooperator which indicates why the data are collected and provides procedures for measuring antlers or extracting necessary biological samples. Nevertheless, cooperators do not appear to be as knowledgeable about overall goals of DMAP related to accurate record keeping, population health, developing management plans, eventual management by the landowner or club, and association management. Lack of understanding about overall goals of DMAP by cooperators may interfere with biological goals through noncompliance with management suggestions. Also, an inability on the part of cooperators to explain DMAP goals to adjacent landowners may reduce new recruits into DMAP. In the 21 years since implementation, cooperators may have forgotten these goals amidst their data collecting activities or properties have changed cooperators and the message has been lost. We suggest the agency may investigate conducting an information and education program targeting current and potential DMAP cooperators which reaffirms program goals and responsibilities.

According to cooperators, DMAP is performing well relative to overall goals to reduce deer populations and teaching them more about deer on their property and how to manage them. Additionally, although cooperators did not view reducing damage to agricultural crops as an important determinant in deciding whether to join DMAP, the program appeared to be effective at doing so. Interestingly, the original program objectives of the pilot program for DMAP in Mississippi, MCDMP, clearly stated this as a program objective. The MDWFP could capitalize on this aspect when trying to recruit new cooperators and reincorporating this as a program objective. Although MDWFP personnel can examine our data and rightfully conclude that they are meeting most customer needs, there is room for improvement considering most providers seek 100% satisfaction with their service and programs however difficult that goal may be to achieve (Berry and Parasura-

Table 4. Mean scores on items measuring cooperators' expectations of an ideal Mississippi Deer Management Assistance Program biologist, mean scores on cooperators' perceptions of performance on those items, and difference scores between expectations and performance in 2005. Items were classified as positive disconfirmation, confirmation, or negative disconfirmation based on the 95% confidence intervals around the mean difference score ($N = 376$; see text for definitions of confirmation and disconfirmation terms). Each performance item started with "My DMAP biologist" if the cooperator was the landowner or "Our DMAP biologist" if the cooperator represented a club.

Disconfirmation performance item	Mean Expectations ^a	Mean Performance ^b	Mean Difference Score ^b
Negative Disconfirmation (expectations not met)			
lets me know when and where he/she wants deer data delivered	4.36	4.28	-0.10
insists on error free records by our club	4.08	3.93	-0.17
never is too busy to respond to me or my club's requests	4.05	3.84	-0.24
has the knowledge to answer my or my club's questions	4.34	4.08	-0.26
is always willing to help me	4.23	3.95	-0.31
tells me exactly when reports and management plans will be delivered	3.98	3.69	-0.32
instills confidence in me enough to make decisions regarding my property	4.21	3.90	-0.32
understands my or my club's deer management objectives	4.32	3.97	-0.36
responds to inquiries in a timely fashion	4.28	3.92	-0.36
makes sure me or my club completely understand why we collect the information we do from harvested deer	4.26	3.87	-0.39
shows a sincere interest in solving our problems with the DMAP property	4.23	3.79	-0.45
has my or my club's best interest at heart	4.31	3.87	-0.45
shows a sincere interest in my DMAP property	4.20	3.75	-0.46
makes sure DMAP recommendations are understood	4.21	3.73	-0.48
makes presentations to you or your club on an annual basis	3.97	3.24	-0.74
makes an annual on-site visit to my DMAP property	4.20	3.20	-1.02

a. Responses were measured on a scale where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree.

b. Means may be different than arithmetically subtracting the mean performance from the mean expectation because of missing values in the data set (performance - expectations = difference score).

man 1991). Perceived shortfalls in the program, especially with regard to service delivery, on the part of MDWFP biologists may discourage cooperators from continuing in the program or encourage negative word-of-mouth to potential participants.

The gap/difference scores enable one to recognize where improvements are warranted. In our study, greatest improvements can be made by better understanding what DMAP cooperators consider a quality deer herd, quality deer, and quality deer hunting experiences on their property. This finding is also corroborated by strongest correlates with DMAP satisfaction. Satisfaction with DMAP would likely increase if the agency could at least meet, let alone exceed, cooperators desires for program performance in these areas. This would also help communicate overall goals of DMAP. Interestingly, items related to lack of face-to-face interaction had the greatest service quality shortfalls. However, correlates with overall ratings of satisfaction with the biologist suggest that increasing interaction between biologists and cooperators isn't enough. The strongest correlates indicate that biologists showing a sincere interest in cooperator's property, sincere interest in solving their problems, being willing to help, and understanding cooperator management objectives suggest that interactions should be personable and genuine.

Management Implications

For MDWFP, it is undesirable to have their biologists spend an inordinate amount of time on a cooperator's property, but some additional efforts to "be on the ground" should be investigated. Because definitions of hunting quality and satisfaction are highly subjective and likely will vary by cooperator, better understanding these constructs could help to facilitate interactions between biologists and cooperators. Numerous studies have been conducted that can give MDWFP a better idea of components of hunting quality, hunting satisfaction, and program satisfaction prior to meeting with cooperators (see for example Decker et al. 1980, Vaske et al. 1986, Hammitt et al. 1990, Woods et al. 1996, Gigliotti 2000, and Miller and Graefe 2001); this can help them identify key issues to pay closer attention to in discussions.

Results of our study are only a snapshot in time (cross-sectional) and do not offer a longitudinal perspective. Whereas we believe this study provided useful information to improve educational and technical assistance to cooperators, we suggest research into cooperator satisfaction for DMAP should continue and become a built in mechanism of yearly program evaluation (much like the biological data collected). To achieve effective interpersonal communication, however, MDWFP must also further monitor itself as well as

its clientele (Shanahan et al. 2000). Given the increased focus on “people management” in wildlife management, MDWFP should continue to invest in interpersonal communications training for biologists, and re-training for those who may continue to experience difficulties with cooperators and the public. By better understanding how to communicate with their clientele, biologists will become more effective in identifying cooperator needs and desires, and convincing them and potential cooperators of program and management benefits.

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