

# Hunter Attitudes toward Hunting Club Cooperatives and Quality Deer Management on Forest Industry Lands

**Stephen C. Grado**, Department of Forestry, College of Forest Resources, Forest and Wildlife Research Center, Mississippi State University, Mississippi State, MS 39762

**Marcus K. Measells**, Department of Forestry, College of Forest Resources, Forest and Wildlife Research Center, Mississippi State University, Mississippi State, MS 39762

**Darren A. Miller**, Weyerhaeuser NR Company, P.O. Box 2288, Columbus, MS 39704

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**Abstract:** Hunting leases for white-tailed deer (*Odocoileus virginianus*) occur across the United States and provide revenue to many landowners, including private forest industry. Hunting quality and revenue could potentially be enhanced through “cooperatives” and adherence to Quality Deer Management (QDM) principles. Formation of hunting club cooperatives (HCC), where adjoining hunting clubs collectively manage the deer herd, may also increase QDM program success and increase stakeholder interaction. We surveyed Mississippi hunters who leased land from Weyerhaeuser Company in 2009 to determine their attitudes and perceptions relative to QDM and an established HCC program, perceptions toward Mississippi Department of Wildlife, Fisheries and Parks (MDWFP), opinions on adjusting lease fees according to habitat quality, and to examine marketability of the HCC concept. Current HCC members indicated satisfaction with the HCC, recommended participation by other clubs, and viewed MDWFP more favorably than hunters in leases not in the HCC (76.2% versus 63.8%, respectively). HCC and non-HCC hunting clubs were interested in the program and indicated their willingness-to-pay for habitat improvements totaled US \$1.42 and \$1.13 more per acre, respectively, over current lease rates. Given the pilot program’s success, the HCC concept has potential to be successfully implemented elsewhere to foster better relationships among state wildlife agencies, the hunting public, and large, private forest landowners. By working within this cooperative framework, QDM techniques can be implemented on a larger scale and improve deer herd health and quality across larger landscapes.

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**Key words:** forest industry lands, hunting club cooperatives, hunter recruitment, hunting leases, mail survey, Mississippi, *Odocoileus virginianus*, quality deer management, state wildlife agencies

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Hunting leases, primarily for white-tailed deer (*Odocoileus virginianus*), are prevalent on forest industry lands (Capozzi and Dawson 2001, Morrison et al. 2001) which occupy approximately 40 million acres in the southern United States (Wear and Greis 2002). Nationally, hunters spent US \$4.4 billion during 2006 for land leasing or land ownership (USDI and USDC 2007). Such investments in hunting leases provide for consistent annual revenues to landowners, improve access control, and create public relations opportunities with sportspersons (Morrison et al. 2001). Because hunters have clearly shown a willingness to pay higher lease rates to maintain access to quality hunting land (Fried et al. 1995, Green et al. 2004, Hussain et al. 2004), there may be opportunities for landowners to charge higher lease prices by providing higher quality hunting experiences. For example, Huggins et al. (2005) found hunters in Oklahoma bid higher on lands where they had previous hunting experience and knew the quality of male white-tailed deer (hereafter, bucks).

Quality deer management (QDM) principles can improve deer

herd and buck quality via habitat, hunter, and herd management (including protection of younger bucks and adequate doe harvest) and monitoring (Collier and Kremetz 2006, Edwards and Miller 2008, Miller 2010, Quality Deer Management Association 2010). While QDM is increasing in popularity across the United States, many hunters still have little knowledge about QDM or its guiding principles (e.g., Bull and Peyton 2001). However, Bull and Peyton (2001) found that 55% of survey respondents supported management techniques that produced an older age structure among bucks and 59% of those who supported antler restrictions were interested in seeing and/or harvesting bucks with larger antlers. Studies in Mississippi and South Carolina (Woods et al. 1996) and New York (Enck et al. 2003) found increased hunter satisfaction on areas managed using QDM principles. Proper education and management advice from state wildlife agencies could also be critical to QDM implementation. However, Collier and Kremetz (2006) indicated that only 19% of Arkansas hunting camps have worked with Arkansas Game and Fish Commission (AGFC) biologists,

and this was more prevalent on camps leasing lands from forest industry. Most respondents (56%) suggested that direct contact and/or recommendations from AGFC biologists would be most beneficial for their camp followed by management assistance programs (49%), population estimation (47%), and habitat development programs (43%) (Collier and Krementz 2006).

Although QDM may increase hunter satisfaction and provide economic incentives to landowners to implement such a program, QDM is more effectively applied on a land base larger than a typical lease holding (Miller 2010). Also, because most leaseholders operate independently, there is limited ability to effectively manage deer herds within a given area. To examine the possible application of QDM principles on hunting leases, Weyerhaeuser Company (hereafter, Company) funded our project on their only Hunting Club Cooperative (HCC) developed in 2004 (Edwards and Miller 2008, Miller 2010) on Company-owned lands in Kemper County, Mississippi. The HCC, consisting of six hunting clubs encompassing 11,500 contiguous acres, was a collaborative endeavor between the hunting clubs, the Company, and Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) to implement QDM across the HCC area. However, it was unclear how club members perceived this program, how they regarded assistance provided by MDWFP, or if other hunting clubs would be interested in forming additional cooperatives. Therefore, we surveyed HCC members and compared them to Mississippi hunters who leased Company lands not contained in the HCC to better understand acceptance and marketability of the HCC concept and perceptions of MDWFP relative to the HCC.

## Methods

We worked with representatives from the Company and MDWFP, all of whom were hunters, to develop survey instruments for both the HCC and non-HCC club members. We asked a combination of questions where participants could choose from a set of potential responses and other questions which were open-ended. Prior to survey implementation, we pilot-tested both surveys with three hunters representative of those we actually surveyed. All were members of hunting clubs leasing lands from Weyerhaeuser Company. For our formal survey process (Dillman 2000), we mailed the survey in June 2009, sent a thank you/reminder postcard one week later, and then mailed a second survey four weeks after mailing the initial survey. The survey was mailed to all members ( $n = 132$ ) of the six HCC program hunting clubs. Additionally, we randomly selected 750 hunters from a database of all hunters leasing Company lands in Mississippi. We also offered both survey groups an incentive (a randomly-drawn participant from each group received a gift card of nominal value) to increase response

rates. After an analysis of their socio-demographic data we treated both groups as similar populations since they were similar in every way except six clubs were part of the cooperative. All questions and research procedures were approved by the Mississippi State University Institutional Review Board's Committee for the Protection of Human Subjects (Docket No. 09-069).

## Results

### HCC Members

After accounting for non-deliverable surveys, HCC members returned 64 surveys for a 56.6% adjusted return rate. Most respondents were Caucasian (88.9%) and male (100%) with a mean age of 56.3 (ranging from 27 to 86) (Table 1). A considerable number of respondents were retired (29.5%), 28.6% had completed some college, 31.6% reported a total household income of \$40,000–\$59,999, and 75% were Mississippi residents. HCC members had been hunting all game species an average of 40.9 years and deer hunting an average of 36.3 years (Table 1). Over their lifetime, they belonged to an average of 2.4 hunting clubs, ranging from one to eight. During our survey, HCC members belonged to an average of 1.25 clubs, with the maximum being three. On average, HCC members had belonged to their current HCC hunting club for 18 years (maximum of 54 years). The average HCC member drove 130.4 miles one-way to their hunting club with most staying at a club-provided camp house (67.2%). Individuals spent from one to 100 days (average = 29.7) afield with 98.4% pursuing deer and 40.6% hunting eastern wild turkey (*Meleagris gallopavo*).

Before beginning the HCC program, most had little to no knowledge about hunting club cooperatives (80.9%) or QDM (68.8%) (Table 2). However, based on their limited knowledge, most rated QDM positive (49.2%) to very positive (4.9%) before

**Table 1.** Comparisons between the Weyerhaeuser Company Hunting Club Cooperative (HCC) and non-HCC members in Mississippi for some socio-demographic and other hunting-related factors of importance in 2009.

	HCC members	Non-HCC members
Caucasian (%)	88.9	90.5
Male (%)	100.0	99.0
Age (years)	56.3	52.6
Retired (%)	29.5	23.0
Completed some college (%)	28.6	26.2
Household income (\$40,000–\$59,999)	31.6	24.3
Mississippi resident (%)	75.0	72.1
Years hunting	40.9	40.4
Years white-tailed deer hunting	36.3	34.4
Years in current club	18.0	13.5
Distance driven one-way to club (miles)	130.4	41.5
Days afield	29.7	42.9
Willingness-to-pay for HCC	\$1.42/acre	\$1.13/acre

**Table 2.** Mississippi Weyerhaeuser Company Hunting Club Cooperative (HCC) and non-HCC member responses to key mail survey questions regarding their perceptions or knowledge levels concerning HCCs and Quality Deer Management (QDM) as promoted by the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) in 2009.

		Nothing	Very little	Little	A lot	Everything
HCC knowledge (%)	HCC (before)	14.3	31.7	34.9	14.3	4.8
	Non-HCC	25.0	32.8	28.4	12.7	1.0
QDM knowledge (%)	HCC (before)	7.8	17.2	43.8	26.6	4.7
	Non-HCC	4.4	9.8	44.1	40.7	1.0
		Very negative	Negative	Neutral	Positive	Very positive
QDM rating (%)	HCC (before)	0.0	9.8	36.1	49.2	4.9
	HCC (now)	0.0	6.3	34.4	51.6	7.8
	Non-HCC	1.6	2.7	24.9	55.7	15.1
Company perceptions (%)	HCC (before)	0.0	7.9	39.7	42.9	9.5
	HCC (now)	0.0	9.5	27.0	50.8	12.7
	Non-HCC	2.0	6.5	30.2	49.2	12.1
Company cooperation and guidance (%)	HCC (now)	0.0	11.1	19.1	58.7	11.1
	Non-HCC	3.6	4.1	43.3	39.7	9.3
MDWFP perceptions (%)	HCC (before)	0.0	1.6	35.5	53.2	9.7
	HCC (now)	1.6	1.6	25.4	55.6	15.9
	Non-HCC	1.5	3.6	31.1	50.0	13.8
MDWFP cooperation and guidance (%)	HCC (now)	1.6	3.2	15.9	61.9	17.5
	Non-HCC	3.2	3.2	29.5	46.3	17.9

beginning the HCC program with 36.5% being skeptical about beginning the program. Some reasons for their skepticism included concerns about whether other clubs and/or members would follow the guidelines, worrying whether lease prices would increase beyond their means, and feeling they could manage the deer without program assistance. Most hunters believed the HCC and QDM program would result in larger buck antlers (66.7%), better hunting experiences (58.7%), and older bucks harvested (57.1%). Most (69.4%) believed these expectations were met on their hunting club.

After being in the HCC program for five years, hunter expectations included larger antlered bucks (65.1%), older bucks harvested (65.1%), and heavier buck weights (52.4%); few hunters (6.3%) rated QDM and the HCC program negatively. Most (74.6%) hunters perceived an improvement in the deer herd since starting the program by noting larger buck antlers (56.0%), heavier buck weights (52.0%), more buck sign/sightings (48.0%), and older bucks harvested (44.0%). Most (87.3%) hunters believed other members of their hunting club also enjoyed program benefits with an average of 71.5% "buying-into" program rules. Respondents believed the best way to ensure club members embraced QDM management practices and the HCC concept were by sending a newsletter (53.2%), sending pamphlets/brochures (46.8%), or having the Company and/or MDWFP representatives give presentations

(38.1%). In general, 93.4% wanted to receive more communication from the Company and/or MDWFP representatives regarding QDM and the HCC. Preferred methods of personal communication were newsletters (62.9%), presentations (43.5%), and pamphlets/brochures (41.9%).

In general, respondents typically had neutral (39.7%), positive (42.9%), or very positive (9.5%) perceptions towards the Company before beginning the HCC (Table 2). These general perceptions increased to neutral (27.0%), positive (50.8%), or very positive (12.7%) after HCC participation. The majority rated cooperation and guidance provided by the Company as positive (58.7%) or very positive (11.1%). In regard to their perceptions of the Company toward the HCC program, most were positive (57.1%) or very positive (11.1%).

In general, respondents typically had neutral (35.5%), positive (53.2%), or very positive (9.7%) perceptions towards MDWFP before beginning the HCC. These general perceptions also increased to neutral (25.4%), positive (55.6%), or very positive (15.9%) after HCC implementation. The majority rated cooperation and guidance provided by MDWFP as positive (61.9%) or very positive (17.5%). In regard to their perceptions of MDWFP toward the HCC program, most were positive (57.1%) or very positive (19.1%).

Most hunters (78.7%) were satisfied with the current situation as part of the HCC while 69.8% believed they were getting a good value for what their hunting club was investing in the HCC. In addition, 84.7% felt the Company was getting a good value for their investment in the HCC area. Most (56.6%) indicated they were not willing to pay additional lease fees for habitat improvement activities. Some hunters were willing to pay \$1.00/acre (7.5% of respondents) or \$2.00/acre (9.4%) more for their lease, resulting in an average of \$1.42/acre more and ranging from \$0 to \$10. Most respondents (87%) believed other hunting clubs would benefit from forming a HCC.

In response to an open-ended question, HCC respondents believed areas needing improvement included having more areas available for plantings or food plots, having more guidelines for removing bucks with deformed antlers, closing gates to minimize poaching and trespassing on the area, and preventing forest management activities by the Company during hunting seasons. Other issues or concerns expressed by many included expensive hunting leases and that some habitat improvement activities promised by the Company before beginning the HCC had yet to be implemented.

### Non-HCC Members

After accounting for non-deliverable surveys, non-HCC members returned 206 surveys for a 34.2% adjusted return rate. Most

were Caucasian (90.5%) and male (99.0%) with a mean age of 52.6 (ranging from 21 to 78). Twenty-three percent were retired, 35.1% had completed high school or a GED while 26.2% had completed some college. Approximately 50% of respondents reported a total household incomes of \$40,000–\$59,999 (24.3%) to \$60,000–\$79,999 (24.9%), and 72.1% were Mississippi residents. Non-HCC members have been hunting all game species an average of 40.4 years and deer hunting an average of 34.4 years. Over their lifetime, they belonged to an average of 3.3 clubs, ranging from one to 13. During our survey, they belonged to an average of 1.26 clubs, with the maximum being six. On average, they belonged to their current Company hunting club for 13.5 years (maximum of 42 years). The average hunter drove 41.5 miles one-way to their hunting club with 67.3% commuting daily. Individuals spent from one to 300 days (average = 42.9) afield with 97.7% hunting deer and 45.7% pursuing wild turkey.

Most non-HCC members had little to no knowledge about hunting club cooperatives (86.2%) or QDM (58.3%). For those with knowledge of QDM, most rated it as positive (55.7%) or very positive (15.1%). Ninety (45.5%) currently, or have in the past, belonged to a hunting club that implemented QDM practices. Most (66.0%) were interested in starting QDM and a HCC program with the Company. However, 32.5% were skeptical about beginning such a program. Some reasons for their skepticism included worrying whether other clubs and/or members would follow the guidelines, concerned that lease prices would increase beyond their means, and noting they already managed deer or have their own management guidelines in place. Most expected the QDM and HCC program would result in larger antlered bucks (77.4%), older bucks harvested (68.3%), and heavier buck weights (62.4%). The majority (73.4%) believed other members in their hunting club would enjoy the program benefits with an average of 57.7% “buying-into” the program’s rules. Respondents believed the best ways to introduce club members to QDM and the HCC concept were by having the Company and/or MDWFP representatives give presentations (53.2%) or send pamphlets/brochures (45.3%). Most non-HCC members (68.4%) would personally like to receive more communication from the Company and/or MDWFP representatives regarding QDM and the HCC using the same methods: pamphlets/brochures (49.4%), presentations (44.1%), and newsletters (41.2%).

In general, respondents typically had neutral (30.2%), positive (49.2%), or very positive (12.1%) perceptions towards the Company. Most rated cooperation and guidance provided by the Company as neutral (43.3%), positive (39.7%) or very positive (9.3%). They primarily had neutral (31.1%), positive (50.0%), or very positive (13.8%) perceptions towards MDWFP. Most (55.7%) indicat-

ed that MDWFP had not worked with, nor provided management recommendations to, their club. However, those who had received cooperation and/or guidance from MDWFP rated these activities as positive (46.3%) or very positive (17.9%).

Most (70.3%) believed they were getting an acceptable return for their hunting club dues. Where respondents could choose from a set of potential responses, few indicated they would be willing to implement deer herd management guidance by MDWFP in combination with active habitat improvement by the Company at an increased cost/acre (23.8%) or solely active habitat improvement by the Company at an increased cost/acre (18.8%). However, when asked if their club were to implement QDM and the HCC program, how much more they felt their club would be willing to pay per acre, 143 responded. The majority (55.2%) indicated \$0.00 while 13.3% said \$1.00 and 13.3% replied \$2.00 for an average of \$1.13/acre and ranging from \$0 to \$15. The main issues or concerns non-HCC respondents provided in their written comments related to very expensive hunting leases, hunting deer with dogs (most would like to see the practice stopped), cooperation of their members and surrounding clubs in regard to QDM, and amount of poaching and trespassing that occurs.

## Discussion

It’s important to note that we conducted our research in the midst of a significant economic recession, during which many people lost wealth. Additionally, Mississippi averaged a 9.5% unemployment rate during 2009 (MDES 2010). We believe our results, especially willingness-to-pay, were affected by these conditions, and that our respondents would likely have been willing to pay more under a better economic environment. However, we also recognize that other factors (e.g., amount of public land/other hunting land available to hunters, competitor’s lease rates, quantity of game, presence of non-deer game species) we did not measure may have affected our willingness-to-pay results. Future research should address these factors to determine their impacts on willingness-to-pay for the HCC program.

Our HCC response rate of 56.6% was similar to other studies of hunting club members in the United States, with response rates ranging from 48% (Mehmood et al. 2003, Green et al. 2004) in Alabama and New York to 68% in New York (Capozzi and Dawson 2001). However, our non-HCC response rate of 34.2% was much lower. This lower response rate may be attributed to non-HCC members not feeling as involved nor encouraged about such a program while HCC members were more engaged in and, therefore, probably were more willing to share their thoughts regarding the HCC and QDM. Socio-demographically, our respondents were similar to other studies, for which most hunters were predomi-



nately older white males with incomes greater than \$40,000 (Enck et al. 2003, Mehmood et al. 2003, Green et al. 2004, Hussain et al. 2004). Like other studies (Capozzi and Dawson 2001, Green et al. 2004), most non-HCC respondents reported living close to their leases; however, the average HCC member drove 130 miles to their lease. Unlike the 30 to 32 years of hunting experience reported by others (Enck et al. 2003, Hussain et al. 2004, Bhandari et al. 2006), both the HCC and non-HCC members had more hunting experience at 41 and 40 years, respectively. Our respondents had very little to no knowledge of QDM, as did those reported by others (Green and Stowe 2000, Bull and Peyton 2001, Collier and Kremenz 2006). Although they had little knowledge, many were willing to implement QDM strategies. Like others, most of our respondents felt they were getting a good value for their money (Mehmood et al. 2003) and were generally satisfied with their hunting leases (Capozzi and Dawson 2001, Mehmood et al. 2003). Our respondents generally had a high satisfaction level with the HCC and QDM programs, as did other studies in Mississippi, South Carolina, Pennsylvania, and New York (Woods et al. 1996, Miller and Graefe 2001, Enck et al. 2003). However, we must note that not all HCC clubs were equally satisfied with the program. For example, one HCC club had more negative feelings towards all aspects of the program, but they were satisfied with the current situation and believed they were getting a good value for what their club was investing. Therefore, it is important even within an HCC to examine attitudes and perceptions of each hunting club and individual members enrolled in the program.

The HCC club members' perceptions and ratings towards the Company and MDWFP, while favorable before entering the HCC, showed a marked increase after having participated in the program for five seasons. However, the non-HCC perceptions and ratings were lower. As Morrison et al. (2001) stated, one potential benefit of hunting leases is creating public relation opportunities with sportspersons. This is likely the case, as our results also indicated this was a beneficial component of the HCC program for both the Company and MDWFP.

While most respondents in the non-HCC group knew little to nothing about HCC or QDM, a sizable majority (66.0%) indicated they were interested in starting a HCC program and QDM with the Company. This illustrated the importance of providing descriptions on both the HCC and QDM programs after the directed response question on the survey that we used to determine their original knowledge levels. We assumed the positive response could be explained by this basic background information they received. Both groups shared similar reasons for being skeptical about beginning a HCC program, and these included concerns over whether other clubs and/or members would follow the guidelines, fears

lease prices would increase too much, and noting they already managed deer or have their own management guidelines in place. These concerns could be eased by having Company and MDWFP representatives give presentations to interested hunting clubs.

A sizable majority of hunting club members (82.0%) belonging to the HCC were satisfied or possibly satisfied with the program. Somewhat less (76.2%) thought they were getting good value for their club dues as well or remained undecided. In addition, 59.4% of HCC members rated QDM in combination with an HCC program positively or very positively. Based on our results, it was not surprising a majority of these hunters would recommend the program to other hunting clubs. Therefore, implementing these programs may have potential, based on knowledge and experience, if these hunters were approached in the appropriate manner.

In general, there were few differences between HCC members and other hunting club members on their willingness-to-pay for establishing the HCC and QDM program, which would improve both habitat and game quality, provide larger contiguous areas for hunting, allow for greater club control on non-club member access, and establish more opportunities to hunt species other than deer. For HCC members, 82.8% were willing to pay an average of \$1.42 more per acre for the Company HCC program, assuming QDM was implemented. For non-HCC members, 69.4% were willing to pay an average of \$1.13 more per acre for the Company HCC program and implementing QDM. In both cases, the median was \$0.00/acre, meaning half of the respondents were not willing to pay an additional fee for their current lease (note: current fees are confidential). Similarly, in their 2002 study of Alabama hunting leases, Hussain et al. (2004) indicated hunters were willing to pay an additional \$0.77/acre over their current lease rates for areas with increased game and habitat quality. We suggest that higher values were expressed by HCC members as they have a greater familiarity with cooperatives and QDM (Huggins et al. 2005). While our survey stated these were not projected price increases for leasing, but rather an estimate of the value of these programs and what they have to offer, it was disappointing these values were so low. Without knowing the full extent of the Company's outreach to these clubs in this regard, we assumed the perception of value was being understated. Perhaps this was because of fear of lease price increases, which was noted in some written comments we received.

### Management Implications

The association of the Company and MDWFP with the HCC program was viewed by HCC members as a positive one. We recommend that efforts should remain to maintain this unique arrangement and foster its existence. In addition, this result gives the

Company and MDWFP, as well as other forest industry companies and state wildlife agencies, a clear incentive to continue and/or implement the HCC program in other areas. Given the positive attitudes reported, we recommend that companies and state wildlife agencies reevaluate communication and education efforts directed toward hunting clubs to include formation of hunting club cooperatives that implement QDM techniques, equating value from the HCC and QDM, and the perception that the clubs have relative to these values. It was possible that lease prices and fear of lease price increases were driving factors in determining these opinions.

When HCC members were asked about how they would like to be contacted concerning the HCC program and QDM, the preferred methods were the use of newsletters and pamphlets/brochures and having presentations made by the Company and MDWFP, as Collier and Kremenz (2006) also indicated for Arkansas hunters. For non-HCC members, the methods were similar, only differing in order; pamphlets/brochures, presentations made by the Company and the MDWFP, and then newsletters. In addition, because 59.4% of HCC members rated QDM with an HCC program as positive or very positive, it may be beneficial to have some of these individuals communicate their experiences with the HCC program to other hunting clubs. Other forest industry companies or organizations and/or state wildlife agencies should consider forming similar HCC programs and use the above mentioned techniques to introduce hunting clubs to the concept.

We also recommend that companies and state wildlife agencies consider strategies to recruit a younger, more diverse population of hunters into the club structure. As our results and others (Enck et al. 2003, Mehmood et al. 2003, Green et al. 2004, Hussain et al. 2004) have indicated, most members of hunting clubs were older white males, many of whom were retired or nearing retirement. It is crucial that wildlife managers recruit younger individuals into hunting with a greater diversity in terms of gender and race. This may involve direct actions by the Company or agency in assisting clubs with this activity (e.g., marketing, recruiting efforts, public relations). While it is clear that the HCC and QDM hold value for the Company, hunting clubs and wildlife agencies, a declining hunting public will eventually lead to less support for these programs in the future. Diversifying the clientele base along these lines could increase demand for leasing land and hunting participation in general.

Many forest industry entities and other forest landowners could implement a similar HCC program on their lands to increase their leasing revenues and improve their image among lease holders. These types of programs could also be implemented by other landowners who share common beliefs and management ideas regarding deer and forest management. In addition, wildlife management

agencies should promote the HCC program and QDM to hunting clubs, when conditions permit. In promoting these programs, forest industry companies, organizations, and wildlife management agencies can potentially improve the perceptions and attitudes of their constituents toward them (Morrison et al. 2001) and their management practices resulting in improved deer herds from better management practices. These activities, along with improved hunting participation rates will help sustain this beneficial activity into the future.

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