

EXPLORING POSSIBLE DIFFERENCES BETWEEN AFRICAN-AMERICAN AND
ANGLO MALE HUNTERS IN MISSISSIPPI

By

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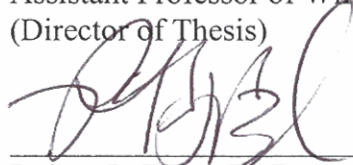
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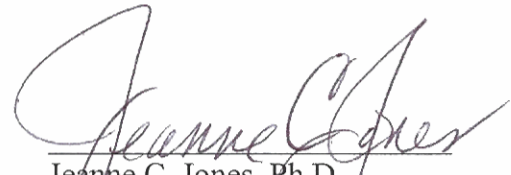
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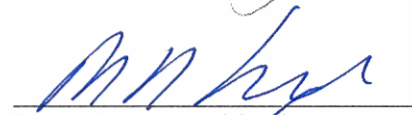
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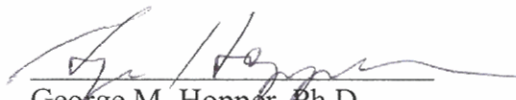
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Despite the continual increase in the U.S. population, which is primarily from increasing minority populations, the participation rate in hunting is declining. Thus, natural resources agencies and hunting-oriented industries are faced with the challenge of attracting more members of various cultural groups to the activity to remain relevant to its constituents. The purpose of the study was to improve the current knowledge about African-American hunters in Mississippi by better understanding how they differ from the traditional Anglo constituents in their characteristics, participation patterns, motivations for hunting, and attitudes toward wildlife. Analysis of Covariance (ANCOVA) was used to detect differences between African-American and Anglo males' attitudes and motivations. Overall, there were significant differences in most hunter characteristics and participation patterns tested. Moreover, after controlling for several covariates, there were still some significant differences in motivational and attitudinal scores.

DEDICATION

I dedicate this thesis to my parents, Dorothy and Richard Fuller. When I was down and thought I couldn't go any further....you guys picked me up and carried me the rest of the way. For that I love you and thank you.

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CHAPTER I

INTRODUCTION AND OBJECTIVES

Introduction

For many hunters, their families, and their communities, hunting is far more than a recreational activity; it's an integral part of their social world (Stedman & Decker, 1996). With the abundance and variety of game in North America before the Civil War, Americans from every part of the country took part in the sport. In the South there was an even greater enjoyment of the sport because the region was filled with a diverse and large quantity of wildlife. The Southern sportsmen tended to see hunting as a form of recreation with special ties to their region and to themselves (Gohdes, 1967). Proctor (2002, p. 4) stated, "The hunt, like the church, courthouse, and family, played an integral role in the society and culture of the Old South; it was an activity that all southerners, black and white, male and female, rich and poor, rural and urban, knew something about." However, recent studies show that hunting today is increasingly becoming an activity dominated by Anglo males (USDOJ & USDOC, 2001).

Despite the increase in the U.S. population during the 1980s and 1990s, an expanded base from which hunting could potentially draw new recruits, the total number of U.S. hunters did not increase (Decker, Brown, & Siemer, 2001). Therefore, while the absolute number of hunters may be relatively stable, a smaller proportion of the U.S.

population now participates in hunting (Heberlein & Thomson, 1992, 1996). This trend could be because hunting participation rates are markedly less among minority populations, which are growing at a faster rate than Anglos in the United States (Decker et al., 2001). In the future, there will be additional population changes in the United States. For example, where the U.S. population is projected to increase by 50 million by 2010, over 80% of this growth is expected in Hispanic, African-American and other minority population segments (Murdock, Loomis, Ditton & Hoque, 1996). Thus, for hunting to maintain its cultural significance and for agencies to sustain current funding levels generated by license sales and hunting expenditures, natural resources agencies and hunting-oriented industries are faced with the challenge of attracting more members of various cultural groups to the activity.

Hunt (2000) identified three possible reasons for the limited knowledge agencies have about their racial and ethnic clientele: 1) information obtained comes from a limited clientele orientation that relies mainly on constituency feedback through formal public hearings and large national surveys, 2) samples are selected at random from license files with limited attention paid to stratified sampling options such as race or ethnic origin, and 3) agencies may not have the forethought to include measures of race and ethnicity in their license holder database. For these reasons, very little is known about hunters from non-traditional populations. This information is needed to help in recruitment, education, and marketing efforts. However, as with any marketing efforts, it is important to understand current product users to develop strategies to attract more users. Enck, Decker, and Brown (2000, p. 822) applied this perspective to hunter recruitment and

retention efforts and stated that, “There should be more concentration on understanding and influencing antecedents to participation and less on trying to influence participation directly.” Therefore, to increase African-American participation in hunting, we need a better understanding of current African-American hunters and their experience preferences. Thus, the purpose of my study was to improve current knowledge about African-American hunters in Mississippi by better understanding how they differ from the traditional Anglo clientele in terms of characteristics, participation patterns, motivations for hunting, and attitudes toward wildlife.

Objectives

The primary objectives of my thesis were to:

- (1) Compare demographic characteristics, participation patterns and social characteristics of African-American and Anglo males,
- (2) Determine if scores on a motivational scale measuring motivations for hunting differ between African-American and Anglo males and,
- (3) Determine if scores on an attitudinal scale measuring attitudes toward wildlife differ between African-American and Anglo males.

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CHAPTER II
HUNTER CHARACTERISTICS, PARTICIPATION
PATTERNS, AND MOTIVATIONS FOR HUNT-
ING OF AFRICAN-AMERICAN AND
ANGLO MALES IN MISSISSIPPI

Introduction

Hunting has a deep-rooted cultural significance for millions of North Americans (Decker, Brown & Siemer, 2001). For many hunters, their families, and their communities, hunting is far more than a recreational activity; it's an integral part of their social world (Stedman & Decker, 1996). With the great abundance and variety of game in North America before the Civil War, Americans from every part of the country took part in the sport. In the South, there was an even greater enjoyment of the sport because the region was filled with an exceptionally diverse and large quantity of wildlife. The Southern sportsmen tended to see hunting as a form of recreation with special ties to their region and to themselves (Gohdes, 1967). Proctor (2002, p. 4) stated, "The hunt, like the church, courthouse, and family, played an integral role in the society and culture of the Old South; it was an activity that all southerners, black and white, male and female, rich and poor, rural and urban, knew something about."

According to the U. S. Department of the Interior (USDOI), Fish and Wildlife Service and U.S. Department of Commerce (USDOC), Census Bureau, about 13.034 million individuals 16-years old or older participated in hunting in 2001. Of these, 12.568 million hunters (96%) were Anglo, 297,000 hunters (2%) were African-American, and 169,000 (2%) hunters were from some other ethnic origin. Furthermore, despite the increase in the U.S. population during the 1980s and 1990s, an expanded base from which hunting could potentially draw new recruits, the total number of U.S. hunters did not increase (Decker et al., 2001). While the absolute number of hunters may be relatively stable, a smaller proportion of the U.S. population now participates in hunting (Heberlein & Thomson, 1992, 1996). One of the reasons for this trend is most likely due to the changing demographics of the United States. For example, where the U.S. population is projected to increase by 50 million by 2010, over 80% of this growth is expected in Hispanic, African-American and other minority population segments (Murdock, Loomis, Ditton & Hoque, 1996). This population change is especially important because minorities do not participate in hunting to the same extent as Anglos. Thus, for hunting to maintain its cultural significance and for agencies to sustain current funding levels generated by license sales and hunting expenditures, natural resources agencies and hunting-oriented industries are faced with the challenge of attracting more members of various cultural groups to the activity.

Pullis (2000) found that 73% of African-American hunters live in the south. This indicates that to some extent, hunting still has cultural significance for African-Americans there. Despite the concentration of African-American hunters in the south,

little is known about their characteristics, participation patterns, and motivations for hunting. Hunt (2000) identified three possible reasons for the limited knowledge agencies have about their racial and ethnic clientele: 1) information obtained comes from a limited clientele orientation that relies mainly on constituency feedback through formal public hearings and large national surveys, 2) samples are selected at random from license files with limited attention paid to stratified sampling options such as race or ethnic origin, and 3) agencies may not have the forethought to include measures of race and ethnicity in their license holder database. Further, small sample sizes of African-Americans in the national survey conducted by the USDOJ and USDOC (2001), make it impossible to provide statistically reliable results of basic demographic characteristics of African-American hunters such as age, income, and education. For these reasons, additional research on hunters from non-traditional populations is needed to help in recruitment, education, and marketing efforts.

Reasons why African-Americans may be less predisposed than Anglos to take part in outdoor recreation activities (including hunting) has been covered substantially in the sociological literature. Walsh, John, McKean and Hof (1992, p. 151) stated that, "Whites will be more likely to participate in most types of wildlife recreation than nonwhites." Dolin (1988) offered five theoretical postulates to explain African-Americans' presumed lower interest in nature, wildlife or wildlife related issues: 1) socioeconomic status, 2) identification with slavery, 3) personal priorities, 4) lack of access, and 5) mythology. These theories may provide insight into why contemporary

African-Americans do not participate in outdoor recreation activities and help to identify possible hypotheses about African-American hunters' behaviors.

The theory that disinterest in wildlife is related to socioeconomic status assumes that interest in wildlife is a luxury that can be pursued only after more basic material needs, e.g., adequate food and financial security, are satisfied (Dolin, 1988). According to this theory, African-Americans represent one of the poorest races in society, and because of this, satisfaction of their material needs are not met to the point that would allow them to express concern in wildlife or wildlife issues. If this theory was found to adequately explain African-American attitudes toward wildlife, then it would be more accurate to say that these attitudes are not the result of a lack of interest; rather, they stem from limited economic opportunity to develop such interests (Dolin, 1988). This suggests that African-Americans do not participate because of poverty and various consequences of socioeconomic discrimination. This is consistent with the marginality hypothesis developed by Washburne (1978). This assessment of the socioeconomic/marginality perspective has served a useful purpose by helping researchers and policy makers realize that various socioeconomic factors may be associated with low levels of outdoor recreation participation among African-Americans (Floyd, 1998). This theory could be a possible explanation for 1996 national survey results that indicated African-Americans hunted fewer days, on average, than all hunters combined in the United States (Pullis, 2000).

Washburne (1978) and Floyd's (1998) perspectives are supported by Proctor (2002, p. 171) when he stated that, "During the 20th Century, hunting maintained its

associations with the past, but it also reflected the development of a new awareness of race, gender, class, and society. Changes in hunting laws, the sporting press, weapons technology, the southern environment, economy, and social structure all affected the form and meaning of the hunt, and white hunters of every class adapted.” For most African-American hunters it was harder to adapt to these conditions. There was great hostility from Anglos toward African-Americans who were armed (Proctor, 2002). This hostility made it difficult for African-Americans to conduct a successful hunt on private or public lands. Other conditions that made it more difficult to maintain the hunting tradition for African-Americans were the closing of the open range and specific requirements for hunting licenses (Proctor, 2002).

The identification with slavery theory states that African-Americans have a low interest in nature and wildlife because of their history with slavery. During the slavery era, the relationship with the land was more required than voluntary. Dolin (1988, p. 19) states that this theory was first voiced in 1976 by Eldridge Cleaver in an essay entitled, "The Land Question and Black Liberation" in which Cleaver wrote, “During slavery itself, black people learned to hate the land. From sunup to sundown, the slaves worked the land: plowing, sowing, and reaping crops for somebody else, for profit they themselves could never see or taste...” If one assumes that Cleaver’s definition of “the land” can be extended to include the natural environment in general, then this theory may offer a partial reason why African-Americans express little interest in wildlife (Dolin, 1988). Hunting, in particular, was a form of manual labor for African-Americans because slaves routinely hunted for their masters. In most hunting narratives, slaves were

not given much recognition, worked quietly in the background, and performed the unacknowledged labor that made it possible for slaveholders to adopt the pose of men and of leisure (Proctor, 2002). They were the ones that usually tracked and located the game, guarded the stands, and looked after the horses and dogs.

Recently, a theory similar to identification with slavery has been used to explain African-Americans' historical and cultural significance in outdoor recreation participation. The ethnicity or subculture theory attributes differences in recreation behavior to value differences based on subcultural norms (Washburne, 1978, Johnson, Bowker, English, & Worthen, 1998). Further, Meeker (1973) argued that African-Americans have had a different historical relationship to wildlands and nature compared to white Northern European traditions, and that wildlands have a negative connotation, rooted in servitude and poverty from African-Americans' experiences in the South. This theory also states that this unique cultural value system of minorities may be passed from one generation to another, forming a part of their characteristic cultural heritage (Washburne, 1978). Therefore, if hunting is not considered a traditional and cultural activity for African-Americans, this theory may help explain their low hunting participation rates. This theory is consistent with Decker et al. (2001) who indicated that those introduced to hunting by family usually begin as children and tend to remain active because they have strong and consistent family support. However, those introduced to hunting by friends rather than family usually try it out as young adults, lack strong family support for hunting, and are likely to quit hunting after a few years.

The personal priorities theory implies that outdoor and wildlife related activities are not a high priority to African-Americans because other, more pressing concerns are important to them on a daily basis. In Dolin (1988, p. 19), a research paper written by Washington (1976) was quoted as stating that, “ To a large and growing number of blacks, wildlife along with any aesthetic or recreational benefits they might derive from it, are but distant abstractions that compete poorly with the persuasive immediacy of present problems.” Furthermore, Hunt and Ditton (2002) observed results that were consistent with Taylor’s (1989) and Valenzuela’s (1994) perspective that African-Americans may have less involvement in environmental groups because those focus on nonhuman organisms and neglect socially relevant environmental justice issues, e.g., poor air quality and land-fills near minority communities. Thus, African-Americans’ participation in organizations with an emphasis on environmental and conservation issues was expected to be less than their involvement in organizations that address issues that are currently more important to them.

The lack of access to wildlife theory proposes that African-Americans have a negative attitude toward and lower interest in wildlife because they were denied access to recreational settings during the segregationist era. Before the major success of the Civil Rights Movement in the 1950’s and 1960’s, African-Americans were often denied access to public facilities or forced to use areas in those facilities set aside for African-Americans only (Dolin, 1988). Marks (1991) found that the type of game that was hunted also was in fact segregated. African-Americans primarily hunted for small game such as rabbits, squirrel, raccoons, and opossum. This is consistent with Pullis (2000) in

which she found that 68% of African-American hunters were more likely to hunt small game. Further, Marks (1991) found that Anglos enjoyed hunting big game, like deer and turkey, as well as waterfowl and quail.

The mythology theory affirms that African-Americans view nature more holistically than do Anglos. Those cultures who view nature this way have been defined as harmonic cultures (Kluckhohn & Strodtbeck, 1961). Harmonic cultures are distinguished more by their religious philosophy and tradition than their relationship to science and technology (Hunt, 2000). Daniel and Smitherman (1976) state a fundamental tenet of African culture is that of a dynamic, hierarchical unity between God, man, and nature, with God heading the hierarchy. In this view, human beings are seen to live in an interactive state with the natural and spiritual world. Thus, one becomes a living witness to God's work when he aligns himself with the forces of nature, and strives to live in harmony with it (Daniel & Smitherman, 1976). Herskovitz (1958) identified that this harmonic view has been retained from the African culture and is observed in African descendents throughout the world (i.e., African survivals). If this view has indeed been passed down to current African-Americans, than this theory suggests that they may participate less in hunting and fishing because they do not have strong utilitarian beliefs.

In addition to theories that help to explain why there may be discrepancies between African-American and Anglos in hunting participation rates and patterns, determining reasons why people participate in hunting is also of concern to managers and researchers. Understanding what motivates people to hunt has helped wildlife managers better identify the benefits or products of hunting. Further, this information helps

wildlife agencies set budget and program priorities and tailor their programs to provide hunters with the experiences they desire (Pierce, Manfredo & Vaske, 2001).

Driver (1977, 1983) developed the Recreation Experience Preference (REP) scales to identify and quantify the relative importance of different psychological outcomes that are desired and expected from recreation participation. These outcomes are termed motivations in hunting research, and Driver's scale items have been used widely in outdoor recreation research. After a thorough analysis of hunting motivation research, Cornell University researchers proposed three motivational orientations for wildlife recreation: 1) achievement, 2) affiliative, and 3) appreciative (Decker, Provencher, & Brown, 1984, Decker, Brown, & Driver, 1987). First, those with achievement orientation have specific goal-oriented reasons related to self worth for participating in wildlife recreation. Second, hunters who are motivated with an affiliative orientation participate in wildlife recreation for the opportunity to be with others while strengthening or establishing relationships through shared experiences. Lastly, hunters with an appreciative orientation toward wildlife recreation seek tranquility from the outdoors and want to become acquainted more with wildlife and the natural environment. Decker et al. (1984) concluded that a person may have a combination of these motivations, but often one is a primary motivation. Nevertheless, no published studies were found that have specifically investigated African-Americans' motivations for hunting.

The purpose of my study was to improve the current knowledge about African-American hunters in Mississippi by better understanding how they differed from the

traditional Anglo clientele in terms of characteristics, participation patterns, and motivations for hunting. Based on the literature review, I expected to find differences between African-American and Anglo males on demographic characteristics, participation patterns, social characteristics, and motivations for hunting. For many variables such as residence location, number of years hunted, importance of hunting compared to other outdoor recreation activities, all terrain vehicle (ATV) use for hunting, the individual who introduced them to hunting, age of first hunting experience, and motivations for hunting, it was unclear from previous research the ultimate direction of differences. Nevertheless, the literature and U.S. Census information did allow me to develop hypotheses on some variables. Specifically, I expected that African-American males were younger, had a lesser annual household income and had fewer years of formal education than Anglo males. I also expected that African-American males hunted fewer days than Anglo males. Additionally, I expected that African-American male hunters in Mississippi preferred to hunt and actually hunted small game and predator species. Lastly, I expected that African-American males had lower membership in hunting or conservation organizations and subscribed less to hunting magazines than Anglo males.

Methods

Sampling Design

Data for my study were collected from the 2005 Mississippi Statewide Hunter Survey conducted for the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP). The sampling frame consisted of resident Mississippi hunters who purchased

a Sportsman, Big Game, or Small Game hunting license. I used licensed hunters from 18 to 64 years of age. From this sampling frame I pulled four random samples based on race/gender category: 802 Anglo male hunters; 802 African-American male hunters; 198 Anglo female hunters; and 198 African-American female hunters. My original intent was to sample 500 individuals from each group, however, I selected only 198 individuals for the female samples because there were only 198 African-American female hunters listed in the license file.

Survey Implementation and Response

The 2005 Mississippi Statewide Hunter Survey consisted of an 11-page, self-administered mail questionnaire designed to collect information on the objectives of this thesis as well as other biological, social, and economic information beyond the scope of this thesis. The Total Design Method (TDM) developed by Dillman (1978) was used as a reference for survey design and mailing procedures. Three mailings, as necessary, were sent to hunters between July and October 2005. Each mailing consisted of a cover letter explaining the purpose of the survey, the importance of hunter response, the confidential nature of responses, and a contact number in case the hunter had any questions regarding the survey or to request a replacement questionnaire. Additionally, a postage-paid business reply envelope was used to facilitate returns. Each envelope and letter was addressed to each individual person using the merge function in Microsoft Word, and their names and addresses were printed directly on the letters and envelopes to simulate a first class mailing. All questionnaires were numbered using a bar code system printed on clear adhesive labels. When questionnaires were returned to Mississippi State

University, the bar codes were scanned to remove the individual from the possibility of further mailings. The questionnaire and content of the mailings were reviewed and approved by the Mississippi State University Institutional Review Board for the Protection of Human Subjects (Docket 02-158).

Demographic Characteristics

I sought information on the demographic characteristics of hunters: age, gender, residence location, income level, education level, and ethnic origin. First, I asked hunters to indicate their age and gender. I then asked hunters to indicate their county of home residence. County data were recoded into urban and rural for analysis purposes based on U.S. Census data. If the U.S. Census data indicated that more than 50% of each county's population was urban or rural, I recoded my data to fit those categories, respectively. Next, I asked hunters their approximate annual household income level before taxes in \$10,000 increments to "\$100,000 and above." These categories allowed for a general determination of incomes of certain groups of people without invading privacy. Then, by using a close-ended question and measured on an interval scale, I asked hunters to indicate how many years of formal education they completed. Lastly, as a verification of license files, I asked hunters their race/ethnicity which was measured on a nominal scale that categorized hunters into four groups: "White or Anglo", "Black or African-American", "Native American or Alaskan Native", and "Asian or Pacific Islander."

Participation Patterns

I sought information on participation patterns of hunters: number of days hunted, number of years hunted, importance of hunting, species preference, species hunted, and all terrain vehicle (ATV) use for hunting. I asked hunters two open-ended questions: 1) “How many days did you hunt in Mississippi in the 2004-05 hunting season?”; and 2) “How many years have you been hunting?” Next, I asked hunters to indicate how important hunting was compared to their other outdoor activities: “your most important outdoor activity,” “your second most important outdoor activity,” “your third most important outdoor activity,” and “none of the above.” I asked hunters, “Do you or someone in your household own an ATV that is used for hunting?” The response was coded as 1 = yes and 2 = no. I then asked hunters, “Which animal do you most prefer to hunt in Mississippi?” I provided hunters space for their first, second and third species preference. Data were later recoded into five categories for analysis purposes: 1) big game which included deer and turkey; 2) small game which included rabbit, squirrel, raccoon, armadillo, groundhog, and opossum; 3) upland bird which included dove, quail, woodcock/snipe, and crow; 4) waterfowl which included mallards, wood duck, and geese; and 5) predator species which included red fox, gray fox, bobcat, coyote, and feral hog. To determine whether species preference was similar to actual species hunted, I created a variable based on whether each hunter participated in each of the 5 categories more than one day in the previous hunting season.

Social Characteristics

I sought information on the social characteristics of hunters: membership in a national hunting or conservation organization, subscription to hunting magazine(s), the individual that introduced them to hunting, and age of first hunting experience. I asked hunters, “Are you a member of a national hunting or conservation organization?” and “Do you subscribe to any hunting magazines?” If hunters indicated “yes” to either question, I asked them to indicate: 1) how many clubs/organizations they belonged to, and/or 2) how many hunting magazines to which they subscribed. I then asked hunters, “To the best of your recollection, what individual introduced you to hunting?” using 17 response options: “grandfather,” “grandmother,” “father,” “mother,” “brother,” “sister,” “son,” “daughter,” “uncle,” “aunt,” “cousin,” “friend,” “business associates,” “clients,” “youth hunting event instructor,” “introduced myself,” and “other.” Data were recoded into four categories for analysis purposes: 1) immediate family, which included grandmother, grandfather, father, mother, brother, sister, son, daughter, spouse, husband, wife, great grandfather, stepfather, grandson, granddaughter, and ex-husband; 2) extended family, which included uncle, aunt, cousin, father-in-law, son-in-law, nephew, brother-in-law, and other in-laws; 3) friends, which included friend, business associate, client, boyfriend, fiancé, girlfriend, and pastor; and 4) self. Lastly I asked, “At what age did you have your first hunting experience?”

Motivations for Hunting

I asked hunters to indicate the importance of 25 items as reasons for hunting in Mississippi on a five-point importance continuum with the following response format: 1

= “not at all important”; 2 = “slightly important”; 3 = “moderately important”; 4 = “very important”; and 5 = “extremely important” (Table 2.1). Scale items were selected from the original Recreation Experience Preference (REP) scales developed by Driver (1983) to represent the three general hunter motivational orientations indicated by Decker et al. (1984): 1) achievement, 2) affiliation, and 3) appreciative. Lastly, scale items for each of the three constructs were then subjected to scale reliability analysis using Cronbach’s alpha (Miller, 1995).

Data Entry and Statistical Analysis

I entered data into a Microsoft Access database using a data entry screen that looked exactly like the questionnaire. The database also had built in codes to warn if erroneous values were entered to further reduce input errors. Next, I conducted a data verification procedure. Error rates were examined by first ordering surveys by identification number and taking every 20th survey (n = 26) from the hard copy set. Second, the hard copy survey data were compared to the computerized data version to search for possible errors. Any errors were recorded and corrected in the final dataset. After all data were verified, some errors were found in the initial data entry process. A total of 46 errors was found among 3,952 questions resulting in an error rate of 1.2%. Errors were random and no pattern was found for any particular variable. As a final check on errors, I conducted a frequency distribution on each variable to check for inconsistencies in response and data entry. I then converted the data for analysis procedures into SAS 9.1 format (Schlotzhauer & Littell, 1997).

I used several statistical tests for data analysis. Parametric and non-parametric tests were used as appropriate based on tests for normality. The two-sample T-test was used to detect differences between African-American and Anglo males on the normally distributed variables age and education level. All other variables were either not at least interval level data or were not distributed normally. The Chi-square (X^2) test was used to detect differences between groups on gender, income level, residence location, importance of hunting compared to other outdoor activities, membership in hunting/conservation organizations, subscription to hunting magazines, ATV use for hunting, and the individual that introduced groups to hunting. When necessary, I also analyzed the standardized residuals to determine which cells contributed the most to the significant Chi-square value. I used the Wilcoxon Rank Sum test to detect differences between groups on days hunted, years hunted, and age of first hunting experience.

Previous research implies that competing explanations be controlled for or used as covariates when looking for differences between cultural groups on motivational and attitudinal constructs. Age, income level, education level, and number of years hunted have been suggested as the most important covariates. Two different approaches have been used to control for covariates in cultural studies. Washburne (1978) and Hunt and Ditton (2002) controlled for competing explanations by using paired or matched samples to better understand differences in recreational behaviors between racial and ethnic groups. Others, such as Floyd and Gramann (1993), have used these variables as covariates to look for differences in recreational behavior. I have chosen to use the latter approach for my analysis of motivations.

I used Analysis of Covariance (ANCOVA) in PROC GLM to test for differences between African-American and Anglo males on motivations for hunting and associated preliminary steps. This method allowed me to test the main effect of race on motivations for hunting while controlling for age, income level, education level, and years hunted. Based on previous studies (Stevens, 2002, Wildt & Ahtola, 1978, Milliken & Johnson, 2002), for the ANCOVA to be applied reasonably, two assumptions have to be considered: 1) that age, income level, education level, and years hunted (i.e., covariates) were linearly related to motivations for hunting (i.e., dependent variables); and 2) that regression lines were parallel for any covariate that was linearly related to motivations for hunting. A preliminary data analysis was conducted to avoid violation of the assumptions. Based on previous research, I initially assumed that all covariates tested would meet the assumptions of the ANCOVA test. However, after running the test on all the covariates, several had no linear relationship with motivational scores. To include those covariates in the final analysis would have been pointless because no reduction in variance would be achieved and the power of the test would have been reduced (Milliken & Johnson, 2002). The one-way Analysis of Variance (ANOVA) in PROC GLM was used when none of the covariates tested had a linear relationship with motivations for hunting.

Results

Response Rates

Data were obtained from 558 licensed Mississippi hunters of which 138 were African-American males, 314 were Anglo males, 38 were African-American females and 68 were Anglo females (Table 2.2). Response rates were calculated by dividing number of returned useable questionnaires by the total number of surveys sent minus number returned non-eligible and minus non-deliverables (Dillman, 1978). The overall response rate for my study was 36.7%. African-American males had the least response rate (22.0%), followed by African-American females (27.0%), then Anglo females (46.2%) and Anglo males (51.8%). Because the total number of responses from both female groups was so low, the probability of making a Type II error was high at 30% (Cohen, 1988). Thus, because of low statistical power (70%) I decided to exclude females from any statistical analysis for fear of drawing false conclusions.

Poor response rates and the high non-deliverable rates for all groups were most likely due to Hurricane Katrina's impact on the State of Mississippi. The second mailing for my study was postmarked the day Hurricane Katrina hit the Mississippi coast. Needless to say, many residents were forced to evacuate and a statewide hunter survey was not the most salient thing in their lives at the time. I proceeded with the third mailing that included sympathetic language and an apology to subjects if they found the survey offensive. Despite this, some negative comments were received, and I opted to not conduct a follow-up non-respondent survey. Whereas this most likely reduced the generalizability of my findings, after consulting with state and university officials, I felt

this was a necessary omission. Although I believe results presented henceforth are valuable knowledge for recreation planners in Mississippi, and contribute to future theory development, care should be taken when generalizing results beyond my sample.

Demographic Characteristics

I did not find a statistically significant difference ($t = 1.06$, $P = 0.289$) in the average age of African-American ($\bar{x} = 44.7$, $m = 46$, $n = 137$) and Anglo male hunters ($\bar{x} = 43.5$, $m = 43$, $n = 312$; Table 2.3). I also did not find a statistically significant difference in residence location of African-American and Anglo male hunters ($X^2 = 0.22$, $P = 0.638$; Table 2.4). Most African-American males resided in rural counties (53.9%, $n = 69$) and similarly, most Anglo males resided in rural counties (56.4%, $n = 168$). I did find a statistically significant difference in annual household income ($X^2 = 54.18$, $P < 0.001$; Table 2.5) between African-American and Anglo males. African-American male hunters median household income category was \$30,000-\$39,999 ($n = 120$), whereas median household income category for Anglo males was \$50,000-\$59,999 ($n = 285$). I found a statistically significant difference in education level ($t = -3.29$, $P = 0.001$; Table 2.6). African-American males average level of education ($\bar{x} = 12.8$, $n = 133$), was significantly less than Anglo males ($\bar{x} = 13.6$, $n = 298$).

Participation Patterns

I found a statistically significant difference in number of days hunted in Mississippi ($Z = -2.04$, $P = 0.041$; Table 2.7). African-American males ($\bar{x} = 26.9$, $m = 20$, $n = 118$) hunted fewer days, on average, than Anglo males ($\bar{x} = 30.1$, $m = 25$, $n =$

287). Additionally, I found a statistically significant difference in the number of years the groups have been hunting ($Z = -3.28$, $P = 0.001$; Table 2.8). African-American males have been hunting fewer years ($\bar{x} = 25.2$, $m = 25$, $n = 124$) than Anglo males ($\bar{x} = 30.5$, $m = 30$, $n = 304$). I also found that compared to other outdoor recreation activities, there was no statistically significant difference in how the groups rated hunting ($X^2 = 6.06$, $P = 0.109$; Table 2.9). African-American (50.0%, $n = 128$) and Anglo male hunters (61.8%, $n = 314$) both rated hunting as their most important outdoor activity. Lastly, I found a statistically significant difference in hunters whose household owned an all terrain vehicle (ATV) that was used for hunting ($X^2 = 15.69$, $P < 0.001$; Table 2.10). There were fewer African-American male hunters (54.3%, $n = 69$) than Anglo male hunters (73.8%, $n = 228$) who lived in a household that owned an ATV that was used for hunting.

I found statistically significant differences in first, second, and third choice species preferences for African-American and Anglo male hunters (Table 2.11). For the first game choice ($X^2 = 56.30$, $P < 0.001$), the most preferred game species for African-American (65.3%, $n = 83$) and Anglo male hunters (81.1%, $n = 253$) was big game. As for second game choice ($X^2 = 56.71$, $P < 0.001$), most African-American male hunters preferred small game (72.7%, $n = 85$) and most Anglo male hunters preferred big game (40.1%, $n = 111$) or small game (33.9%, $n = 94$). As for third game choice ($X^2 = 34.91$, $P < 0.001$), small game (74.3%, $n = 75$) were chosen by most African-American male hunters whereas small game (42.0%, $n = 99$) or upland bird (28.0%, $n = 66$) were chosen by most Anglo male hunters. Furthermore, there were no African-American male hunters who would prefer to hunt waterfowl in any of the game choice categories.

I found statistically significant differences in species hunted for African-American and Anglo male hunters (Table 2.12). For big game species ($X^2 = 17.60$, $P < 0.001$), there was a greater percentage of Anglo males (65.3%, $n = 205$) who actually hunted these species than African-American males (44.2%, $n = 61$). However, for small game species ($X^2 = 4.14$, $P = 0.042$), there was a greater percentage of African-American males who actually hunted these species (59.4%, $n = 82$) than Anglo males (49.0%, $n = 154$). The results of upland bird species ($X^2 = 52.45$, $P < 0.001$) indicated that there was a greater percentage of Anglo males (40.5%, $n = 127$) that actually hunted these species than African-American males (6.5%, $n = 9$). Furthermore, as for waterfowl species ($X^2 = 17.71$, $P < 0.001$), there was a low percentage of Anglo males (11.8%, $n = 37$) that actually hunted waterfowl, but there were no African-American males who hunted them. Finally, the results of predator species ($X^2 = 5.45$, $P = 0.020$) showed that there was a greater percentage of Anglo males (6.7%, $n = 21$) who actually hunted these species than African-American males (1.5%, $n = 2$).

Social Characteristics

I found a statistically significant difference in hunters who belonged to a national hunting or conservation organization ($X^2 = 14.71$, $P = 0.001$; Table 2.13). African-American male hunters (8.0%, $n = 10$) were less likely to be in a hunting or conservation organization than Anglo male hunters (24.1%, $n = 74$). I also found a statistically significant difference in hunters who subscribed to hunting magazines ($X^2 = 15.97$, $P < 0.001$; Table 2.14). African-American males (20.6%, $n = 26$) were less likely to subscribe to any hunting magazine than Anglos males (40.8%, $n = 126$). I found a

statistically significant difference in individuals who socialized African-American and Anglo males into hunting ($X^2 = 22.44, P < 0.001$; Table 2.15). Most African-American males were introduced to hunting by their immediate family members (62.2%, $n = 79$), extended family members (18.9%, $n = 24$), their friends (11.8%, $n = 15$), or introduced themselves (7.1%, $n = 9$). Most Anglo males were introduced to hunting by their immediate family members (81.7%, $n = 250$), their extended family members (8.5%, $n = 26$), their friends (8.2%, $n = 25$), or introduced themselves (1.6%, $n = 5$). After the analysis of the standardized residuals, I found that more African-American males than expected were socialized into hunting by their extended family or introduced themselves to hunting. Lastly, I found a statistically significant difference in the age of first hunting experience between African-American and Anglo males ($Z = 7.13, P < 0.001$; Table 2.16). African-American males started hunting at a later age ($\bar{x} = 13.7, m = 12, n = 128$) than Anglo male hunters ($\bar{x} = 10.0, m = 10, n = 307$).

Motivations for Hunting

Cronbach's alpha for the achievement motivational construct was 0.85 (Table 2.1) indicating adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates years hunted ($F_{2, 367} = 0.69, P = 0.504$), income level ($F_{2, 367} = 0.21, P = 0.809$), or education level ($F_{2, 367} = 2.39, P = 0.093$) on achievement motivational orientation scores (Table 2.17). I did detect a statistically significant relationship between the covariate age ($F_{2, 367} = 3.13, P = 0.045$) and achievement motivational orientation scores. I found when age was tested alone, a statistically significant relationship with achievement scores still existed ($F_{2, 445} = 3.68, P$

= 0.026). I tested the equality of slopes for African-American and Anglo male achievement scores by age and found there was not a statistically significant difference across groups ($F_{1, 445} = 0.06, P = 0.800$). Therefore, with age as a covariate, there was a statistically significant difference ($P = 0.006$) in adjusted achievement mean scores between African-American ($\bar{x} = 28.6$) and Anglo males ($\bar{x} = 26.6$). The average score for this construct was 3.6 for African-American males and 3.3 for Anglo males.

Cronbach's alpha for the affiliative motivational construct was 0.87 (Table 2.1) indicating adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates years hunted ($F_{2, 367} = 1.22, P = 0.296$), age ($F_{2, 367} = 2.61, P = 0.075$), income level ($F_{2, 367} = 0.80, P = 0.451$), or education level ($F_{2, 367} = 0.14, P = 0.872$) on affiliative motivational orientation scores (Table 2.18). Because none of the covariates showed a statistically significant relationship with scores, I performed a one-way ANOVA to test if affiliative mean scores were significantly different for African-American and Anglo males. I found that there was no statistically significant difference ($F_{1, 450} = 0.96, P = 0.327$) in mean affiliative scores of African-American males ($\bar{x} = 36.4, n = 138$) and Anglo males ($\bar{x} = 37.3, n = 314$). The average score for this construct was 3.3 for African-American males and 3.4 for Anglo males.

Cronbach's alpha for the appreciative motivational construct was 0.90 (Table 2.1) indicating adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates years hunted ($F_{2, 367} = 0.48, P = 0.617$), age ($F_{2, 367} = 1.17, P = 0.313$), income level ($F_{2, 367} = 0.07, P = 0.936$), or education level ($F_{2, 367} = 0.09, P = 0.914$) on appreciative motivational orientation scores (Table 2.19).

Because none of the covariates showed a statistically significant relationship with the scores, I performed a one-way ANOVA to test if appreciative mean scores were significantly different for African-American and Anglo males. I found that there was no statistically significant difference ($F_{1,450} = 2.37, P = 0.125$) in mean appreciative scores of African-American males ($\bar{x} = 23.3, n = 138$) and Anglo males ($\bar{x} = 24.1, n = 314$). The average score for this construct was 3.9 for African-American males and 4.0 for Anglo males.

Discussion

Demographic Characteristics

African-American males in my study had significantly lesser household incomes and significantly fewer years of formal education than Anglo males. Further, there were no African-American males who had 20 or more years of education. This is consistent with my hypotheses and U.S. Census (2004) findings that show African-Americans in Mississippi have lesser income and education levels than Anglos. The low income and educational levels indicate that socioeconomic status cannot be ruled out as a possible reason for African-Americans underrepresentation in hunting. I expected to find that African-American males were younger than Anglo males but the results indicated there was a similar distribution in the age of both groups.

Future research in Mississippi needs to include hunters and non-hunters from all racial and ethnic groups. If there is an interest in understanding the participation rates of hunters in Mississippi, information from non-hunters may provide an insight into why

they do not hunt and what can be done to potentially recruit them into the activity. This is especially important in attempts to recruit ethnic minorities. Previous research concluded that African-Americans have lesser participation rates than Anglos in Mississippi, as well as nationally. However, according to the U.S. Census, African-Americans are one of the fastest growing ethnic groups. In 1999, one in nine Americans were African-American and by 2030 about one in seven Americans will be African-American (Pullis, 2000).

Participation Patterns

As hypothesized, there were differences in African-American and Anglo males' days of participation; African-American males hunted fewer days than Anglo males. This result was consistent with state and national data reported by the USDOJ and USDOC (2001). African-American males also hunted fewer years than Anglo males. This was somewhat expected, because a limited number of socialization projects hinted that African-Americans may be introduced to hunting at later ages (Hunt & Ditton, 2001). Further, there was a lesser percentage of African-American males in my study that owned an ATV that was used for hunting. This may be the result of fewer economic resources for African-American males, which reduces the possibility of them being able to afford an ATV. African-American and Anglo males both rated hunting as their most important outdoor activity which is consistent with the Pennsylvania Game Commission (2004) findings.

The findings of species preferences in my study showed that big game were the first game choice for African-American and Anglo males. However, species hunted

results indicated that a greater percentage of African-American males hunted small game and a greater percentage of Anglo males hunted big game. Past research indicated that African-Americans hunt small game whereas Anglos hunt big game (Marks, 1991,USDOI & USDOC, 2001, Proctor, 2002). Not only were my results of species hunted consistent with previous studies, they also indicated that waterfowl species are not preferred or actually hunted by African-American males. Species preference results go against the previous belief that African-Americans prefer small game and Anglos prefer big game. The principle that African-Americans prefer small game has been questioned previously by researchers who suggest the group may be opportunistic game hunters (Washburne, 1978, Floyd, 1998, Proctor, 2002). The important thing to remember is that while African-American males hunt small game more often, most would prefer to hunt big game. Hunting providers should understand that African-American males do not necessarily hunt exclusively for small game.

Social Characteristics

My results showed that a substantially lower percentage of African-American males were members of national hunting/conservation organizations or subscribed to hunting magazines than Anglo males. This is consistent with Taylor's (1989) and Valenzuela's (1994) conclusion that African-Americans may have less involvement in environmental groups because those groups focus on nonhuman organisms and neglect socially relevant environmental justice issues. Further, the personal priorities theory proposed by Dolin (1988) implies that issues related to outdoor recreation activities are not high in priority to African-Americans because other, additional pressing material

concerns are more important to African-Americans on a daily basis. Consequently, African-Americans should have lesser rates of participation in hunting clubs or organizations that concentrate on hunting or hunting conservation. As such, they were also less likely to subscribe to magazines that put an emphasis on hunting related issues.

I found that most African-American and Anglo males were socialized into hunting through their immediate family members. However, African-American males were socialized into the sport by extended family, friends, or introduced themselves to hunting at greater percentages than Anglos. This suggests that for some African-American males exposure to the activity required them to look outside of their immediate family structure. Further, African-American males' first hunting experience occurred at later ages than did those of Anglo males. This suggests that the hunting tradition tends to reach African-American males later on in life, which would be consistent with socialization outside of the immediate family.

My results on socialization suggest that African-American and Anglo males quite possibly follow two different models of recreation participation. Anglo males appear to follow the childhood deterministic model, and African-American males appear to follow the leisure career model as defined by McGuire, Dottavio, and O'Leary (1987). According to the former, participation in outdoor recreation is learned through childhood experiences. The leisure career model, in contrast, views socialization into leisure activities as occurring over a lifetime instead of being a refinement of activities learned as a youth. Activities are added, dropped, expanded, and relearned, depending on an individual's circumstances (Hunt & Ditton, 2002). Therefore, because my study

concluded that African-American males started hunting at later ages, hunted fewer years, and in some instances were socialized into the sport by those more distant than immediate family members, they fit more closely to the leisure career model. This would be consistent with Decker et al. (2001) who concluded that individuals introduced into hunting by family at an early age are more likely to continue as a traditional hunter. However, those that are introduced by friends are more likely to try it out as young adults, lack strong family support for hunting, and are likely to become an intermittent hunter. This also may possibly explain some of the differences between African-American and Anglos' participation rates. Future research should continue to explore possible differences in the socialization process of African-American and Anglos and its relation to hunting participation later in life.

Motivations for Hunting

I found that regardless of age, there was a difference in importance on achievement motivations for hunting between African-American and Anglos males. African-American males of all ages indicated that it was "very important" for them to hunt in Mississippi to gain a sense of self pride/confidence, to test their hunting skills and the extent to which they can hunt, as well as for the challenge to harvest a specific animal. However, Anglo males of all ages found these motivations for hunting as "moderately important" when hunting in Mississippi. This difference suggests there may be a cultural explanation for existing differences in motivational scores. African-American males' participation in the activity may be more goal oriented than Anglo males. The ranking of the achievement construct compared to the two other motivational

constructs reaffirms this finding. African-American males ranked the achievement construct as secondary whereas Anglo males ranked it as tertiary in terms of importance when compared to the two other motivational constructs.

I found no significant differences in affiliative motivations for hunting between African-American and Anglo males. Both groups indicated that it was “moderately important” to hunt in Mississippi to socialize and bring together their family, friends, and other hunting companions who have similar values and enjoy hunting as much as they do. This suggests that, to a large extent, hunting is a social activity that is important for African-American and Anglo males. However, African-American males ranked the affiliative construct as tertiary and Anglo males ranked it as secondary in terms of importance when compared to the two other motivational constructs.

I found that there were no significant differences in appreciative motivations for hunting between African-American and Anglo males. Both groups indicated that it was “very important” for them to hunt in Mississippi to be close to and obtain a feeling of harmony with nature and the natural environment as well as seek peace in the outdoors. This was expected because participation in the activity requires some appreciation of the natural environment. Further, both groups ranked the appreciative construct as their primary motivation for hunting when compared to the other two motivational constructs. However, this is inconsistent with Kellert and Berry (1980) who concluded that in general, African-Americans expressed significantly less knowledge and concern about wildlife and the natural environment than Anglos. Although Kellert and Berry’s study also included non-hunters, I expected to see a difference in scores between African-

American and Anglo males. Further research should be conducted to obtain a better understanding of this motivation type.

Despite significant findings on only one of the three motivational constructs, results indicated that education level, income level, and years hunted were not significant covariates with any of the motivational constructs. This leads me to believe that motivations for hunting of African-American males may not be as linked to their education and income as previous cultural research has implied. Future research should continue to investigate these variables as possible covariates because my results may have been a function of small sample sizes or less than representative samples. Nevertheless, even if covariates indicate a significant difference, that does not mean that differences are consistent or even exist at all levels of the covariate. Researchers should pay particular attention to the slopes instead of assuming they are parallel and provide randomly selected adjusted means. Recently, Milliken and Johnson (2002) indicated that this is one of the most common mistakes researchers make when conducting an ANCOVA.

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Table 2.1 Scale items used to measure African-American and Anglos' motivations for hunting in Mississippi and scale reliability.

Construct	Scale items (I hunt in Mississippi to:) ^a	Scale reliability (Cronbach's alpha)
Achievement	gain a sense of confidence	0.85
	test the extent to which I can hunt	
	become better at hunting	
	develop my hunting skill and abilities	
	be challenged	
	bag an animal	
	develop a sense of self pride	
	bag a specific animal, such as a trophy	
Affiliative	be with individuals that have values similar to mine	0.87
	compare my hunting equipment with others	
	be with people that enjoy hunting as much as I do	
	get my family together for a while	
	bring my family closer together	
	test my hunting equipment	
	do something with my family	
	be with my friends	
	discuss my hunting equipment with other hunters	
	hunt with my companions	
be with members of my hunting club/organization		
Appreciative	be close to nature	0.90
	obtain a feeling of harmony with nature	
	seek peace in the outdoors	
	become more acquainted with the natural environment	
	enjoy the smells and sounds of nature	
	become more acquainted with wildlife	

Table 2.2 Response categories and rates for the 2004-05 Mississippi Resident Statewide Hunter Survey by race and gender category.

Category	African-American males	Anglo males	African-American females	Anglo females	Overall totals
# Mailed	802	802	198	198	2000
# Not returned	490	292	103	79	964
# Returned useable	138	314	38	68	558
# Returned non-eligible	31	33	12	15	91
# Non-deliverable	143	163	45	36	387
Response rate ^a	22.0%	51.8%	27.0%	46.2%	36.7%

^a Response rate calculated by dividing number of returned useable questionnaires by total number of surveys sent minus number of returned non-eligible minus non-deliverables.

Table 2.3 Number and percentage of African-American and Anglo male hunters in Mississippi by age.

Overall mean/ Category	African-American male hunters		Anglo male hunters		t-value	<i>P</i>
	n	%	n	%		
\bar{x} (\pm SD) m	44.7 (11.33)	46	43.5 (12.26)	43	1.06	0.289
Less than 20	1	0.7	10	3.2		
20-29	15	11.0	36	11.6		
30-39	29	21.2	65	20.8		
40-49	38	27.7	99	31.7		
50-59	43	31.4	66	21.2		
60-65	11	8.0	36	11.5		
Total	137	100.0	312	100.0		

Table 2.4 Number and percentage of African-American and Anglo male hunters in Mississippi by residence location.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Urban	59	46.1	130	43.6	0.22	0.638
Rural	69	53.9	168	56.4		
Total	128	100.0	298	100.0		

Table 2.5 Number and percentage of African-American and Anglo male hunters in Mississippi by annual household income category.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Less than \$10,000	7	5.8	9	3.2	54.18	< 0.001
\$10,000-\$19,999	14	11.7	17	6.0		
\$20,000-\$29,999	30	25.0	20	7.0		
\$30,000-\$39,999	16	13.3	43	15.1		
\$40,000-\$49,999	17	14.2	24	8.4		
\$50,000-\$59,000	15	12.5	33	11.6		
\$60,000-\$69,000	5	4.2	23	8.1		
\$70,000-\$79,999	4	3.3	23	8.1		
\$80,000-\$89,999	5	4.2	24	8.4		
\$90,000-\$99,999	4	3.3	14	4.9		
\$100,000 or more	3	2.5	55	19.2		
Total	120	100.0	285	100.0		

Table 2.6 Number and percentage of African-American and Anglo male hunters in Mississippi by highest completed level of education.

Overall mean/ Years of education	African-American male hunters		Anglo male hunters		t-value	P
	n	%	n	%		
\bar{x} (\pm SD) m	12.8 (2.16) 12		13.6 (2.45) 13		-3.29	0.001
Less than 5	0	0.0	1	0.3		
5	1	0.8	0	0.0		
6	0	0.0	0	0.0		
7	0	0.0	0	0.0		
8	0	0.0	3	1.0		
9	3	2.3	5	1.7		
10	12	9.0	10	3.4		
11	4	3.0	7	2.4		
12	58	43.6	96	32.2		
13	13	9.8	27	9.1		
14	18	13.5	56	18.8		
15	4	3.0	23	7.7		
16	12	9.0	47	15.7		
17	3	2.3	4	1.3		
18	4	3.0	5	1.7		
19	1	0.7	8	2.7		
20	0	0.0	3	1.0		
21	0	0.0	3	1.0		
22 or more	0	0.0	0	0.0		
Total	133	100.0	298	100.0		

Table 2.7 Number and percentage of African-American and Anglo male hunters in Mississippi by number of days hunted in 2004-2005.

Overall mean/ Category	African-American male hunters		Anglo male hunters		Z-value	P
	n	%	n	%		
\bar{X} (\pm SD) m	26.9 (26.12) 20		30.1 (25.03) 25		-2.04	0.041
Less than 5	15	12.7	21	7.3		
5-9	11	9.3	20	7.0		
10-14	19	16.1	39	13.6		
15-19	14	11.9	23	8.0		
20-24	14	11.9	41	14.3		
25-29	3	2.5	21	7.3		
30-34	12	10.2	37	12.9		
35-39	2	1.7	6	2.1		
40 or more	28	23.7	79	27.5		
Total	118	100.0	287	100.0		

Table 2.8 Number and percentage of African-American and Anglo male hunters in Mississippi by number of years hunted.

Overall mean/ Category	African-American male hunters		Anglo male hunters		Z-value	P
	n	%	n	%		
\bar{x} (\pm SD) m	25.2 (13.77) 25		30.5 (13.26) 30		-3.28	0.001
Less than 5	9	7.3	8	2.5		
5-9	15	12.1	9	3.0		
10-14	6	4.8	18	5.9		
15-19	9	7.3	33	10.9		
20-24	15	12.1	29	9.5		
25-29	13	10.5	24	7.9		
30-34	18	14.5	57	18.8		
35-39	16	12.9	40	13.2		
40-44	14	11.3	32	10.5		
45 or more	9	7.2	54	17.8		
Total	124	100.0	304	100.0		

Table 2.9 Number and percentage of African-American and Anglo male hunters in Mississippi by hunting importance when compared to other outdoor recreation activities.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Most important outdoor activity	64	50.0	194	61.8	6.06	0.109
Second most important outdoor activity	49	38.3	87	27.7		
Third most important outdoor activity	11	8.6	27	8.6		
None of the above	4	3.1	6	1.9		
Total	128	100.0	314	100.0		

Table 2.10 Number and percentage of African-American and Anglo male hunters in Mississippi by household ownership of an all terrain vehicle (ATV) that is used for hunting.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Own ATV that is used for hunting	69	54.3	228	73.8	15.69	< 0.001
Do not own ATV that is used for hunting	58	45.7	81	26.2		
Total	127	100.0	309	100.0		

Table 2.11 Number and percentage of African-American and Anglo male hunters in Mississippi by animal most preferred to hunt.

Category	Game species preference	African-American male hunters		Anglo male hunters		Chi-square $(X)^2$ value	<i>P</i>
		n	%	n	%		
First choice	Big game	83	65.3	253	81.1	56.30	< 0.001
	Small game	42	33.1	22	7.1		
	Upland bird	2	1.6	14	4.5		
	Waterfowl	0	0.0	21	6.7		
	Predator	0	0.0	2	0.6		
	Total	127	100.0	312	100.0		
Second choice	Big game	29	24.8	111	40.1	56.71	< 0.001
	Small game	85	72.7	94	33.9		
	Upland bird	2	1.7	37	13.3		
	Waterfowl	0	0.0	27	9.8		
	Predator	1	0.8	8	2.9		
	Total	117	100.0	277	100.0		
Third choice	Big game	17	16.8	52	22.0	34.91	< 0.001
	Small game	75	74.3	99	42.0		
	Upland bird	9	8.9	66	28.0		
	Waterfowl	0	0.0	15	6.4		
	Predator	0	0.0	4	1.6		
	Total	101	100.0	236	100.0		

Table 2.12 Number and percentage of African-American and Anglo male hunters in Mississippi by species hunted.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Big game	61	44.2	205	65.3	17.60	< 0.001
Small game	82	59.4	154	49.0	4.14	0.042
Upland birds	9	6.5	127	40.5	52.45	< 0.001
Waterfowl	0	0.0	37	11.8	17.71	< 0.001
Predator species	2	1.5	21	6.7	5.45	0.020

Table 2.13 Number and percentage of African-American and Anglo male hunters in Mississippi by membership in national hunting/conservation organizations.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Member of any national hunting/conservation organizations	10	8.0	74	24.1	14.71	0.001
Not a member of any hunting/conservation organizations	115	92.0	233	75.9		
Total	125	100.0	307	100.0		

Table 2.14 Number and percentage of African-American and Anglo male hunters in Mississippi by subscription to hunting magazines.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Subscribe to hunting magazines	26	20.6	126	40.8	15.97	< 0.001
Do not subscribe to hunting magazines	100	79.4	183	59.2		
Total	126	100.0	309	100.0		

Table 2.15 Number and percentage of African-American and Anglo male hunters in Mississippi by individual that introduced them to hunting.

Category	African-American male hunters		Anglo male hunters		Chi-square (X^2) value	<i>P</i>
	n	%	n	%		
Introduced to hunting by immediate family	79	62.2	250	81.7	22.44	< 0.001
Introduced to hunting by extended family	24	18.9	26	8.5		
Introduced to hunting by friends	15	11.8	25	8.2		
Introduced themselves to hunting	9	7.1	5	1.6		
Total	127	100.0	306	100.0		

Table 2.16 Number and percentage of African-American and Anglo male hunters in Mississippi by age of first hunting experience.

Overall mean/ Category	African-American male hunters		Anglo male hunters		Z-value	P
	n	%	n	%		
\bar{x} (\pm SD) m	13.7 (6.10) 12		10 (4.54) 10		7.13	< 0.001
Less than 5	2	1.6	10	3.3		
5	1	0.8	29	9.5		
6	4	3.1	31	10.1		
7	5	3.9	20	6.5		
8	10	7.8	39	12.7		
9	7	5.5	7	2.3		
10	6	4.7	58	18.9		
11	4	3.1	13	4.2		
12	27	21.1	34	11.1		
13	8	6.3	19	6.2		
14	7	5.5	7	2.3		
15	12	9.4	18	5.9		
16	10	7.8	8	2.6		
17	6	4.7	5	1.6		
18	3	2.3	2	0.7		
19	3	2.3	1	0.3		
20	3	2.3	0	0.0		
21	0	0.0	1	0.3		
22	0	0.0	0	0.0		
23	0	0.0	0	0.0		
24	0	0.0	0	0.0		
25 or older	10	7.8	5	1.5		
Total	128	100.0	307	100.0		

Table 2.17 Preliminary and final ANCOVA for achievement motivation scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	935.31	103.92	2.32	0.015
Race	1	3.25	3.25	0.07	0.788
Yrs. Hunted (Race)	2	61.42	30.71	0.69	0.504
Age (Race)	2	279.83	139.91	3.13	0.045
Income (Race)	2	18.97	9.48	0.21	0.809
Education (Race)	2	214.22	107.11	2.39	0.093
Error	367	16421.81	44.75		
Corrected Total	376	17357.13			
Final ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	3	683.37	227.79	4.77	0.003
Race	1	331.82	331.82	6.95	0.009
Age (Race)	2	351.55	175.77	3.68	0.026
Error	445	21258.61	47.77		
Corrected Total	448	21941.98			
Slope Test					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Age*Race	1	3.07	3.07	0.06	0.800
Error	445	21258.61	47.77		
Corrected Total	448	21941.98			

Table 2.18 Preliminary ANCOVA and final ANOVA for affiliative motivation scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	803.62	89.29	1.24	0.269
Race	1	0.01	0.01	0.00	0.992
Yrs Hunted (Race)	2	175.69	87.84	1.22	0.296
Age (Race)	2	375.98	187.99	2.61	0.075
Income (Race)	2	114.98	57.49	0.80	0.451
Education (Race)	2	19.79	9.89	0.14	0.872
Error	367	26416.93	71.98		
Corrected Total	376	27220.55			
Final ANOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Race	1	71.13	71.13	0.96	0.327
Error	450	33172.41	73.72		
Corrected Total	451	33243.53			

Table 2.19 Preliminary ANCOVA and final ANOVA for appreciative motivation scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	175.09	19.45	0.86	0.557
Race	1	6.75	6.75	0.30	0.584
Yrs Hunted (Race)	2	21.74	10.87	0.48	0.617
Age (Race)	2	52.47	26.24	1.17	0.313
Income (Race)	2	2.99	1.49	0.07	0.936
Education (Race)	2	4.06	2.03	0.09	0.914
Error	367	8255.35	22.49		
Corrected Total	376	8430.43			
Final ANOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Race	1	54.54	54.54	2.37	0.125
Error	450	10377.07	23.06		
Corrected Total	451	10431.61			

CHAPTER III

ATTITUDES TOWARD WILDLIFE OF AFRICAN-AMERICAN AND ANGLO MALES IN MISSISSIPPI

Introduction

With the abundance and variety of game in North America before the Civil War, Americans from every part of the country took part in the sport of hunting. The Southern sportsmen tended to see hunting as a form of recreation with special ties to their region and to themselves (Gohdes, 1967). Nevertheless, despite the increase in the U.S. population during the 1980s and 1990s, an expanded base from which hunting could potentially draw new recruits, the total number of U.S. hunters did not increase (Decker, Brown & Siemer, 2001). According to the U. S. Department of the Interior (USDO), Fish and Wildlife Service and U.S. Department of Commerce (USDOC), Census Bureau, about 13.034 million individuals 16-years old or older participated in hunting in 2001. Of these, 12.568 million hunters (96%) were Anglo, 297,000 hunters (2%) were African-American, and 169,000 (2%) hunters were from some other ethnic origin. While the absolute number of hunters may be relatively stable, a smaller proportion of the U.S. population now participates in hunting (Heberlein & Thomson, 1992, 1996). The decreasing rate of participation has been attributed to the effects of demographic and social changes, such as increasing minority populations, urbanization, an aging

population, and changing family structures, which make future increases in hunting involvement seem unlikely (Purdy & Decker, 1989).

Changes in the demographic structure of the U.S population is seen as one of the most important reasons for lesser rates of participation in hunting. For example, where the U.S. population is projected to increase by 50 million by 2010, over 80% of this growth is expected in Hispanic, African-American and other minority population segments (Murdock, Loomis, Ditton & Hoque, 1996). This is especially important because minorities do not participate in hunting to the same extent as Anglos. Thus, for hunting to maintain its cultural significance and for agencies to sustain current funding levels generated by license sales and hunting expenditures, natural resources agencies and hunting-oriented industries are faced with the challenge of attracting more members of various cultural groups to the activity. Overcoming these challenges will most likely be the key to changing the current trends in hunter participation (Purdy & Decker, 1989).

Despite a lack of research on minority hunter characteristics, there has been an increased interest in how Americans from different ethnic groups feel about wildlife. This is an important underlying factor because it can give an insight into why African-American and Anglos' recreational patterns substantially differ. Moreover, one of the most important aspects of wildlife management is to understand the public's attitudes about wildlife. Society's attitudes toward wildlife often influence how science and management programs are operated (Ballard, 1994). Several studies (Kellert, 1976, Washington, 1976, Kellert & Berry, 1980, Dolin, 1988) have focused on the role of

ethnicity in the formation of attitudes toward wildlife. However, the subject still remains relatively untouched and needs to be examined with more detail.

The first study to be conducted on African-Americans attitudes toward wildlife was by Washington (1976) in which he sought to determine the extent of urban African-Americans' interest in wildlife. Washington (1976, p. 15) ultimately concluded that, "Wildlife is little more than a vestigial component in the lives of many urban blacks...and there is a large and growing number of urban blacks whose desires are not strongly oriented toward the enjoyment of wildlife." Although this was determined in the late 1970's the same trend seems to continue today, but there is a lack of scientific data to support this presumption. In another effort to identify African-Americans' attitudes toward wildlife, Dolin (1988) performed an extensive literature review and described various theories on why African-Americans might have little interest in wildlife, discussed why it is important to understand African-Americans' attitudes toward wildlife, and considered the need for more research on the subject. Dolin (1988, p. 20) concluded that, " If it is substantiated that blacks have little or no interest in wildlife, it may be prudent for advocates of wildlife management to work toward altering black attitudes on this subject." His results made it clear that little empirical work on African-Americans' attitudes toward wildlife had been conducted and that more research is needed before accurate conclusions could be reached.

In one of the most well-known studies on Americans' attitudes toward animals, Kellert and Berry (1980) conducted a five-phase report for the United States Department of the Interior, Fish and Wildlife Service. From 1977 through 1983, they evaluated

knowledge and attitudes toward animals using survey and interview style questioning. Kellert and Berry developed a typology of attitudes toward animals to identify people's basic values and perceptions of animals. These attitudes reflect patterned feelings, ideas and beliefs and, in most cases, considerably influence individual action and activities (Kellert & Berry, 1980). Nine basic attitudes toward animals were tested: naturalistic, ecologicistic, humanistic, moralistic, scientific, aesthetic, utilitarian, dominionistic, and negativistic.

The results of Kellert and Berry's (1980) research showed that the most common attitudes toward animals were humanistic, moralistic, utilitarian, and negativistic. African-Americans had particularly high scores for the utilitarian, dominionistic and negativistic attitude types. Dolin (1988, p. 18) summarized Kellert and Berry's findings by reporting that, "In general, the blacks interviewed expressed significantly less knowledge and concern about wildlife and the natural environment than whites." Kellert and Berry also found three important differences between African-American and Anglo respondents: 1) African-Americans expressed the least interest for the environment as a system and in wildlife/habitat interactions than any other ethnicity; 2) educated and higher income African-Americans were less interested, knowledgeable about, or involved with wildlife than Anglos of similar economic status; and 3) differences in attitudes among African-American and Anglo respondents of lower socioeconomic status were small or insignificant.

Purdy and Decker (1989) developed a Wildlife Attitudes and Values Scale (WAVS) to better understand people's attitudes toward non-economic social values of

wildlife. This scale was a standardized measure that could be incorporated easily into a variety of questionnaires, be relevant to a variety of management issues and audiences, and provide useful information to wildlife managers. Through a factor analysis of the WAVS data, four broad dimensions of attitudes types were identified: 1) Communication-Benefits; 2) Problem-Tolerance; 3) Social-Benefits; and 4) Traditional-Conservation. The Communication-Benefits dimension included items related to observing and talking about wildlife. The Problem-Tolerance dimension included items concerning the safety risks associated with wildlife. The Social-Benefits dimension contained items about the appreciation and existence of wildlife, and the Traditional-Conservation dimension was characterized by responses to items involving management of wildlife for sustainable use, including hunting and trapping.

WAVS has been used extensively in New York to help understand how values of wildlife are related to people's reasons for hunting. In two separate studies Purdy, Decker, and Brown (1985) and Purdy and Decker (1986) found that hunters consistently held Social-Benefits values of wildlife in higher regard than values related to Traditional-Conservation. Additionally, attitudes about recreational hunting were most negative among persons who were not raised in families where hunting was an accepted, traditional activity. In contrast, persons from "hunting families" exhibited strong, positive attitudes about traditional conservation aspects of wildlife. Further, Butler, Shanahan, and Decker (2003) combined data from 17 WAVS surveys of New York residents using a multivariate analysis to find trends in the four dimensions. Their results indicated declining Problem-Tolerance attitudes, that Traditional-Conservation attitudes

gained proponents among men, and Communication-Benefits attitudes were rated consistently high. Furthermore, no significant changes were detected in attitudes concerning the Social-Benefits of wildlife. However, demographic characteristics such as race, ethnicity, and income were not considered in this study because they were not asked of participants in several of the studies included in the analysis.

Understanding attitudes of all ethnic groups is important in respect to natural resource management. Current resource managers cannot ignore historical events that have conditioned people's attitudes, affected the resources that they and their families have available, and fundamentally changed their relationships to natural resources (Schelhas, 2002). Dolin (1988, p. 20) states that, "It is extremely important that the public, especially voters, be concerned about wildlife if our nation's commitment to managing and protecting that resource is to remain strong and become more expansive over time..." The purpose of my study was to improve current knowledge about African-American hunters in Mississippi by better understanding how they differ from the traditional Anglo clientele in their attitudes toward wildlife. Specifically, I expected to find differences between African-American and Anglo males in their Communication-Benefits, Problem-Tolerance, Social-Benefits, and Traditional-Conservation attitudes. I anticipated that African-American male hunters would differ from Anglo male hunters based on their historical relationship with natural resources; however, the direction of differences is unclear from the literature review.

Methods

Sampling Design

Data for my study were collected from the 2005 Mississippi Statewide Hunter Survey conducted for the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP). The sampling frame consisted of resident Mississippi hunters who purchased a Sportsman, Big Game, or Small Game hunting license. I used licensed hunters from 18 to 64 years of age. From this sampling frame I pulled four random samples based on race/gender category: 802 Anglo male hunters; 802 African-American male hunters; 198 Anglo female hunters; and 198 African-American female hunters. My original intent was to sample 500 individuals from each group, however, I selected only 198 individuals for the female samples because there were only 198 African-American female hunters listed in the license file.

Survey Implementation and Response

The 2005 Mississippi Statewide Hunter Survey consisted of an 11-page, self-administered mail questionnaire designed to collect information on the objectives of this thesis as well as other biological, social, and economic information beyond the scope of this thesis. The Total Design Method (TDM) developed by Dillman (1978) was used as a reference for survey design and mailing procedures. Three mailings, as necessary, were sent to hunters between July and October 2005. Each mailing consisted of a cover letter explaining the purpose of the survey, the importance of hunter response, the confidential nature of responses, and a contact number in case the hunter had any questions regarding the survey or to request a replacement questionnaire. Additionally, a postage-paid

business reply envelope was used to facilitate returns. Each envelope and letter was addressed to each individual person using the merge function in Microsoft Word, and their names and addresses were printed directly on the letters and envelopes to simulate a first class mailing. All questionnaires were numbered using a bar code system printed on clear adhesive labels. When questionnaires were returned to Mississippi State University, the bar codes were scanned to remove the individual from the possibility of further mailings. The questionnaire and content of the mailings were reviewed and approved by the Mississippi State University Institutional Review Board for the Protection of Human Subjects (Docket 02-158).

Demographic Characteristics

I first sought information on the demographic characteristics and participation patterns of African-American and Anglo male hunters that would serve as covariates when investigating attitudinal differences: age, income level, education level, and number of years hunted. First, I asked hunters to indicate their age and whether they were male or female. Next, I asked hunters their approximate annual household income level before taxes in \$10,000 increments to “\$100,000 and above.” These categories allow for a general determination of incomes of certain groups of people without invading privacy. Then, I asked hunters to indicate how many years of formal education they completed (1-22 years). I then asked hunters, “How many years have you been hunting?” Lastly, as a verification of license files, I asked hunters their race/ethnicity which was measured on a nominal scale that categorized hunters into four groups: “White or Anglo”, “Black or

African-American”, “Native American or Alaskan Native”, and “Asian or Pacific Islander.”

Attitudes Toward Wildlife

I asked hunters to indicate the extent to which they agreed or disagreed with each of 17 WAVS items on a five-point Likert-type scale with the following response format: 1 = “strongly disagree”; 2 = “disagree”; 3 = “neutral”; 4 = “agree”; and 5 = “strongly agree” (Table 3.1). To make sure I used the most current scale items in my study, I contacted the Human Dimensions Research Unit at Cornell University which provided me with the current scale items (W. F. Siemer, personal communication, July 23, 2004). Individual items by attitude type were: (1) Communication-Benefits – It is important to me personally: “to talk about wildlife with family and friends,” “to observe or photograph wildlife,” “to express opinions about wildlife and their management to public officials or to officials of private conservation organizations,” and “to see wildlife in books, movies, paintings, or photographs.” (2) Problem-Tolerance – It is important to me personally: “that I tolerate most levels of property damage by wildlife,” “that I tolerate the ordinary risk of wildlife transmitting diseases to humans or domestic animals,” and “that I tolerate most wildlife nuisance problems.” (3) Social-Benefits – It is important to me personally: “to know that wildlife exist in nature,” “that wildlife are included in educational materials as the subject for learning more about nature,” “that I consider the presence of wildlife as a sign of the quality of the natural environment,” “that I appreciate the role that wildlife plays in the natural environment,” and “that I understand more about the behavior of wildlife.” (4) Traditional-Conservation – It is important to me personally: “to hunt game

animals for recreation,” “to trap furbearing animals for sale of fur or pelts,” “that game animals are managed for an annual harvest for human use without harming the future of the wildlife population,” “that local economies benefit from the sale of equipment, supplies, or services related to wildlife recreation,” and “to hunt game animals for food.” Scale items for each of the four dimensions were then subjected to scale reliability analysis using Cronbach’s alpha (Miller, 1995).

Data Entry and Statistical Analysis

I entered data into a Microsoft Access database using a data entry screen that looked exactly like the questionnaire. The database also had built in codes to warn if erroneous values were entered to further reduce input errors. Next, I conducted a data verification procedure. Error rates were examined by first ordering surveys by identification number and taking every 20th survey (n = 26) from the hard copy set. Second, the hard copy survey data were compared to the computerized data version to search for possible errors. Any errors were recorded and corrected in the final dataset. After all data were verified, some errors were found in the initial data entry process. A total of 46 errors were found among 3,952 questions resulting in an error rate of 1.2%. Errors were random and no pattern was found for any particular variable. As a final check on errors, I conducted a frequency distribution on each variable to check for inconsistencies in response and data entry. I then converted the data for analysis procedures into a SAS 9.1 format (Schlotzhauer & Littell, 1997). I used several statistical tests for data analysis. Parametric and non-parametric tests were used as appropriate based on tests for normality. The two-sample T-test was used to detect

differences between African-American and Anglo males on the normally distributed variables age and education level. All other variables were either not at least interval level data or were not distributed normally. Chi-square (X^2) test was used to detect differences between groups on gender and income. I used the Wilcoxon Rank Sum test to detect differences between groups on the number of years respondents have been hunting.

Previous research implies that competing explanations be controlled for or used as covariates when looking for differences between cultural groups on motivational and attitudinal constructs. Age, income level, education level, and number of years hunted have been suggested as the most important covariates. Two different approaches have been used to control for covariates in cultural studies. Washburne (1978) and Hunt and Ditton (2002) controlled for competing explanations by using paired or matched samples to better understand differences in recreational behaviors between racial and ethnic groups. Others, such as Floyd and Gramann (1993), have used these variables as covariates to look for differences in recreational behavior. I have chosen to use the latter approach for my analysis of attitudes towards wildlife.

I used Analysis of Covariance (ANCOVA) in PROC GLM to test for differences between African-American and Anglo males on attitudes toward wildlife and associated preliminary steps. The ANCOVA allowed me to test the main effect of race on attitudes toward wildlife while controlling for age, income level, education level, and years hunted. Based on previous studies (Stevens, 2002, Wildt & Ahtola, 1978, Milliken & Johnson, 2002), for the ANCOVA to be applied reasonably, two assumptions have to be

met: 1) that age, income level, education level, and years hunted (i.e., all covariates) were linearly related to attitudes toward wildlife (i.e., dependent variables); and 2) that regression lines were parallel for any covariate that was linearly related to attitudes toward wildlife. A preliminary data analysis was conducted to avoid violation of the assumptions. Based on previous research, I initially assumed that all covariates tested would meet the assumptions of the ANCOVA test. However, after running the test on all the covariates, several had no linear relationship with attitudinal scores. To include those covariates in the final analysis would have been pointless because no reduction in variance would be achieved and the power of the test would have been reduced (Milliken & Johnson, 2002). In some instances there was a violation of the homogeneity of regression lines assumption, which I corrected for by examining adjusted means at different levels of the covariate. The one-way Analysis of Variance (ANOVA) in PROC GLM was used when none of the covariates tested had a linear relationship with attitudes toward wildlife.

Results

Response Rates

Data were obtained from 558 licensed Mississippi hunters of which 138 were African-American males, 314 were Anglo males, 38 were African-American females and 68 were Anglo females (Table 3.2). Response rates were calculated by dividing number of returned useable questionnaires by the total number of surveys sent minus number returned non-eligible minus non-deliverables (Dillman, 1978). The overall response rate

for my study was 36.7%. African-American males had the least response rate (22.0%), followed by African-American females (27.0%), then Anglo females (46.2%) and Anglo males (51.8%). Because the total number of responses from both female groups was so low, the probability of making a Type II error was high at 30% (Cohen, 1988). Thus, because of low statistical power (70%) I decided to exclude females from any statistical analysis for fear of drawing false conclusions.

Poor response rates and the high non-deliverable rates for all groups were most likely due to Hurricane Katrina's impact on the State of Mississippi. The second mailing for my study was postmarked the day Hurricane Katrina hit the Mississippi coast. Needless to say, many residents were forced to evacuate and a statewide hunter survey was not the most salient thing in their lives at the time. I proceeded with the third mailing that included sympathetic language and an apology to subjects if they found the survey offensive. Despite this, some negative comments were received, and I opted to not conduct a follow-up non-respondent survey. Whereas this most likely reduced the generalizability of my findings, after consulting with state and university officials, I felt this was a necessary omission. Although I believe results presented henceforth are valuable knowledge for recreation planners in Mississippi, and contribute to future theory development, care should be taken when generalizing results beyond my sample.

Demographic Characteristics

I did not find a statistically significant difference ($t = 1.06$, $P = 0.289$) in the average age of African-American ($\bar{x} = 44.7$, $m = 46$, $n = 137$) and Anglo male hunters ($\bar{x} = 43.5$, $m = 43$, $n = 312$). I found a statistically significant difference in annual

household income ($X^2 = 54.18, P < 0.001$) of African-American and Anglo males. African-American male hunters' median household income category was \$30,000-\$39,999 ($n = 120$) whereas median household income category for Anglo males was \$50,000-\$59,999 ($n = 285$). I found a statistically significant difference in education ($t = -3.29, P = 0.001$). African-American males' average level of education ($\bar{x} = 12.8, n = 133$) was significantly less than Anglo males ($\bar{x} = 13.6, n = 298$). Lastly, I found a statistically significant difference in the number of years the groups have been hunting ($Z = -3.28, P = 0.001$). African-American males have been hunting fewer years ($\bar{x} = 25.2, m = 25, n = 124$) than Anglo males ($\bar{x} = 30.5, m = 30, n = 304$). Differences exhibited in demographic characteristics further showed the need to use these variables as covariates.

Attitudes Toward Wildlife

Social-Benefits

Cronbach's alpha for the Social-Benefits dimension was 0.78 (Table 3.1) indicating adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates years hunted ($F_{2, 367} = 0.64, P = 0.529$), age ($F_{2, 367} = 0.26, P = 0.775$), income level ($F_{2, 367} = 0.39, P = 0.680$), or education level ($F_{2, 367} = 0.76, P = 0.469$) on Social-Benefits scores (Table 3.3). Because none of the covariates showed a statistically significant relationship with scores, I performed a one-way ANOVA to test if Social-Benefits scores were significantly different for African-American and Anglo males. I found a statistically significant difference ($F_{1, 450} = 10.16,$

$P = 0.002$) in mean Social-Benefits scores in which African-American males scores were less ($\bar{x} = 21.3$, $n = 138$) than Anglo males ($\bar{x} = 22.1$, $n = 314$).

Traditional-Conservation

Cronbach's alpha for the Traditional-Conservation dimension was 0.59 (Table 3.1) indicating a low, but adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates age ($F_{2, 367} = 0.95$, $P = 0.387$), income level ($F_{2, 367} = 1.29$, $P = 0.277$), or education level ($F_{2, 367} = 0.59$, $P = 0.554$) on Traditional-Conservation scores (Table 3.4). I did detect a statistically significant relationship between the covariate years hunted ($F_{2, 367} = 3.29$, $P = 0.038$) and Traditional-Conservation scores. I found when the number of years the respondent had been hunting was tested alone, a statistically significant relationship with Traditional-Conservation scores still existed ($F_{2, 425} = 5.74$, $P = 0.004$). I tested the equality of slopes for African-American and Anglo males' Traditional-Conservation scores and years hunted and found there was a statistically significant difference across groups ($F_{1, 425} = 5.49$, $P = 0.020$). This indicated that Traditional-Conservation scores for African-American and Anglo males varied depending on the number of years respondents have been hunting. Therefore, scores were evaluated for a range of pertinent years hunted (Table 3.5). I found that the adjusted means of Traditional-Conservation scores for African-American males who have been hunting at least 15 years and no more than 50 years, were less than Anglo males. At other number of years hunted, there was not a significant difference detected in scores across groups.

Problem-Tolerance

Cronbach's alpha for the Problem-Tolerance dimension was 0.74 (Table 3.1) indicating adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates years hunted ($F_{2, 367} = 0.05, P = 0.955$), age ($F_{2, 367} = 1.13, P = 0.323$), or income level ($F_{2, 367} = 1.95, P = 0.144$) on Problem-Tolerance scores (Table 3.6). I did detect a statistically significant relationship between the covariate education ($F_{2, 367} = 3.62, P = 0.028$) and Problem-Tolerance scores. When the education level of respondents was tested alone, a statistically significant relationship with Problem-Tolerance scores still existed ($F_{2, 434} = 3.04, P = 0.049$). I tested the equality of slopes for African-American and Anglo males' Problem-Tolerance scores and education level in which I found there was a statistically significant difference across groups ($F_{1, 434} = 5.68, P = 0.018$). This indicated that Problem-Tolerance scores for African-American and Anglo males varied depending on education level. Therefore, scores were evaluated for a range of pertinent education levels (Table 3.7). I found that the adjusted means of Problem-Tolerance scores for African-American males with one to 15 years of education were less than Anglo male scores. At educational levels greater than 15 years, there was not a statistically significant difference detected in scores across groups.

Communication-Benefits

Cronbach's alpha for the Communication-Benefits dimension was 0.67 (Table 3.1) indicating adequate internal consistency of scale items. I did not detect a statistically significant relationship between the covariates age ($F_{2, 367} = 1.74, P = 0.177$), income

level ($F_{2, 367} = 1.15, P = 0.318$), or education level ($F_{2, 367} = 0.53, P = 0.591$) on Communication-Benefits scores (Table 3.8). I did detect a statistically significant relationship between the covariate years hunted ($F_{2, 367} = 3.14, P = 0.044$) and the Communication-Benefits scores. When the number of years the respondents had been hunting was tested alone, a statistically significant relationship with Communication-Benefits scores still existed ($F_{2, 425} = 3.41, P = 0.034$). I tested the equality of slopes for African-American and Anglo males' Communication-Benefits scores and years hunted and found there was not a statistically significant difference across groups ($F_{1, 425} = 1.25, P = 0.264$). With number of years hunted as a covariate, I found there was no statistically significant difference ($P = 0.227$) in adjusted Communication-Benefits mean scores for African-American ($\bar{x} = 16.3$) and Anglo males ($\bar{x} = 16.6$).

Discussion

Social-Benefits

I found differences between African-American and Anglo males in their scores on the Social-Benefits dimension, although the dimension was important to both groups. This indicates that both groups have an appreciation for wildlife, enjoy seeing and knowing wildlife exist in nature, and like to read about wildlife in educational materials to learn more about them. However, African-American males' scores on the Social-Benefits dimension were still significantly less than Anglo males. This suggests that there may be a cultural explanation for existing differences in attitudes. Based on Dolin (1988), two cultural patterns may explain this finding: 1) identification with slavery, and

2) personal priorities. The identification with slavery theory states that African-Americans have a low interest in nature and wildlife because of their history with slavery in which the relationship with the land was more required than voluntary. If this theory can be extended to include the natural environment in general, then it may offer a partial reason why African-American males expressed less interest in the existence and appreciation of wildlife. Further, the personal priorities theory implies that outdoor and wildlife related activities are not a high priority to African-Americans because other more pressing material concerns are more important to them on a daily basis. This is consistent with Taylor's (1989) and Valenzuela's (1994) perspective that African-Americans have less involvement in environmental groups because those groups focus on nonhuman organisms and neglect socially relevant environmental justice issues.

Traditional-Conservation

I found differences between African-American and Anglo males in their scores on the Traditional-Conservation dimension at later years of experience. This is consistent with the observation by Bryan (1977) that novices in recreational activities, like hunting and fishing, would be more consumptively oriented. Items in this scale appear to be related to utilitarian benefits of hunting or wildlife. At early years of experience, African-American and Anglo males both view this construct as "moderately important." However, as years of participation in hunting increased, Traditional-Conservation attitudes became increasingly more important to Anglos whereas years of experience didn't appear to affect the importance of Traditional-Conservation attitudes of African-American males; in fact, they became less important. This finding suggests that African-

American male hunters with a lot of experience may become more appreciative of non-utilitarian aspects of hunting. However, this is contradicted by their lower scores on the Social-Benefits dimension. Taking into consideration Kellert and Berry's (1980) earlier study that showed African-American males in general are more utilitarian oriented than Anglos males, further research should be conducted to shed light on this finding.

Problem-Tolerance

I found that there were significant differences between African-American and Anglo males in their scores on the Problem-Tolerance dimension. Differences were most pronounced between groups with fewer years of formal education. African-American males at lower educational levels were less tolerant of problems caused by wildlife that included property damage, diseases, and being a nuisance in general. However, as educational level increased, African-American males became more tolerant and differences between them and Anglos disappeared after some years of college. At that point, both Anglo and African-American males' views tolerating wildlife problems were "moderately important." This suggests that there may be something about the college experience that changes African-American attitudes toward viewing wildlife problems. Perhaps this is the result of courses taken which broadened the understanding of wildlife, or exposure to others from different cultural backgrounds who have more involvement with wildlife.

Communication-Benefits

I did not detect differences in African-American and Anglo male scores on the Communication-Benefits dimension after controlling for years of experience. This suggests that this dimension is not influenced by culture as much as it is by years of hunting experience. Nevertheless, both groups indicated that it was “very important” to talk about wildlife with others, see wildlife in reading materials, observe or photograph wildlife, and express opinions about wildlife to management officials. This was not totally unexpected because participation in the sport requires some understanding of wildlife species and a basic knowledge of management issues that can potentially affect their overall hunting experience. However, this finding is inconsistent with Kellert and Berry’s (1980) conclusion that in general, African-Americans expressed significantly less knowledge and concern about wildlife and the natural environment than Anglos. Further research should be conducted to better understand the relationship between African-American hunters and non-hunters as well as the influence of hunting experience with this attitude type.

Despite significant findings on three of the four attitude constructs, age and income level were not significant covariates with any of the attitudinal constructs. This leads me to believe that attitudes toward wildlife of African-American males may not be as linked to their age and income as previous cultural research has implied. Future research should continue to investigate these variables as possible covariates because my results may have been a function of small sample sizes or less than representative samples. Nevertheless, even if covariates indicate a significant difference, that does not

mean that differences are consistent or even exist at all levels of the covariate.

Researchers should pay particular attention to the slopes instead of assuming they are parallel and provide randomly selected adjusted means. Recently, Milliken and Johnson (2002) indicated that this is one of the most common mistakes researchers make when conducting an ANCOVA.

Although the scale reliabilities I found on each of the WAVS constructs achieved about 0.60 or better, which is seen as acceptable in most outdoor recreation research, additional items and/or different scales may need to be investigated, at least for hunting in Mississippi. Lower than anticipated reliabilities may have occurred for three reasons. First, Cornell University researchers developed this scale on all wildlife stakeholders (not only hunters) in New York State whereas I looked only at hunters in Mississippi. Second, there could be regional differences in how southern and northern residents interpret scale items. Similarly, African-American males may have interpreted scale items differently than Anglo males, or a different factor structure may exist for the WAVS scale if only African-Americans were investigated. For example, Toth and Brown (1997) found that a different factor structure existed between African-American and Anglo anglers in the Mississippi Delta. This same phenomenon may be evident in attitudes toward wildlife. As Dolin (1988, p. 20) said, “With so little empirical work on black attitudes toward wildlife available, it is clear that more research must be done before solid conclusions can be reached on what those attitudes are and why they are held.”

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Table 3.1 Scale items used to measure African-American and Anglos' attitudes toward wildlife in Mississippi and scale reliability.

Dimension	Scale items (It is important to me personally:) ^a	Scale reliability (Cronbach's alpha)
Communication-Benefits	to talk about wildlife with family and friends	0.67
	to observe or photograph wildlife	
	to express opinions about wildlife and their management to public officials or to officials of private conservation organizations	
	to see wildlife in books, movies, paintings, or photographs	
Problem-Tolerance	that I tolerate most levels of property damage by wildlife	0.74
	that I tolerate the ordinary risk of wildlife transmitting diseases to humans or domestic animals	
	that I tolerate most wildlife nuisance problems	
Social-Benefits	to know that wildlife exist in nature	0.78
	that wildlife are included in educational materials as the subject for learning more about nature	
	that I consider the presence of wildlife as a sign of the quality of the natural environment	
	that I appreciate the role that wildlife plays in the natural environment	
Traditional-Conservation	that I understand more about the behavior of wildlife	0.59
	to hunt game animals for recreation	
	to trap furbearing animals for sale of fur or pelts	
	that game animals are managed for an annual harvest for human use without harming the future of the wildlife population	
	that local economies benefit from the sale of equipment, supplies, or services related to wildlife recreation	
	to hunt game animals for food	

^a Response format: 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree."

Table 3.2 Response categories and rates for the 2004-05 Mississippi Resident Statewide Hunter Survey by race and gender category.

Category	African-American males	Anglo males	African-American females	Anglo females	Overall totals
# Mailed	802	802	198	198	2000
# Not returned	490	292	103	79	964
# Returned useable	138	314	38	68	558
# Returned non-eligible	31	33	12	15	91
# Non-deliverable	143	163	45	36	387
Response rate ^a	22.0%	51.8%	27.0%	46.2%	36.7%

^a Response rate calculated by dividing number of returned useable questionnaires by total number of surveys sent minus number of returned non-eligible minus non-deliverables.

Table 3.3 Preliminary ANCOVA and final ANOVA for Social-Benefits attitude scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	117.89	13.10	1.87	0.056
Race	1	0.00	0.00	0.00	0.981
Yrs Hunted (Race)	2	8.95	4.47	0.64	0.529
Age (Race)	2	3.58	1.79	0.26	0.775
Income (Race)	2	5.43	2.71	0.39	0.680
Education (Race)	2	10.66	5.33	0.76	0.469
Error	367	2576.00	7.02		
Corrected Total	376	2693.89			
Final ANOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Race	1	71.04	71.04	10.16	0.002
Error	450	3145.23	6.99		
Corrected Total	451	3216.27			

Table 3.4 Preliminary and final ANCOVA for Traditional-Conservation attitude scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	433.77	48.20	5.72	< 0.001
Race	1	6.09	6.09	0.72	0.396
Yrs Hunted (Race)	2	55.46	27.73	3.29	0.038
Age (Race)	2	16.03	8.02	0.95	0.387
Income (Race)	2	21.70	10.85	1.29	0.277
Education (Race)	2	9.95	4.97	0.59	0.554
Error	367	3089.87	8.42		
Corrected Total	376	3523.63			
Final ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	3	428.52	142.84	16.85	< 0.001
Race	1	2.43	2.43	0.29	0.593
Yrs Hunted (Race)	2	97.35	48.67	5.74	0.004
Error	425	3602.09	8.48		
Corrected Total	428	4030.61			
Slope Test					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Yrs Hunted*Race	1	46.56	46.56	5.49	0.020
Error	425	3602.09	8.48		
Corrected Total	428	4030.61			

Table 3.5 Adjusted means (\pm SD) for Traditional-Conservation attitude scores of African-American and Anglo male hunters in Mississippi by years hunted.

Years Hunted	African-American males ^a	Anglo males ^a	<i>P</i>
5	18.2 (0.46)	18.9 (0.36)	0.281
10	18.2 (0.39)	19.1 (0.31)	0.069
15	18.1 (0.34)	19.3 (0.26)	0.005*
20	18.1 (0.28)	19.5 (0.21)	< 0.001*
25	18.0 (0.26)	19.7 (0.18)	< 0.001*
30	18.0 (0.28)	19.9 (0.17)	< 0.001*
35	17.9 (0.32)	20.1 (0.18)	< 0.001*
40	17.8 (0.38)	20.3 (0.21)	< 0.001*
45	17.8 (0.46)	20.6 (0.25)	< 0.001*
50	17.7 (0.54)	20.8 (0.30)	< 0.001*

* Statistically significant difference indicated; p-value < 0.05.

^a Average number of years hunted for African-American and Anglo males was 25.2 years and 30.5 years, respectively.

Table 3.6 Preliminary and final ANCOVA for Problem-Tolerance attitude scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	250.18	27.80	4.76	< 0.001
Race	1	12.01	12.01	2.06	0.152
Yrs Hunted (Race)	2	0.53	0.27	0.05	0.955
Age (Race)	2	13.23	6.61	1.13	0.323
Income (Race)	2	22.71	11.35	1.95	0.144
Education (Race)	2	42.22	21.11	3.62	0.028
Error	367	2142.24	5.84		
Corrected Total	376	2392.42			
Final ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	3	225.37	75.12	12.11	< 0.001
Race	1	69.06	69.06	11.14	0.001
Education (Race)	2	37.74	18.87	3.04	0.049
Error	434	2691.30	6.20		
Corrected Total	437	2916.67			
Slope Test					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Education*Race	1	35.23	35.23	5.68	0.018
Error	434	2691.30	6.20		
Corrected Total	437	2916.67			

Table 3.7 Adjusted means (\pm SD) for Problem-Tolerance attitude scores of African-American and Anglo male hunters in Mississippi by years of education.

Education (in years) ^a	African-American males ^b	Anglo males ^b	<i>P</i>
1	6.8 (1.09)	11.2 (0.71)	0.001*
2	7.0 (1.00)	11.2 (0.66)	0.001*
3	7.2 (0.91)	11.1 (0.60)	0.001*
4	7.4 (0.83)	11.1 (0.55)	0.001*
5	7.6 (0.74)	11.1 (0.50)	0.001*
6	7.8 (0.66)	11.0 (0.45)	< 0.001*
7	8.0 (0.57)	11.0 (0.40)	< 0.001*
8	8.3 (0.49)	10.9 (0.34)	< 0.001*
9	8.5 (0.41)	10.9 (0.29)	< 0.001*
10	8.7 (0.34)	10.9 (0.25)	< 0.001*
11	8.9 (0.28)	10.8 (0.21)	< 0.001*
12	9.1 (0.23)	10.8 (0.17)	< 0.001*
13	9.3 (0.21)	10.8 (0.15)	< 0.001*
14	9.5 (0.23)	10.7 (0.14)	< 0.001*
15	9.7 (0.28)	10.7 (0.16)	0.004*
16	9.9 (0.34)	10.6 (0.19)	0.077
17	10.2 (0.42)	10.6 (0.23)	0.349
18	10.4 (0.50)	10.6 (0.27)	0.727
19	10.6 (0.58)	10.5 (0.32)	0.938
20	10.8 (0.66)	10.5 (0.37)	0.692
21	11.0 (0.75)	10.4 (0.42)	0.522

* Statistically significant difference indicated; p-value < 0.05.

^a Response format: 1-8 = elementary, 9-12 = high school, 13-16 = college, and 17 or more = graduate.

^b Average education levels for African-American and Anglo males were 12.8 years and 13.6 years, respectively.

Table 3.8 Preliminary and final ANCOVA for Communication-Benefits attitude scores of African-American and Anglo male hunters in Mississippi.

Preliminary ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	9	65.01	7.22	1.68	0.093
Race	1	0.85	0.85	0.20	0.657
Yrs Hunted (Race)	2	27.07	13.53	3.14	0.044
Age (Race)	2	14.98	7.49	1.74	0.177
Income (Race)	2	9.90	4.95	1.15	0.318
Education (Race)	2	4.54	2.27	0.53	0.591
Error	367	1581.41	4.31		
Corrected Total	376	1646.42			
Final ANCOVA					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Model	3	41.88	13.96	3.18	0.024
Race	1	0.86	0.86	0.19	0.659
Yrs Hunted (Race)	2	29.92	14.96	3.41	0.034
Error	425	1866.85	4.39		
Corrected Total	428	1908.73			
Slope Test					
Source	<i>df</i>	Type III SS	MS	<i>F</i>	<i>P</i>
Yrs Hunted*Race	1	5.50	5.50	1.25	0.264
Error	425	1866.85	4.39		
Corrected Total	428	1908.73			