1-1-2007

The Role Of Expectations On Waterfowl Hunter Satisfaction

Kevin D Brunke

THE ROLE OF EXPECTATIONS ON WATERFOWL HUNTER SATISFACTION

By

Kevin D. Brunke

A Thesis
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Master of Science
in Wildlife and Fisheries Science
in the Department of Wildlife and Fisheries

Mississippi State, Mississippi

May 2007

THE ROLE OF EXPECTATIONS ON WATERFOWL HUNTER SATISFACTION

By

Kevin D. Brunke

Approved:

Kevin M. Hunt Assistant Professor of Wildlife and Fisheries (Director of Thesis)	Stephen C. Grado Professor of Forestry (Committee Member)
Richard M. Kaminski Professor of Wildlife and Fisheries (Committee Member)	Bruce D. Leopold Professor of Wildlife and Fisheries (Department Head/Graduate Coordinator)
George M. Hopper Dean of the College of Forest Resources	

Name: Kevin D. Brunke

Date of Degree: May 4, 2007

Institution: Mississippi State University

Major Field: Wildlife and Fisheries Science

Major Professor: Dr. Kevin M. Hunt

Title of Study: THE ROLE OF EXPECTATIONS ON WATERFOWL HUNTER SATISFACTION

Pages in Study: 59

Candidate for Degree of Master of Science

Hunter satisfaction has received extensive attention in the literature, but the role of expectations on satisfaction has been neglected. Consumer satisfaction researchers often use the expectancy disconfirmation paradigm (i.e., differences between expectations and reality) to address relationships between expectations and satisfaction. I used this paradigm to examine the relationship between expectations and satisfaction for waterfowl hunters in Arkansas and Mississippi. I found hunter satisfaction was a partial function of fulfilled expectations in both studies. Performance-only measures generally correlated more strongly with overall satisfaction than disconfirmations measured by a difference score. Conversely, disconfirmation of expectations for a season measured on a single item scale, had the greatest relationship with overall satisfaction for a season. Knowledge of congruence between hunter expectations and outcomes offers managers an avenue to effectively focus management efforts to improve satisfaction levels.

DEDICATION

I dedicate this thesis to Casey, my loving wife. Thank you for giving me love and encouragement while pursuing my dreams.

ACKNOWLEDGEMENTS

I want to express my sincerest appreciation to those who assisted in the completion of this thesis. First of all, I thank Dr. Kevin M. Hunt, committee chairman, for his guidance and assistance throughout my Master of Science program. I also want to express appreciation to my committee members, Dr. Richard M. Kaminski and Dr. Stephen C. Grado, for their input on my thesis and other projects during my tenure at Mississippi State University. I also thank my funding sources: U. S. Department of the Interior - U. S. Fish and Wildlife Service, Natural Resource Enterprises and the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP Project W-48-54, Job 6). I also would like to thank the staff at the Monsanto Farm and Wildlife Management Center for their help with implementing my study and for distributing questionnaires at the center, especially Mr. Ray Bohanan, Mr. Shane Roethle, and Dr. John Anderson. Lastly, I would like to thank my fellow graduate students and everyone in the Human Dimension and Conservation Law Enforcement Laboratory for their diligent efforts during survey design, survey mailing, data entry, and data analyses. Specifically, I thank Edith Fogarty, Corey Wigginton, Nanda Joginipally, Nathan Gregory, Brittany Harris, Elizabeth Kirk, Morgan Miranda, Katie Nelson, and Mallory Sullivan.

TABLE OF CONTENTS

LIST OF TABLES

TABLE Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION AND OBJECTIVES

Introduction

Three theories have been used to describe hunter satisfaction and benefits. The "game-bagged" theory was first to emerge, but research revealed that bagging game was not the sole motivation for most hunters (Hendee, 1974). Crissey (1971) suggested a "days-afield" approach, where number of days spent in the field was considered a suitable measure of hunter benefits. However, this measure left out hunting quality and hunter satisfaction and was short-lived (Hendee, 1974). Hendee (1974) was among the first to suggest a multiple-satisfaction approach to game management, a theory supported widely in the literature (Vaske, Fedler, & Graefe, 1986; Hammitt, McDonald, & Patterson, 1990; Hazel, Langenau, & Levine, 1990; Frey, Conover, Borgo, & Messmer, 2003). This concept asserts there is more to hunter satisfaction than bagging game and days-afield, and recreational resources should be managed to offer people opportunity for a range of experiences (Hendee, 1974).

Whereas much research supports the multiple satisfaction approach, the greatest antecedents to hunter satisfaction have varied among studies. Some researchers have found success-related factors (i.e., harvest or getting shots) were strong predictors of satisfaction (Stankey, Lucas, & Ream, 1973; Decker, Brown, & Gutierrez, 1980;

Gigliotti, 2000), while others have reported non-success aspects of the hunt (i.e., getting outdoors or getting close to nature) were strong predictors of satisfaction (Hammitt et al., 1990; Hayslette, Armstrong, & Mirarchi, 2001). Generally, studies have found harvest-oriented hunters were less satisfied than hunters motivated by other reasons (Decker et al., 1980; Gigliotti, 2000). Other studies have shown successful hunters reported greater levels of satisfaction than unsuccessful ones (Vaske, Donnelly, Heberlein, & Shelby, 1982; Gigliotti, 2000). Nevertheless, many researchers have indicated the importance of maintaining some probability of harvest success to uphold hunter satisfaction (Stankey et al., 1973; Decker et al., 1980; McCullough & Carmen, 1982). Thus, hunter satisfaction is a complex issue, and no standardized set of measures has been developed to predict it universally.

When satisfaction is examined among other disciplines, research suggests the true construct is conceptually rooted in expectancy theory (Manning, 1999). Ultimately, satisfaction is defined as the congruence between expectations and outcomes (Manning, 1999). Although the concept of satisfaction is rooted in expectancy theory and numerous definitions of satisfaction relate to expectations, the role of expectations on satisfaction has been largely neglected in hunter-satisfaction literature. Researchers have compared actual hunting experiences to an "ideal" hunt in some studies (e.g., Decker et al., 1980), but the probability of a hunter experiencing an ideal hunt with consistency is probably quite low. Other authors have found anglers with realistic expectations for fish size had greater fishing and trip satisfaction than anglers with unrealistic expectations (Spencer & Spangler, 1992). However, the relationship between expectations and satisfaction has

been studied extensively by consumer-satisfaction researchers under the expectancy disconfirmation paradigm (Oliver, 1980; Tse & Wilton, 1988; Van Ryzin, 2004). Using this paradigm, individuals compare actual performance to standards of performance they formulated based on their expectations (Niedrich, Kiryanova, & Black, 2005). Accordingly, disconfirmation occurs when a difference exists between one's expectations and the reality of the experience (Oliver & DeSarbo, 1988; Burns, Graefe, & Absher, 2003). Negative disconfirmation occurs when reality is worse than expectations, positive disconfirmation occurs when reality is better than expectations, and confirmation results when reality and expectations are similar (Oliver, 1980). As one progresses from negative to positive disconfirmation, ratings of satisfaction generally increase (Tse & Wilton, 1988; Spreng, MacKenzie, & Olshavsky, 1996).

Disconfirmations are typically formed from three expectancies that can be generalized as goals, normative expectations, and predictive expectations (Boulding, Kalra, Staelin, & Zeithaml, 1993; Niedrich et al., 2005). First, goals may be classified as something someone "wants" or "needs" and are less susceptible to change by marketing than other types of expectancies (Boulding et al., 1993; Niedrich et al., 2005). Goals are similar to motivations studied by hunter satisfaction researchers in that goals are the starting point of willful control of action to fulfill a want or need (Niedrich et al., 2005). Thus, fulfilling a person's goals may affect their satisfaction in the same way fulfilled motivations have been found to by hunter satisfaction researchers. Second, normative expectations are something someone thinks "should" happen during their next encounter with an event (Boulding et al., 1993; Niedrich et al., 2005). Finally, predictive

expectations are something someone thinks "will" happen during their next experience with an event and are the standard of comparison typically used when studying consumer satisfaction (Boulding et al., 1993; Niedrich et al., 2005). Furthermore, expectancies are updated with each encounter with an event and change over time based on perceptions of performance, situational influences, or personal characteristics (Boulding et al., 1993; Niedrich et al., 2005).

Disconfirmation of expectancies has been measured by a subjective evaluation of how well expectations were met on a post-experience measurement scale (Oliver, 1980), or by a difference score derived by taking the perception of performance minus the expectation of performance (Parasuraman, Zeithaml, & Berry, 1988). However, much debate exists on the use of difference scores versus performance-only measures as predictors of satisfaction and service quality (Cronin & Taylor, 1992; Cronin & Taylor, 1994; Parasuraman, Zeithaml, & Berry, 1994; Burns et al., 2003). Performance-only measures have been found to be better predictors of overall satisfaction ratings and perceived service quality than difference scores in some studies (Cronin & Taylor, 1992; Burns et al., 2003). However, difference scores are useful at identifying deficient areas and tracking expectations over time (Parasuraman et al., 1994; Crompton & Love, 1995). Burns et al. (2003) indicated difference scores may become better predictors of overall satisfaction if measurement of visitor expectations occurred prior to the recreation experience. Others have found different types of comparison standards form separate constructs when measured as an expectation, but when "want," "need," "will," and "should" comparison standards are measured as disconfirmations on a post-experience

scale, the standards acted interchangeably (Niedrich et al., 2005). Niedrich et al. (2005) concluded that researchers should decide if the potential loss of reliability in difference scores is worse than the potential loss of construct dimensionality in post-experience measurements of disconfirmation. Performance-only measures are typical of predictor variables used by hunter-satisfaction researchers.

Developing a sound understanding of hunter satisfaction is important because there has been a downward trend in hunting participation across much of the United States (Enck, Decker, & Brown, 2000; Li, Zinn, Barro, & Manfredo, 2003; Mehmood, Zhang, & Armstrong, 2003). Many constraints to hunter participation have been found to be strong predictors of satisfaction (Barro & Manfredo, 1996; Miller & Vaske, 2003; Fulton & Hundertmark, 2004; Fulton & Manfredo, 2004). Additionally, satisfaction with an experience has been shown to increase future intentions for participating in an activity (Tian-Cole, Crompton, & Willson, 2001). Moreover, strong predictors of hunter satisfaction, such as harvest and game abundance, have been demonstrated to increase participation among waterfowl hunters (Miller & Hay, 1981; Ringelman, 1997). Thus, expectations, satisfactions, and behavioral intentions are interrelated among hunters, and research examining these relationships is warranted if managers desire the biological, political, and economic support from hunters (Enck et al., 2000; Grado, Kaminski, Munn, & Tullos, 2001). My research was designed to increase understanding of waterfowl hunter expectations, satisfactions, and behavioral intentions.

Objectives

The primary objectives of my thesis were to:

1) Determine if service quality shortfalls existed on a privately owned waterfowl hunting property.

2) Determine if performance-only scores correlated better with overall satisfaction than difference scores.

3) Determine the greatest antecedents for waterfowl hunter satisfaction.

4) Determine the relationship among expectations, satisfaction, and future behavioral intentions of waterfowl hunters.

References

Barro, S. C., & Manfedo, M. J. (1996). Constraints, psychological investment, and hunting participation: Development and testing of a model. *Human Dimensions of Wildlife, 1*, 42-61.

Boulding, W., Kalra, A., Staelin, R., & Zeithaml, V. A. (1993). A dynamic process model of service quality: From expectations to behavioral intentions. *Journal of Marketing Research, 30*, 7-27.

Burns, R. C., Graefe, A. R., & Absher, J. D. (2003). Alternate measurement approaches to recreational customer satisfaction: Satisfaction-only versus gap scores. *Leisure Sciences, 25*, 363-380.

Crissey, W. F. (1971). Some thoughts on wildlife research and management objectives. *Wildlife Society News, 134*, 27-28.

Crompton, J. L., & Love, L. L. (1995). The predictive validity of alternative approaches to evaluating quality of a festival. *Journal of Travel Research, 34*, 11-24.

Cronin, J. J., Jr., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing, 56*, 55-68.

Cronin, J. J., Jr., & Taylor, S. A. (1994). SERVPERF versus SERVQUAL: Reconciling performance-based and perceptions-minus-expectations measurement of service quality. *Journal of Marketing, 58*, 125-131.

Decker, D. J., Brown, T. J., & Gutierrez, R. J. (1980). Further insights into the multiple-satisfactions approach for hunter management. *Wildlife Society Bulletin, 8*, 323-331.

Enck, J. W., Decker, D. J., and Brown, T. L. (2000). Status of hunter recruitment and retention in the United States. *Wildlife Society Bulletin, 28*, 817-824.

Frey, S. N., Conover, M. R., Borgo, J. S., & Messmer, T. A. (2003). Factors influencing pheasant hunter harvest and satisfaction. *Human Dimensions of Wildlife, 8*, 277-286.

Fulton, D. C., & Hundertmark, K. (2004). Assessing the effects of a selective harvest system on moose hunters' behaviors, beliefs, and satisfaction. *Human Dimensions of Wildlife, 9*, 1-16.

Fulton, D. C., & Manfredo, M. J. (2004). A panel design to assess the effects of regulatory induced reductions in opportunity on deer hunters' satisfaction. *Human Dimensions of Wildlife, 9*, 35-55.

Gigliotti, L. M. (2000). A classification scheme to better understand satisfaction of Black Hills deer hunters: The role of harvest success. *Human Dimensions of Wildlife, 5*, 32-51.

Grado, S. C., Kaminski, R. M., Munn, I. A., & Tullos, T. A. (2001). Economic impacts of waterfowl hunting on public lands and at private lodges in the Mississippi Delta. *Wildlife Society Bulletin, 29*, 846-855.

Hammitt, W. E., McDonald, C. D., & Patterson, M. E. (1990). Determinants of multiple satisfaction for deer hunting. *Wildlife Society Bulletin, 18*, 331-337.

Hayslette, S. E., Armstrong, J. B., & Mirarchi, R. E. (2001). Mourning dove hunting in Alabama: Motivations, satisfactions, and sociocultural influences. *Human Dimensions of Wildlife, 6*, 81-95.

Hazel, K. L., Langenau, E. E., & Levine, R. L. (1990). Dimensions of hunting satisfaction: Multiple-satisfactions of wild turkey hunting. *Leisure Sciences, 12*, 383-393.

Hendee, J. C. (1974). A multiple-satisfaction approach to game management. *Wildlife Society Bulletin, 2*, 104-113.

Li, C.-L., Zinn, H. C., Barro, S. C., & Manfredo, M. J. (2003). A cross-regional comparison of recreation patterns of older hunters. *Leisure Sciences, 25*, 1-16.

Manning, R. E. (1999). *Studies in outdoor recreation: Search and research for satisfaction* (2nd ed.). Corvallis, OR: Oregon State University Press.

McCullough, D. R., & Carmen, W. J. (1982). Management goals for deer hunter satisfaction. *Wildlife Society Bulletin, 10*, 49-52.

Mehmood, S., Zhang, D., & Armstrong, J. (2003). Factors associated with declining hunting license sales in Alabama. *Human Dimensions of Wildlife, 8*, 243-262.

Miller, C. A., & Vaske, J. J. (2003). Individual and situational influences on declining hunter effort in Illinois. *Human Dimensions of Wildlife, 8*, 263-276.

Miller, J. R., & Hay, M. J. (1981). Determinants of hunter participation: Duck hunting in the Mississippi Flyway. *American Agricultural Economics Association*, *64*, 677-684.

Niedrich, R. W., Kiryanova, E., & Black, W. C. (2005). The dimensional stability of the standards used in the disconfirmation paradigm. *Journal of Retailing, 81*, 49-57.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*, 460-469.

Oliver, R. L., & DeSarbo, W. S. (1988). Response determinants in satisfaction judgments. *Journal of consumer research, 14*, 495-505.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*, 12-37.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. *Journal of Marketing, 58*, 111-124.

Ringelman, J. K. (1997). Effects of regulations and duck abundance on duck hunter participation and satisfaction. *Transactions of the North American Wildlife and Natural Resource Conference, 62*, 361-376.

Spencer, P. D., & Spangler, G. R. (1992). Effect that providing fishing information has on angler expectations and satisfaction. *North American Journal of Fisheries Management, 12*, 379-385.

Spreng, R. A., MacKenzie, S. B., & Olshavsky, R. W. (1996). A reexamination of the determinants of consumer satisfaction. *Journal of Marketing, 60*, 15-32.

Stankey, G. H., Lucas, R. C., & Ream, R. R. (1973). Relationships between hunting success and satisfaction. *Transactions of the North American Wildlife Conference, 38*, 235-242.

Tian-Cole, S., Crompton, J. L., & Willson, V. L. (2002). An empirical investigation of the relationships between service quality, satisfaction and behavioral intentions among visitors to a wildlife refuge. *Journal of Leisure Research, 34*, 1-24.

Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction formation: An extension. *Journal of Marketing Research, 25*, 201-212.

Van Ryzin, G. G. (2004). Expectations, performance, and citizen satisfaction with urban services. *Journal of Policy Analysis and Management, 23*, 433-448.

Vaske, J. J., Donnelly, M. P., Heberlein, T. A., & Shelby, B. (1982). Differences in reported satisfaction ratings by consumptive and nonconsumptive recreationists. *Journal of Leisure Research, 14*, 195-206.

Vaske, J. J., Fedler, A. J., & Graefe, A. R. (1986). Multiple determinants of satisfaction from a specific waterfowl hunting trip. *Leisure Sciences, 8*, 149-166.

CHAPTER II

COMPARISON OF TWO APPROACHES FOR THE MEASUREMENT OF WATERFOWL HUNTER SATISFACTION

Introduction

Hunter satisfaction has been researched extensively, but the strongest antecedents to satisfaction have varied among studies. Some researchers reported success-related factors (i.e., harvest, seeing harvestable wildlife, or getting shots) were strong predictors of satisfaction (Stankey, Lucas, & Ream, 1973; Decker, Brown, & Gutierrez, 1980; Gigliotti, 2000), whereas others reported non-success aspects of the hunt (i.e., getting outdoors or close to nature) were greatly correlated with satisfaction (Hammitt, McDonald, & Patterson, 1990; Hayslette, Armstrong, & Mirarchi, 2001). Others have shown successful hunters reported greater levels of satisfaction than unsuccessful ones (Vaske, Donnelly, Heberlein, & Shelby, 1982; Gigliotti, 2000). Although hunter satisfaction is more than simply harvesting animals (Hendee, 1974), the opportunity to harvest plays an important role in satisfaction judgments (Decker et al., 1980; Gigliotti, 2000; Miller & Graefe, 2001). However, harvest often is a goal hunters have the least control of achieving and may subsequently report lesser levels of satisfaction than participants in other types of recreational activities (Vaske et al., 1982). Thus, hunter satisfaction is viewed as a multifaceted concept depending on the participant and

recreational setting (Hazel, Langenau, & Levine, 1990; Manning, 1999; Frey, Conover, Borgo, & Messmer, 2003).

Previous research on recreational satisfaction indicates satisfaction is the difference between desired outcomes and perceived fulfillment of those outcomes (Lawler, 1973; Ditton, Graefe, & Fedler, 1981; Holland & Ditton, 1992). Given this definition, hunters may formulate expectations for the fulfillment of desired outcomes before their hunting experiences. Previously, researchers also have suggested expectations may play a role in hunter satisfaction (Vaske, Fedler, & Graefe, 1986; Hammitt et al., 1990), or there was need to provide hunter education to bring expectations closer to reality (Decker et al., 1980; Gigliotti, 2000). However, research on the relationship between hunter expectations and satisfaction is lacking. The dominant approach for addressing similar relationships elsewhere is in the expectancy disconfirmation paradigm, which has been studied extensively in consumer satisfaction research (Oliver, 1980; Tse & Wilton, 1988; Van Ryzin, 2004).

In the expectancy disconfirmation paradigm, disconfirmation occurs when a difference exists between one's expectations and the reality of the experience (Oliver & DeSarbo, 1988; Burns, Graefe, & Absher, 2003). Negative disconfirmation occurs when reality is worse than expectations, positive disconfirmation occurs when reality is better than expectations, and confirmation occurs when reality and expectations are similar (Oliver, 1980). When positive disconfirmation occurs, satisfaction ratings should be greater than when negative disconfirmation occurs. Literature on consumer satisfaction

has shown the positive relationship between disconfirmation and satisfaction generally has held true (Tse & Wilton, 1988; Spreng, MacKenzie, & Olshavsky, 1996).

Disconfirmation has either been measured by a subjective evaluation of the fulfillment of expectations on a post-experience measurement scale (Oliver, 1980) or by a difference score derived by taking the perception of performance minus the expectation of performance (Parasuraman, Zeithaml, & Berry, 1988). Much debate exists on use of difference scores versus performance-only measures as predictors of satisfaction and service quality (Cronin & Taylor, 1992; Cronin & Taylor, 1994; Parasuraman, Zeithaml, & Berry, 1994; Burns et al., 2003). Performance-only measures were better measures of overall satisfaction ratings and perceived service quality than difference scores in some studies (Cronin & Taylor, 1992; Burns et al., 2003). However, Burns et al. (2003) suggested difference scores may have correlated better with overall satisfaction if a different type of expectation was measured or the measurement of expectations occurred before the recreational experience. Further, difference scores may be better at identifying deficient areas and tracking expectations over time than performance-only measures (Parasuraman et al., 1994; Crompton & Love, 1995). Others concluded measuring disconfirmations with a difference score may reduce reliability; however, disconfirmations measured on a post-experience measurement scale may cause loss of construct dimensionality (Niedrich, Kiryanova, & Black, 2005). Furthermore, performance-only measures of satisfaction do not allow for any type of measurement of disconfirmation and have been the typical independent variables for hunter satisfaction researchers.

Several types of expectations have been defined and studied in expectancy disconfirmation research, but the standards of predictive and normative expectations emerge as dominant (Boulding, Kalra, Staelin, & Zeithaml, 1993; Niedrich et al., 2005). Predictive expectations (i.e., expectations that people believe "will" happen) are future-oriented beliefs about uncertain outcomes generated from participants' personal experiences, communication with other people, and related beliefs (Boulding et al., 1993; Niedrich et al., 2005). Normative expectations (i.e., expectations that people believe "should" happen) typically include a larger set of attribute information than predictive expectations and comprise outcomes people believe they deserve (Boulding et al., 1993; Niedrich et al., 2005). Boulding et al. (1993) also indicated predictive and normative expectations may change over time with additional contacts or experiences. Predictive expectations (i.e., "will" expectations) have typically been used in satisfaction research, whereas normative expectations (i.e., "should" expectations) have been used in service quality research (Boulding et al., 1993).

I used difference scores (i.e., performance – expectations) and performance-only measures to examine satisfaction among waterfowl hunters at a private waterfowl hunting area in Arkansas. Assuming harvest is a goal hunters have least control in achieving (Vaske et al., 1982), I hypothesized negative disconfirmation would be greatest for harvest-related variables. Additionally, I hypothesized harvest-related variables would be significant predictors of overall satisfaction. Based on previous research (e.g., Burns et al., 2003), I hypothesized performance-only measures would correlate better with overall

satisfaction than difference scores. Finally, I hypothesized satisfaction would be influenced positively by fulfillment of expectations.

Methods

My study site was a 1,214 hectare farm and hunting lodge owned by Monsanto Company with approximately 384 hectares of artificially floodable forest land. The site is located less than eight kilometers south of Stuttgart, Arkansas. Ducks were primarily hunted in the flooded forest land. Monsanto Company staff invited waterfowl hunters to the property for a two-day hunting trip with lodging, meals, entertainment, and guides provided on-site. Guests were encouraged to bring their own firearms, ammunition, hunting clothes, and personal items. Arkansas hunting licenses and federal waterfowl stamps were available on-site for those who did not already have these. Guests typically arrived the evening before the first day's hunt. After dinner, hunting licenses were processed and a mandatory safety video was shown to guests. Staff distributed a voluntary 4-page pre-hunt questionnaire, with an informational flyer, among guests while their licenses were processed. In the pre-hunt questionnaire, I asked participants to provide their name and address, and using a five-point Likert type scale with the response format of 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree," rate how strongly they agreed or disagreed with statements about their expectations. Expectations were related to three aspects of their trip to the property: 1) hunting experience, 2) service from the staff, and 3) impressions of the facilities. Following Niedrich et al. (2005) and Boulding et al. (1993), I operationalized these predictive expectations with the word "will" for each predictive statement. After

participants completed the pre-hunt questionnaire, participants placed finished questionnaires in a locked ballot box until retrieved by researchers. I mailed an eight-page post-hunt questionnaire to participants who completed the pre-hunt questionnaire one week after the duck hunting season to quantify the fulfillment of expectations during their trip.

I used techniques modified from Dillman (1978) for conducting mail surveys. I mailed the first post-hunt questionnaires with a cover letter and a postage-paid business reply envelope (hereafter termed complete packet). Then, I directed a second complete packet to non-respondents three weeks after initial contact. After the second contact, I mailed non-respondents a final complete packet four weeks after the previous mailing. I included all questionnaires received within six weeks of the final mailing in data analyses. I pre-tested both survey instruments during the 2004-2005 waterfowl hunting season on 94 individuals who hunted the Monsanto property. Based on the pre-test, I reworded some questionnaire items to alleviate ambiguity and reorganized items to lessen item non-response.

I reworded the post-hunt questionnaire items from the pre-hunt questionnaire to gauge guest expectation fulfillment via difference scores. I used the same response format for the pre- and post-hunt questionnaires. The post-hunt questionnaire also had questions on harvest, waterfowl hunting participation, satisfaction, trip expenditures, preferences for management of the property, and hunter demographics. I asked hunters to rate their satisfactions with their waterfowl hunting trip using a five-point satisfaction continuum with a response format of 1 = “not at all satisfied,” 2 = “slightly satisfied,” 3 =

"moderately satisfied," 4 = "very satisfied," and 5 = "extremely satisfied." Satisfaction items were related to: 1) their hunting experience, 2) service from the staff, 3) their impressions of the facilities, and 4) the trip overall.

After I received questionnaires, I coded, entered, verified, and analyzed the data. I calculated difference scores based on Parasuraman et al.'s (1988) work on service quality. I derived difference scores by subtracting participants' performance ratings from their expectations ratings for each item related to their trip. Difference scores with negative values indicated participants' expectations were not met and negative disconfirmation occurred. Unlike Parasuraman et al. (1988), I used 95% confidence intervals to determine if scores varied significantly from zero and then assigned an item to either positive disconfirmation, confirmation, or negative disconfirmation.

I measured the relative importance of each item to overall satisfaction using a one-tailed Spearman's rho, because my hypotheses were directional and the data being analyzed were ordinal (Schlotzhauer & Littell, 1997). To determine if performance-only scores correlated better with overall satisfaction than difference scores, I used methods modified from Burns et al. (2003). I split data from respondents randomly into two halves to meet the assumption of independence for subsequent analysis using Fisher's *z*-test (Burns et al., 2003). I used one-half of the respondents' data to calculate correlations between performance-only measures and overall trip satisfaction. I used the other one-half to calculate correlations between difference scores and overall trip satisfaction. I used PROC CORR with the FISHER and SPEARMAN options in SAS v. 9.1 to conduct a one-tailed Fisher's *z*-test (SAS, 2003). I used Fisher's *z*-test to determine if

performance-only score and difference score correlations with overall trip satisfaction differed significantly (Shavelson, 1996; Burns et al., 2003). I used alpha = 0.05 for significance testing throughout my study.

I made no effort to contact individuals for a non-response survey who did not complete the pre-hunt questionnaire. I used a two-tailed Wilcoxon Rank Sum test to determine if expectations differed between those who completed pre-hunt and post-hunt questionnaires and those who only completed a pre-hunt questionnaire. To further check for possible non-response biases, I assumed each mailing wave probed deeper into the core of non-respondents (Filion, 1975; Choi, Dittion, & Matlock, 1992). Thus, using a two-tailed Spearman's rho, I correlated the mailing wave a participant responded to with variables related to: 1) overall trip satisfaction, 2) overall hunting experience satisfaction, 3) importance of hunting compared to other outdoor recreation activities, 4) importance of waterfowl hunting compared to other hunting activities, 5) days spent waterfowl hunting, 6) age, 7) annual household income, and 8) education. Using these methods, I would be able to identify possible non-response biases via significant correlations. My project was approved by the Mississippi State University Institutional Review Board (IRB) for the protection of human subjects (IRB docket number 05-221).

Results

My study site was visited by 311 individuals, 187 (60.1%) of which agreed to participate in the study and completed the pre-hunt questionnaire. Of the 187 participants, 148 (79.1%) individuals responded to the post-hunt questionnaire. Five questionnaires were non-eligible (i.e., participants were less than 18 years old or

indicated the questionnaire was completed by another person) and removed from the dataset, leaving 143 usable questionnaires from 182 eligible participants of the pre-hunt questionnaire for an effective mailing response rate of 78.6% (Dillman, 1978).

Based on my correlation analysis of successive mailing waves, I found early respondents tended to be older (rho = -0.237, $p = 0.004$, $n = 143$), attained a higher level of education (rho = -0.166, $p = 0.048$, $n = 143$), and considered hunting more important than other outdoor recreation activities (rho = 0.239, $p = 0.004$, $n = 141$). I did not detect any statistically significant correlations for: 1) overall trip satisfaction (rho = 0.149, $p = 0.077$, $n = 142$), 2) overall hunting experience satisfaction, (rho = 0.146, $p = 0.083$, $n = 142$), 3) importance of waterfowl hunting compared to other hunting activities (rho = -0.076, $p = 0.370$, $n = 141$), 4) days spent waterfowl hunting (rho = -0.099, $p = 0.242$, $n = 143$), or 5) annual household income (rho = 0.035, $p = 0.686$, $n = 138$). Further, I did not detect statistical differences in expectations between those who filled out a pre- and post-hunt questionnaire and those who filled out only a pre-hunt questionnaire ($0.085 \leq p \leq 0.894$, $0.133 \leq |z| \leq 1.725$).

Most respondents were "White or Anglo" (99.3%, $n = 142$) and male (97.9%, $n = 139$), with an average age of 44.5 (SE = 0.9, $n = 143$) years. Respondents had a median gross annual household income of "$100,000 and above" and 86.0% ($n = 123$) had some college or graduate level education. Survey participants had an average of 15.3 (SE = 1.3, $n = 138$) years of waterfowl hunting experience. Hunting was rated as the "most important" outdoor recreation activity for most (51.8%, $n = 73$) participants. Waterfowl hunting was rated as the "most important hunting activity" by 25.5% ($n = 36$) of

participants and as the "second most important hunting activity" by 38.3% (n = 54) of participants. Respondents hunted an average of 3.2 (SE = 0.4, n = 141) days in Arkansas and 6.3 (SE = 0.9, n = 143) days outside of Arkansas during the 2005-2006 waterfowl hunting season.

For the single item measuring satisfaction with the overall trip, 90.8% (n = 129) of the respondents reported being either "very satisfied" or "extremely satisfied," with an average score of 4.4 (SE = 0.1, n = 142). Positive disconfirmation occurred for 28%, confirmation occurred for 40%, and negative disconfirmation occurred for 32% of the 25 items measured (Table 2.1). I included negative difference scores as confirmed expectations because their 95% confidence intervals overlapped zero. There were differences between the difference scores reported in Table 2.1 and a difference score derived by subtracting the average performance from the average expectation because of rounding. Although participants did not harvest as many mallards (*Anas platyrhynchos*) as they expected, items related to skill testing, working ducks (calling at ducks circling decoys), seeing wildlife, and learning had greater negative disconfirmation. Thus, I rejected the hypothesis that negative disconfirmation would be greatest for harvest-related variables.

When I correlated performance-only items with satisfaction for the overall trip, all items were significantly related ($0.001 \leq p \leq 0.015$, $0.260 \leq \text{rho} \leq 0.595$; Table 2.2). When I correlated difference scores with overall trip satisfaction, 52% of items were significantly related ($0.001 \leq p \leq 0.045$, $0.204 \leq \text{rho} \leq 0.451$; Table 2.3). When I ranked items by correlation strength for difference scores and performance-only scores, the

strongest related items varied between measurement techniques. However, the variables of "I was placed in the best available hunting location," "I worked a lot of ducks," and "I harvested a sufficient number of mallards" were among the most significantly related ($p \leq 0.001$) items to overall satisfaction for both methods. Because both of the harvest-related items correlated significantly with overall satisfaction, I accepted the hypothesis that harvest-related variables would be significant predictors of overall satisfaction. Furthermore, I accepted the hypothesis that satisfaction would be influenced positively by fulfilled expectations because of the positive correlation with overall satisfaction for all significantly related items in Table 2.3.

Performance-only measures correlated better with overall trip satisfaction than difference scores for 84% of the items. However, I detected significant differences for 40% of the item correlations with Fisher's z-test ($0.001 \leq p \leq 0.047$, $0.228 \leq | z | \leq 3.274$; Table 2.4). Thus, I rejected the hypothesis that performance-only measures would correlate better with overall satisfaction than difference scores for most items examined.

Discussion and Implications

I used methods typically used by customer satisfaction researchers in a context where items related to both customer service and hunting were potentially important to the overall satisfaction of clientele. Although some items with positive disconfirmation correlated relatively low with satisfaction, they may have had stronger influence on satisfaction ratings if expectations were not met. Therefore, managers should be cognitive to at least maintain standards for all strong correlates with trip satisfaction. Cohen (1988) suggested a correlation of 0.3 has a medium effect size and would be

perceptible to the naked eye of a sensitive observer. Thus, correlations of 0.3 and greater may offer a sufficient level of relatedness to warrant management attention. However, my study results suggest managerial efforts would best be focused on items that are strong correlates with satisfaction and have negative disconfirmation. For example, traditional performance-only measures would suggest placing clientele in the best available hunting location, placing them in a pristine environment, or providing a variety of entertainment options other than hunting would best satisfy customers (Table 2.2). However, expectations were met for being placed in the best available hunting location and having a variety of entertainment options other than hunting (Table 2.1). Alternatively, a manager could concentrate efforts to allow hunters to be in a pristine environment, test their skills, or work more ducks to have the best opportunity to improve overall satisfaction ratings. Nonetheless, managers may not have explicit control over these trip aspects and may only be able to improve these opportunities indirectly via habitat and hunting pressure management. Although using performance measures allows for similar management recommendations to be made, difference scores offer a greater breadth of understanding to satisfying clientele (Crompton & Love, 1995).

Several explanations exist as to why items did not rank by correlation more similarly between the two measurement techniques. First, the relatively small number of participants in my study (n = 143) could be a factor; however, Burns et al. (2003) had many more respondents (n = 2,933) and correlations of their items were not similarly ranked either. Second, difference scores could rank dissimilarly because the added dimensionality they offer may allow for the true order of importance to be displayed via

correlation ranking. Third, Peter, Churchill, & Brown (1993) stated difference scores may produce spurious correlations because difference scores are not unique from the components of which they are made. However, their alternative is not as likely in my study because of the split half design in comparing correlations. Finally, Parasuraman et al. (1994) offered "shared method variance" as a reason why performance-only measures correlated better with an overall evaluation of service quality than difference scores. Perhaps if difference scores were correlated with an expected level of overall satisfaction minus a perceived level of overall satisfaction, rankings would be more similar to the performance-only items correlated with a perceived level of overall satisfaction used in my study. However, the validity of using a difference score for overall satisfaction is unknown.

Despite differences in correlation rankings, my study demonstrated comparable correlations for difference scores and performance-only measures for most items where other research did not (e.g., Burns et al., 2003). These findings could have been a result of my using the difference between "will" expectations and a measurement of performance for calculating difference scores, whereas Burns et al. (2003) used importance of an item and satisfaction of performance to calculate their difference scores. Niedrich et al. (2005) demonstrated "will" expectations had greater predictive ability than other types of expectancies. I also measured expectations prior to the recreational experience rather than after the experience as Burns et al. (2003). Another possible reason for better performance of difference scores in my study may relate to my use of Spearman's rho instead of Pearson's *r*. When using ordinal data, Spearman's rho is the

more appropriate analysis (Schlotzhauer & Littell, 1997). Finally, Burns et al. (2003) had a larger sample size than me and had greater statistical power for detecting differences (Cohen, 1988).

I do not believe my follow-up survey suffered from non-response bias for the variables examined in my study, because the significantly correlated demographic characteristics are relatively poor predictors of attitudes (Manning, 1999) and no directional differences were found for satisfaction items. However, because of the high refusal rate for completing the pre-hunt questionnaire, I cannot be certain my sample was representative of the population studied. Choi et al. (1992) suggested it was not possible to determine if study populations were homogenous before surveys were conducted and data from non-respondents were difficult to obtain. In my study, it was not possible to get data from individuals who refused to complete the pre-hunt questionnaire; thus, I was unable to compare homogeneity between survey participants and individuals who refused to participate.

The disconfirmation of expectations has been studied in great detail in the consumer satisfaction research, but, except for some earlier research (i.e., Decker et al., 1980), has been largely neglected by hunting satisfaction researchers. Although use of difference scores has opponents in the marketing literature (i.e., Cronin & Taylor, 1992; Peter et al., 1993), measuring the disconfirmation of expectations can offer valuable insight to wildlife managers wishing to gauge hunter satisfaction. Difference scores could be attained relatively easily on public hunting areas that use a lottery type system to regulate access. By mailing a pre-hunt questionnaire to gauge the expectations of hunters

drawn for a hunt, researchers could overcome the potential bias on expectations in my study wherein questionnaires were distributed on site.

If difference scores are not desirable to the researcher, disconfirmation also may be measured by allowing recreationists to evaluate their disconfirmation subjectively on a post-experience measurement scale as did Oliver (1980). However, more recent research has shown evaluating disconfirmation on a post-experience scale allowed participants to assimilate different disconfirmations into a similar construct, thus one may not be able to differentiate among the different types of expectations (Niedrich et al., 2005). Further, wildlife managers may benefit from research concentrating on the disconfirmation of different types of expectations. For example, Decker et al. (1980) used the difference between hunters' perceptions of an ideal hunt and an actual hunting experience to establish hunter satisfaction management priorities. Whereas my study focused on the disconfirmation of predictive expectations, other research could examine normative expectations to improve quality hunting areas. My use of 95% confidence intervals to assign items to disconfirmation type offers another way to prioritize management efforts beyond simple ranking of difference scores, as done in earlier work (Parasuraman et al., 1988). Furthermore, researchers wishing to improve hunter satisfaction models could possibly look to the expectancy disconfirmation paradigm to gain greater explanatory power in satisfaction models.

References

Boulding, W., Kalra, A., Staelin, R., & Zeithaml, V. A. (1993). A dynamic process model of service quality: From expectations to behavioral intentions. *Journal of Marketing Research, 30*, 7-27.

Burns, R. C., Graefe, A. R., & Absher, J. D. (2003). Alternate measurement approaches to recreational customer satisfaction: Satisfaction - only versus gap scores. *Leisure Sciences, 25*, 363-380.

Choi, S., Ditton, R. B., & Matlock, G. C. (1992). Homogeneity across mail survey waves: A replicated study. *Journal of Leisure Research, 24*, 79-85.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Crompton, J. L., & Love, L. L. (1995). The predictive validity of alternative approaches to evaluating quality of a festival. *Journal of Travel Research, 34*, 11-24.

Cronin, J. J., Jr., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing, 56*, 55-68.

Cronin, J. J., Jr., & Taylor, S. A. (1994). SERVPERF versus SERVQUAL: Reconciling performance-based and perceptions-minus-expectations measurement of service quality. *Journal of Marketing, 58*, 125-131.

Decker, D. J., Brown, T. J., & Gutierrez, R. J. (1980). Further insights into the multiple-satisfactions approach for hunter management. *Wildlife Society Bulletin, 8*, 323-331

Dillman, D. A. (1978). *Mail and telephone surveys: The total design method*. New York, NY: John Wiley & Sons, Inc.

Ditton, R. B., Graefe, A. R., & Fedler, A. J. (1981). *Recreational satisfaction at Buffalo National River: Some measurement concerns*. USDA Forest Service General Technical Report: University of Minnesota Agricultural Experiment Station: St. Paul, NC.

Filion, F. L. (1975). Estimating bias due to nonresponse in mail surveys. *Public Opinion Quarterly, 39*, 482-492.

Frey, S. N., Conover, M. R., Borgo, J. S., & Messmer, T. A. (2003). Factors influencing pheasant hunter harvest and satisfaction. *Human Dimensions of Wildlife, 8*, 277-286.

Gigliotti, L. M. (2000). A classification scheme to better understand satisfaction of Black Hills deer hunters: The role of harvest success. *Human Dimensions of Wildlife, 5*, 32-51.

Hammitt, W. E., McDonald, C. D., & Patterson, M. E. (1990). Determinants of multiple satisfaction for deer hunting. *Wildlife Society Bulletin, 18*, 331-337.

Hayslette, S. E., Armstrong, J. B., & Mirarchi, R. E. (2001). Mourning dove hunting in Alabama: Motivations, satisfactions, and sociocultural influences. *Human Dimensions of Wildlife, 6*, 81-95.

Hazel, K. L., Langenau, E. E., & Levine, R. L. (1990). Dimensions of hunting satisfaction: Multiple-satisfactions of wild turkey hunting. *Leisure Sciences, 12*, 383-393.

Hendee, J. C. (1974). A multiple-satisfaction approach to game management. *Wildlife Society Bulletin, 2*, 104-113.

Holland, S. M., & Ditton, R. B. (1992). Fishing trip satisfaction: A typology of anglers. *North American Journal of Fisheries Management, 12*, 28-33.

Lawler, E. E. (1973). *Motivation in work organizations*. Monterey, CA: Brooks/Cole Publishing Company.

Manning, R. E. (1999). *Studies in outdoor recreation: Search and research for satisfaction* (2nd ed.). Corvallis, OR: Oregon State University Press.

Miller, C. A., & Graefe, A. R. (2001). Effect of harvest success on hunter attitudes toward white-tailed deer management in Pennsylvania. *Human Dimensions of Wildlife, 6*, 189-203.

Niedrich, R. W., Kiryanova, E., & Black, W. C. (2005). The dimensional stability of the standards used in the disconfirmation paradigm. *Journal of Retailing, 81*, 49-57.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*, 460-469.

Oliver, R. L., & DeSarbo, W. S. (1988). Response determinants in satisfaction judgments. *Journal of Consumer Research, 14*, 495-505.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*, 12-37.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: Implications for further research. *Journal of Marketing, 58*, 111-124.

Peter, J. P., Churchill, G. A., Jr, & Brown, T. J. (1993). Caution in the use of difference scores in consumer research. *Journal of Consumer Research, 19*, 655-662.

SAS Institute Inc. (2003). SAS onlinedoc 9.1. Cary, NC: SAS Institute Inc.

Schlotzhauer, S. D., & Littell, R. C. (1997). *SAS system for elementary analysis* (2nd ed.). Cary, NC: SAS Institute Inc.

Shavelson, R. J. (1996). *Statistical reasoning for the social sciences* (3rd ed.). Needham Heights, MA: Allyn and Bacon.

Spreng, R. A., MacKenzie, S. B., & Olshavsky, R. W. (1996). A Reexamination of the determinants of consumer satisfaction. *Journal of Marketing, 60*, 15-32.

Stankey, G. H., Lucas, R. C., & Ream, R. R. (1973). Relationships between hunting success and satisfaction. *Transactions of the North American Wildlife Conference, 38*, 235-242.

Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction formation: An extension. *Journal of Marketing Research, 25*, 201-212.

Van Ryzin, G. G. (2004). Expectations, performance, and citizen satisfaction with urban services. *Journal of Policy Analysis and Management, 23*, 433-448.

Vaske, J. J., Donnelly, M. P., Heberlein, T. A., & Shelby, B. (1982). Differences in reported satisfaction ratings by consumptive and nonconsumptive recreationists. *Journal of Leisure Research, 14*, 195-206.

Vaske, J. J., Fedler, A. J., & Graefe, A. R. (1986). Multiple determinants of satisfaction from a specific waterfowl hunting trip. *Leisure Sciences, 8*, 149-166.

Table 2.1. Means for item expectations, performance, and difference scores for a two-day waterfowl hunting trip near Stuttgart, Arkansas during the 2005-2006 waterfowl hunting season. Items were classified as positive disconfirmation, confirmation, or negative disconfirmation based on the 95% confidence intervals around the mean difference score (n = 143).

DISCONFIRMATION Item	Mean Expectations [a]	Mean Performance [a]	Difference Score [b]
POSITIVE DISCONFIRMATION			
Other parties interfered with my hunt [r]	3.97	4.38	0.40
High quality meals were provided at the club house	4.64	4.83	0.19
I received quality service at the club house	4.68	4.86	0.19
I enjoyed hunting with the others in my blind	4.39	4.57	0.17
The rooms were well-kept	4.53	4.70	0.16
The property was well-kept	4.69	4.84	0.15
The club house was well-kept	4.66	4.77	0.12
CONFIRMATION			
I had a variety of entertainment options other than hunting	4.01	4.15	0.14
My guide decoyed ducks in close	4.08	4.12	0.04
I was placed in the best available hunting location	4.10	4.06	-0.03
I hunted in well-managed habitat	4.66	4.63	-0.04
I saw a lot of mallards	4.15	4.09	-0.05
I hunted in a well-built blind	4.36	4.30	-0.07
My participation in this hunt was more than just shooting	4.40	4.29	-0.12
Party size was set to maximize harvest opportunities	4.05	3.93	-0.13
I experienced hunting in an environment I do not typically hunt	4.48	4.33	-0.16
I harvested a sufficient number of ducks	3.97	3.76	-0.19

Table 2.1 (continued)

NEGATIVE DISCONFIRMATION			
I met new people	4.51	4.37	-0.15
I hunted in a pristine environment	4.43	4.28	-0.16
I saw a variety of duck species	3.86	3.59	-0.29
I harvested a sufficient number of mallards	3.97	3.65	-0.31
I learned a lot from the guides	4.16	3.82	-0.34
I saw a variety of wildlife in addition to waterfowl	4.00	3.59	-0.42
I worked a lot of ducks	3.69	3.27	-0.42
I tested my waterfowl hunting skills	4.04	3.54	-0.50

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

[b] Means may be different than arithmetically subtracting the mean performance from the mean expectation because of rounding of means.

[r] This item was reverse coded.

Table 2.2. The results of performance-only items correlated with overall satisfaction for a two-day waterfowl hunting trip near Stuttgart, Arkansas during the 2005-2006 waterfowl hunting season; ranked by Spearman's rho (n = 71).

Item [a]	Spearman's rho [b]	SE	p-value
I was placed in the best available hunting location	0.595	0.084	< 0.001
I hunted in a pristine environment	0.593	0.088	< 0.001
I had a variety of entertainment options other than hunting	0.567	0.095	< 0.001
I hunted in well-managed habitat	0.531	0.104	< 0.001
I tested my waterfowl hunting skills	0.530	0.088	< 0.001
The rooms were well-kept	0.520	0.107	< 0.001
The property was well-kept	0.518	0.084	< 0.001
I worked a lot of ducks	0.508	0.093	< 0.001
I hunted in a well-built blind	0.460	0.106	< 0.001
I experienced hunting in an environment I do not typically hunt	0.456	0.100	< 0.001
I learned a lot from the guides	0.435	0.106	< 0.001
I received quality service at the club house	0.419	0.098	< 0.001
I saw a lot of mallards	0.417	0.112	< 0.001
I met new people	0.413	0.107	< 0.001
Party size was set to maximize harvest opportunities	0.410	0.097	< 0.001
I harvested a sufficient number of mallards	0.372	0.111	< 0.001
The club house was well-kept	0.360	0.111	0.001
My participation in this hunt was more than just shooting	0.359	0.109	0.001
I harvested a sufficient number of ducks	0.341	0.117	0.002
Other parties interfered with my hunt [r]	0.327	0.119	0.003
I saw a variety of duck species	0.320	0.114	0.003
My guide decoyed ducks in close	0.318	0.115	0.003
I saw a variety of wildlife in addition to waterfowl	0.304	0.109	0.005
High quality meals were provided at the club house	0.297	0.114	0.006
I enjoyed hunting with the others in my blind	0.260	0.121	0.015

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

[b] Items were correlated with a 5-point satisfaction scale where 1 = "not at all satisfied," 2 = "slightly satisfied," 3 = "moderately satisfied," 4 = "very satisfied," and 5 = "extremely satisfied."

[r] This item was reverse coded.

Table 2.3. The results of difference scores correlated with overall satisfaction for a two-day waterfowl hunting trip near Stuttgart, Arkansas during the 2005-2006 waterfowl hunting season; ranked by Spearman's rho (n = 70).

Item a	Spearman's rho b	SE	p-value
I harvested a sufficient number of ducks	0.451	0.101	< 0.001
I worked a lot of ducks	0.442	0.097	< 0.001
I was placed in the best available hunting location	0.420	0.095	< 0.001
My guide decoyed ducks in close	0.415	0.100	< 0.001
I harvested a sufficient number of mallards	0.414	0.102	< 0.001
I saw a variety of wildlife in addition to waterfowl	0.339	0.109	0.002
I tested my waterfowl hunting skills	0.329	0.113	0.003
Party size was set to maximize harvest opportunities	0.310	0.102	0.005
I learned a lot from the guides	0.283	0.111	0.009
I hunted in a pristine environment	0.254	0.117	0.017
I saw a lot of mallards	0.246	0.110	0.020
I experienced hunting in an environment I do not typically hunt	0.213	0.117	0.038
I had a variety of entertainment options other than hunting	0.204	0.117	0.045
My participation in this hunt was more than just shooting	0.197	0.110	0.052
Other parties interfered with my hunt r	0.196	0.109	0.052
I hunted in well-managed habitat	0.143	0.126	0.119
I met new people	0.123	0.111	0.155
The property was well-kept	0.103	0.129	0.199
The club house was well-kept	0.088	0.116	0.236
I enjoyed hunting with the others in my blind	0.075	0.112	0.268
I saw a variety of duck species	0.058	0.117	0.317
The rooms were well-kept	0.053	0.121	0.331
I hunted in a well-built blind	0.040	0.117	0.372
I received quality service at the club house	-0.119	0.119	0.163
High quality meals were provided at the club house	-0.120	0.116	0.162

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

[b] Items were correlated with a 5-point satisfaction scale where 1 = "not at all satisfied," 2 = "slightly satisfied," 3 = "moderately satisfied," 4 = "very satisfied," and 5 = "extremely satisfied."

[r] This item was reverse coded.

Table 2.4. Differences between difference scores (n = 70) and performance-only (n = 71) correlations with overall satisfaction for a two-day waterfowl hunting trip near Stuttgart, Arkansas during the 2005-2006 waterfowl hunting season. Differences were detected using Fisher's z-test and items are ranked by p-value.

Item [a]	z-transformed Difference [b]	z-transformed Performance [c]	Fisher's z score	p-value
I received quality service at the club house	-0.119	0.446	-3.274	<0.001
The rooms were well-kept	0.053	0.577	-3.042	<0.001
The property was well-kept	0.103	0.573	-2.732	0.003
I hunted in a well-built blind	0.040	0.498	-2.662	0.004
I hunted in well-managed habitat	0.144	0.591	-2.598	0.005
I had a variety of entertainment options other than hunting	0.207	0.643	-2.528	0.006
High quality meals were provided at the club house	-0.120	0.307	-2.482	0.007
I hunted in a pristine environment	0.259	0.683	-2.460	0.007
I met new people	0.124	0.440	-1.835	0.033
The club house was well-kept	0.088	0.377	-1.671	0.047
I experienced hunting in an environment I do not typically hunt	0.216	0.492	-1.603	0.054
I saw a variety of duck species	0.058	0.332	-1.590	0.056
I tested my waterfowl hunting skills	0.342	0.590	-1.444	0.074
I was placed in the best available hunting location	0.448	0.686	-1.378	0.084
I saw a lot of mallards	0.251	0.443	-1.118	0.132
I enjoyed hunting with the others in my blind	0.075	0.266	-1.104	0.135
I learned a lot from the guides	0.291	0.466	-1.017	0.155
My participation in this hunt was more than just shooting	0.200	0.376	-1.015	0.155
Other parties interfered with my hunt [r]	0.199	0.339	-0.812	0.208

Table 2.4 (continued)

I harvested a sufficient number of ducks	0.486	0.355	0.757	0.224
Party size was set to maximize harvest opportunities	0.320	0.435	-0.667	0.252
My guide decoyed ducks in close	0.441	0.330	0.647	0.259
I worked a lot of ducks	0.474	0.560	-0.499	0.309
I harvested a sufficient number of mallards	0.441	0.391	0.291	0.386
I saw a variety of wildlife in addition to waterfowl	0.353	0.314	0.228	0.410

[a] Responses were measured on a scale where 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," 5 = "strongly agree."
[b] Spearman's rho correlations transformed into Fisher's z coefficients for difference scores.
[c] Spearman's rho correlations transformed into Fisher's z coefficients for performance-only measures.
[r] This item was reverse coded.

CHAPTER III

MISSISSIPPI WATERFOWL HUNTER EXPECTATIONS, SATISFACTION, AND INTENTIONS TO HUNT IN THE FUTURE

Introduction

Current downward trends in hunting participation may have negative implications for agencies that rely on hunters for economic, biological, or political support (Enck, Decker, & Brown, 2000; Li, Zinn, Barro, & Manfredo, 2003). Mehmood, Zhang, & Armstrong (2003) suggested that reasons for lack of hunting participation by non-hunters indicated a low probability of recruiting hunters from the ranks of non-hunters. Although efforts to recruit new hunters need to persist, factors affecting hunter retention also should be examined to attempt to lessen declining participation. Numerous studies have been conducted on hunter retention and reasons for lack of participation are diverse. For example, research has indicated some constraints to hunters included lack of access, time, opportunity, and game as well as crowding and hunting regulations (Enck, Swift, & Decker, 1993; Barro & Manfredo, 1996; Miller & Vaske, 2003; Fulton & Manfredo, 2004). These constraints also were related to ratings of hunter satisfaction in other studies (Decker, Brown, & Gutierrez, 1980; Hammitt, McDonald, & Patterson, 1990; Frey, Conover, Borgo, & Messmer, 2003; Fulton & Hundertmark, 2004).

Satisfaction with a recreational experience also has been found to influence future behavioral intentions for individuals visiting and promoting a wildlife refuge (Tian-Cole, Crompton, & Willson, 2001). Specifically, Tian-Cole et al. (2001) found satisfied recreationists were likely to encourage friends and relatives to go to a refuge, visit a refuge again in the future, and say positive things about a refuge to other people. The interrelationship among satisfactions, constraints, and future behavioral intentions indicates developing an understanding of the satisfactions derived from hunting is important for agencies. Specifically, agencies may be able to maximize benefits sought by hunters and increase hunters' intentions for continuing hunting or encouraging others to do so (Hendee, 1974; Decker et al., 1980; Radder, 2000; Hayslette, Armstrong, & Mirarchi, 2001; Tian-Cole et al., 2002). By examining influences on hunter satisfaction and intentions to hunt in the future, wildlife managers may identify potential constraints before they reduce participation or disassociation with the activity.

Factors affecting satisfaction vary among recreation settings and characteristics of participants (Manning, 1999; Hayslette et al., 2001). Satisfaction ultimately is defined as the congruence between expectations and outcomes and has a conceptual basis rooted in expectancy theory (Manning, 1999). Although many definitions of satisfaction relate to expectations, research on the relationship between fulfillment of expectations and satisfactions is lacking in the hunter satisfaction literature. The dominant method of addressing similar relationships elsewhere lies in the expectancy disconfirmation paradigm and has been studied extensively by consumer satisfaction researchers (Oliver, 1980; Tse & Wilton, 1988; Van Ryzin, 2004). Research has shown that as

disconfirmation (a difference between expectations and reality) moves from negative disconfirmation (expectations are not met) to positive disconfirmation (expectations are exceeded), satisfaction ratings increase (Tse & Wilton, 1988; Spreng, MacKenzie, & Olshavsky, 1996). Indeed, the disconfirmation of expectations has been found to be among the strongest antecedents to satisfaction for consumers (Van Ryzin, 2004, Niedrich, Kiryanova, & Black, 2005).

Most research on hunter satisfaction has focused on the influences of various aspects of participants or hunting on satisfaction. For instance, studies have found that harvest-oriented hunters generally were less satisfied than hunters motivated for other reasons (Decker et al., 1980; Gigliotti, 2000). Further, various factors have been found to be strong predictors of satisfaction, with actual harvest being of lesser importance in many studies (Vaske, Fedler, & Graefe, 1986; Gigliotti, 2000; Hayslette et al., 2001). However, numerous researchers have indicated the importance of maintaining some probability of harvest success to uphold hunter satisfaction (Stankey, Lucas, & Ream, 1973; Decker et al., 1980; McCullough & Carmen, 1982). Moreover, harvest success from the previous season also has been found to influence the probability and intensity of waterfowl hunting in the Mississippi Flyway in subsequent seasons (Miller & Hay, 1981).

Many hunting regulations are intended to manipulate harvest, game populations, or hunting opportunity to some degree. Thus, wildlife managers are often most interested in knowing how these and other game-related variables affect hunter satisfaction (Gigliotti, 2000; Fulton & Hundertmark, 2004; Fulton & Manfredo, 2004). Research has

suggested factors such as game population size, seeing game, perception of balanced harvest, and harvest success may affect satisfaction with wildlife management agencies (Miller & Graefe, 2001). Further, hypothetical increases in waterfowl abundance have been shown to increase hunters' future intentions to hunt for a season (Ringelman, 1997). These findings suggest success-related variables, such as seeing harvestable wildlife and opportunities for harvesting game, are not only important predictors of hunter satisfaction, but they also may influence hunters' satisfaction with an agency and intentions to continue hunting.

I used the expectancy disconfirmation paradigm and success-related variables to examine the relationship among: 1) the disconfirmation of expectations, 2) satisfaction with the previous season, 3) seeing waterfowl, 4) opportunities to bag birds, and 5) intentions to hunt the following season for Mississippi waterfowl hunters. Based on my literature review, I hypothesized disconfirmation of expectations, having good opportunities to bag birds, and seeing waterfowl would be related to satisfaction with the season. I also hypothesized hunters' perceptions of seeing waterfowl in the areas they hunted and having good opportunities to bag birds would be related to the disconfirmation of expectations. Last, I hypothesized satisfaction with the previous season, seeing waterfowl, and having good opportunities to bag birds would be related to intentions of hunting the following season for each of the three regulatory packages that may be offered to Mississippi waterfowl hunters (seasons may be a 60-day duck season with a 6-duck limit, a 45-day duck season with a 6-duck limit, or a 30-day duck season with a 3-duck limit).

Methods

I mailed a 12-page self-administered mail questionnaire to a proportional random sample of 1,500 individuals (n = 1,135 resident hunters and n = 365 non-resident hunters), age 18 and older, who purchased a 2005-2006 Mississippi waterfowl stamp. I used a modified version of Dillman (2000) for mailing procedures and questionnaire design. Seven weeks after the close of the waterfowl hunting season, I made initial contact with participants via a pre-notice letter which explained the importance of the study and they would be receiving a questionnaire in the mail in about a week. One week after the pre-notice letter, I mailed a cover letter, questionnaire, and business reply envelope (henceforth termed complete packet). One week after the first questionnaire mailing, I sent a thank you/reminder postcard to all participants. Two weeks after the postcard was mailed, I sent a second complete packet to non-respondents. Four weeks after that, I mailed a third complete packet to non-respondents. The third complete packet had a stamp affixed to the outgoing mail envelope to change the appearance of that mailing wave from other mailing waves. I included all questionnaires received within six weeks of the final mailing in data analyses.

Among other items, the mail questionnaire consisted of items related to harvest, expectations, satisfactions, future behavioral intentions, and beliefs about waterfowl hunting. I measured how well hunter expectations were met for "the waterfowl hunting season overall" on a five-point scale with a response format of 1 = "much poorer than expected," 2 = "poorer than expected," 3 = "as expected," 4 = "better than expected," and 5 = "much better than expected." Furthermore, I asked participants to provide an

estimate of how many ducks they expected to harvest on a typical day's hunt given a daily bag limit of six and three ducks. These questions were intended to determine if hunters typically had higher expectations of harvest than what they actually harvested on average. I measured satisfaction with "the waterfowl hunting season overall" using a five-point satisfaction continuum with a response format of 1 = "not at all satisfied," 2 = "slightly satisfied," 3 = "moderately satisfied," 4 = "very satisfied," and 5 = "extremely satisfied." I measured future behavioral intentions by outlining available season lengths and bag limits for duck hunting and asking how likely they were to hunt next year given each of the available regulatory alternatives on a five-point Likert type scale with a response format of 1 = "very unlikely," 2 = "unlikely," 3 = "neutral," 4 = "likely," and 5 = "very likely." The available regulatory packages were: 1) "a 60-day season with a 6-duck limit," 2) "a 45-day season with a 6-duck limit," and 3) "a 30-day season with a 3-duck limit." I also asked participants a series of 24 questions about their beliefs about waterfowl hunting on a five-point Likert type scale with a response format of 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree." Among these items were the two items I used in analyses for my study: "I saw plenty of waterfowl in the places I hunted this season" and "I have good opportunities to bag birds."

I used backward step-wise hierarchical log-linear analysis to examine the associations among fulfilled expectations, satisfaction with the season, seeing waterfowl, opportunities to bag birds, and intentions to hunt the following season for Mississippi waterfowl hunters (Knoke & Burke, 1980; Miller & Graefe, 2001; Stevens, 2002). I

generated three separate models, one for each regulatory package that may be offered to Mississippi waterfowl hunters. This analysis tests for independence among variables, where low probabilities of significance indicate an association exists among variables and the hypothesis of independence is rejected (Knoke & Burke, 1980; Miller & Graefe, 2001; Stevens, 2002). Backward elimination removes unassociated items until there is no significant gain in model fit by further deletions. A good-fitting model will have a Pearson chi-square or Likelihood ratio chi-square probability greater than the selected alpha level (0.05 in this study) (Stevens, 2002). I preferred hierarchical log-linear analysis over multiple regression because log-linear analysis considers all variables as independent and provides the most straight-forward analysis where multiple relationships are hypothesized among variables (Knoke & Burke, 1980; Miller & Graefe, 2001; Stevens, 2002).

Ten weeks after the final mailing wave, I began a follow-up telephone non-response survey. I made up to two telephone contacts with the 253 non-respondents for which I was able to obtain phone numbers through directory assistance. To test for differences between respondents to the mail survey and respondents to the telephone survey, I used a two-tailed Wilcoxon Rank Sum test for items related to satisfaction with the season, fulfillment of expectations for the season, importance of hunting compared to other outdoor recreation activities, importance of waterfowl hunting compared to other hunting activities, days hunted in Mississippi, and waterfowl harvested in Mississippi.

To further check for possible non-response bias, I assumed that the later a participant responded to the mail survey, the more they took on characteristics of a non-

respondent (Filion, 1975; Choi, Ditton, & Matlock, 1992). Thus, I correlated: 1) age, 2) gross household income, 3) education level, 4) likeliness to hunt the following waterfowl season under "a 60-day duck season with a 6-duck limit," 5) likeliness to hunt the following waterfowl season under "a 45-day duck season with a 6-duck limit," 6) likeliness to hunt the following waterfowl season under "a 30-day duck season with a 3-duck limit," 7) years of waterfowl hunting experience, 8) number of years out of the last five participants waterfowl hunted, 9) level of agreement with "I saw plenty of waterfowl in the places I hunted this season, and 10) level of agreement with "I have good opportunities to bag birds" with how many days from the first mailing wave (that contained a questionnaire) it took for the completed questionnaire to be returned. I used a two-tailed Spearman's rho to detect significant trends in responses as time progressed from the first questionnaire mailing. My project was approved by the Mississippi State University Institutional Review Board (IRB) for the protection of human subjects (IRB docket number 02-158).

Results

Of the 1,500 individuals sampled, 773 (51.5%) responded to my study questionnaire. Of the respondents, 586 indicated they hunted while 187 indicated they did not hunt waterfowl during the 2005-2006 waterfowl hunting season. Additionally, 102 individuals were non-eligible because they were deceased (n = 2), they refused to participate in the survey (n = 6), or the questionnaire was not completed by whom it was addressed (n = 17), or were non-deliverable (n = 77). Thus, the overall effective mailing response rate was 55.3%. Results of my study are based on individuals who hunted

during the 2005-2006 waterfowl hunting season (n = 586). Of the 253 individuals I attempted to contact for the non-response survey, 33 could not be reached, one was deceased, 22 refused to participate in the telephone survey, 21 indicated they did not hunt, and 49 indicated they hunted during the 2005-2006 Mississippi waterfowl hunting season.

Based on my telephone non-response survey, respondents to my mail survey hunted more days (z = -3.875, $p < 0.001$), harvested fewer birds (z = 3.729, $p < 0.001$), and considered waterfowl hunting more important to them than other types of hunting (z = 3.006, p = 0.003). Based on my trends analysis, mail survey participants were older (rho = -0.179, $p < 0.001$, n = 704), have hunted ducks for more years (rho = -0.140, $p < 0.001$, n = 677), and hunted more years out of the last five than non-respondents (rho = -0.086, p = 0.025, n = 676). I detected no significant trends or differences for any variable used in the log-linear analysis.

Survey participants used in this study were mostly white (98.7%, n = 529) males (98.9%, n = 530) with some college experience (83.0%, n = 444). They were 41.8 (SE = 0.6, n = 536) years of age on average with a median annual gross household income between $80,000 and $89,999. They had an average of 29.1 (SE = 0.6, n = 549) years of hunting experience and 20.0 (SE = 0.6, n = 550) years of waterfowl hunting experience. Most (67.9%, n = 361) stated hunting was their most important outdoor recreation activity and most (55.0%, n = 295) indicated waterfowl hunting was their most important hunting activity. Participants that we used in this study hunted for waterfowl an average of 12.9 (SE = 0.5, n = 551) days in Mississippi and 16.1 (SE = 0.6, n = 551) total days.

Participants that hunted the 2005-2006 season harvested an average of 2.2 (SE = 0.1, *n* = 493) ducks and 0.1 (SE = 0.03, *n* = 493) geese per day. However, they expected to harvest an average of 4.3 (SE = 0.1, *n* = 538) ducks per day if the limit were six ducks per day (as it was for the 2005-2006 waterfowl hunting season) and an average of 2.8 (SE = 0.02, *n* = 534) ducks per day if the limit were three ducks per day on a typical day's hunt.

A plurality (43.7%, *n* = 250) of participants indicated some form of negative disconfirmation for the 2005-2006 waterfowl hunting season, whereas 34.6% (*n* = 198) stated their expectations were met (confirmation) and 21.7% (*n* = 124) indicated some form of positive disconfirmation (Table 3.1). Most (78.2%, *n* = 441) stated they were at least "slightly satisfied" with the season overall (Table 3.1). A plurality (45.0%, *n* = 255) disagreed to some extent about seeing plenty of waterfowl in the places they hunted, whereas most (51.3%, *n* = 288) agreed to some extent about having good opportunities to bag birds (Table 3.1). Most participants indicated they were either "likely" or "very likely" to participate in the next waterfowl hunting season if a 60-day season and a six-duck limit (88.7%, *n* = 448) or a 45-day duck season with a six-duck limit (77.8%, *n* = 430) was offered (Table 3.1). However, only 47.0% (*n* = 259) indicated some degree of likeliness to participate the next season if a 30-day duck season and a three-duck limit were in place (Table 3.1).

The hierarchical log-linear analysis used 21 steps to generate the final model for a 60-day duck season with a six-duck limit (Table 3.2). Seeing waterfowl, having opportunities to bag birds, and the disconfirmation of expectations were related to satisfaction (Table 3.2, Figure 3.1). Thus, I accepted my hypotheses about variables

related to satisfaction. I accepted my hypothesis that seeing waterfowl was related to the fulfillment of season expectations, but rejected my hypothesis that opportunities to bag birds was related to the fulfillment of season expectations. Only the perception of having good opportunities to bag birds was related to intentions to hunt the following season if a 60-day season with a six-duck limit was offered. Thus, I rejected my hypotheses that satisfaction with the season and seeing birds was directly related to intentions to hunt in the future, but accepted my hypothesis that having good opportunities to bag birds was related to intentions to hunt.

The hierarchical log-linear analysis used 19 steps to generate the final model for a 45-day duck season with a six-duck limit (Table 3.3). Seeing waterfowl, having opportunities to bag birds, and the disconfirmation of expectations were related to satisfaction (Table 3.3, Figure 3.2). Thus, I accepted my hypotheses about variables related to satisfaction. I accepted my hypotheses that having good opportunities to bag birds and seeing waterfowl were related to the fulfillment of expectations. The perception of having good opportunities to bag birds and seeing plenty of waterfowl was related to intentions to hunt the following season if it were 45 days long with a six-duck limit, but satisfaction with the season was not related to intentions to hunt. Thus, I accepted my hypotheses that seeing waterfowl and opportunities to harvest birds were related to intentions to hunt, but rejected my hypothesis that satisfaction was related to intentions to hunt for this model.

The hierarchical log-linear analysis used 19 steps to generate the final model for a 30-day duck season with a three-duck limit (Table 3.4). Seeing waterfowl, having

opportunities to bag birds, and the disconfirmation of expectations were related to satisfaction (Figure 3.3). Thus, I accepted my hypotheses about variables related to satisfaction. I accepted my hypotheses that having good opportunities to bag birds and seeing waterfowl were related to the fulfillment of expectations. Satisfaction with the season and seeing waterfowl was related to intentions to hunt during a 30-day duck season with a three-duck limit, but having good opportunities to bag birds was not related to intentions to hunt. Thus, I accepted my hypotheses that seeing waterfowl and satisfaction with the season were related to intentions to hunt, but rejected my hypothesis that good opportunities to harvest birds was related to intentions to hunt for this model.

Discussion and Implications

My study examined variables that had multiple hypothesized relationships based on previous research. I do not believe my study suffered appreciably from non-response bias, because none of the variables used in the log-linear analysis had significant trends or differences detected. I only examined people who hunted waterfowl during the 2005-2006 waterfowl hunting season, therefore more infrequent hunters may be underrepresented. My non-response analyses indicated mail survey participants were older, have hunted ducks for more years, and hunted more years out of the last five than non-respondents. Thus, results presented in my study may be more representative of avid and experienced waterfowl hunters than the entire population of waterfowl stamp purchasers in Mississippi.

I found that disconfirmation of expectations for the season, seeing plenty of waterfowl, and having good opportunities to bag birds was related directly to satisfaction

for all models. This suggests that not only success-related variables, such as seeing wildlife and opportunity to harvest, are important influences on satisfaction for a season, but fulfilling hunters' expectations also is important. Conceptualizations of satisfaction indicate the importance of fulfilling expectations for satisfaction (Manning, 1999), but little empirical evidence exists in the hunter satisfaction literature to support those conceptualizations.

Hunter expectations of harvest were greater than reality for a six-duck limit and a three-duck limit, suggesting that bringing expectations closer to reality or increasing waterfowl harvest may improve ratings of satisfaction. However, increasing waterfowl harvest enough to meet hunter expectations may be infeasible, because per-day harvest expectations under a three and six-duck limit were greater than any resident waterfowl hunter harvest per-day estimate for the past 25 years (Hunt & Brunke, 2006). Researchers have found anglers with realistic expectations for fish size had greater fishing and fishing trip satisfaction than anglers with unrealistic expectations, although efforts to manipulate angler expectations met with limited success in their study (Spencer & Spangler, 1992). Boulding, Kalra, Staelin, & Zeithaml (1993) suggested expectations changed over time and were updated with additional contacts with an activity. Interestingly, years of waterfowl hunting experience was correlated positively with expectations of daily harvest rates for a six-duck limit in my study. Perhaps some hunters have experienced exceptionally good seasons in terms of waterfowl harvested over their hunting careers. Based on these good seasons, hunters may have subsequently updated their expectations to unrealistic levels, on average. If this is the case, it may be difficult

to manipulate the expectations of individuals who have hunted for many years. Nevertheless, publicizing of actual harvest rates and trends in harvest may help move hunter expectations to more realistic levels (Decker et al., 1980; Gigliotti, 2000), especially among hunters with less waterfowl hunting experience. To further temper hunter expectations, education efforts could be used to explain that liberal season lengths and bag limits do not necessarily translate into numerous ducks and greater harvest rates in their area.

Seeing plenty of waterfowl was related directly to the disconfirmation of expectations for all models, but the perception of having good opportunities to bag birds only was related to the disconfirmation of expectations for the 45-day and the 30-day season models (Figures 3.2 and 3.3). Expectations are fulfilled based on performance of certain variables (Boulding et al., 1993; Niedrich et al., 2005), so it is unclear why having good opportunities to bag birds was not related to the disconfirmation of expectations for all models. I worded the variable related to seeing waterfowl so that it specifically referenced the season, but the variable related to bagging birds did not. The different wording may have had an effect in item interpretation and thus the relationship among variables in the models. The variable related to bagging birds also had a relatively weak relationship with the disconfirmation of expectations in the 45-day and 30-day season models (Tables 3.3 and 3.4), whereas seeing birds the previous season had a greater relationship for all models. This suggests participants put more value in seeing birds for the disconfirmation of their expectations than for bagging birds. Therefore, the 60-day

season model most likely dropped the relationship between disconfirmation and bagging birds because it affected model fit insignificantly.

The perception of having good opportunities to bag birds was related to intentions to hunt next year for the 60-day and the 45-day duck season models (Figures 3.1 and 3.2) whereas seeing waterfowl the previous season was related to intentions to hunt for the 45-day and 30-day season models (Figures 3.2 and 3.3). Satisfaction only was related to intentions to hunt in the future for the 30-day duck season model (Figure 3.3). These findings suggest seeing harvestable wildlife and having opportunities to harvest wildlife may not only be important determinants of satisfaction, but affect intentions to hunt in the future. Season level satisfaction did not relate to intentions to hunt until the bag limit and season length was reduced to the most restrictive option under the current waterfowl hunting regulation packages. As previous research has found, satisfaction with a hunting experience often includes numerous non-success-related variables (Vaske et al., 1986; Gigliotti, 2000; Hayslette et al., 2001). Thus, hunters who are motivated more by non-success factors may be more satisfied and more likely to hunt in the future with substantially reduced harvest opportunity. This may be because harvest is of lesser importance in determining their satisfaction. These findings, coupled with the finding that only the perceptions of having good opportunities to bag birds was related to intentions to hunt if a 60-day season with a six-duck limit was offered, suggests the characteristics of the waterfowl hunter population may shift under various regulatory packages.

In my study, I illustrated multiple relationships among the disconfirmation of expectations, perceptions about hunting, satisfaction, and intentions for waterfowl hunting in the future. I found success-related factors were related to satisfaction with the season, and also related to intentions to hunt in the future and fulfillment of expectations. Further, I found the disconfirmation of expectations had a consistent relationship with satisfaction for all models. Future research could focus on how hunters formulate expectations and ways to manipulate hunter expectations. Models including expectations, satisfactions, and behavioral intentions could be further refined by segmenting hunters into groups based on their motivations for hunting. Models examining how non-success-related variables relate to the disconfirmation of expectations may further help researchers understand how to meet hunter expectations.

References

Barro, S. C., & Manfedo, M. J. (1996). Constraints, psychological investment, and hunting participation: Development and testing of a model. *Human Dimensions of Wildlife, 1*, 42-61.

Boulding, W., Kalra, A., Staelin, R., & Zeithaml, V. A. (1993). A dynamic process model of service quality: From expectations to behavioral intentions. *Journal of Marketing Research, 30*, 7-27.

Choi, S., Ditton, R. B., & Matlock, G. C. (1992). Homogeneity across mail survey waves: A replicated study. *Journal of Leisure Research, 24*, 79-85.

Decker, D. J., Brown, T. J., & Gutierrez, R. J. (1980). Further insights into the multiple-satisfactions approach for hunter management. *Wildlife Society Bulletin, 8*, 323-331.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method* (2nd ed.). New York, NY: John Wiley & Sons, Inc.

Enck, J. W., Swift, B. L., and Decker, D. J. (1993). Reasons for decline in duck hunting: Insights from New York. *Wildlife Society Bulletin, 21*, 10-21.

Enck, J. W., Decker, D. J., and Brown, T. L. (2000). Status of hunter recruitment and retention in the United States. *Wildlife Society Bulletin, 28*, 817-824.

Filion, F. L. (1975). Estimating bias due to nonresponse in mail surveys. *Public Opinion Quarterly, 39*, 482-492.

Frey, S. N., Conover, M. R., Borgo, J. S., & Messmer, T. A. (2003). Factors influencing pheasant hunter harvest and satisfaction. *Human Dimensions of Wildlife, 8*, 277-286.

Fulton, D. C., & Hundertmark, K. (2004). Assessing the effects of a selective harvest system on moose hunters' behaviors, beliefs, and satisfaction. *Human Dimensions of Wildlife, 9*, 1-16.

Fulton, D. C., & Manfredo, M. J. (2004). A panel design to assess the effects of regulatory induced reductions in opportunity on deer hunters' satisfaction. *Human Dimensions of Wildlife, 9*, 35-55.

Gigliotti, L. M. (2000). A classification scheme to better understand satisfaction of Black Hills deer hunters: The role of harvest success. *Human Dimensions of Wildlife, 5*, 32-51.

Hammitt, W. E., McDonald, C. D., & Patterson, M. E. (1990). Determinants of multiple satisfaction for deer hunting. *Wildlife Society Bulletin, 18*, 331-337.

Hayslette, S. E., Armstrong, J. B., & Mirarchi, R. E. (2001). Mourning dove hunting in Alabama: Motivations, satisfactions, and sociocultural influences. *Human Dimensions of Wildlife, 6*, 81-95.

Hendee, J. C. (1974). A multiple-satisfaction approach to game management. *Wildlife Society Bulletin, 2*, 104-113.

Hunt, K. M. & Brunke, K. D. (2006). Trends in resident and non-resident hunter effort and harvest for waterfowl in Mississippi 1980-2005. HDCLEL Technical Document # 136: Mississippi State, MS.

Knoke, D., & Burke, P. J. (1980). *Log-linear models*. Sage University paper Series on Quantitative Applications in the Social Sciences, Series no. 20. Thousand Oaks, CA: Sage.

Li, C.-L., Zinn, H. C., Barro, S. C., & Manfredo, M. J. (2003). A cross-regional comparison of recreation patterns of older hunters. *Leisure Sciences, 25*, 1-16.

Manning, R. E. (1999). *Studies in outdoor recreation: Search and research for satisfaction* (2nd ed.). Corvallis, OR: Oregon State University Press.

McCullough, D. R., & Carmen, W. J. (1982). Management goals for deer hunter satisfaction. *Wildlife Society Bulletin, 10*, 49-52.

Mehmood, S., Zhang, D., & Armstrong, J. (2003). Factors associated with declining hunting license sales in Alabama. *Human Dimensions of Wildlife, 8*, 243-262.

Miller, C. A., & Graefe, A. R. (2001). Effect of harvest success on hunter attitudes toward white-tailed deer management in Pennsylvania. *Human Dimensions of Wildlife, 6*, 189-203.

Miller, C. A., & Vaske, J. J. (2003). Individual and situational influences on declining hunter effort in Illinois. *Human Dimensions of Wildlife, 8*, 263-276.

Miller, J. R., & Hay, M. J. (1981). Determinants of hunter participation: Duck hunting in the Mississippi Flyway. *American Agricultural Economics Association*, *64,* 677-684.

Niedrich, R. W., Kiryanova, E., & Black, W. C. (2005). The dimensional stability of the standards used in the disconfirmation paradigm. *Journal of Retailing, 81*, 49-57.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*, 460-469.

Radder, L. (2000). Expectations of kudu hunters in the Eastern Cape: A value chain constellation. *South African Journal of Wildlife Research, 30*, 129-133.

Ringelman, J. K. (1997). Effects of regulations and duck abundance on duck hunter participation and satisfaction. *Transactions of the North American Wildlife and Natural Resource Conference, 62*, 361-376.

Spencer, P. D., & Spangler, G. R. (1992). Effect that providing fishing information has on angler expectations and satisfaction. *North American Journal of Fisheries Management, 12*, 379-385.

Spreng, R. A., MacKenzie, S. B., & Olshavsky, R. W. (1996). A reexamination of the determinants of consumer satisfaction. *Journal of Marketing, 60*, 15-32.

Stankey, G. H., Lucas, R. C., & Ream, R. R. (1973). Relationships between hunting success and satisfaction. *Transactions of the North American Wildlife Conference, 38*, 235-242.

Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Tian-Cole, S., Crompton, J. L., & Willson, V. L. (2002). An empirical investigation of the relationships between service quality, satisfaction and behavioral intentions among visitors to a wildlife refuge. *Journal of Leisure Research, 34*, 1-24.

Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction formation: An extension. *Journal of Marketing Research, 25*, 201-212.

Van Ryzin, G. G. (2004). Expectations, performance, and citizen satisfaction with urban services. *Journal of Policy Analysis and Management, 23*, 433-448.

Vaske, J. J., Fedler, A. J., & Graefe, A. R. (1986). Multiple determinants of satisfaction from a specific waterfowl hunting trip. *Leisure Sciences, 8*, 149-166.

Table 3.1. Frequencies and means for items used in the backward step-wise hierarchical log-linear analysis on 2005-2006 Mississippi waterfowl hunters (n = 566).

Item	Response Category 1 (%)	Response Category 2 (%)	Response Category 3 (%)	Response Category 4 (%)	Response Category 5 (%)	Mean
The waterfowl hunting season overall [a]	14.5	29.2	34.6	16.6	5.1	2.69
The waterfowl hunting season overall [b]	21.8	21.3	34.8	17.7	4.4	2.62
I saw plenty of waterfowl in the places I hunted this season [c]	15.5	29.5	20.9	27.2	6.9	2.80
I have good opportunities to bag birds [c]	6.6	17.5	24.6	42.9	8.4	3.29
A 60-day duck season with a 6-duck limit [d]	5.3	1.1	4.9	13.4	75.3	4.52
A 45-day duck season with a 6-duck limit [d]	4.9	4.7	12.6	27.5	50.3	4.14
A 30-day duck season with a 3-duck limit [d]	22.7	14.7	15.6	12.3	34.7	3.22

[a] Response categories: 1 = “much poorer than expected,” 2 = “poorer than expected,” 3 = “as expected,” 4 = “better than expected,” and 5 = “much better than expected.”
[b] Response categories: 1 = “not at all satisfied,” 2 = “slightly satisfied,” 3 = “moderately satisfied,” 4 = “very satisfied,” and 5 = “extremely satisfied.”
[c] Response categories: 1 = “strongly disagree,” 2 = “disagree,” 3 = “neutral,” 4 = “agree,” and 5 = “strongly agree.”
[d] Response categories: 1 = “very unlikely,” 2 = “unlikely,” 3 = “neutral,” 4 = “likely,” and 5 = “very likely.”

Table 3.2. Backward step-wise hierarchical log-linear analysis output for 2005-2006 Mississippi waterfowl hunters for the model including a 60-day duck season with a six-duck limit (n = 545).

Generating Class [a]		df	L.R. χ^2 Change	p
Satisfaction	Sawplenty	16	60.37	<0.001
Disconfirmation	Sawplenty	16	62.56	<0.001
Sawplenty	Bagbirds	16	122.72	<0.001
Bagbirds	Intentions60	16	45.91	<0.001
Disconfirmation	Satisfaction	16	263.15	<0.001
Satisfaction	Bagbirds	16	70.87	<0.001
Goodness-of-fit test statistics		df	χ^2	p
Likelihood ratio		3008	531.47	1.000
Pearson		3008	2303.52	1.000

[a] Satisfaction = How satisfied were you with "the waterfowl hunting season overall."
[a] Disconfirmation = How well were your expectations met for "the waterfowl hunting season overall."
[a] Sawplenty = “I saw plenty of waterfowl in the places I hunted this season.”
[a] Bagbirds = “I have good opportunities to bag birds.”
[a] Intentions60 = Likeliness to waterfowl hunt next year with "A 60-day duck season with a 6-duck limit."

Table 3.3. Backward step-wise hierarchical log-linear analysis output for 2005-2006 Mississippi waterfowl hunters for the model including a 45-day duck season with a six-duck limit (n = 539).

Generating Class [a]		df	L.R. χ^2 Change	p
Disconfirmation	Sawplenty	16	41.75	<0.001
Sawplenty	Bagbirds	16	99.65	<0.001
Disconfirmation	Satisfaction	16	219.28	<0.001
Disconfirmation	Bagbirds	16	28.05	0.031
Satisfaction	Bagbirds	16	36.63	0.002
Bagbirds	Intentions45	16	35.86	0.003
Satisfaction	Sawplenty	16	65.40	<0.001
Sawplenty	Intentions45	16	45.26	<0.001

Goodness-of-fit test statistics	df	χ^2	p
Likelihood ratio	2976	588.55	1.000
Pearson	2976	1467.91	1.000

[a] Satisfaction = How satisfied were you with "the waterfowl hunting season overall."
[a] Disconfirmation = How well were your expectations met for "the waterfowl hunting season overall."
[a] Sawplenty = “I saw plenty of waterfowl in the places I hunted this season.”
[a] Bagbirds = “I have good opportunities to bag birds.”
[a] Intentions45 = Likeliness to waterfowl hunt next year with "A 45-day duck season with a 6-duck limit."

Table 3.4. Backward step-wise hierarchical log-linear analysis output for 2005-2006 Mississippi waterfowl hunters for the model including a 30-day duck season with a three-duck limit (n = 537).

Generating Class [a]		df	L.R. χ^2 Change	p
Disconfirmation	Sawplenty	16	40.22	<0.001
Satisfaction	Sawplenty	16	66.91	<0.001
Satisfaction	Intentions30	16	26.74	0.045
Sawplenty	Bagbirds	16	100.92	<0.001
Sawplenty	Intentions30	16	27.90	0.033
Disconfirmation	Satisfaction	16	222.37	<0.001
Disconfirmation	Bagbirds	16	28.65	0.026
Satisfaction	Bagbirds	16	39.47	<0.001

Goodness-of-fit test statistics	df	χ^2	p
Likelihood ratio	2976	652.84	1.000
Pearson	2976	1333.13	1.000

[a] Satisfaction = How satisfied were you with "the waterfowl hunting season overall."
[a] Disconfirmation = How well were your expectations met for "the waterfowl hunting season overall."
[a] Sawplenty = “I saw plenty of waterfowl in the places I hunted this season.”
[a] Bagbirds = “I have good opportunities to bag birds.”
[a] Intentions30 = Likeliness to waterfowl hunt next year with "A 30-day duck season with a 3-duck limit."

Figure 3.1. An illustration demonstrating the relationships for the backward step-wise hierarchical log-linear model for 2005-2006 Mississippi waterfowl hunters, including a 60-day duck season with a six-duck limit. A line between items indicates a significant relationship between items in the final model (n = 545).

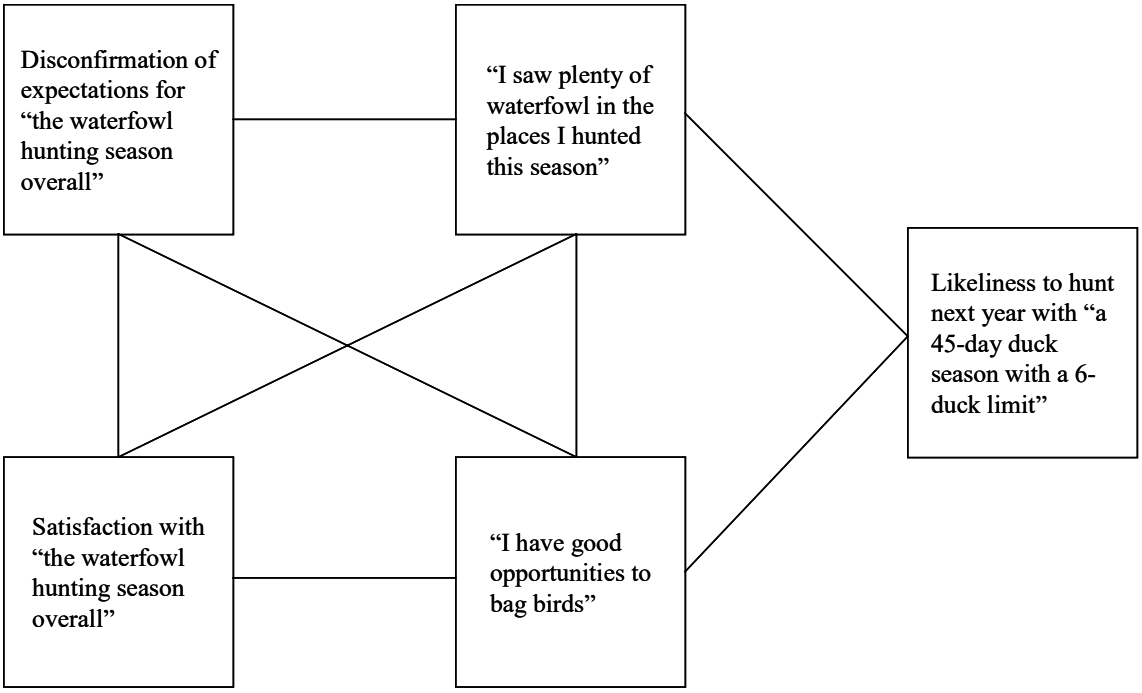

Figure 3.2. An illustration demonstrating the relationships for the backward step-wise hierarchical log-linear model for 2005-2006 Mississippi waterfowl hunters, including a 45-day duck season with a six-duck limit. A line between items indicates a significant relationship between items in the final model (n = 539).

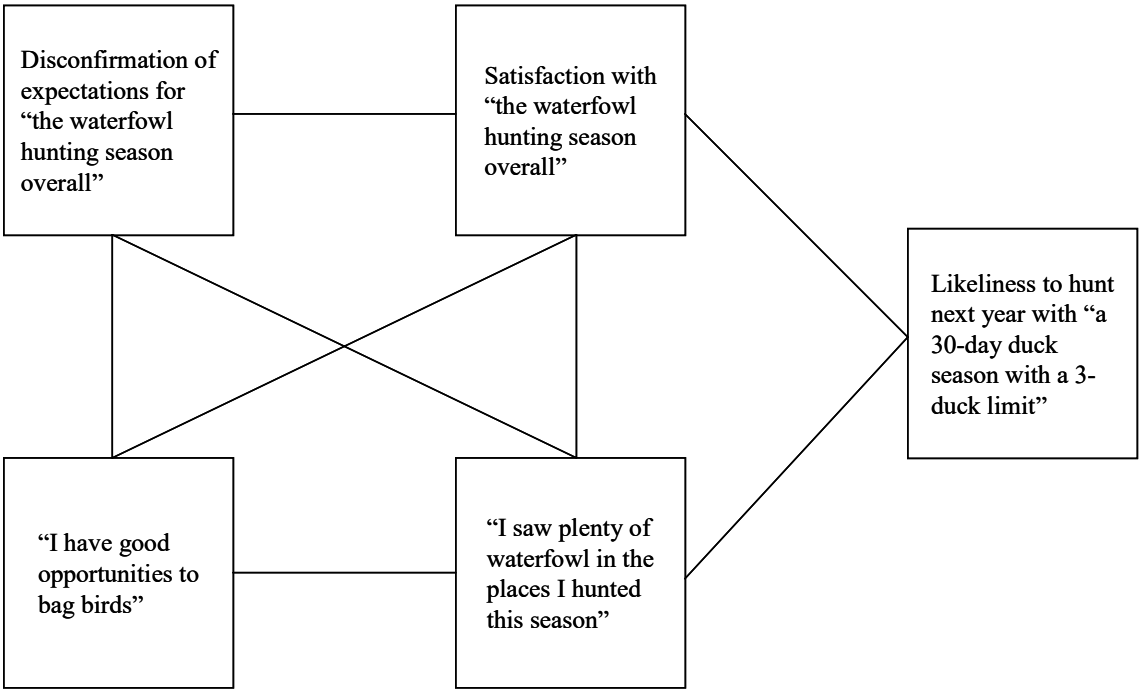

Figure 3.3. An illustration demonstrating the relationships for the backward step-wise hierarchical log-linear model for 2005-2006 Mississippi waterfowl hunters, including a 30-day duck season with a three-duck limit. A line between items indicates a significant relationship between items in the final model (n = 537).