

**DEVELOPMENT AND INITIAL ASSESSMENT OF TEXAS COOPERATIVE
EXTENSION'S WHITE-TAILED DEER MANAGEMENT MODULE**

A Thesis

by

MARK ANDREW BEDGOOD

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

December 2004

Major Subject: Agricultural Education

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ABSTRACT

Development and Initial Assessment of Texas Cooperative Extension's White-tailed Deer Management Module. (December 2004)

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The purpose of this study was to evaluate the development and initial use of Texas Cooperative Extension's (TCE) White-tailed Deer Management Module (WDMM) delivered over the Internet. The results of this study will provide suggestions about future online wildlife management modules.

Data were collected from two populations using questionnaires. A sample of six county Extension agents (CEA's) and four Extension specialists were selected by an Extension wildlife specialist who perceived them to be professionals in the fields of wildlife and range management. This first sample is also referred to as change agents. The second sample, also known as early users, consisted of 27 anonymous CEA's and landowners within TCE's District 10. Quantitative and qualitative methods were used to collect and analyze data. The results are as follows:

Thus, the development of WDMM was the responsibility of the Extension specialist and researcher. The Extension specialist and researcher did seek professional opinions on content and layout information.

Results suggested that CEA's and Extension specialists agreed the WDMM would be a beneficial educational tool for new landowners. Overall, WDMM was perceived to be user friendly, visually appealing, and provided useful content. Although most change agents responded positively to most questions, there were a few that would like to see

more educationally challenging questions. For example, there were a few questions that respondents felt were of the “elementary” and “kindergarten” level. They would like more questions concerning management.

The majority of early users were in support of WDMM. Data gathered from the WDMM Feedback Questionnaire agreed with data gathered from change agents. In general, most early users said that they were pleased with the WDMM.

Recommendations were made based on these findings to expand the WDMM. Some of these include:

- 1) Expanding WDMM;
- 2) Replicating this study using random sampling;
- 3) Collecting computer knowledge and skills and demographics on future studies;
- 4) Developing similar modules to see if they gain the same positive response.

DEDICATION

This thesis is dedicated in memory of Dr. Byron Wright, 1965-2004. Dr. Byron Wright was an Assistant Professor and Extension Wildlife Specialist, Department of Wildlife & Fisheries Sciences, Texas A&M University. Byron was a well respected and dedicated wildlife biologist. He was very knowledgeable in managing rangeland habitats for white-tailed deer, bobwhite quail, and other wildlife native to South Texas and the Edwards Plateau. This thesis would not have been possible without the initiative and dedication of Dr. Byron Wright to the field of wildlife management and education.

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I would like to express my appreciation to Dr. Scott Cummings, my advisor and boss, for all of his support and guidance throughout this study and my extended graduate career. I am also grateful to Dr. Chris Boleman, committee member and co-worker, who provided me with tremendous feedback and support throughout the duration of this study. I would also like to acknowledge Dr. Tom “Andy” Vestal, committee member and co-worker, for his inspiration and motivation that he continuously instilled in me. A special thanks goes to Dr. Neal Wilkins, committee member, especially for his support during the loss of Dr. Byron Wright.

I cannot express enough gratitude to my colleagues and mentors in the Department of Agricultural Education, Department of Wildlife and Fisheries Sciences, and to others who have provided support. Thank you.

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CHAPTER I

INTRODUCTION

Texas Cooperative Extension (TCE) is an “educational organization provided by the U.S. government, the state government through Texas A&M University System, and your county government” (Texas Cooperative Extension, 2001, *What is extension?*, ¶ 1). The mission of TCE is to provide “quality, relevant outreach and continuing education programs and services to the people of Texas” (Texas Cooperative Extension, 2004a, *For our employees*, Mission, ¶ 1). Traditionally, TCE has focused these programs in agriculture and other disciplines for a rural clientele. Because of societal, environmental, and landscape changes, there has become a realization for Extension to emphasize natural resource management (Schneider & Smallidge, 2000).

With this emphasis on natural resource management, comes the opportunity for alternative delivery methods other than the traditional face-to-face group methods. Technology has rapidly advanced allowing educators to extend their methods of teaching (Wickersham, 2000). The Internet has opened the door to teaching allowing educators to offer programs without the worries of when and where the program will be delivered.

Statement of the Problem

Demographics and needs of clientele are becoming more urban and these clientele are interested in a wide range of natural resource topics rather than just a traditional agriculture focus (Rodewald, 2002). Today there are more private landowners living in the urban sector and owning land in a rural setting far from where they reside. This

This thesis follows the style and format of the *Journal of Agricultural Education*.

separation between landowners and their property make it increasingly difficult for the landowners to attend a traditional Extension group meetings or programs. “Management of wildlife on private lands is increasingly recognized as critical to the success of statewide conservation efforts” (Rodewald, 2002, Introduction, ¶ 3).

Purpose of Study

The purpose of this study was to evaluate the development and initial use of Texas Cooperative Extension’s (TCE) White-tailed Deer Management Module (WDMM), delivered over the internet, in order to assist county Extension agents and educators reach new audiences.

Specific Objectives

To achieve the purpose of the study, the following specific objectives were established:

1. Discuss the development process of the WDMM;
2. Describe the perceptions of change agents about WDMM; and
3. Describe the perceptions of early users of WDMM.

Theoretical Base for the Study

Web based learning is becoming a very popular educational tool. Many universities offer classes via the Internet and many other companies and organizations train their employees over the Internet. Reviewing web-based educational programs and their structure will help guide in the development of other web-based educational programs. Collaboration between the use of the Internet and TCE programming will allow for an educational delivery without the tasks of scheduling a location and time for a traditional workshop.

Additionally, information gathered on the development of the WDMM will allow TCE to use the data from this study for the development and delivery of future wildlife management modules.

Research Questions

Considering the theoretical base above, and in accord with the objectives of the study, the following research questions were developed:

1. What was the process used to develop the WDMM?
2. What were the perceptions of change agents about WDMM?
3. What support of the WDMM was offered by early users?

Importance of Study

This study will help TCE identify the steps used to develop the WDMM, and white-tailed deer management topics that are most desirable by clientele. Further, this study will provide information on the ease of use and aesthetics of the module. In addition, TCE will be able to use the data for the development and delivery of future wildlife management modules.

Delimitations

The geographical location for this study was defined within Texas Cooperative Extension's District 10. District 10 is located in the Hill Country of Texas. Seventeen counties were selected within the district to pilot test the WDMM. The 17 counties included in the study were as follows: Blanco, Caldwell, Comal, Edwards, Gillespie, Gonzales, Guadalupe, Kendall, Kerr, Kimble, Kinney, Medina, Real, Sutton, Travis, Uvalde, and Wilson counties. The study focused on the 17 county's Extension agents and approximately five of their cooperating landowners. County Extension agents

involved were selected by an Extension wildlife specialist and the cooperating landowners were selected by the county Extension agents. Other individuals selected to pilot test the module, were individuals considered by an Extension wildlife specialist as experts in the field of wildlife management.

Limitations

This study was limited to the specific, unique region of Texas Cooperative Extension's District 10, and the sampling process was nonrandom.

Assumptions

It is assumed that the majority of TCE's clientele, that would have an interest in this module, have access to the Internet.

Definition of Terms and Acronyms

For the purpose of this report, the researcher defined certain terms referring to members of the target populations. The definitions of these terms are included below to clarify the intent of their usage throughout the report.

Change Agent - Selected Texas Cooperative Extension agents and specialists that were interviewed using a telephone survey.

Cooperative Extension Service - The division of the United States Department of Agriculture created by the Smith-Lever Act and charged with disseminating research-based information to the public through state and land grant universities.

District - A territorial division of Texas for administrative purposes.

Early User - Those anonymous individuals that provided feedback to the researcher by means of the Feedback Questionnaire on the White-tailed Deer Management

Module.

Extension Agent - An employer of the Extension Service that assists people in rural areas with methods of agriculture and natural resources, 4-H and youth development, family and consumer sciences, and community development.

Extension Specialist - An employer of the Extension Service with expert knowledge in a particular occupation or field of study.

Module - A set of educational lessons that cover one major subject.

Online Survey Instrument - The online survey, or questionnaire, that was used by the researcher to gather anonymous data from the early users. This online survey instrument may also be referred to as the WDMM Feedback Questionnaire or simply the Feedback Questionnaire.

Telephone Survey Instrument - The telephone survey that was used by the researcher to gather data from the change agents.

Wildlife - Non human and non domesticated living things such as mammals, birds, and fishes.

Two acronyms and abbreviations are used. They are included below for the reader's reference.

TCE - Texas Cooperative Extension

WDMM - White-tailed Deer Management Module

CHAPTER II

REVIEW OF LITERATURE

Opinions and Attitudes towards White-tailed Deer

The public's opinions and attitudes are important not only to the study of white-tailed deer, but to all wildlife populations. Duda, Bissell, and Young (1998) suggest that a majority of Americans are concerned about the nation's fish and wildlife resources, but have little knowledge of the successes of the wildlife management profession and the importance of the scientific management approach when dealing with fish and wildlife. Therefore, they form attitudes and opinions that affect the welfare of both humans and fish and wildlife. Duda et al. (1998) concluded that understanding the public is often the key factor in determining the success of wildlife programs.

Seventy-five percent of Americans support hunting according to Duda et al. (1998). The differences in opinions and attitudes come on consumption and wildlife-related activities. The attitudes toward hunting also change when animal rights and welfare are at stake. Those supporting hunting agree that animals should be treated both humanely and humanly. The animal rights philosophy is that no use of animals should occur. Some go as far to say no fishing or hunting, no wearing of silk or wool sweaters, no sweetening tea with honey, no eating of dairy products, and no playing sports with a ball made of leather. However, when looking at Americans supporting animal rights only a few do not use animals for a one purpose or another (Duda et al., 1998).

The following data relates to certain wildlife attitudes and opinions formulated by Responsive Management 1997 according to Duda et al. (1998). In one Arkansas research project on deer population, it was observed that most residents and hunting license

holders agree that, in their counties, there were more deer in 1997 compared to five years ago. It is also important to mention that researchers noted that regional differences affected responses (Duda et al., 1998).

Duda et al. (1998) revealed another survey by Responsive Management 1997 that showed people were interested in larger numbers of deer. It stated that 55% of Arkansas residents and 69% of hunting license holders, who want to see deer population increased, said they would still support an increase in deer population in their counties at the cost of more automobile accidents involving deer. Sixty-seven percent of Arkansas residents and 81% hunting license holders said yes to an increased deer population even if it meant damage to their gardens. Fifty-eight percent of the Arkansas residents and 71% of the hunting license holders agree to an increase in the deer population even if it resulted in more damage to farmers' crops. Percentages dropped when the increased deer population meant poorer health for the deer and less food and poor quality habitats for the deer (Duda et al., 1998).

Duda et al. (1998) also reported in New Hampshire, 64% of its residents want deer herds to stay the same while 21% want them to increase, 5% want them to decrease and 10% did not know according to Responsive Management 1995.

Land Trends

During the ten year period of 1990-2000, the analysis of recent changes in land ownership size, land use and property values of private farms, ranches and forest lands in Texas indicate that the greatest threat to wildlife habitat and the long-term existence of agriculture in Texas is the fragmentation or reduction of large family owned farms and ranches (Wilkins et al., 2003).

Over 84% of Texas (144 million acres) is privately owned. This growth of privately owned farms and ranches has been in an upward trend of about 1,000 new ownerships a year since 1970, but the actual land area has decreased by about three million acres (Wilkins et al., 2003).

In viewing trends of ownership size due to land fragmentation, midsize farms and ranches lost about 250,000 acres per year. The effect of this trend, if it continues, will cause more fragmentation in south, central, and east-central Texas, while some properties in the High Plains will increase in acreage (Wilkins et al., 2003).

In Texas, land use trends show a progression from native rangelands and croplands to nonnative “improved pastures” (Wilkins et al., 2003, p. 5). This progression brings about a significant loss of important wildlife habitats, especially in the central and eastern portions of the state. According to Wilkins et al. (2003) the following are changes directly associated with land ownership:

- Large ranches, greater than 2,000 acres, have an increased likelihood of remaining native rangeland.
- Ranches 500 – 2,000 acres are more likely to retain their farmed land in planted crops.
- Ranches less than 500 acres are susceptible to becoming nonnative pastures.

As for trends in land values, an acre of ranch or farmland went for \$624 in 2001 which comes to an increased yearly average of 2.7% since 1992. The breakdown shows that market values are highest near metropolitan areas. Property in the Llano Uplift and Edwards Plateau increased by 86% and 50% respectively, while the Gulf Coast declined from 1992 – 2001 (Wilkins et al., 2003).

It is not the agricultural farm and ranch land creating the fragmentation, but the non-agricultural land values are a fairly good indicator as to what the trends in land fragmentation will be in the future. Currently the Panhandle and north-central Texas have escaped land fragmentation, but may soon face its pressures. The only deterrent to this trend may be offering landowners financial incentives not to sell or subdivide. Financial incentives have led to the rise of Purchase of Development Rights Programs (Wilkins et al., 2003).

In Texas over 2.2 million acres of rural land was converted to urban use between 1982 – 1997. However, from 1992 – 1997, there was an increase of 30% of rural land to urban use (Wilkins et al., 2003). Many new landowners want to own land as a weekend or a recreational retreat (American Farmland Trust, 2003).

Ecological and Economic Impacts of White-tailed Deer

The management of Texas white-tailed deer is achieved through habitat manipulation and hunter harvest.

Current economic conditions leave ranchers looking for additional income. Landowners are seeking and using various marketing pitches which will lead to improved economic and recreational benefits from deer (Gore, n.d.). Leases are one means of obtaining this goal. Lease values are increasing annually. This use of land, as landowners are realizing, is a means of using hunting access as an economic resource. Since the landowners control hunting access, they can charge \$4 to \$6 an acre for hunting or provide guided hunts ranging from \$1,500 to \$3,500 per hunter (Gore, n.d.).

It has been observed that Texas has yet to see the maximum price that deer hunters' will pay. A few hunters control a large amount of land and deer access, but only

harvest a few deer. Present philosophy and attitudes change, the economic reward could double or triple the present income if landowners would divide up the typical hunting season into segments. Leasing each segment to different hunting parties would allow many more hunters the chance to harvest deer while increasing economic productivity (Gore, n.d.).

Research states that communities have yet to see the full potential of hunter's expenditures in their communities (Thigpen, Ramsey, & Stribling, 1992).

One pilot test in Gillespie County does show the economic profits from hunter's expenditures. Community businesses benefit from retail trade generated. The average hunter spent around \$560 annually. The pilot test showed that the total county income from hunters was about seven million dollars during 1988 – 1989 hunting season (Thigpen et al., 1992).

Hunting Lease Impact on Rural Communities' Economics (Ward, A., n.d.) show the breakdown of hunters income:

- 1.2 million in lease income
- 2.0 million for non lease income

Cooperative Extension has been a part of conducting surveys on the economic impacts of white-tailed deer and also come to the conclusion that it is good economics all the way around (Ward, A., n.d.).

Importance of Wildlife Education

Wildlife education programs are delivered throughout the state of Texas in traditional face to face methods. Texas Cooperative Extension currently provides wildlife education programs such as the Texas 4-H Sport Fishing Program, Texas 4-H

Shooting Sports, Texas Master Naturalist, Texas Wildlife Habitat Evaluation Program, and The County Level Easily Accessible Resource (C.L.E.A.R.) Project (Extension Wildlife and Fisheries Sciences, 2004). Programs such as the Texas Brigades (Bobwhite Brigade, Buckskin Brigade, Feathered Forces, and Bass Brigade) are sponsored by Texas Cooperative Extension, Texas Wildlife Association, Texas Parks & Wildlife, USDA-NRCS, the Lower Colorado River Authority, the Texas Deer Association, the Mellon Foundation, Quail Unlimited, National Wild Turkey Federation, numerous individuals, private businesses, foundations, and other non-profit organizations (The Texas Brigades, 2004). The 4-H School Enrichment Program offers wildlife education programs like Predators in the Classroom, Something's Fishy, White-tailed Deer, Wildlife Success Stories and Endangered Species, and a Marine Education Program (Extension Wildlife and Fisheries Sciences, 2004). Texas Parks and Wildlife is another contributor to the field of wildlife education. Texas Parks and Wildlife sponsors Adopt-A-Wetland Program, Kidfish, Project WET Texas, Project Aquatic Wild, Project Wild, Reel Kids, Junior and Master Angler, Be a Volunteer Instructor, Tackle Loaner Program, Texas Boater Education Program, Texas Hummingbird Roundup, and Texas Hunter Education Program (Extension Wildlife and Fisheries Sciences, 2004).

Wildlife education of children is best understood when reviewing economic trends in this country. Economics have caused urban areas to grow and rural areas to decline (Coates, 1992). This factor has created an increase in children who are less likely to be raised in rural areas. This often leaves them totally unaware of their place in the scheme of nature (Horwitz, 1977). This concern or problem could be lessened with after school wildlife educational programs.

All of the studies in this literature review support the importance of wildlife education for adults. One particular study places emphasis on the education and certification of hunters and fishermen stating that it would add to the pleasure of the chase and be an effective means of maintaining the sport and managing the wildlife (Wagar, 1979). Another point made by Wagar (1979) and Ward (1941) is that education is needed to create a balance in knowledge between the landowners and the public. In other words, the landowner may possess information on current situations facing wildlife species or the environment which needs to be shared with the public. Due to the interdependence between landowners and the public, the public must be kept abreast of wildlife issues so that they are a receptive public (Gilbert, 1979).

Mangun (1992) supports wildlife education when he states, “A better educated populace that is more environmentally aware is likely to demand a larger voice in how wildlife management is to be conducted on public lands” (p. 3). Mangun (1992) also noted that the baby boomers, anyone born between 1946-1961, must receive wildlife education because of their potential political clout in policy making.

Essentially, there has always been a need for wildlife education and the need will continue. Wildlife education must extend beyond the basic education of a species or a specific interest; it must show the relation of the species to other living organisms, to vegetation, to land, to water, and to man and his needs (Gabrielson, 1959).

History of Wildlife in Extension and Delivery Methods

The historic role of Cooperative Extension, is to respond to rural property owners and their wildlife concerns. Modern wildlife information needs to go beyond the confines of the rural community (Schaefer, Huegel, & Mazzottie, 1992).

The demand for wildlife education has changed due to the move from rural to urban environmental awareness, and encounters with wildlife in the suburbs and cities (Schaefer et al., 1992). The means of getting this information to the public is accomplished through print, electronic and all modern technology such as fax machines, television, videos, cd-roms, cellular phones, email, and the Internet. These all enable Distance Education to reach a multitude of interested constituents that may not otherwise have the time to seek traditional means of educating themselves both from a personal and professional standpoint (Edge & Loegering, 2000; Tennessen, PonTell, Romine, & Motheral, 1997).

Cooperative Extension has put time and effort into reaching the public through the Internet and in education of its Extension agents through use of Internet pages, listserve, and email. It saves travel time and allows Extension agents to reach the public (Lippert, Plank, Camberato, & Chastain, 1998). The Internet has allowed the once rural communities to become a virtual community which profits from the vast global knowledge that exists today (DeYoung, Harris, & Larsen, 1995).

Distance Education

Education is all around us and is no longer restricted to the traditional classroom. Students and educators are involved with distance education through “correspondence classes via mail, to classes delivered via satellite, video-conference and the Internet” (Wickersham, 2000, p. 14). Distance education is “planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic

and other technology, as well as special organization and administrative arrangements” (Moore & Kearsley, 1996, p. 2).

To understand distance education as a field of study and its successful practice, Moore and Kearsley (1996) presented a model consisting of five components and each component has its own categories:

- The first component is sources which contains the categories of student needs, organizations, theory/history, and philosophy.
- Second, there is the design component with the categories of instructional design, media, program, and evaluation.
- Third is the component of delivery and the categories of print, audio/video recordings, radio/television, computer software, audioconferencing, videoconferencing, and computer networks.
- The fourth component is interaction with the categories of instructors, tutors, counselors, administrative staff, and other students.
- The fifth component is learning environment. The categories in learning environment are workplace, home, classroom, and learning center (p. 8-9).

Adults are a high proportion of users of distance education programs. Adults continue to learn because “adulthood is a time of growth and learning” (Hayes, 1990, p. 27). Most often adult learners seek non-credit options, often for self hobby, or a certificate which would increase the value of a current degree in turn helping in the areas of job obsolescence, job competition, new goals, and social acceptability (Cross, 1981).

Houle (1961) conducted interviews on adults who took part in learning activities and concluded that there are three groups of learners. Goal-oriented learners were the

first group identified. Goal-oriented learners are there to acquire specialized objectives like improved business skills and public speaking skills. The next group of learners were classified as activity-oriented learners. These are the learners that want to participate in an activity as opposed to actually acquiring skills or content. Finally, there are the learning-oriented learners or learners who are dedicated to life long learning.

Enckevort, Harry, Morin, and Schutze (1986) asks which methods of instruction and learning are suited to adults' learning ways. When considering the most suited method of learning for adults it is important to discuss the advantages and disadvantages of technologies for the adult learner presented by Enckevort et al. (1986). They assessed that your non-interactive technologies, audio cassettes, radio, and broadcast television, would have a higher availability making them more familiar and less threatening to use. These non-interactive technologies would allow for individual learning or group learning in the home or workplace, which could be beneficial or even detrimental. There are often many distractions that may occur in these types of settings such as scheduling conflicts, noise distractions, and even the chance of no peer interaction (Enckevort et al., 1986).

Interactive technologies, in most cases, are able to turn the disadvantages of non-interactive technologies into advantages. With interactive technologies, the learner is able to present questions and discussions to the class and the instructor and receive quick responses (Wickersham, 2000).

Even though interactive technologies have greater advantages than non-interactive, they still have their own disadvantages. One disadvantage would be an unfamiliarity of the technology which could create an intimidation factor (Enckevort et al., 1986). Another disadvantage, Enckevort et al. (1986) suggests, is the cost of the

equipment. Enckevoort et al. (1986) said, “Multiple cable television services, video cassette recorders, video disc playback machines and other advanced technologies entail considerable costs, and unless low income students have access to such equipment they will be excluded from a wide variety of formal and informal educational options that can be accessed exclusively through such media” (p. 35-36).

Interactive technology is also used in the acceptance of computer based courses. Enckevoort et al. (1986) quotes Lewis, 1983, p. 36-37 in how computer based courses differ from other interactive technologies in that:

not only is it a medium and a tool but has the potential of being used as a tool maker, i.e. the creator of new programs and applications. Thus, where other technologies are media or tools for the purpose of directed instruction - even though at the individual pace of the student - the computer can be utilized for open education, i.e. for (relatively) free, individual exploration, directed by his or her curiosity, inhibitions or needs. While computers do lend themselves readily to the purpose of directed instruction, they can also be used for more creative, inhibitive and self-controlled learning.

The amount of technological exposure may also play a role in how difficult or easy a student perceives the learning environment. Galusha (1998) made the point that if a student is going to participate in a distance education program they must have an understanding or be taught the basics of the operating system being used to deliver the course. “If distance learning is to be successful, technical barriers must be made a non-issue” (Galusha, 1998, p. 11).

Oliver & Shapiro (1993) made reference to a student's self-efficacy, or a student's view on their ability to perform the task at hand, as a notable factor in the student's success of the computer program. Students that feel they are self-efficacious using computers will expect a more rewarding experience as opposed to those who do not feel self-efficacious using computers are more likely to have a negative experience (Oliver & Shapiro, 1993).

Face-to-Face vs. Internet Delivery

Television, live satellite broadcasts, cd-rom, the Internet, computer based hypermedia instruction and others offer courses to an increasing number of students. Then there is the traditional class lecture by which students receive instruction. Most research shows no significant difference ($p < .05$) in performance between students taking technologically delivered material or distance education and those of lecture courses (Hoyt, 1999).

Technology does not allow traditional interaction with the instructor. Though it may contribute to learning pleasure, as in any situation, it is a negative for some learners and for others it does not make a difference (Simonson, Schlosser, & Hanson, 1998).

Researchers have used both student grades and test scores as a means of measuring student achievement verifying that technologically delivered courses can be as effective as lectures or face-to-face methods (Hoyt, 1999).

There were some positive attributes for technological courses when it came to controlling instructor bias or using the same instructor across courses (Hoyt, 1999). Results vary in delivery methods and student performance. The compiled data revealed

that the only factor relating to student performance in technologically offered courses and face-to-face lecture classes was age. Older students scored higher (Hoyt, 1999).

Modern technology communication is giving rise to innovative teaching and learning practices that may not be possible in traditional, place-bound education (McDonald, 2002). Researchers Ruberg and Sherman, according to McDonald (2002), feel that computer mediated communication (CMC) research has provided a new look into the complexity and power of face-to-face interaction. “In addition to reaching learners at a distance, distance education formats are increasingly being used to enrich, improve, and expand face-to-face instruction, thus resulting in a “convergence” of educational practices” (McDonald, 2002, p. 12).

Mason and Kaye (1990) see the following as ramifications of the interactive potential of online education:

1. Online education hides the line between distance and traditional education because of discussion opportunities, collaboration, and group involvement among participants.
2. Traditional teaching, administrative, and staff roles are affected, which allows for additional give and take amongst the learners and the organization.
3. Online education allows access to peers, which creates a network for the exchange of ideas, collective thinking, collaborative endeavors, and socialization.

On the other hand, “McComb considers the advantages of online education to be the result of three characteristics: asynchronicity; efficient information access; and increased social distance” (McDonald, 2002, p. 13).

Even though there are pros and cons for both online and face-to-face education and the research does not reach any firm conclusions on the impact of the two, distance learning is growing at an astounding rate and is offering opportunities in education that will be global, not just local (McDonald, 2002).

Distance Wildlife Education

Wildlife education is a field that is fairly new to being delivered over the Internet. There are several universities that are beginning to offer wildlife courses online such as Oregon State University and Texas A&M University (Department of Fisheries & Wildlife Oregon State University, 2003 & Wildlife and Fisheries Sciences Texas A&M University, 2003). Along with traditional wildlife courses, there are also hunter education courses that are available (Texas Parks and Wildlife, 2004). Additionally, TCE is producing cd-roms that include wildlife education material (Texas Cooperative Extension, 2004b, *TCE Bookstore*). Most notable is the Master Wildlifer – Wildlife on Private Lands program. This is a program delivered via satellite from Clemson University for private landowners and wildlife enthusiasts which is sponsored by land-grant universities, federal and state agencies, private corporations, and conservation organizations in the U.S (Clemson University, 2004).

The field of natural resource management, which is similar to wildlife education, seems to be an area that is going to a distance education format. Pennsylvania is implementing natural resource distance education programs. Their programs are being delivered primarily using satellite downlink. One such program was a two hour pond management program (Schmidt, Swistock, & Sharpe, 2003). One problem about the program was the lack of personal interaction and not sufficient time allowed for

questioning. Even though this problem was noted, attendees and Cooperative Extension employees provided generally favorable feedback concerning the satellite delivery method. Most individuals of both audiences were willing to do without the one-on-one interaction of a live-speaker program for the increased availability offered locally by the satellite format (Schmidt et al., 2003).

Pennsylvania has also offered and compared a satellite program versus a traditional program over the topic of "Safe Drinking Water." The majority (81%) of the attendees rated the satellite program good, very good, or excellent. Swistock, Sharpe, & Dickison (2001) noted that the satellite program easily met the same educational objectives as those developed for the traditional program delivery method. It was also reported that not only did most of the attendees like the delivery method, but also learned a minimum of two new ideas. There were a few negative points to the program. Complaints were made about technical problems, television size, sound quality, and the satellite format at the meeting site. Even with the few negative remarks about the program, survey results indicated that 66% of attendees preferred the satellite program over the traditional program (Swistock et al., 2001)

Helping make the satellite program meaningful was the availability of written publications, on-site water testing laboratories, and water treatment vendors (Swistock et al., 2001). Though the numbers differed both positively and negatively for labs and treatments from the traditional setting, the satellite attendees concurred that labs and water treatment vendors should be invited to future programs (Swistock et al., 2001).

Two definite points proving less than favorable to the satellite programs was the lack of personal interaction at the end of the program and the lack of personal computers

(Swistock et al., 2001). Attendees felt that the lack of personal interaction did not allow them to present their questions at the end of the workshop, and the lack of personal computers did not allow them to present those questions to the Penn State Water Quality Web page (Swistock et al., 2001).

The satellite program did have successes which supported the use of distance education. One success was that it encouraged people to take action to maintain or improve their water systems through water testing (Swistock et al., 2001). The money saved by satellite programming was another success. The cost of the traditional program was two to three times more than the satellite program. Cooperative Extension specialists took ten days to prepare the traditional education program compared to one day to prepare a satellite program. The traditional education programs also took about four times the number of employees. A final success of the satellite program was the fact that a video of the program could be left with the Extension agent and viewed by those interested at their convenience (Swistock et al., 2001).

In light of the positives and negatives of traditional vs. satellite education programs, there will still be the need for traditional education in areas where large attendance is highly probable. However, satellite education programs are definitely a means of reaching a sizeable targeted populace with less cost while meeting the same objectives and obtaining the same outcomes (Swistock et al., 2001).

Another report showed positive effects of distance education in relation to continuing education activities for professionals. Dooley, Van Lannen, and Fletcher (1999) explained how Texas Agricultural Extension Service and Texas Department of Health used distance learning to help instructors obtain their seven hours of approved

update training every three years. The manuscript explained how instructors statewide received uniform education without major costs due to travel and time.

Fasulo (1995) identified computer-verified training programs as another type of distance learning that is becoming an essential part of today's workforce. The researcher explained how the programs were more beneficial than traditional manuals. This type of distance learning which can be obtained from the local Extension agent allows employees to view according to schedule (Fasulo, 1995).

Dooley et al. (1999) summarized distance technology by saying combining technology and education, distance learning, is the ultimate means of reaching audiences across vast distances while cutting costs in travel and time.

Internet Surveys vs. Paper Mail-Out Surveys

Until recently, there were not many choices as to how a survey was delivered. Traditional survey methods were primarily mail-out or telephone interviews. Technological advancements now allow for surveys to be delivered over the Internet. Electronically delivered surveys are becoming a popular route in obtaining data (Dillman, 2000).

The shift towards increased use of Internet surveys is most commonly noted for its cost reduction (Dillman, 2000). Gunn (2002) presented research performed by Schaefer (2001) on cost comparison of mail-out paper surveys to Internet surveys reflects this cost reduction. The average cost of mail-out paper surveys was \$2.07 while the average cost of Internet delivered surveys was only \$0.88. "There is no other method of collecting survey data that offers so much potential for so little cost as Web surveys" (Dillman, 2000, p. 400).

Additionally, Internet surveys can offer increased response rates; increased rates at which data processing can occur; option for rearranging the order of questions; ease of navigation and instructions for selected questions; and, the use of drop-down boxes (Gunn, 2002).

Internet surveys do have problems as do mail-out surveys. Gunn (2002) listed the following as concerns for Internet surveys:

1. Questionnaires may appear differently based on differing browsers and monitors, therefore altering visual effects.
2. Computer literacy levels may vary causing non-response error.
3. Respondents may have issues with data security.

Overall, Ladner, Wingenbach, and Raven (2002) discovered that Internet and paper mail-out survey methods were of equal validity and reliability when researching social science.

CHAPTER III

METHODS/PROCEDURES

The purpose of the descriptive study was to identify the developmental process, county Extension agent's and Extension specialist's perceptions, and support of early users of the WDMM. The following methodology was used to accomplish this purpose.

Research Design

This study used an *ex post facto* descriptive design for data collection (Tuckman, 1999). Two survey instruments were developed by the investigator and his committee. Both instruments were reviewed by an Extension Education Specialist and an Extension Wildlife Specialist for reliability and validity. The first instrument, which was completed by selected county Extension agents and Extension specialists, was developed to determine professional perceptions of the WDMM. The second instrument was completed by early users of the WDMM with the objective of determining additional support of the WDMM.

Both quantitative and qualitative data were obtained. The quantitative data allowed the researcher to make generalizations about the samples, while the qualitative data allowed the researcher to clarify meanings of responses and speculate about trends in the data.

Samples

Two target population samples were included in this study. The first sample was made up of six county Extension agents and four Extension Specialists that were selected by an Extension wildlife specialist who perceived them to be professionals in the fields of

wildlife and range management. These ten individuals were contacted by telephone and asked to participate in a 20 minute survey containing 15 questions about WDMM.

The second sample consisted of 27 county Extension agents and landowners within TCE's District 10. This sample was selected by an Extension wildlife specialist and county Extension agents. Seventeen county Extension agents located in TCE's District 10 were identified by the Extension wildlife specialist. These seventeen county Extension agents were then asked to identify four to five landowners to pilot test the WDMM and provide feedback.

Survey Instruments

Both of the survey instruments were developed by the researcher and his committee and were reviewed by Dr. Scott Cummings (Extension Education) and Dr. Byron Wright (Extension Wildlife) for reliability and validity. Examples of each survey instrument used are included in the appendices. Appendix A contains the telephone survey instrument for county Extension agents and Extension Specialists. Appendix B contains the online survey instrument for early users.

Telephone Survey Instrument

The instrument that was used to interview county Extension agents and Extension specialists contained a total of 15 questions (see Appendix A). Questions on this survey contained Likert-type scale responses along with open ended responses. Questions were designed to assess the overall value and content of the WDMM based on visual aspects, speed and accessibility, along with content and length. The survey was designed to take less than 20 minutes to complete. Surveys were completed during June and July 2004.

Online Survey Instrument

The instrument that was used online with early users of the WDMM was modeled after the telephone survey instrument (see Appendix B). This online survey instrument is also referred to as the Feedback Questionnaire. This online survey contained 15 questions and these surveys were secured on a closed server. Questions on this survey contained Likert-type scale responses along with open ended responses. Questions were designed to assess the overall value and content of the WDMM based on visual aspects, speed and accessibility, along with content and length. Surveys were accessible via the WDMM during June and July 2004.

Data Collection

County Extension Agents and Extension Specialists

For the county Extension agents and Extension specialists telephone survey, a total of 10 interviews were conducted during June and July 2004. There were a total of six county Extension agents and four Extension specialists surveyed.

The researcher contacted each county Extension agent and Extension specialist by telephone. Not all county Extension agents or Extension specialists were available during the initial phone call. Due to scheduling conflicts the researcher was only able to obtain seven of the interviews over the telephone. The researcher was able to forward the telephone survey to the remaining three respondents via electronic mail. Two of the responses were then returned via electronic mail and the third, or last response, was sent to the researcher via fax.

Early Users

The online survey, or the Feedback Questionnaire, was used to collect anonymous WDMM data during June and July 2004. There were a total of 34 questionnaires submitted to the researcher, but only 27 were usable. The seven questionnaires that were not usable were incomplete.

The online Feedback Questionnaire was designed using Macromedia Dreamweaver 4 software. When responses provided from the WDMM Feedback Questionnaire were submitted online, they were automatically stored on a secure closed server. Once data were sent to the server, they were automatically placed in a Microsoft Access data base spreadsheet.

Data Analysis

Surveys contained Likert-type scale responses that were assigned values of 1 = *strongly disagree*, 2 = *slightly disagree*, 3 = *neutral*, 4 = *slightly agree*, and 5 = *strongly agree*. These values obtained from respondents were then used to report quantitative data. Quantitative data were analyzed using the Statistical Package for Social Sciences Release 11.0 in order to determine the frequencies and percents.

Qualitative data analysis was used to compare the respondents' answers to open ended questions. This type of research is used to interpret non-numerical data. These open ended responses allowed the researcher to emphasize the similarities and differences of opinions of the county Extension Agents, Extension Specialists, and early users.

CHAPTER IV

FINDINGS AND DISCUSSION

Objective One

The first objective sought to identify the developmental process of the WDMM. Development of the WDMM was initiated by an Extension wildlife specialist for TCE's District 10. TCE's District 10 is located in the Southwest region of Texas. According to the Ag Census, this region was comprised of 20,286 farms totaling 11,337,879 acres of farm land in 1997 (Texas Land Trends, 2004).

The specialist along with the researcher worked together to develop the WDMM into its current status. The researcher's role in the developmental process was to work directly with the Extension specialist to gather the content for the WDMM and to produce the actual Internet site by taking the information and placing it on the Internet.

The Extension wildlife specialist started with the basic question; what would be a beneficial tool for absentee landowners and county Extension agents that could be delivered via distance technology on white-tailed deer management in District 10. The Extension specialist decided that an Internet site needed to be developed that would allow a landowner to enter information describing their property for review by a county Extension agent or Extension specialist. The idea to design interactive quizzes on topics of white-tailed deer management was also something thought to be beneficial as part of the module to try and evaluate cognitive learning of the participants. These two concepts became building blocks for construction of the WDMM.

The Extension specialist and the researcher first evaluated the property description section. In this section, the first question that arose dealt with what

information a county Extension agent or Extension specialist would want to know about a landowner's property. From the wildlife Extension specialist's point of view, a set of questions were developed. The researcher then developed a basic layout for the property description section from these identified questions. Once the layout was developed and approved by the Extension specialist, the Extension specialist then selected county Extension agents in District 10 to review the content. Recommendations from the county Extension agents were sent directly to the researcher. As recommendations were received and corrections made, new updated layouts were then resent to the county Extension agents. Finally, a layout and its contents were approved by all county Extension agents and the Internet site construction was initiated by the researcher.

The second phase of the construction was more difficult and took more time to develop. The Extension specialist decided that there should be three quiz categories. These categories were: (1) Life History, (2) Habitat Management, and (3) Harvest Strategies. Once categories were determined, questions and answers were derived by the Extension specialist. The questions were developed to range from the very basic to more difficult. Reasoning behind the basic to difficult format was a result of not knowing the target audience's knowledge level.

Upon completion of developing questions and answers, the Extension specialist and the researcher then agreed upon a format or layout for the quiz sections. The format chosen would include pictures to be displayed in the question itself or with the answer. The Extension specialist and researcher then reviewed the questions and developed ideas for what type of picture would most effectively match each question or answer. Photos used in the module were taken by the Extension specialist and the researcher. Some of

the photos were pictures that either the Extension specialist or the researcher had in their personal photograph files. The rest of the photos were taken during the development of the WDMM as needed. When the quiz sections were completed, the researcher then placed them into the WDMM.

The WDMM was then comprised of two major sections. These sections were: (1) Property Description and (2) Interactive Quizzes. Knowing that the WDMM had to have some kind of introduction, the first page of the WDMM was designed to inform the user of the module's purpose, what the module contained, and the agency that developed the module. The introductory page then linked to the index page containing links to the property description, interactive quizzes, and a feedback information sheet. The feedback information sheet was designed by the researcher and a committee in order to gain knowledge of what the users thought about the construction and content of the site.

Objective Two

The second objective was to describe the perceptions of change agents about the WDMM. In this study change agents were county Extension agents and Extension specialists that were selected by an Extension wildlife specialist who perceived them to be professionally competent in the fields of wildlife and range management. Data were collected from six county Extension agents and four Extension specialists for a total of ten change agents.

Change agents were contacted and interviewed by the researcher. The first question addressed was whether or not the change agent had reviewed the module. All ten (100 %) change agents responded positively, so the researcher was able to continue with the interview. The second statement asked about the accessibility of the site on a

Likert-type scale defined as 1 = *strongly disagree*, 2 = *slightly disagree*, 3 = *neutral*, 4 = *slightly agree*, and 5 = *strongly agree*. All ten (100 %) of the change agents strongly agreed with the statement (Table 1).

Table 1

Frequencies and percents of change agent's slightly agree and strongly agree responses to telephone survey questions using a Likert-type scale of 1=Strongly Disagree, 2=Slightly Disagree, 3=Neutral, 4=Slightly Agree, and 5=Strongly Agree.

Statement	Number	Slightly Agree		Strongly Agree	
		Freq.	%	Freq.	%
The site is easily accessible.	10	0	0	10	100
The site is easy to read and use.	10	1	10	9	90
The format is visually appealing.	10	0	0	10	100
The pictures downloaded quickly and easily.	10	2	20	8	80
The format was easy to understand and follow.	10	0	0	10	100
The site flows well from page to page.	10	1	10	9	90
This program met my expectations.	10	2	20	8	80
The design and presentation of this site were useful.	10	0	0	10	100

Nine (90%) of the change agents strongly agreed with the third statement which said that the site was easy to read and use. One individual (10%) only slightly agreed with the statement (Table 1). When the researcher asked why, the change agent responded by saying “The delay in answers and continuing takes a little while on snail internet connection.” In other words, going from page to page is slow when you are using a dial up modem.

All ten (100%) respondents strongly agreed with the fourth statement which said that the format was visually appealing (Table 1). Half of the respondents, 5 (50%), elaborated on the statement with the following remarks:

1. “Good photos!”
2. “Nice pictures!”
3. “Good pictures!”
4. “Great pictures!”
5. “I really liked the pictures.”

Change agents were then given the statement saying pictures downloaded quickly and easily. Two (20%) responded at only the slightly agree level and stated it was probably due to their internet connection using a dial up modem. One of the two is quoted, “It may just be on my end because I am using a dial up modem.” With only two (20%) slightly in agreement, the other eight (80%) strongly agreed (Table 1). Three of the eight respondents provided additional statements supporting their response. Two said that they were using very fast computers with Ethernet connections. Most notable was the response of the third change agent. This respondent is quoted, “I have an old slow computer and they downloaded just fine.”

All ten (100%) respondents strongly agreed with the sixth statement (Table 1). The sixth statement said that the format was easy to understand and follow. One respondent felt strongly about the statement because the “questions start simple and go to more difficult.”

The seventh statement on the telephone survey said that the length of the WDMM is too long. Three (30%) respondents slightly disagreed with the statement. One of them suggested that the quizzes could be longer and provide more information. The remaining seven (70%) strongly disagreed that the WDMM was too long (Table 2). Two change

agents that strongly disagreed still felt that there could be some more explanation in the answers, but the overall length was good.

Table 2

Frequencies and percents of change agent's slightly disagree and strongly disagree responses to telephone survey questions using a Likert-type scale of 1=Strongly Disagree, 2=Slightly Disagree, 3=Neutral, 4=Slightly Agree, and 5=Strongly Agree.

Statement	Number	Slightly Disagree		Strongly Disagree	
		Freq.	%	Freq.	%
The length of the module is too long.	10	3	30	7	70

Next, change agents were asked if the site flowed well from page to page. Nine (90%) responded that they strongly agreed. Only one respondent (10%) was slightly in agreement because they felt the speed was a little slow (Table 1). This one response could also be related to the change agent's connection and computer speed.

When the researcher asked the change agents if the program met their expectations, eight (80%) strongly agreed. One respondent said that it was a simple and easy to use program. The other two (20%) responded that they only slightly agreed (Table 1). When asked to explain, one individual said the program may be too simple.

All ten (100%) responded in favor of strongly agreeing with the next statement presented by the researcher (Table 1). That statement said that the design and presentation of the site were useful.

The researcher asked each of the 10 change agents to rate the value of the content on a Likert type scale of 1 = *poor*, 2 = *fair*, 3 = *good*, and 4 = *excellent*. Seven (70%) of them gave the value of the content a ranking of excellent. The other three (30%) rated the value as good (Table 3). Two of the three that provided a good rating said they did not give it a rating of excellent because they felt some of the questions were "too simple."

The two respondents felt that the questions needed to contain “more complex information” and the “questions need to be tougher.”

Table 3

Frequencies and percents of change agent’s good and excellent responses to telephone survey questions using a Likert-type scale of 1=Poor, 2=Fair, 3=Good, and 4=Excellent.

Statement	Number	Good		Excellent	
		Freq.	%	Freq.	%
Rate the overall value of the content.	10	3	30	7	70

The twelfth statement on the telephone survey asked the change agents if there were any topics not covered that they would like to have seen covered. Eight (80%) said there were no other topics they would like to have seen. There were two (20%) individuals that responded yes to the question. One of the respondents was hoping to have seen more information on nutrition and forage while the other respondent would have liked to see a list of links that would allow users to find additional information.

Next, change agents were asked if the WDMM would be useful to them in their job responsibilities. All ten (100%) respondents said that the WDMM would be useful and eight of them provided the following explanations as to how or why the program would be useful:

1. “I see lots of use. This will be good for old landowners to review and a starting place for new landowners.”
2. “The module will serve as a reference or starting point for landowners.”
3. “It is also reviewed by my tax office and is going to be a valuable tool in their tax valuation guides and management recommendations.”
4. “Good for basic information.”

5. “This site could be useful if producers would use it. However, we still need producers to be able to download their ranch through an aerial view for us to look at.”
6. “I did not know all of the answers.”
7. “I learned answers to questions that I didn’t know.”
8. “It will be useful if the questions are tougher.”

Once the respondents said the WDMM would be useful, the researcher then asked how many landowners they foresaw using the site in their county. Responses varied greatly among the change agents. Answers provided to the researcher are as follows:

1. “25”
2. “50”
3. “70 % which is approximately 220 landowners”
4. “10 – 15 %”
5. “None, because they don’t know about it yet.”
6. “It will vary because as new landowners change from ag to wildlife valuation it will become increasingly valuable.”
7. “Its hard to say, mostly new landowners that are computer literate. Educated.”
8. “Depends on advertisement.”
9. “I don’t know.”
10. “That’s a hard one to predict.”

Finally, the change agents were asked for any additional suggestions or comments about the WDMM. Three (30%) of the respondents said that they had no comment. The other seven (70%) answered with the following remarks:

1. "Some of the questions are basic."
2. "Check spelling and consider revising legend to depict interconnected brush instead of mottes."
3. "Concept is great. You went from question to answer to an explanation. There was also great interaction which is a strong aspect. The landowner description will be very useful to specialists and agents. It would be nice to add a score to the quiz and have that score along with the land description submitted to the agent."
4. "How can counties get feedback as to whom in our counties use the module?"
5. "Looks good."
6. "You may include more on food plots and management if possible."
7. "Would like to see more detail on management."

Objective Three

The third objective was to describe the perceptions of early users of the WDMM. In this study early users were selected by TCE county Extension agents within TCE's District 10. County Extension agents from District 10 were asked by the researcher to select landowners in their counties to pilot test the WDMM. Data collected from the WDMM Feedback Questionnaire contained no identifiers or tracking components making the data anonymous. There were a total of 34 submitted Feedback

Questionnaires, but only 27 were usable. The seven Feedback Questionnaires that were omitted from the data analysis were omitted because they were incomplete.

First question on the WDMM Feedback Questionnaire asked the user what type of modem they were using. The choices were: 28.8K, 56K, Cable, DSL, Other, or Don't Know. Of the six choices, there was only one respondent (3.7%) using a 28.8K modem, one respondent (3.7%) using a DSL modem, and one respondent (3.7%) selected "other". These three individuals comprised just over 11 % of the respondents. Twelve respondents (44.4%) used the 56K dial up modem. The 56K modem was the most used by respondents and could possibly be attributed to the rural nature of ranches and District 10. There were only four respondents (14.8%) using a cable modem and an additional eight respondents (29.6 %) that did not know what type of modem they had.

Next, the WDMM Feedback Questionnaire provided the statement saying the site was easily accessible. Of the 27 respondents, 16 (59.2%) said that they strongly agreed with the statement using a Likert-type scale defined as 1 = *strongly disagree*, 2 = *slightly disagree*, 3 = *neutral*, 4 = *slightly agree*, and 5 = *strongly agree*. Seven (25.9%) of the early users responded at the slightly agree level (Table 4). Two individuals (7.4%) indicated that they were neutral and did not agree or disagree with the statement. One respondent (3.7%) slightly disagreed and one strongly disagreed (3.7%) that the site was easily accessible.

Table 4

Frequencies and percents of early user's slightly agree and strongly agree responses to online survey questions using a Likert-type scale of 1=Strongly Disagree, 2=Slightly Disagree, 3=Neutral, 4=Slightly Agree, and 5=Strongly Agree.

Statement	Number (n)	Slightly Agree		Strongly Agree	
		Freq.	%	Freq.	%
The site is easily accessible.	23	7	25.9	16	59.2
The site is easy to read and use.	26	6	22.2	20	74.0
The format is visually appealing.	25	7	25.9	18	66.6
The pictures downloaded quickly and easily.	22	10	37.0	12	44.4
The format was easy to understand and follow.	24	4	14.8	20	74.0
The site flows well from page to page.	26	8	29.6	18	66.6
This program met my expectations.	21	9	33.3	12	44.4

The third statement on the WDMM Feedback Questionnaire said the site was easy to read and use. Twenty respondents (74%) strongly agreed the site was easy to read and use. Six (22.2%) indicated they slightly agreed (Table 4) and only one user (3.7%) selected that they slightly disagreed with the statement. Overall, the early users were satisfied with the readability and ease of use of the WDMM.

WDMM Feedback Questionnaire's fourth statement said the format was visually appealing. Of the 27 respondents, 18 (66.6%) strongly agreed, seven (25.9%) slightly agreed (Table 4), one (3.7%) was neutral, and one (3.7%) slightly. Overall, the majority of the early users were in support of the visual appeal of the WDMM.

The researcher's next statement on the WDMM Feedback Questionnaire said that the pictures downloaded quickly and easily. Twelve respondents (44.4%) strongly agreed with the statement and ten (37%) slightly agreed with the statement (Table 4). There were three (11.1%) neutral responses and two (7.4%) that slightly disagreed. The

responses to the statement were probably spread more evenly due to the fact that the majority of the users were using a slow dial up modem.

Early users of the WDM Feedback Questionnaire were provided the sixth statement saying the format was easy to understand and follow. Twenty respondents (74%) strongly agreed with the statement. The remaining seven respondents (25.9%) were distributed between the slightly agree and neutral categories. Four of the individuals (14.8%) slightly agreed (Table 4) and the other three (11.1%) were neutral.

The length of the module was the next statement early users had to address. Responses to this statement varied a great deal. Thirteen respondents (48.1%) said that they slightly disagreed that the length of the module was too long. Five respondents (18.5%) strongly disagreed that the module was too long (Table 5), four (14.8%) were neutral, and five (18.5%) slightly agreed. Majority of the respondents felt that the length was alright while five seemed to think it was a little lengthy.

Table 5

Frequencies and percents of early user's slightly disagree and strongly disagree responses to online survey questions using a Likert-type scale of 1=Strongly Disagree, 2=Slightly Disagree, 3=Neutral, 4=Slightly Agree, and 5=Strongly Agree.

Statement	Number (n)	Slightly Disagree		Strongly Disagree	
		Freq.	%	Freq.	%
The length of the module is too long.	18	13	48.1	5	18.5

When early users were asked to respond to the statement saying the site flows well from page to page, there was a very strong agreement. Of the 27 respondents, 18 (66.6%) strongly agreed and eight (29.6%) slightly agreed (Table 4). That left only one respondent (3.7%) who felt neutral on the statement. Overall, 96.2 % of early users felt that the site transitioned smoothly from page to page.

The ninth statement on the WDMM Feedback Questionnaire provided users with the statement saying the program met their expectations. Twelve respondents (44.4%) strongly agreed while nine (33.3%) slightly agreed (Table 4). Five of the early users (18.5%) did not agree or disagree with the statement, but instead felt neutral. There was only one early user (3.7%) that felt the program did not meet their expectations by indicating that they slightly disagreed with the statement.

Next, early users were asked to rate the design and presentation of the site on a Likert-type scale defined as 1 = *very unuseful*, 2 = *slightly unuseful*, 3 = *neutral*, 4 = *slightly useful*, or 5 = *very useful*. Seventeen respondents (62.9%) found the site to be very useful. Nine (33.3%) thought the site was slightly useful (Table 6) and one individual (3.7%) was neutral on the usefulness of the site.

Table 6

Frequencies and percents of early user's slightly useful and very useful responses to online survey questions using a Likert-type scale of 1=Very Unuseful, 2=Slightly Unuseful, 3=Neutral, 4=Slightly Useful, and 5=Very Useful.

Statement	Number (n)	Slightly Useful		Very Useful	
		Freq.	%	Freq.	%
Rate the design and presentation of this site.	26	9	33.3	17	62.9

Early users were next asked to rate the overall value of the content of the WDMM on a scale of poor, fair, good, or excellent. Majority of the respondents, 15 (55.5%), gave the WDMM a rating of good. Nine of the early users (33.3%) responded with an excellent rating (Table 7) and three (11.1%) provided a fair rating. Overall the respondents were satisfied with the value of the content.

Table 7

Frequencies and percents of early user's good and excellent responses to online survey questions using a Likert-type scale of 1=Poor, 2=Fair, 3=Good, and 4=Excellent.

Statement	Number (n)	Good		Excellent	
		Freq.	%	Freq.	%
Rate the overall value of the content.	24	15	55.5	9	33.3

The last four questions of the WDMM Feedback Questionnaire were open ended responses. The first open ended question, asked early users what they liked most about the site. Answers provided by the respondents are as follows:

1. "The site is good for people newly involved in wildlife management."
2. "The quizzes provided interesting and useful information."
3. "Answers to questions were given."
4. "Pictures."
5. "Harvest information was good."
6. "Educational."
7. "The ease of usage and how quickly it was ready to use."
8. "Found out I knew more than I thought."
9. "Very interactive which requires the viewer to think."
10. "Pictures and information."
11. "Format and presentation."
12. "The site is very good for the new landowner. I think that someone just starting out will find the information very helpful."
13. "Good facts presented in an easy to understand format."
14. "Statement on spike bucks."
15. "Pictures."

16. “Color.”
17. “It allows landowners to evaluate their property and think about what they want to do with it – set goals and have a starting point.”
18. “Interactive nature of it.”
19. “Question and answer session as an educational tool.”

The next question asked early users what they liked least about the site.

Respondents provided the researcher with a wide variety of answers. Answers provided were as follows:

1. “Some of the questions were basic and identifications were more for elementary persons that don’t know much about deer.”
2. “What was the purpose of filling out the property info.?”
3. “Is there some way that as soon as you answer a question it automatically gives the answer instead of having to click on finished?”
4. “On the whitetail deer, the first two questions a 2 year old could answer then it jumped into more scientific terms.”
5. “To be more producer oriented, it needs to go from what a producer has and how to obtain his or her goals.”
6. “Some of the pictures seem dark on my computer.”
7. “Some of the questions could use more choices/examples.”
8. “Long quizzes.”
9. “Old information to me.”
10. “I wasn’t sure of the reason for putting in all the information about my ranch. Will this be linked to something else or someone?”

11. "Some of the questions were kindergarten level. I think you're shooting too low with the caliber of some of the questions you've asked."
12. "Estimation of range sites %."

The researcher's next question on the WDMM Feedback Questionnaire asked early users if there were any topics not covered that they were hoping to learn about. Eighteen of the respondents (66.6%) said that there were no other topics they were hoping to learn about. The remaining nine respondents (33.3%) replied with the following responses:

1. "Specific plants used by deer. How to manage for those plants, etc..."
2. "I was hoping is more on the level of the range management quizzes. I think there should be more information on each of the seven activities."
3. "Maybe more on water. It's obvious that deer need water, but how much or how many water stations do they need?"
4. "Plant ID"
5. "Possibly you could talk about the benefits to wildlife in general in regards to proper deer management."
6. "It might be useful to include some information on aging deer on the hoof."
7. "Harvest strategies."
8. "Aging on the hoof."
9. "How about plant ID? How to evaluate deer habitat. Management practices like burning, brush sculpting."

Finally, early users were asked to make any additional suggestions or comments about the WDMM. There were 12 respondents (40.7%) that provided the researcher with feedback to this question. Responses were as follows:

1. “Some information should be provided on how to determine the population density such as spotlighting surveys and/or visual counts. To improve habitat using a comparison of existing and expected improvements with specific goals would be controlled by property sizes and locations. Needs to emphasis to obtain these goals it will take many years of work and planning. There should be a summary indicating when all of the objectives are met as listed above that all properties are not suitable to raise and manage white-tail deer, example: too small, too close to urban development, not the proper habitat available or surrounded by too many small places. State hunting regulations established by counties restrict deer harvest therefore the property location controls what a land owner can do in managing his deer herd. This restricts the small property owners more than the large properties which controls deer management. This is why all properties sometimes are not suited for white-tail deer management.
2. “Answer the spike buck harvest question a little more clearly.”
3. “Maybe some way of printing out the explanations.”
4. “This will be a great site to educate small rural land owners.”
5. “Site needs to be built for different regions or topography for white-tails.”

6. “On some of the pictures, for example the hedging photo, I nearly had to scroll the picture off the top of the page in order to answer the question. Possibly move some of the answer blanks to the side of the photos.”
7. “Overall I think the page could be beneficial to a new landowner seeking general info about deer management. Once this section is mastered, will other more advanced modules be available?”
8. “Under Life History, question 2 and 7 are very similar.”
9. “Very good.”
10. “Good job.”
11. “I think this is a very useful website for new landowners and owners without any wildlife education or goals.”
12. “Offer links to other readings in the particular sections; perhaps even the particular questions (e.g., the TEXNAT web site has symposium proceedings of the deer genetics workshop, brush sculptors, etc).”

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to evaluate the development and initial use of Texas Cooperative Extension's White-tailed Deer Management Module (WDMM) delivered over the Internet.

Web based learning is becoming a very popular educational and learning tool. Many universities are offering classes via the Internet and many other companies and organizations are also choosing to offer training to their employees over the Internet. Reviewing web-based learning programs and their structure will help guide in the development of other web-based learning programs. Collaboration between the use of the Internet and TCE programming will allow for an educational delivery without the tasks of scheduling a location and time for a traditional workshop.

To achieve the purpose of the study, the following specific objectives were established:

1. Discuss the development process of the WDMM.
2. Describe the perceptions of change agents about WDMM.
3. Describe the perceptions of early users of WDMM.

Summary of Methods/Procedures

This study was both quantitative and qualitative in nature. Six TCE county Extension agents and four TCE specialists were contacted by telephone and asked to participate in a 20 minute survey containing 15 questions about WDMM. There were an additional 27 anonymous feedback responses from the WDMM Web site. This online survey contained 15 questions and these surveys were secured on a closed server.

Anonymity of data collected from the WDMM was ensured because there was no way to trace the data back to the subject nor are there any identifiers on the data. The phone interviews were reviewed when determining perceptions of change agents. The anonymous feedback responses were reviewed to identify any additional support of the WDMM.

Summary of Findings

The findings for this study corresponded to three objectives. The summary below categorizes the findings by objective.

Objective One

The first objective of this study was to discuss the developmental process of the WDMM. Development of the WDMM was first initiated by an Extension wildlife specialist. This Extension specialist along with the researcher worked together to develop the WDMM into its current status. The researcher's role in the developmental process was to work directly with the Extension specialist to gather the content for the WDMM and to produce the actual internet site by taking the information and placing it on the internet. The developmental process should aid TCE in developing future wildlife management modules.

Objective Two

The second objective was to describe perceptions of change agents about the WDMM. This objective was addressed by the telephone surveys with TCE County Extension agents and Extension specialists.

The first question addressed was whether or not the change agent had reviewed the module. All ten change agents (100%) responded positively. Ten of the change

agents (100%) strongly agreed the site was easily accessible. Nine of the change agents (90%) strongly agreed with the third statement which said that the site was easy to read and use. All ten of the change agents (100%) strongly agreed the format was visually appealing. Two respondents (20%) slightly agreed that the pictures downloaded quickly and easily while the other eight (80%) strongly agreed. All ten of the respondents (100%) strongly agreed the format was easy to understand and follow. Seven change agents (70%) strongly disagreed that the WDMM was too long while three (30%) slightly disagreed. Nine (90%) responded that they strongly agreed the site flowed well from page to page. The researcher asked the change agents if the program met their expectations and eight (80%) strongly agreed. All change agents, ten (100%), responded in favor of strongly agreeing that the design and presentation of the site were useful. The researcher asked each of the ten change agents to rate the value of the content on a scale of poor, fair, good, or excellent. Seven (70%) gave the value of the content a rating of excellent. The other three (30%) rated the value as good. Change agents were asked if there were any topics not covered that they would like to have seen covered. Eight (80%) responded no there were no other topics that they could think of that they thought should have been covered. Next, change agents were asked if the WDMM would be useful to them in their job responsibilities. All ten respondents (100%) said that the WDMM would be useful. The researcher then asked how many landowners they foresaw using the site in their county. Responses varied greatly among the change agents. Finally, the change agents were asked for any additional suggestions or comments about the WDMM. Seven (70%) provided a variety of feedback saying that some of the

questions were basic, check some of the grammar, great concept, along with some suggestions for additional content.

Objective Three

The third objective was to describe the perceptions of early users of the WDMM. This objective was addressed by the anonymous feedback questionnaire located on the WDMM.

First question on the WDMM Feedback Questionnaire asked the user what type of modem they were using, 28.8K, 56K, Cable, DSL, Other, or Don't Know. There was only one respondent (3.7%) using a 28.8K modem, one respondent (3.7%) using a DSL modem, and one respondent (3.7%) selected other. Twelve respondents (44.4%) were using the 56K dial up modem. There were only four respondents (14.8%) using a Cable modem and a surprising eight respondents (29.6%) that did not know what type of modem they had. Of the 27 respondents, 16 of them (59.2%) said that they strongly agreed the site was easily accessible. Seven of the early users (25.9%) responded they slightly agreed. Twenty respondents (74%) strongly agreed the site was easy to read and use. Eighteen (66.6%) of the early users strongly agreed, seven individuals (25.9%) slightly agreed, one (3.7%) was neutral, and one (3.7%) slightly disagreed the site was visually appealing. Twelve respondents (44.4%) strongly agreed the pictures downloaded quickly and easily and ten (37%) slightly agreed with the statement. Twenty respondents (74%) strongly agreed the format was easy to understand and follow. Thirteen respondents (48.1%) said that they slightly disagreed the length of the module is too long. Overall, 26 (96.2%) of early users felt that the site transitioned smoothly from page to page. Twelve respondents (44.4%) strongly agreed the program met their

expectations while nine (33.3%) slightly agreed. Seventeen respondents (62.9%) found the site to be very useful. Majority, 15 (55.5%) of the respondents gave the WDMM a rating of good out of a scale of poor, fair, good, or excellent. Most users responded that they liked the site mostly because the information and pictures were useful. Respondents provided the researcher with a wide variety of answers as to what they liked least about the site. Some responses dealt with the lack of difficulty in the questions. Eighteen of the respondents (66.6%) said that there were no other topics they were hoping to learn about. Finally, early users made additional suggestions or comments about the WDMM saying that it was a good site and would be most beneficial to small land owners.

Conclusions

This study provides some insight into the development of the WDMM and perceptions of change agents and early users of the WDMM. The following conclusions are presented with respect to the three objectives of the study.

Objective One: The Developmental Process of the WDMM

The first objective was directed toward discussing the developmental process of the WDMM. Due to the lack of programs of this nature, the first conclusion is simply that there were not many programs to model this project. Thus, the development of the WDMM was the responsibility of the Extension specialist and the researcher. The Extension specialist and the researcher did seek professional opinions on some content and layout information.

Objective Two: The Perceptions of Change Agents about WDMM

The second objective evaluated change agent perceptions of the WDMM. Change agents were a selected group of TCE county agents and specialists. Data were collected

from six county Extension agents and four Extension specialists who were perceived by an Extension wildlife specialist to be professionals in wildlife and range management subject matter. Both Extension agents and Extension specialists overwhelmingly agreed that the WDMM would be a beneficial tool for new landowners. Thus, it can be concluded that the WDMM was perceived to be user friendly, visually appealing, and provided useful content. Although, most change agents responded positively to most questions there were a few that would really like to see some more challenging questions.

Objective Three: The Perceptions of Early Users of WDMM

On the whole, the majority of early users were in support of the WDMM. Data gathered from the WDMM Feedback Questionnaire were in overall agreement with the data gathered from the change agents.

Some respondents felt that the questions went from an elementary level to an advanced level of questioning very abruptly. Very basic questions seemed to not challenge the user. For the entire data group, there was only one respondent that leaned towards negative responses on almost all questions. This respondent was assumed by the researcher to be more knowledgeable in the area of wildlife management than other users.

In general, most early users said that they were pleased with the WDMM. Additionally, early users suggested that this site be expanded to include the entire state of Texas.

Implications

The results of this research project revealed that this Internet technology, in its current state, will be beneficial to the landowner with minimal to moderate experience

with white-tailed deer management. However, there are certainly some additions and corrections that can be made to make this module more beneficial to more individuals.

The researcher believes that many of the negative remarks concerning the accessibility of the site and the speed at which pictures downloaded could be related to computer and Internet literacy. This is believed because 30% of respondents on the WDMM Feedback Questionnaire did not know what type of modem they were using. The speed at which pictures downloaded were most likely directly related to the type of modem they were using. The rural nature of TCE's District 10 limits many users to the 56K modem, which is not the most technologically advance. Lack of computer and Internet knowledge may also be related to the age group of the landowners pilot testing the WDMM. Many of them probably just have a basic understanding of how to perform your basic computer operations of typing documents, emails, and browsing the Internet.

Recommendations

Developing modules such as the WDMM require planning and collaboration between content specialists and layout designers. Modules of this kind need to be developed for a wide range of users. The WDMM was designed to go from questioning a participant's very basic knowledge to more in depth knowledge of white-tailed deer management. It is recommended that questions do not become too basic because this could bore the users. Therefore, it is important to identify knowledge levels of your audience. Most users are going to have the very basic knowledge of white-tailed deer management. They have come to the site to increase their knowledge. It is also recommended that the format of the site be developed to accommodate slower modem speeds without losing the quality and content of the site.

The following is a list of potential items that this researcher recommends based on this initial study:

1. The WDMM should be expanded to include all regions of Texas and not just the unique region of District 10. Content of interactive quiz sections should be expanded. This recommendation is based on the numerous respondent request for more content and that 100% of change agents and 66.6% of early users disagreed with the statement “The length of the module is too long.”
2. This study should be replicated once the WDMM has been designed for all regions of Texas. The replication should include a random sampling technique to ensure all regions are adequately represented. Random sampling ensures that the population is adequately represented and reduces biased results (Tuckman, 1999).
3. Computer knowledge and skill sets should be collected with future research along with demographics of the audience. Collection of this data will allow the developer to avoid questions that may bore or loose interest of the user. Comments about the WDMM containing “elementary” and “kindergarten” level questions support this recommendation.
4. Other wildlife modules should be developed similar to the WDMM because of the positive response gathered by the researcher from county Extension agents, Extension specialists, and anonymous landowners. Some of the positive comments from respondents that support this recommendation are as follows:
 - “I see lots of use. This will be good for old landowners to review and a starting place for new landowners.”

- “Concept is great. You went from question to answer to an explanation. There was also great interaction which is a strong aspect. The landowner description will be very useful to specialists and agents.”
 - “Very interactive which requires the viewer to think.”
 - “Good facts presented in an easy to understand format.”
 - “Question and answer session as an educational tool.”
5. It would also be beneficial to look into the development of similar modules for beef cattle, meat goats, horticulture, pond management, etc. in order to determine if those modules would gain the same positive response. This recommendation is presented on WDMM positive responses, rapid advancements in technology (McDonald, 2002), and Hoyt’s (1999) discoveries, based on grades and test scores, that technologically delivered educational materials can prove to be as effective as face-to-face methods of delivery.

REFERENCES

- American Farmland Trust, Texas Regional Office. (2003, June). *Going Going Gone? Impacts of Land Fragmentation on Texas Agriculture and Wildlife*. Retrieved October 15, 2004, from http://landinfo.tamu.edu/projects/aft/AFT_GoingGoingGonelow.pdf
- Clemson University. (2004). *Master Wildlifer – Wildlife on Private Lands*. Retrieved October 15, 2004, from <http://masterwildlifer.org/>
- Coates, J. F. (1992). Public policy factors and futures: Considerations in wildlife management. In W. R. Mangun (Ed.), *American fish and wildlife policy: The human dimension* (pp. 241-255). Carbondale and Edwardsville: Southern Illinois University Press.
- Cross, K. P. (1981). *Adults as learners*. San Francisco: Jossey Bass.
- Department of Fisheries & Wildlife, Oregon State University. (2003). *Online classes*. Retrieved April 21, 2004, from <http://fw.oregonstate.edu/index.htm>
- DeYoung, B., Harris, P., & Larsen, L. (1995, February). Virtual communities and university outreach. *Journal of Extension*, 33, Number 1. Retrieved October 15, 2004, from <http://www.joe.org/joe/1995february/a5.html>
- Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method*. (2nd ed.). New York, NY: John Wiley & Sons.
- Dooley, K. E., Van Lannen, P. G., & Fletcher, R. D. (1999, June). Food safety instructor training using distance education. *Journal of Extension*, 37, Number 3. Retrieved December 17, 2003, from <http://www.joe.org/joe/1999june/a5.html>
- Duda, M. D., Bissell, S. J., & Young, K. C. (1998). *Wildlife and the American mind: Public opinion on and attitudes toward fish and wildlife management*. Harrisonburg, VA: Responsive Management.
- Edge, W. D., & Loegering, J. P. (2000). Distance education: Expanding learning opportunities. *Wildlife Society Bulletin*, 28 (3), 522-533.
- Enchevort, G. V., Harry, K., Morin, P., & Schutze, H. G. (Eds.) (1986). *Distance higher education and the adult learner*. Dutch Open University: Heerlen.
- Extension Wildlife and Fisheries Sciences. (2004). *Programs*. Retrieved October 15, 2004, from <http://wildlife.tamu.edu/programs.cfm>

Fasulo, T. R. & Koehler, P. G. (1995, April). Developing computer-verified training tutorials for urban pest control training. *Journal of Extension*, 33, Number 2. Retrieved December 17, 2003, from <http://www.joe.org/joe/1995april/tt1.html>

Gabrielson, I. N. (1959). *Wildlife management*. New York: The Macmillan Company.

Galusha, J. M. (1998). *Barriers to distance learning*. University of Southern Mississippi: Hattiesburg. (ERIC Document Reproduction Service No. ED 416 377)

Gilbert, D. L., (1979). Public relations and communications. In R. D. Teague & E. Decker (Eds.). *Wildlife conservation: Principles and practices* (pp. 67-74). Washington D. C.: The Wildlife Society.

Gore, H. G. (n.d.). Benefits from deer management. In *Wildlife management handbook* (pp. II-D 57 – II-D59). Retrieved October 15, 2004, from <http://wildlife.tamu.edu/publications/A068.PDF>

Gunn, H. (2002). Web-based surveys: Changing the survey process. *First Monday*, 7, Number 12. Retrieved October 18, 2004, from http://www.firstmonday.dk/issues/issue7_12/gunn/

Hayes, E. (1990). Adult education: Context and challenge for distance educators. *The American Journal of Distance Education*, 4 (1), 25-38.

Horwitz, E. (Ed.). (1977). *Ways of wildlife*. New York: Citation Press/Scholastic.

Houle, C. O. (1961). *The inquiring mind*. Madison: University of Wisconsin Press.

Hoyt, J. E. (1999, July). *Does the delivery method matter?: Comparing technologically delivered distance education with on-campus instruction*. Orem, UT: Utah Valley State College, Department of Institutional Research.

Ladner, D., Wigenbach, G., & Raven, M. (2002). Internet and paper-based data collection methods in agricultural education research. *Journal of Southern Agricultural Education Research*, 52 (1), 40-51.

Lippert, R. M., Plank, O., Camberato, J., & Chastain, J. (1998, February). Regional Extension in-service training via the Internet. *Journal of Extension*, 36, Number 1. Retrieved October 15, 2004, from <http://www.joe.org/joe/1998february/a3.html>

Mangun, W. R. (1992). Fish and wildlife policy issues. In W. R. Mangun (Ed.), *American fish and wildlife policy: The human dimension* (pp. 241-255). Carbondale and Edwardsville: Southern Illinois University Press.

Mason, R., & Kaye, A. R. (1990). Toward a new paradigm for distance education. In L. M. Harasim (Ed.), *Online education: Perspectives on a new environment* (pp. 15-38). New York, NY: Praeger Publishers.

McDonald, J. (2002, August). Is "As Good As Face-to-Face" as good as it gets?. *Journal of Asynchronous Learning Networks*, 6, Issue 2. Retrieved October 15, 2004, from http://www.sloan-c.org/publications/jaln/v6n2/pdf/v6n2_macdonald.pdf

Moore, M. G. & Kearsley, G. (1996). *Distance education: A systems view*. Wadsworth: New York.

Oliver, T. A., & Shapiro, F. (1993). Self-efficacy and computers. *Journal of Computer-Based Instruction*, 20 (3), 81-85.

Rodewald, A. D. (2002, April). Interagency collaboration on wildlife management issues: Opportunities and constraints. *Journal of Extension*, 40, Number 2. Retrieved January 27, 2004, from <http://www.joe.org/joe/2002april/rb3.html>

Schaefer, J. M., Huegel, C. N., & Mazzotti, F. J. (1992, Summer). Expanding into the urban arena. *Journal of Extension*, 30, Number 2. Retrieved October 15, 2004, from <http://www.joe.org/joe/1992summer/a2.html>

Schmidt, K. L., Swistock, B. R., & Sharpe, W. E. (2003, August). Distance education of Pennsylvania pond owners. *Journal of Extension*, 41, Number 4. Retrieved April 24, 2004, from <http://www.joe.org/joe/2003august/rb2.shtml>

Schneider, R. L., & Smallidge, P. J. (2000, June). Assessing extension educator needs in New York to address natural resource issues for the new millennium. *Journal of Extension*, 38, Number 3. Retrieved January 27, 2004, from <http://www.joe.org/joe/2000June/a4.html>

Simonson, M., Schlosser, C., & Hanson, D. (1998). Theory and distance education: A new discussion. In K. H. Gillespie (Ed.), *The impact of technology on faculty development, life and work*. (pp. 60-75). San Francisco, CA: Jossey Bass.

Swistock, B. R., Sharpe, W. E., & Dickison, J. (2001, June). Educating rural private water system owners in Pennsylvania using satellite versus traditional programs. *Journal of Extension*, 39, Number 3. Retrieved April 26, 2004, from <http://joe.org/joe/2001june/a7.html>

Tennessen, D. J., PonTell, S., Romine, V., & Motheral, S. W. (1997, October). Opportunities for Cooperative Extension and local communities in the information age. *Journal of Extension*, 35, Number 5. Retrieved October 15, 2004, from <http://www.joe.org/joe/1997october/comm1.html>

- Texas Brigades. (2004). *The home of the Texas Brigades: Wildlife intensive leadership development*. Retrieved October 15, 2004, from <http://www.texasbrigades.org/>
- Texas Cooperative Extension. (2001). *What is Extension?*. Retrieved January 28, 2004, from <http://texasextension.tamu.edu/>
- Texas Cooperative Extension. (2004a). *For our employees*. Retrieved January 28, 2004, from <http://tce-employees.tamu.edu/>
- Texas Cooperative Extension. (2004b). *TCE Bookstore*. Retrieved January 28, 2004, from <http://tce-employees.tamu.edu/>
- Texas land trends*. (2004). Retrieved October 18, 2004, from <http://landinfo.tamu.edu/Frag/LOTce.asp>
- Texas Parks and Wildlife. (2004). *Education*. Retrieved April 24, 2004, from <http://www.tpwd.state.tx.us/>
- Thigpen, J., Ramsey, C., & Stribling, J. (1992). *Hunter expenditures to rural communities and landowners*. Retrieved October 15, 2004, from <http://wildlife.tamu.edu/publications/A009.PDF>
- Tuckman, B. W. (1999). *Conducting educational research*. (5th ed.). Belmont, CA: Wadsworth Group.
- Wagar, J. V. K., (1979). Quality in Wildlife Management. In R. D. Teague & E. Decker (Eds.). *Wildlife conservation: Principles and practices* (pp. 11-15). Washington D. C.: The Wildlife Society.
- Ward, A. (n.d.). Hunting lease impacts on rural communities' economics. In *Wildlife management handbook* (pp. I-C 7 – IC 12). Retrieved October 15, 2004, from <http://wildlife.tamu.edu/publications/A030.PDF>
- Ward, H. B. (1941). Biology as the foundation of conservation education. In H. B. Ward, P. B. Sears, & C. J. Ballam (Eds.), *The foundations of conservation education* (pp. 50-72). The National Wildlife Federation USA.
- Wickersham, L. E. (2000). *Attrition rate in a swine continuing education course delivered asynchronously: Interrelationships among learner characteristics, instructional design, and technological comfort*. Doctoral dissertation. Department of Agricultural Education. Texas A&M University, College Station, TX.
- Wildlife and Fisheries Sciences Texas A&M University. (2003). *WFSC distance education*. Retrieved April 21, 2004, from <http://wfscnet.tamu.edu/>

Wilkins, N., Hays, A., Kubenka, D., Steinbach, D., Grant, W., Gonzalez, E., et al. (2003, March). *Texas rural lands: Trends and conservation implications for the 21st century*. Retrieved October 15, 2004, from <http://landinfo.tamu.edu/projects/aft/rldocl.pdf>

APPENDIX A
TELEPHONE SURVEY INSTRUMENT FOR COUNTY EXTENSION AGENTS
AND EXTENSION SPECIALISTS

**TEXAS COOPERATIVE EXTENSION'S
WHITE-TAILED DEER MANAGEMENT MODULE**
(Telephone Survey Script)

Hello. My name is _____. I am calling for Texas Cooperative Extension. If possible, I wanted to speak with _____ about the White-tailed Deer Management Module they reviewed a couple of weeks ago. Is Mr./Ms. _____ available?

Hello Mr./Ms. _____. I wanted to follow-up with you about the Texas Cooperative Extension's White-tailed Deer Management Module you reviewed a couple of weeks ago.

I was hoping to ask you a few follow-up questions about the web site. The survey will take less than twenty minutes and will help us understand your perceptions of the site as a whole and how we might improve the site. Please be assured that the survey is completely confidential. Also, your participation is voluntary and you may stop this interview at any time.

This research study has been reviewed by the Institutional Review Board - Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Dr. Michael W. Buckley, Director of Support Services, Office of the Vice President for Research at 979-458-4067 or at mwbuckley@tamu.edu.

May I continue? Yes No (Circle their response. If Yes, then proceed. If No, stop and thank them
for their time.)

I am going to read several statements about the White-tailed Deer Management Module to you. Once I read the statement, you please tell me how you feel about the statement using the following scale:

1 = Strongly Disagree, 2 = Slightly Disagree, 3 = Neutral, 4 = Slightly Agree, and 5 = Strongly Agree.

(Read each statement and the choices aloud to the participant starting with "1 = Strongly Disagree". Allow them time to respond to the statement. You may need to read the scale to them again. Circle the number that matches their response on the follow-up survey form. If they refuse to answer the question, mark refused on the survey form.)

1. Have you had a chance to review the White-tailed Deer Management Module?

Yes No Refused

2. The site is easily accessible.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

3. The site is easy to read and use.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

4. The format is visually appealing.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

5. The pictures downloaded quickly and easily.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

6. The format was easy to understand and follow.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

7. The length of the module is too long.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

8. The site flows well from page to page.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

9. This program met my expectations.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

10. The design and presentation of this site were useful.

- 1 Strongly Disagree
- 2 Slightly Disagree
- 3 Neutral
- 4 Slightly Agree
- 5 Strongly Agree

Refused

Can you explain?

11. Rate the overall value of the content.

Poor Fair Good Excellent Refused

Can you explain?

12. Where there any topics not covered that you would like to have seen covered?

Yes No Refused

Can you explain?

13. Would this site be useful to you as an agent/specialist?

Yes No Refused

Can you explain?

14. How many landowners in your county do you foresee using this site?

15. Do you have any additional suggestions or comments about the site?

That completes the survey. If you have any questions or concerns regarding this project, you may contact Mark Bedgood, Principle Investigator, at 979-862-8056, or Dr. Scott Cummings, Graduate Committee Chair, at 979-847-9388.

Mr./Ms. _____, I thank you for your time and participation.

APPENDIX B

ONLINE SURVEY INSTRUMENT FOR EARLY USERS

2) The site is easily accessible.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3) The site is easy to read and use.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4) The format is visually appealing.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5) The pictures downloaded quickly and easily.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) The format was easy to understand and follow.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7) The length of the module is too long.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8) The site flows well from page to page.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9) This program met my expectations.

Strongly Disagree	Slightly Disagree	Neutral	Slightly Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10) Rate the design and presentation of this site.

Strongly Unuseful	Slightly Unuseful	Neutral	Slightly Useful	Very Useful
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11) Rate the overall value of the content.

Poor	Fair	Good	Excellent
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12) What did you like the most about the site?

13) What did you like the least about the site?

14) Was there any topic not on the site you were hoping to learn about?

15) Please make any additional suggestions or comments.

VITA

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EDUCATIONAL BACKGROUND **Stephen F. Austin State University**, Nacogdoches, TX
Bachelor of Science in Forestry, December 1999
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EXPERIENCE **Texas Cooperative Extension (Extension Education)**
Extension Assistant, 02/2004 – 12/2004
Extension Graduate Assistant, 02/2003 – 01/2004

Potluck Resources (South Fork Ranch)
Asst Ranch Manager/Wildlife Biologist, 06/2000 – 07/2002

Bird Forestry Services
Forest Technician, 01/2000 – 02/2000

Temple-Inland Forest Products
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