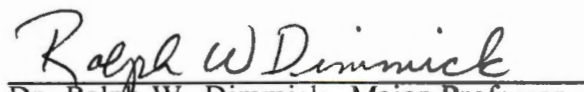
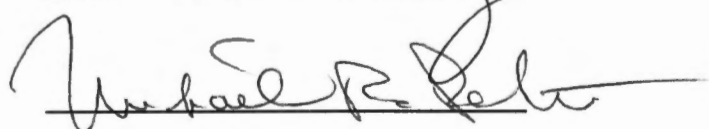


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Dr. Ralph W. Dimmick, Major Professor

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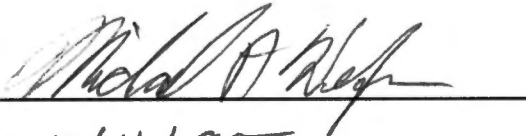
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**PERFORMANCE, PROFILES, AND OPINIONS OF QUAIL AND
RABBIT HUNTERS ON TWO MIDDLE TENNESSEE
WILDLIFE MANAGEMENT AREAS**

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Michael A. Wefer

August 1995

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ABSTRACT

The effects of hunting on northern bobwhite (*Colinus virginianus*) populations were studied on Laurel Hill Wildlife Management Area (WMA), Lawrence County, Tennessee and Percy Priest WMA, Rutherford County, Tennessee during the 1990-91 and 1991-92 small game seasons. Contact forms and a 15-page questionnaire were distributed to quail and rabbit hunters using the 2 areas to obtain information on hunter success, demographics, opinions, and satisfaction levels. Estimated pre-hunt quail densities during the 1991-92 small game season were 0.52 quail/ha on a selected portion of Laurel Hill and 1.19 quail/ha on a similar area on Percy Priest. Post-hunt quail densities were 0.11 quail/ha on Laurel Hill and 0.19 quail/ha on Percy Priest. During the 2 seasons, Laurel Hill quail hunters bagged an average of 1.7 quail/day and 1.4 quail/day, compared to 0.80 quail/day and 0.66 quail/day reported by Percy Priest quail hunters. Rabbit hunters bagged an average of 3.5 rabbits/day and 2.9 rabbits/day on Laurel Hill and 1.6 rabbits/day and 2.3 rabbits/day on Percy Priest during the 2 seasons. Hunters that used the 2 WMAs were on average male, middle-aged, had completed high school, worked in administrative or blue collar jobs, lived in small towns or suburbs, and had a combined family income of over \$30,000 per year. Percy Priest hunters reported that litter, vandalism, parking and a lack of wildlife officer patrols were problems on the WMA. All hunter groups reported that low numbers of rabbits or quail were a problem on the WMAs. Most of the hunters were satisfied with existing hunting regulations on the WMAs. Rabbit hunters were more satisfied with their hunting visits than were quail hunters. About half of the quail hunters were unsatisfied with their visits compared to only about one fifth of the rabbit hunters.

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CHAPTER I

INTRODUCTION

There has been considerable discussion among wildlife professionals concerning the importance of hunter satisfactions and the factors influencing them (eg., Potter et al. 1973, Stankey et al 1973, Hendee 1974, Arthur and Wilson 1979, Decker et al. 1980, Connelly et al. 1985, Vaske et al. 1986, and Hammitt et al. 1989). Wildlife managers have long recognized that human satisfactions are important products of wildlife management. The wildlife manager needs to know the characteristics and preferences of wildlife users to provide for their satisfaction, just as he or she needs to know the biological requirements of wildlife species to successfully manage them. Hendee and Potter (1971) suggested that knowledge about the satisfactions, benefits, motives and preferences of wildlife users, and how they vary under different conditions is extremely important to help guide wildlife managers. Specific factors influencing satisfaction vary not only under different conditions but also among different types of hunters (Potter et al. 1973).

The Tennessee Wildlife Resources Agency (TWRA) became interested in assessing quail and rabbit hunter satisfaction and preferences on some of their wildlife management areas (WMAs) after receiving complaints from small game hunters about poor success. TWRA wished to find out how successful the hunters were on the WMAs, how they used the WMA, how satisfied they were with their visits, who they were, and what they

thought of the management of the WMAs. TWRA was also interested in assessing the impacts of hunting on bobwhite populations on the WMAs.

Laurel Hill and Percy Priest WMAs are both managed by TWRA. Both WMAs are managed primarily for hunting northern bobwhites (*Colinus virginianus*) and cottontail rabbits (*Sylvilagus floridanus*). They provide a unique contrast. Percy Priest WMA is located near a large urban center and is managed to provide maximum hunting opportunity. Laurel Hill WMA is located in a rural area and uses restrictive regulations to manage for reduced hunter conflicts and provide quality hunts. There is little information on demographics, opinions, success, and satisfaction levels of quail and rabbit hunters using the two areas. The relationship between quail and rabbit population levels and hunter performance on WMAs also needs to be better understood.

TWRA was interested in finding the answers to the following management questions:

- 1) How is hunting pressure on the 2 WMAs impacting quail populations? (Are the WMAs being overhunted?)
- 2) How successful were the quail and rabbit hunters that used the 2 WMAs?
- 3) How were the WMAs used by quail and rabbit hunters?
- 4) What are the characteristics of quail and rabbit hunters that used the WMAs?
- 5) What problems did the hunters encounter while using the 2 WMA's?
- 6) What were the quail and rabbit hunters' opinions and perceptions of the management of the 2 WMAs?
- 7) How satisfied were the quail and rabbit hunters with their hunting visits?

CHAPTER II

STUDY AREAS

LAUREL HILL WILDLIFE MANAGEMENT AREA

The Laurel Hill Wildlife Management Area is located approximately 120 km southwest of Nashville and 50 km north of the Alabama state line (Fig. 1). It is mostly in Lawrence County, Tennessee with small portions of the WMA extending into Lewis and Wayne Counties. The WMA is approximately 5,700 ha in size.

Laurel Hill is located within the Highland Rim section of the Interior Low Plateaus province. The WMA is characterized by narrow ridges, steep slopes, and deep narrow valleys. Most of the land is too steep and broken for cultivation. A few good agricultural fields are located on the tops of the wider ridges and in flat valleys.

The major soil types on the area are Bodine cherty silt loam, Greendale cherty silt loam, Mountveiw silt loam, and Pace cherty silt loam. The soils are medium to strongly acid, low in organic matter content, low in plant nutrients, and are low in water holding capacity (Overton et al. 1959).

The climate of this area is temperate, with temperatures averaging 15.3°C. Summers are hot and winters are mild. Humidity is relatively high and average annual precipitation is 145 cm (Overton et al. 1959).

Natural vegetation consists largely of eastern hardwoods. Portions of the WMA that are flat enough for cultivation are planted in annual and perennial food plots for big and

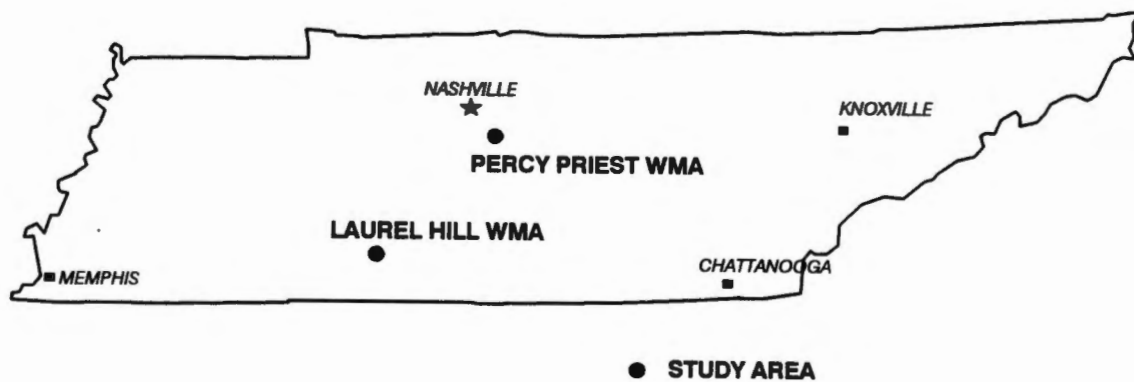


Fig. 1. General location of the study areas, Laurel Hill and Percy Priest Wildlife Management Areas, within Tennessee.

small game management. Major game species present in the area include northern bobwhite, eastern cottontail, gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), white-tailed deer (*Odocoileus virginianus*), and wild turkey (*Meleagris gallopavo*).

Laurel Hill is managed to provide a high-quality hunting experience for small game hunters. No deer hunts are scheduled when the WMA is open to small game hunting. Quail and rabbit hunting occur on alternating days, with Friday being closed to both. For example, during the 1991–92 hunting season the area was open to quail hunting on Sunday, Tuesday, and Thursday and was open to rabbit hunting on Monday, Wednesday, and Saturday. The days of the week open to quail and rabbit hunting are switched each small game season.

Population Study Area

Population study areas (PSAs) were established to monitor the effects of hunting upon quail populations on the 2 WMAs. The 189.1 ha PSA on Laurel Hill was located on the eastern side of the WMA near the checking station. The PSA was composed of approximately one-third hardwoods and two-thirds food plots (Fig. 2). The food plots are mostly composed of annual plantings of grain sorghum and partridge pea and perennial plots of Korean lespedeza and bicolor lespedeza. The brushy portions of the PSA are regularly burned and are composed mostly of woody shrubs, blackberries (*Rubus spp.*), and annual weeds such as ragweeds (*Ambrosia spp.*) and goldenrod (*Solidago spp.*).

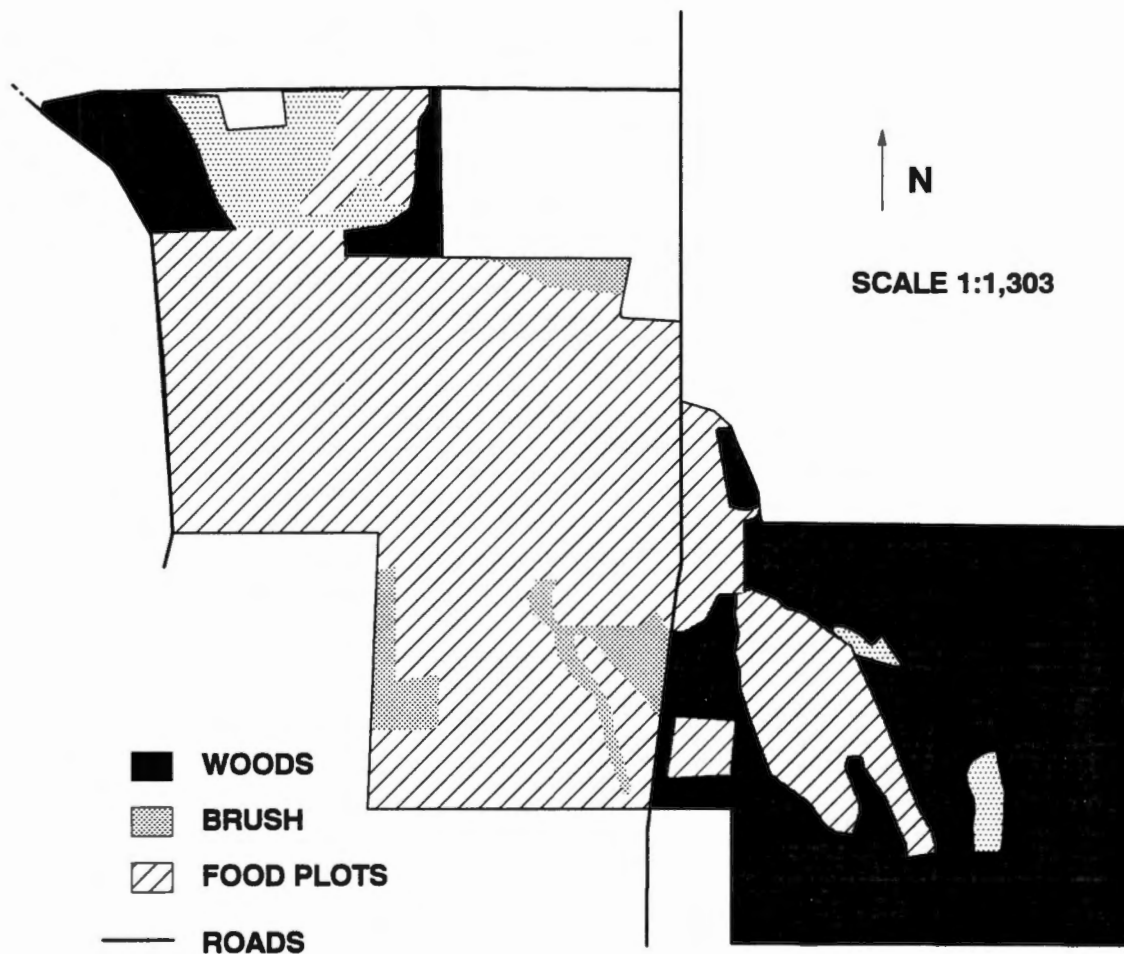


Fig. 2. The Laurel Hill population study area, Laurel Hill Wildlife Management Area, Lawrence County, Tennessee.

PERCY PRIEST WILDLIFE MANAGEMENT AREA

Percy Priest Wildlife Management Area is managed by TWRA as part of a management agreement with the U.S. Army Corps of Engineers. The WMA is located on 2,642 ha of U.S. Army Corps of Engineers property surrounding J. Percy Priest Lake in Metropolitan Nashville/Davidson County and Rutherford County. The study occurred in Rutherford County where most of the lands suitable for hunting are located.

Percy Priest is in the Nashville Basin of the Central Highland Province. The area is characterized by flat to rolling topography with numerous limestone outcrops. The tops of hills are suited to pasture and trees, but not to cultivation (True et al. 1977).

The major soils on the area are Gladeville-Rock complex, Bradyville silt loam, Harpeth silt loam, and Armour silt loam. The Gladeville-Rock complex consists of untillable "glady" land characterized by outcrops of bouldery limestone. The tillable soils on the WMA are well-drained, medium to strongly acid and have high water capacity (True et al. 1977).

The climate is temperate with an average annual temperature of 15.6°C. Summers are warm and winters are mild. Humidity is relatively high. Average annual precipitation is 123cm (True et al. 1977).

The major vegetation type on the area is eastern red cedar (*Juniperous virginianus*) forest. Eastern hardwood forest is also common on the area. Non-forested areas on the WMA are mainly kept open by agriculture and controlled burning. The major game species present on the WMA are white-tailed deer, northern bobwhite, eastern cottontail, Canada goose (*Branta canadensis*), gray squirrel and fox squirrel.

Percy Priest Wildlife Management Area is divided into two units. Unit I is a continuous 520-ha tract managed mainly for pointing dog field trials and to provide hunting opportunities to juveniles. Unit II is composed of 2122-ha of discontinuous tracts. This study was done on Unit II. Unit II is managed to provide hunters with the maximum hunting opportunities. Unit II is composed of agricultural tracts leased by local farmers and fallow fields. Hunting regulations on Percy Priest are similar to statewide regulations, except that hunters are not required to purchase a wildlife management area permit to hunt on Percy Priest.

Population Study Area

A 154.3-ha population study area was added in 1991 to assess the effects of hunting upon quail populations on Percy Priest. The PSA is composed mainly of agricultural fields bordered by hardwoods and brush (Fig. 3). The fields are farmed mainly in a corn-soybean rotation. Strips of bicolor lespedeza border many of the fields. The brushy areas are mainly composed of red cedars mixed with Japanese honeysuckle (*Lonicera japonica*) and blackberries.

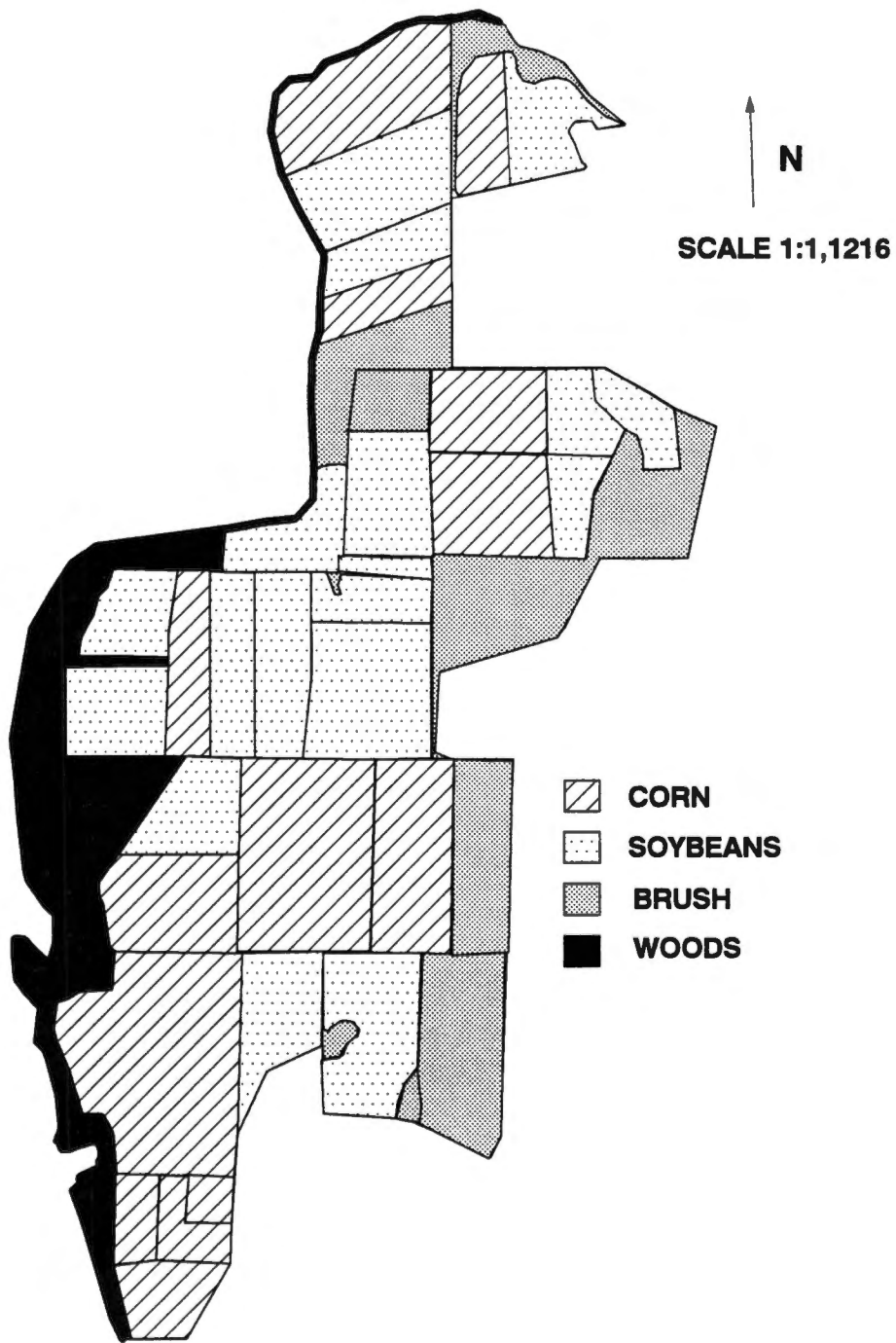


Fig. 3 The Percy Priest population study area, Percy Priest Wildlife Management Area, Rutherford County, Tennessee.

CHAPTER III

MATERIALS AND METHODS

ESTIMATION OF QUAIL POPULATIONS

A population study area was chosen in 1990 to assess the effect of hunting on Laurel Hill's quail populations. The PSA was highly accessible, received heavy hunting pressure, and had well-marked boundaries. A similar PSA was selected in 1991 on Percy Priest to permit comparing the 2 WMAs.

Quail populations were estimated using the walk-census technique described in Dimmick et al. (1982). Considering the information presented by Anderson (1975), I judged the walk-census technique to be ineffective for censusing rabbit populations. The areas were censused about 2 weeks before the hunting season to determine the pre-hunt population and about 3 weeks after the season to estimate the post-hunt population. The Laurel Hill PSA was censused on 31 October 1990, 20 March 1991, 28 October 1991, and 16 March 1992. The Percy Priest PSA was censused 26 October 1991 and 15 March 1992.

The censuses began approximately 1 hour after sunrise. A 7 to 8 person crew was spaced about 20 m apart in a straight line. The person in the center of the line ensured that the line remained straight and that the proper compass direction was followed. The crew followed a predetermined compass heading to cover the area thoroughly. The crew walked from border to border until the area had been censused. This required approximately 10 hours on each PSA. When a covey was flushed, its location, number

of quail, and the cover type in which it was located was also recorded. Applying the correction factor recommended by Dimmick et al. (1982), I estimated the quail population by multiplying the number of quail flushed by 2.

DISTRIBUTION OF CONTACT FORMS

Many hunter surveys are conducted by mailing questionnaires to statewide license holders (eg., Schole et al. 1973, Decker and Brown 1979, and Adams and Thomas 1986). Because I had no means of separating users of the 2 WMAs from statewide license holders and because I could not contact out of state users, I could not use this method. In surveys where hunters using specific management areas were contacted, hunters were contacted at checking stations (eg., Hammitt et al. 1989). This method could not be employed because there were no checking stations for small game on the WMAs. In order to contact hunters using the WMAs I had to contact them while they were in the field. Harris et al. (1979) reported that the windshield method was a viable means for questionnaire distribution. Consequently, I placed contact forms on the windshields of vehicles that I assumed to belong to quail and rabbit hunters.

Hunter contact forms were distributed throughout the 1990–91 and 1991–92 hunting seasons. They were used to obtain quail and rabbit hunter addresses, party size, hunter success, and breeds and numbers of dogs used (Appendix A). A question asking the hunter to report the length of the hunt was added to the 1991–92 contact forms.

As quail and rabbit hunting occur on different days at Laurel Hill, a different contact form was distributed to quail hunters than to rabbit hunters (Appendix A). Only

one contact form was used on Percy Priest because both quail and rabbit hunting occurred concurrently.

High use areas on the WMAs were identified with the help of the WMA managers to aid in obtaining the highest number of participants. Sampling routes (Figs. 4 and 5) were developed to ensure that all survey workers sampled the same area.

Sampling began on opening day of the small game season and continued through the end of the season. The statewide season started on Saturday, 10 November, during the 1990–91 season and Saturday, 9 November, during the 1991–92 season. Because deer hunts occurred during the opening weekend of the statewide season, small game hunting began Monday, 12 November 1990, and Sunday, 10 November 1991, on Laurel Hill. The 1990–91 and the 1991–92 small game seasons ended on the last day of February.

Hunter survey routes were traversed twice each day, beginning at 8:30 a.m. and 1:00 p.m.; they required approximately 2.5 hours to complete. The survey route was approximately 68 km in length on Laurel Hill and 77 km in length on Percy Priest.

If hunters were at their vehicle, they were approached by the survey worker and asked to fill out the 1-page contact form in the field. If there was no one at the vehicle, the survey worker judged whether or not it belonged to a small game hunter. Hunter vehicles were identified by the presence of a dog box, gun cases, or shotgun shells in the vehicles, and their proximity to hunting fields. If the vehicle was assumed to belong to a hunter, 2 self-addressed stamped envelopes containing a letter of explanation (Appendix B) and a contact form were placed on the vehicle. The number of contact forms distributed was recorded daily. If hunters were seen in the field, the researcher placed

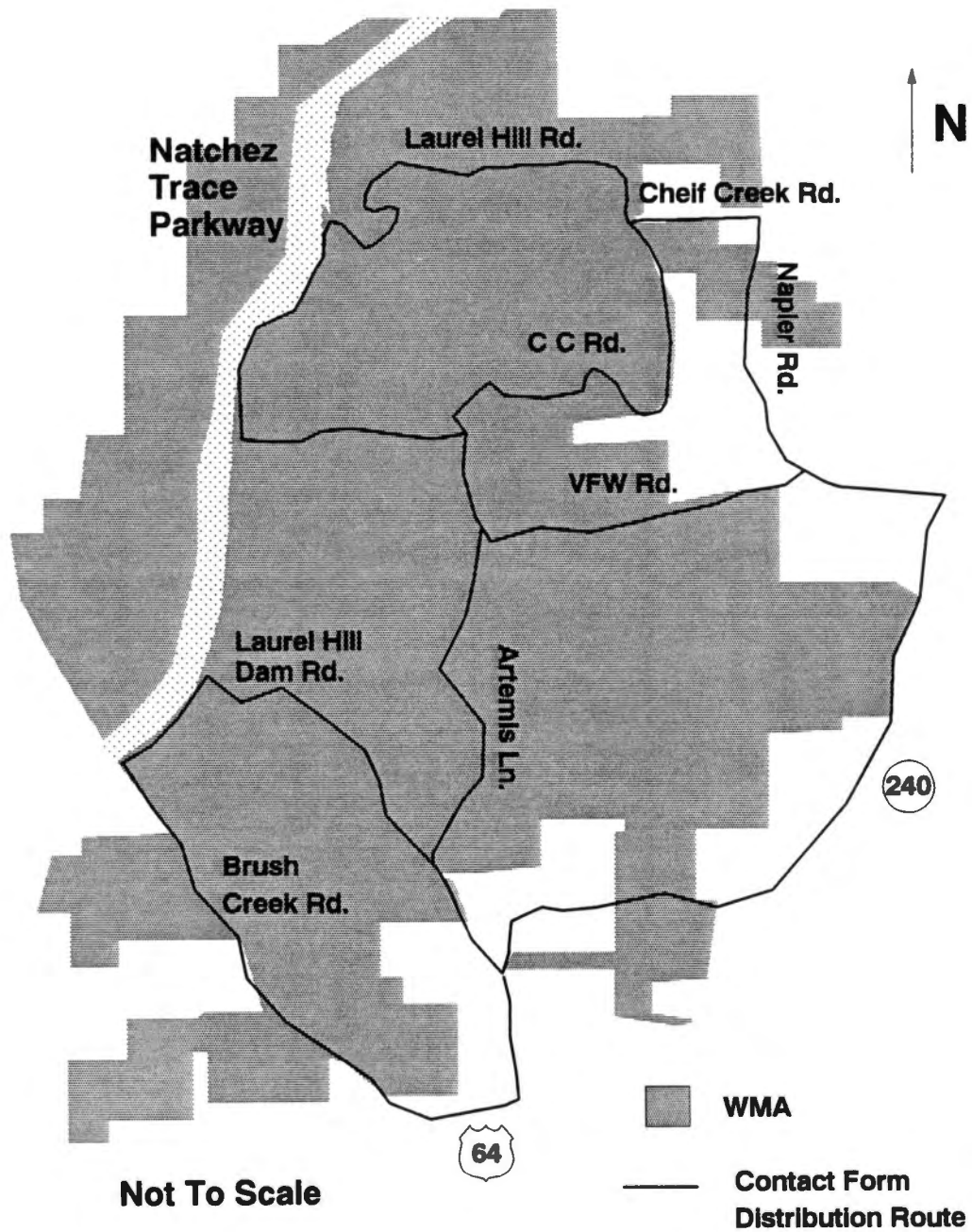


Fig. 4. Contact form distribution route on Laurel Hill Wildlife Management Area, Lawrence County, Tennessee.

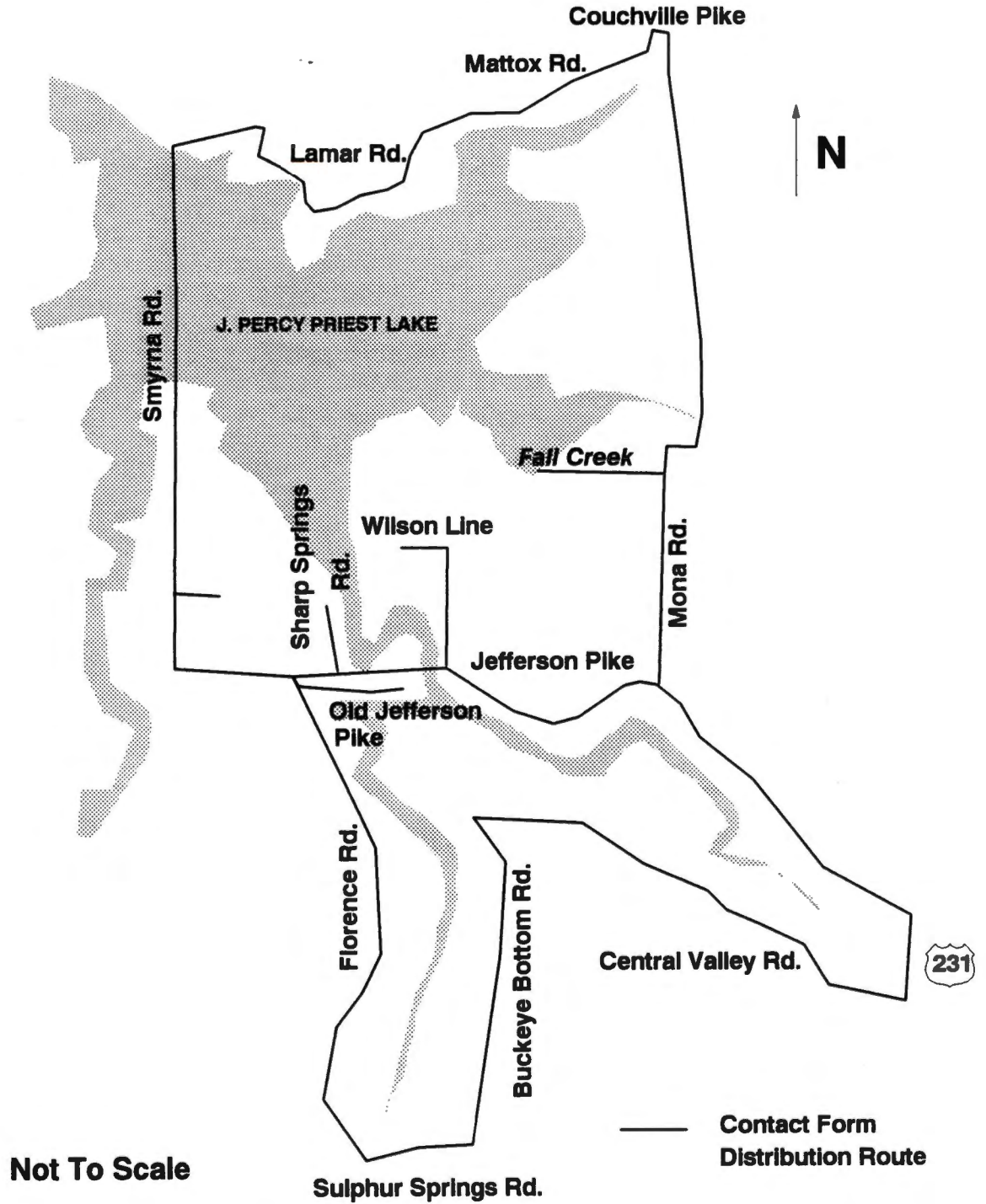


Fig. 5. Contact form distribution route on Percy Priest Wildlife Management Area, Rutherford County, Tennessee.

the contact forms on their windshields and did not interrupt their hunt. TWRA personnel on Laurel Hill distributed contact forms to hunters encountered during their regular management activities.

Contact forms were distributed approximately 30 days each hunting season on each WMA. Sampling days were split between weekends and weekdays in order to characterize hunter use patterns.

One hundred forty-five contact forms were distributed to quail hunters on Laurel Hill WMA during the 1990–91 hunting season, and 90 forms during the 1991–92 season. Twenty-seven contact forms were presented to rabbit hunters on Laurel Hill during the 1990–91 season, and 86 forms during the 1991–92 season. During the 1990–91 small game season 201 contact forms were distributed to quail and rabbit hunters on Percy Priest WMA and 192 forms during the 1991–92 season.

MAIL QUESTIONNAIRE

The major data collection instrument for the study was the mail questionnaire. Because of the differences in hunting regulations and management techniques between the 2 WMAs, different questionnaires were developed for each WMA and each hunter type. There is considerable overlap between the 4 questionnaires and all the questions analyzed can be found in the 2 questionnaires located in Appendix C. The 1992 questionnaires were revised by removing questions in the 1991 instrument considered to be confusing to the respondents or irrelevant to the study. Only the questions contained in both 1991 and 1992 questionnaires were analyzed.

Over both seasons, 48.8% of the Laurel Hill quail hunter contact forms, 31.4% of the Laurel Hill rabbit hunter contact forms, and 30.7% of the Percy Priest hunter contact forms were returned. The overall return rate for contact forms was 34.3%. This is similar to 30.1% to 35.3% return rates reported by Harris et al. (1979).

Sixty-one contact forms were distributed to Laurel Hill quail hunters during the 1990–91 season; of those 36 (59.0%) were completed and returned. Twenty-three (38.3%) of the 60 contact forms distributed to Laurel Hill quail hunters were returned the following season. Of the 13 contact forms distributed to Laurel Hill rabbit hunters during the 1990–91 season, 4 (30.8%) were returned. Eighteen (31.6%) of the 57 Laurel Hill rabbit hunter contact forms were returned during the 1991–92 season. Of the 201 contact forms distributed on Percy Priest during the 1990–91 season, 75 (37.3%) were returned. Of the 223 contact forms distributed on Percy Priest the following season, 55 (24.7%) were returned.

On Percy Priest a hunter could hunt both quail and rabbit at the same time. If the hunter was hunting both species and reported that he was hunting with pointing dogs, he was classified as a quail hunter. If the hunter was hunting both species and was hunting with beagles, he was classified as a rabbit hunter. None of the hunters who sent in contact forms reported hunting for both rabbit and quail without dogs. This allowed them to be easily separated into the two groups. During the 1990–91 season, 40 (53.3%) contact forms were returned by quail hunters and 35 (46.7%) were returned by rabbit hunters. During the 1991–92 season, 34 (61.8%) were returned by quail hunters and 21 (38.2%) by rabbit hunters.

Those respondents with complete and legible names and addresses were sent a survey packet after the end of the season. The number of contact forms that lacked complete addresses or were illegible ranged between 1 and 4 per hunter type. To reduce bias, hunters that responded to the 1991 questionnaire were not sent the 1992 questionnaire. The number of hunters that responded to the questionnaire in 1991 and returned contact forms in 1992 ranged between 1 and 12 with the largest number being Percy Priest quail hunters.

The survey packet contained a letter explaining the purpose of the study (Dillman 1978) and assuring the hunter's confidentiality (Appendix D), a 15-page photo-reduced mail questionnaire with an illustrated color cover, and a self-addressed stamped envelope. Each questionnaire was assigned an identification number to determine which hunters returned their questionnaires. Two weeks after the survey packet was sent, a follow-up packet was mailed to non-respondents. The follow-up packet contained a reminder letter (Appendix E) asking the hunter to respond, another questionnaire, and a self-addressed stamped envelope. A reminder postcard (Appendix F) urging the hunter to respond was mailed to non-respondents 2 weeks after the follow-up packet was sent.

The mail questionnaire in this study (Appendix C) was patterned after the questionnaire used by Hammitt et al. (1989) to characterize deer hunters using Big South Fork National Recreation Area. The questionnaire includes 4 sections. The first section asked the hunters about their specific experiences on the WMA during that year's hunting season. The second section asked questions that characterized hunter experience levels and hunting patterns. The third section questioned the hunters about their impressions

about the management practices used on the WMAs. The fourth section was used to obtain information on hunter demographics.

Over the two seasons, 80.5% of the Laurel Hill quail and rabbit hunter questionnaires and 64.9% of the Percy Priest quail and rabbit hunter questionnaires were returned. The overall questionnaire return rate for this study was 71.3%. Questionnaire return rates in similar studies have ranged from 57% to 86.7% (Decker et al. 1980, Vaske and Donnelly 1980, Hammitt et al. 1989).

During the 1990–91 season, 35 questionnaires were sent to Laurel Hill quail hunters and 30 (85.7%) were returned. Twenty were mailed to Laurel Hill quail hunters during the 1991–92 season and 16 (80%) were returned. Of the 4 questionnaires mailed to Laurel Hill rabbit hunters during the 1990–91 season, 4 (100%) were returned. Among the 18 questionnaires mailed to Laurel Hill rabbit hunters during the 1991–92 season, 12 (66.7%) were returned. During the 1990–91 season, 39 questionnaires were mailed to Percy Priest quail hunters and 27 (69.2%) were returned. Of the 22 questionnaires mailed to Percy Priest quail hunters during the 1991–92 season, 15 (68.2%) were returned. Nineteen (57.6%) of the 33 questionnaires mailed to Percy Priest rabbit hunters during the 1990–91 season were returned. Of the 17 questionnaires mailed to rabbit hunters during the 1991–92 season, 11 (64.7%) were returned.

STATISTICAL ANALYSIS

Hunter responses were recorded in the computer spreadsheet program Lotus 1-2-3, version 2.4 (Lotus Development Corp. 1992). T-tests were performed to test for

significance. Standard deviations (SDs) were obtained by using the statistical functions within Lotus 1-2-3 for Windows, release 4.01 (Lotus Development Corp. 1993). Unless otherwise stated, $\alpha = 0.05$. Where prudent, the data from the 2 seasons were combined for analysis to obtain larger sample sizes. As some hunters did not respond to all of the questions, the number of respondents (n) varied among questions.

NONRESPONSE BIAS

One of the problems inherent in using a mail survey is nonresponse bias. The respondents may differ substantially from those who do not respond. Armstrong and Overton (1977) suggested that subjective estimates may be used to predict the direction of nonresponse bias. Respondents tend to be better educated and are more interested in the topic of the questionnaire (Armstrong and Overton 1977). By using this information the direction of bias can be predicted. Respondents tend to be more educated and would have a greater interest in the pursuit and management of quail and rabbit hunting. The group that was sampled in this project may not represent the average hunters using the WMAs, but instead may be better characterized as the avid quail and rabbit hunters using the WMAs.

CHAPTER IV

RESULTS

QUAIL POPULATIONS

During the 1990-91 pre-hunt quail census on the Laurel Hill population study area (PSA), 4 coveys were flushed and 37 quail were observed. The pre-hunt population on the PSA was estimated to be 74 quail (0.39 quail/ha.). During the post-hunt quail census, 3 coveys were flushed and 25 quail were observed. The post-hunt population was estimated to be 50 quail (0.26 quail/ha.). An estimated loss of 24 quail (32 %) from the population took place on the PSA during the 1990-91 season on Laurel Hill.

Five coveys were flushed and 49 birds were observed during the 1991-92 pre-hunt quail census on the Laurel Hill PSA. The pre-hunt population was estimated to be 98 quail (0.52 quail/ha). During the post-hunt quail census 1 covey, containing 10 birds, was flushed. The post-hunt population on the PSA was estimated to be 20 quail (0.11 quail/ha), an estimated loss of 78 quail (80%) from the population.

During the 1991-92 pre-hunt quail census on Percy Priest PSA, 10 coveys were flushed and 92 quail were observed. The pre-hunt population was estimated to be 184 quail (1.19 quail/ha). During the post-hunt quail census, 3 coveys were flushed and 15 birds were observed. The estimated post-hunt population on the Percy Priest PSA was 30 quail (0.19 quail/ha). There was an estimated loss of 154 quail (84%) from the PSA during the 1991-92 season.

HUNTER SUCCESS

Daily Bag

Daily bag information was obtained from hunter contact forms (Fig. 6). During both seasons, Laurel Hill quail hunters bagged significantly more quail than hunters on Percy Priest. During the 1990-91 season, the average daily bag was 1.7 quail (SD=2.5 quail) per day on Laurel Hill and 0.8 quail (SD=1.7 quail) per day on Percy Priest. During the 1991-92 season, the average daily bag on Laurel Hill was 1.4 quail (SD=1.4 quail) per day and 0.66 quail (SD=1.12 quail) per day on Percy Priest.

Rabbit hunter success did not vary significantly between the 2 WMAs. During the 1990-91 season, the average daily bag was 3.5 rabbits (SD=1.7 rabbits) per day on Laurel Hill and 1.6 rabbits (SD=1.8 rabbits) per day on Percy Priest. The average daily bag on Laurel Hill was 2.9 rabbits (SD=2.0 rabbits) per day and 2.3 rabbits (SD=2.9 rabbits) per day on Percy Priest during the 1991-92 season.

Over the 2 seasons, rabbit hunters were better able to bag their limit (5 rabbits) than quail hunters (10 quail) on both Laurel Hill and Percy Priest (Fig. 6). Of the 59 quail hunter responses, only 1 reported bagging the limit on Laurel Hill. No quail hunters on Percy Priest reported bagging the limit during either season. Conversely, 7 (31.8%) of the 22 Laurel Hill rabbit hunters reported bagging their limit. On Percy Priest, 6 (10.7%) of the 56 responding rabbit hunters bagged their limit.

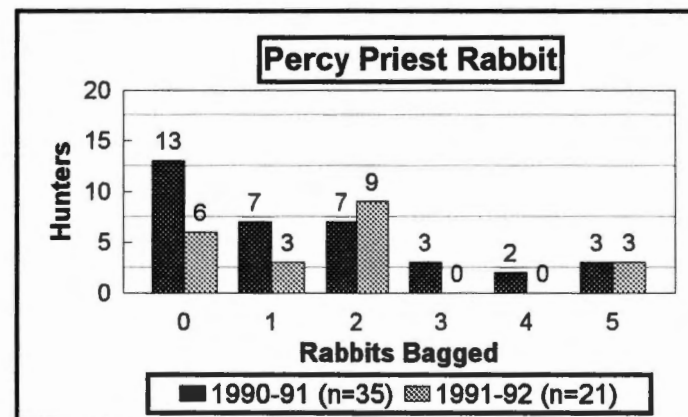
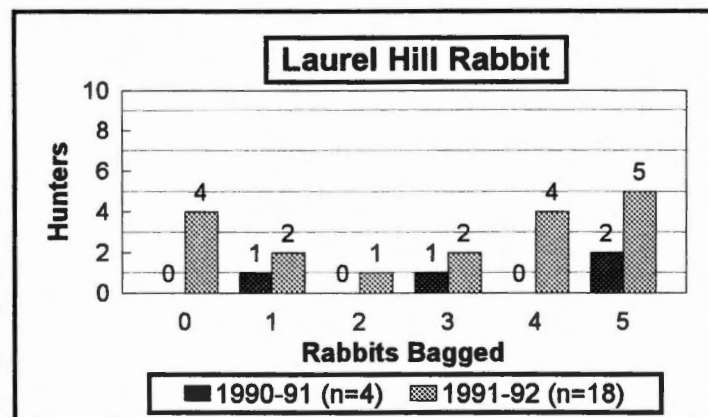
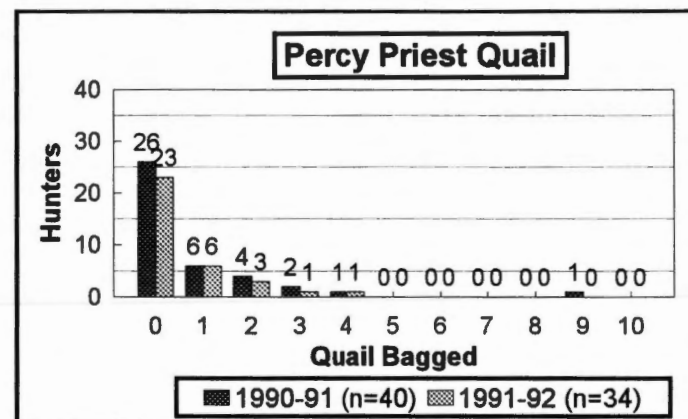
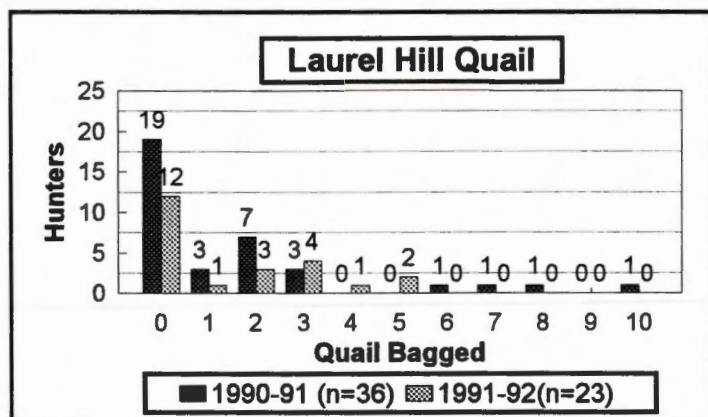


Fig. 6. Daily number of quail or rabbits bagged as reported by hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Few of the quail hunters reported even bagging half the limit (Fig. 6). Only 6 (6.8%) of the 59 Laurel Hill quail hunter responses reported bagging 5 or more quail. Only 1 (1.3%) of the 75 Percy Priest hunter responses reported bagging 5 or more quail.

Total Kill and Crippling Rates

Quail hunters responding to the contact forms were asked to report both the number of quail bagged and those crippled that could not be retrieved. The average bag and the average cripple rates were combined to determine the total kill rate. Laurel Hill quail hunters crippled significantly more quail than Percy Priest quail hunters. During the 1990-91 season, Laurel Hill quail hunters crippled an average of 0.44 quail (SD=0.90 quail) per visit (22.0% of total kill) compared to 0.10 quail (SD=0.62) crippled per visit (10.7% of total kill) on Percy Priest. During the 1991-92 season, quail hunters averaged 0.30 quail (SD=0.62 quail) crippled per visit on Laurel Hill and 0.14 (SD=0.35) on Percy Priest.

The Laurel Hill kill rate was significantly higher than the Percy Priest kill rate during both seasons. During the 1990-91 season, the average total kill rate was 2.0 quail (SD=3.1 quail) per day on Laurel Hill and 0.93 quail (SD=1.7 quail) per day on Percy Priest. During the 1991-92 season, the average total kill rate was 1.7 quail (SD=2.2 quail) per day on Laurel Hill and 0.80 quail (SD=1.2 quail) per day on Percy Priest.

Coveys Flushed

Quail hunters were asked to report the number of coveys that they flushed during their hunting visits. In view of the above bag information, it is not surprising that Laurel Hill quail hunters flushed significantly more coveys than Percy Priest hunters. During the 1990-91 season, quail hunters flushed an average of 1.5 coveys (SD=3.1 coveys) per visit on Laurel Hill and 0.85 coveys (SD= 0.91 coveys) per visit on Percy Priest. During the 1991-92 season, quail hunters on Laurel Hill averaged 2.0 coveys (SD=1.9 coveys) flushed per visit and Percy Priest hunters averaged 0.80 coveys (SD=0.86 coveys) flushed per visit.

Hours Afield

A question asking hunters to report the length of their hunt was added to the hunter contact form during the 1991-92 season. Laurel Hill quail hunters hunted significantly longer than either Laurel Hill rabbit hunters or Percy Priest quail hunters. Laurel Hill quail hunters spent an average of 5.2 hours (SD=1.90 hours) per visit compared to an average of 3.9 hours (SD=2.2 hours) on Percy Priest.

Rabbit hunters using Percy Priest stayed in the field significantly longer than did Laurel Hill rabbit hunters. Laurel Hill rabbit hunters spent an average of 3.9 hours (SD=2.2 hours) in the field and Percy Priest rabbit hunters spent 4.8 hours (SD=1.6 hours) afield. The hours spent hunting did not vary significantly between Percy Priest quail and rabbit hunters.

Kill per Hour

Because the hours afield data had been obtained, the hourly harvest rates could be determined for the 1991-92 season. The quail harvest rate was significantly higher on Laurel Hill than it was on Percy Priest. The average quail harvest rate was 0.34 quail (SD=0.40 quail) killed per hour on Laurel Hill and 0.18 quail (SD=0.26 quail) on Percy Priest. The rabbit harvest rate was significantly higher on Laurel Hill than on Percy Priest. The average rabbit harvest rate was 0.78 rabbits (SD=0.56 rabbits) killed per hour on Laurel Hill and 0.42 rabbits (SD=0.38 rabbits) on Percy Priest.

WMA USE

Contact Form Distribution

The number of contact forms distributed were used to index hunter density on the WMAs (Table 1). As rabbits and quail were hunted on different days of the week on Laurel Hill, individuals could be objectively identified as rabbit or quail hunters. During the 1990-91 season, use of Laurel Hill by quail hunters was significantly higher than that of rabbit hunters. Sixty-one contact forms were distributed to quail hunters and 13 to rabbit hunters. During the 1991-92 season, when rabbit hunting was open on Saturday, there was no significant difference in use between the types of hunters.

Quail hunters on Laurel Hill did not use the WMA significantly more on weekdays versus weekends during either season (Table 1). Rabbit hunters used the area significantly more on weekdays during the 1990-91 season, and significantly more on

Table 1. A summary of contact form distribution on Laurel Hill WMA, Lawrence County, Tennessee, and Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

	Contact Form Type					
	Laurel Hill				Percy Priest	
	Quail		Rabbit		1990-91	1991-92
	1990-91	1991-92	1990-91	1991-92	1990-91	1991-92
Weekdays						
Days Sampled	11	8	7	8	17	13
Contact Forms Distributed	34	33	9	4	70	60
Avg. Distribution Rate (contact forms/day)	3.1	4.1	1.3	0.5	4.1	4.2
Weekends						
Days Sampled	7	8	9	7	16	16
Contact Forms Distributed	27	27	4	53	131	163
Avg. Distribution Rate (contact forms/day)	4.1	3.4	0.7	7.6	8.2	10.2
Combined						
Days Sampled	18	16	16	15	33	29
Contact Forms Distributed	61	60	13	57	201	223
Avg. Distribution Rate (contact forms/day)	5.1	3.7	0.9	3.7	6.1	7.7

weekends during the 1991-92 season. As rabbit hunters used the area more on Saturdays than on weekdays when the opportunity was provided, it appeared that rabbit hunters prefer to hunt on Saturdays rather than Sundays.

Percy Priest received significantly more use on weekends than on weekdays (Table 1). During the 1990-91 season 70 contact forms were distributed on weekdays and 131 on weekends. During the 1991-92 season 60 forms were distributed on weekdays and 163 on weekends.

Party Size

Rabbit hunters hunted in significantly larger parties than quail hunters. Party size did not vary significantly between Laurel Hill and Percy Priest quail hunting parties or between Laurel Hill and Percy Priest rabbit hunting parties. On Laurel Hill the average quail hunting party size was 2.0 hunters (SD=0.81 hunters) and average rabbit hunting party size was 2.8 hunters (SD=1.4 hunters). On Percy Priest the average quail hunting party size was 2.1 hunters (SD=1.3 hunters) and the average rabbit hunting party size was 2.5 hunters (SD=1.1 hunters).

Hunting of Both Quail and Rabbits

Respondents to the contact forms on Percy Priest were asked to identify the species they were hunting and the breed(s) of dogs they were using. Hunters using pointing dogs were categorized as quail hunters and hunters using beagles were categorized as rabbit hunters. During the 1990-91 season, 3 (7.5%) of the 40 quail hunters reported that they

were also hunting rabbits and 5 (14.3%) of the 35 rabbit hunters reported also hunting quail. During the 1991-92 season, 3 (8.6%) of the 35 quail hunters and 4 (19.0%) of the 21 rabbit hunters reported hunting both species.

Parties Encountered

Hunters were asked in the questionnaire to report the average number of hunting parties they encountered while hunting on the WMA. Laurel Hill rabbit hunters encountered significantly fewer other parties than did Laurel Hill quail hunters or Percy Priest rabbit hunters. The number of parties encountered by Percy Priest quail hunters was not significantly different from the number of parties encountered by Laurel Hill quail hunters or Percy Priest rabbit hunters. Laurel Hill quail hunters encountered an average of 1.7 parties (SD=1.4 parties) and Laurel Hill rabbit hunters encountered an average of 0.73 parties (SD=0.68 parties). On Percy Priest, quail hunters saw an average of 1.5 parties (SD=1.1 parties) and rabbit hunters encountered an average of 1.2 parties (SD=0.76 parties).

Distance Travelled to the WMA

Quail and rabbit hunters travelled significantly farther to hunt on Laurel Hill than those that hunted on Percy Priest. The distance travelled by Laurel Hill quail hunters was not significantly different than that travelled by Laurel Hill rabbit hunters. Similarly, there was no significant difference between the distance travelled by Percy Priest quail and rabbit hunters. The average distance travelled by Laurel Hill quail hunters was 101.9

km (SD=82.1 km) or 63.3 miles (SD=51.0 miles); Laurel Hill rabbit hunters travelled 91.3 km (SD=102.6 km) or 56.7 miles (SD=63.7 miles). Quail hunters travelled only 29.0 km (SD=23.8 km) or 18.0 miles (SD=14.8 miles) to hunt on Percy Priest. Percy Priest rabbit hunters travelled an average of 26.9 km (SD=22.1 km) or 16.7 miles (SD=13.7 miles) or to the WMA.

Days on the WMA

The hunters were asked in the questionnaire to report how many days per season they spent hunting quail or rabbits on the WMA. The days spent on the WMA did not vary significantly between Laurel Hill quail and rabbit hunters or between Percy Priest quail and rabbit hunters. Neither was there a significant difference between Laurel Hill quail hunters and Percy Priest quail hunters. Laurel Hill rabbit hunters spent significantly fewer days on their chosen WMA than did Percy Priest rabbit hunters. Laurel Hill rabbit hunters spent the fewest days on a WMA, an average of 4.4 days (SD=3.9 days) per season. Percy Priest rabbit hunters spent an average of 16.3 days (SD=13.2 days) per season hunting on the WMA. Quail hunters spent an average of 7.5 days (SD=8.4 days) per season hunting on Laurel Hill. Percy Priest quail hunters hunted on their WMA an average of 11.4 days (SD=8.7 days) per season.

Quail or Rabbits Bagged on the WMA

Respondents to the questionnaire were asked to estimate the number of quail or rabbits that they bagged on the WMA through the course of season. The reported seasonal bag did not vary significantly between Laurel Hill and Percy Priest quail hunters or between Laurel Hill and Percy Priest rabbit hunters. Quail hunters reported that they bagged an average of 15.1 quail (SD=12.1 quail) per season on Laurel Hill and 16.7 quail (SD=18.8 quail) per season on Percy Priest. Percy Priest rabbit hunters bagged an average of 18.8 rabbits (SD=16.3 rabbits) per season and Laurel Hill rabbit hunters an average of 10.7 (SD=9.8 rabbits).

Other Game Species Hunted on the WMA

Respondents were asked to list all the game species that they hunted on the WMA (Table 2). After quail, doves were the most common species hunted by quail hunters. Of the 46 Laurel Hill quail hunters, 9 (19.6%) hunted doves on the WMA and of the 42 Percy Priest quail hunters, 11 (26.2%) hunted doves. The most common other species hunted by rabbit hunters on Laurel Hill were squirrel and deer. Of the 16 Laurel Hill rabbit hunters, 5 (31.3%) hunted squirrels and 4 (25%) hunted deer. Rabbit hunters on Percy Priest most commonly hunted quail, squirrels, deer, and doves. Of the 29 Percy Priest rabbit hunters, 10 (34.5%) hunted quail, 9 (31.0%) hunted squirrels, 8 (27.6%) hunted deer, and 8 (27.6%) hunted doves on the WMA.

Table 2. Responses of quail and rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, and Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to report the game species that they hunted on the specific WMA .

Game Species	Hunter Type							
	Laurel Hill				Percy Priest			
	Quail		Rabbit		Quail		Rabbit	
	(N)	(%)	(N)	(%)	(N)	(%)	(N)	(%)
Squirrel	3	6.5%	5	31.3%	3	7.1%	9	31.0%
Deer	3	6.5%	4	25.0%	5	11.9%	8	27.6%
Waterfowl	0	0.0%	0	0.0%	5	11.9%	3	10.3%
Turkey	2	4.3%	2	12.5%	0	0.0%	0	0.0%
Quail	46	100%	2	12.5%	42	100%	10	34.5%
Dove	9	19.6%	2	12.5%	11	26.2%	8	27.6%
Snipe	2	4.3%	0	0.0%	1	2.4%	3	10.3%
Raccoon	0	0.0%	0	0.0%	2	4.8%	0	0.0%
Rabbit	2	4.3%	16	100%	4	9.5%	29	100%
Woodcock	6	13.0%	0	0.0%	13	31.0%	1	3.4%
Other	0	0.0%	0	0.0%	0	0.0%	2	6.9%

HUNTER CHARACTERISTICS

Sex

Quail and rabbit hunting were mainly pursued by males on the WMAs. All respondents reported their gender as male.

Age

The average quail or rabbit hunter that used the WMAs was middle-aged. Hunter ages did not vary significantly between Laurel Hill and Percy Priest quail hunters or between Percy Priest quail and rabbit hunters. However, Laurel Hill rabbit hunters were significantly older than either the Laurel Hill quail hunters or Percy Priest rabbit hunters. The average age of Laurel Hill rabbit hunters was 50.1 years (SD=10.0 years). Percy Priest rabbit hunters were 39.2 years old (SD=11.6 years) on average. The mean age of Laurel Hill quail hunters was 42.4 years (SD=14.0 years), and of Percy Priest quail hunters it was 41.0 years (SD=14.8 years).

Education

The hunters were asked to indicate the highest level of education that they had achieved (Fig. 7). Education levels did not vary significantly between Laurel Hill and Percy Priest quail hunters, between Laurel Hill rabbit and quail hunters, or between Percy Priest quail and rabbit hunters. Laurel Hill rabbit hunters had significantly more years of education than did Percy Priest rabbit hunters. Most of the hunters had a high

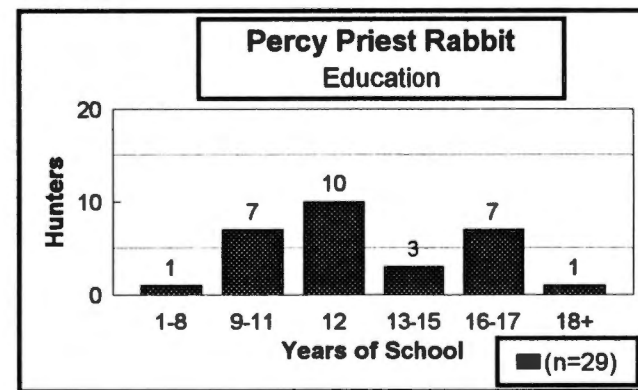
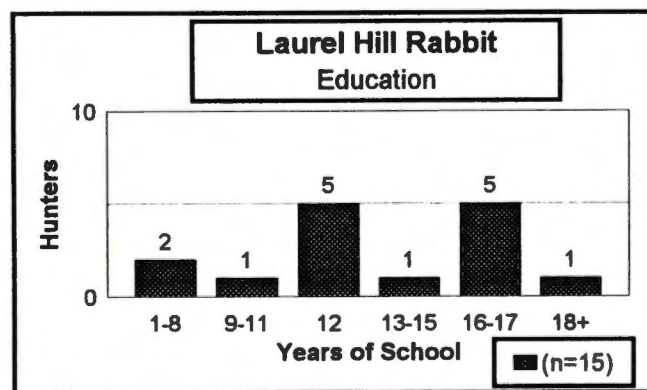
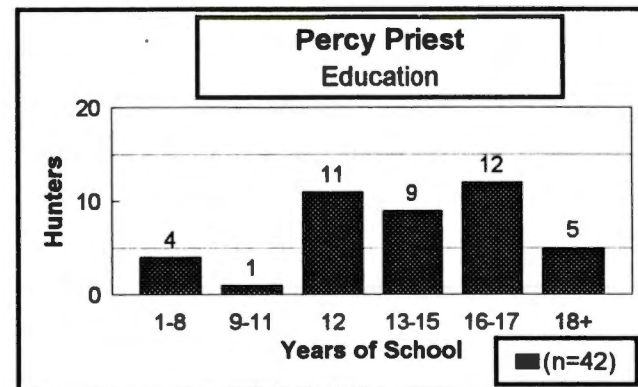
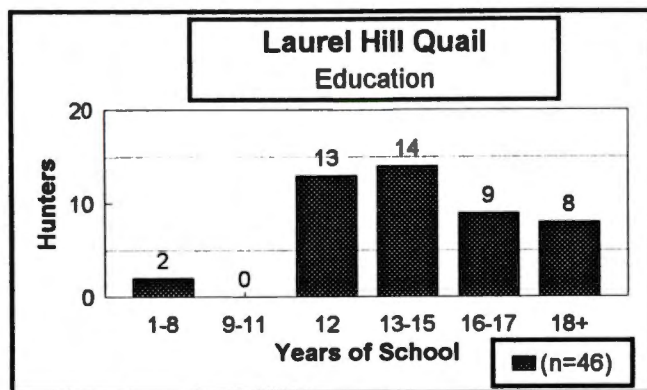
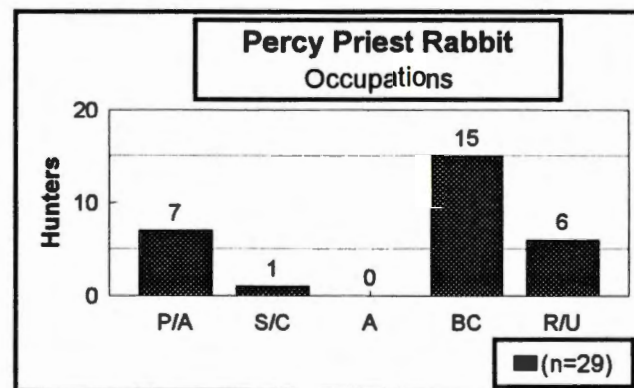
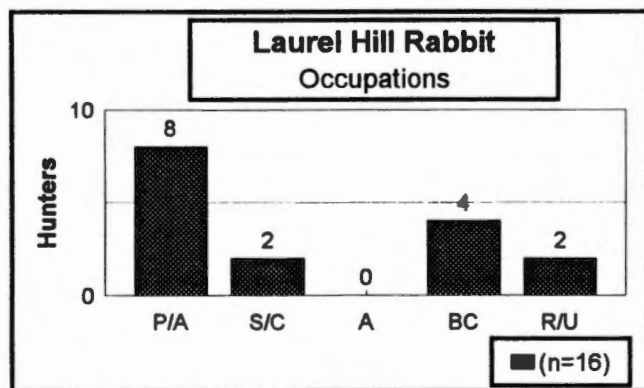
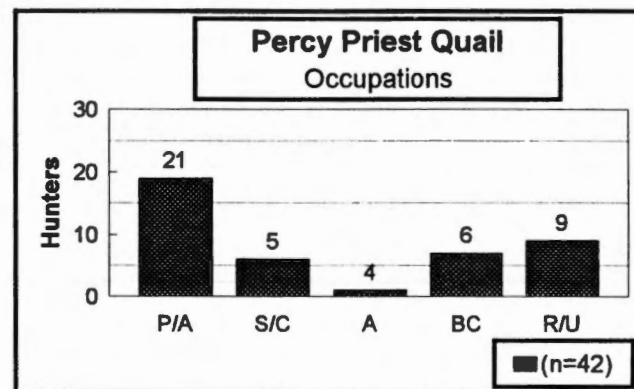
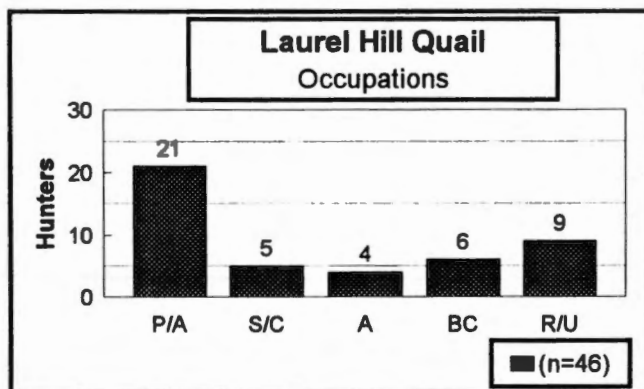


Fig. 7. The responses of quail or rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to report the highest level of education they had completed.

school education or higher. Only 2 (4.3%) of the 46 Laurel Hill quail hunters did not complete high school and of those one was still a student. Five (11.9%) of the 42 Percy Priest quail hunters had not graduated from high school. Two of them were still in school. Among the 15 Laurel Hill rabbit hunters, 3 (20%) did not complete high school. Of the 29 Percy Priest rabbit hunters, 8 (27.6%) didn't complete high school. Only one of them was still a student.

Occupation

Respondents were asked to report their occupations (Fig. 8). The responses were placed in the category that they fit best. The categories included professional/administrative, sales/clerical, agricultural, and retired/unemployed . Most of the hunters were in professional or administrative jobs, or in blue collar jobs. Hunter occupations did not vary significantly between WMA or hunter type. Among the 45 Laurel Hill quail hunters, 21 (46.7%) were professionals or administrators, 6 (13.3%) were blue collar workers, and 9 (20%) were retired or unemployed. Of the 42 Percy Priest quail hunters, 19 (45.2%) were professionals or administrators, 7 (16.7%) were blue collar workers, and 9 (21.4%) were retired or unemployed. Eight (50%) of the 16 Laurel Hill rabbit hunters were professionals or administrators, 4 (25%) were blue collar workers, and 2 (12.5%) were retired or unemployed. The majority of Percy Priest rabbit hunters were in blue collar jobs. Fifteen (51.7%) of the 29 Percy Priest rabbit hunters were blue collar workers, only 7 (24.1%) were professionals or administrators, and 6 (20.7%) were retired or unemployed.



P/A = Professional/Administrative
BC = Blue Collar

S/C = Sales/Clerical A = Agricultural
R/U = Retired/Unemployed

Fig. 8. The responses of quail or rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to report their occupations.

Where They Live

The hunters were asked to choose the category that best described where they live (Fig. 9). Their choices were "Large City (50,000 or more)," "Suburb of a Large City," "Small City or Town (Less than 50,000)," and "Rural Area." The living circumstances of Laurel Hill quail hunters was not significantly different from that of Percy Priest quail hunters. Nor was there a significant difference between Percy Priest quail and rabbit hunters in this respect. Significantly more of Laurel Hill rabbit hunters lived in rural areas (12 of 16, 75%) than did Laurel Hill quail hunters or Percy Priest rabbit hunters. Most of the 46 Laurel Hill quail hunters lived in small towns (14, 30.4%) or rural areas (21, 45.6%). Most of the Percy Priest hunters lived in small towns or suburbs. Among the 42 Percy Priest quail hunters, 15 (35.7%) lived in small towns and 11 (26.3%) in suburbs. Of the 30 Percy Priest rabbit hunters, 11 (36.7%) lived in small towns and 11 (36.7%) in suburbs.

Annual Household Income

The hunters were asked to indicate their total annual household incomes (Fig. 10). Hunter incomes did not vary significantly between Laurel Hill quail and rabbit hunters, or between Percy Priest and Laurel Hill quail hunters. Percy Priest rabbit hunters reported significantly lower incomes than did Percy Priest quail hunters and Laurel Hill rabbit hunters. Eight (21.6%) of the 37 Percy Priest quail hunters had household incomes below \$30,000, compared to 14 (46.7%) of the 30 Percy Priest rabbit hunters. Among the 45 Laurel Hill quail hunters that responded, 7 (15.6%) had incomes below \$30,000.

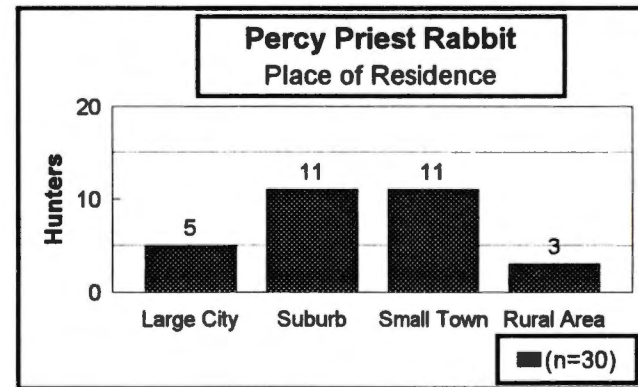
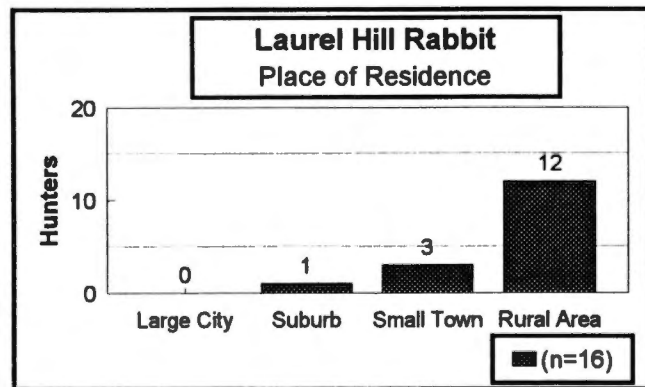
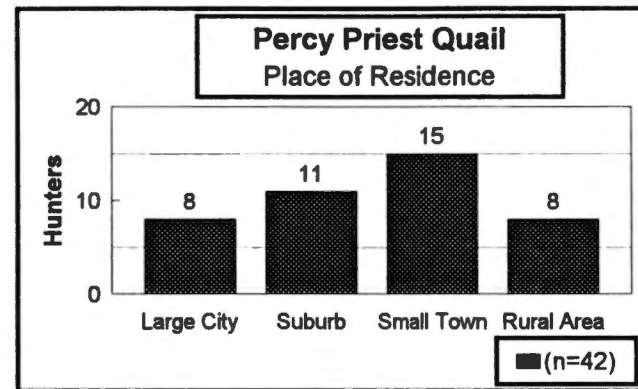
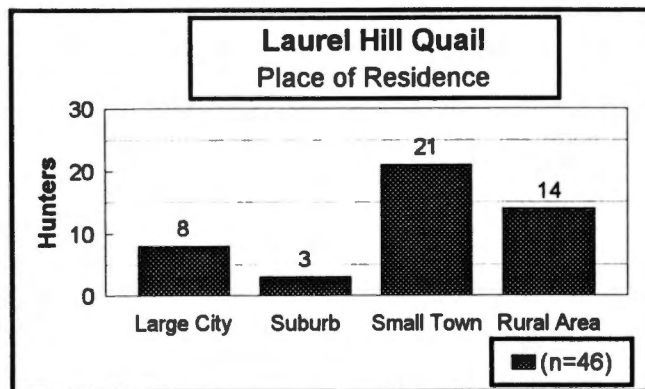


Fig. 9. The responses of quail or rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to describe where they live.

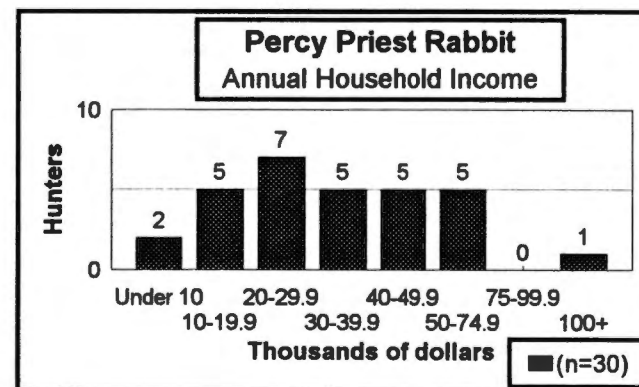
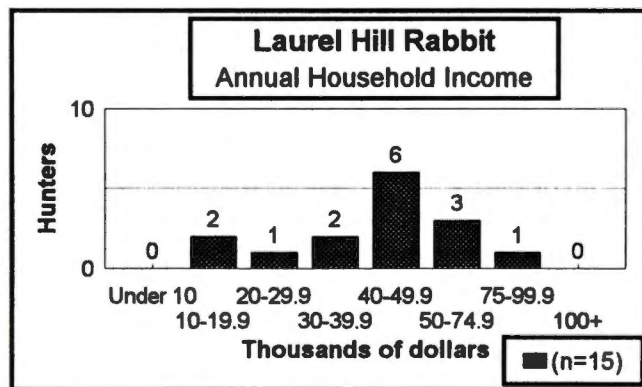
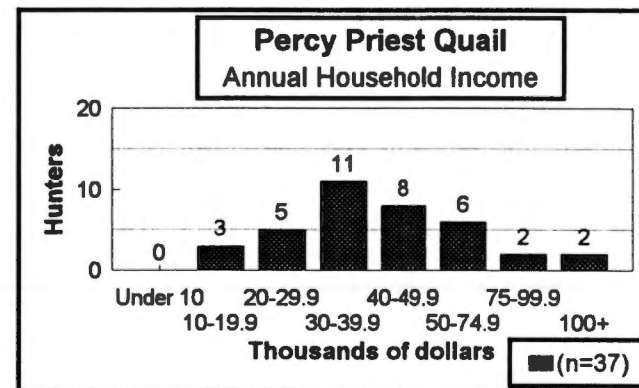
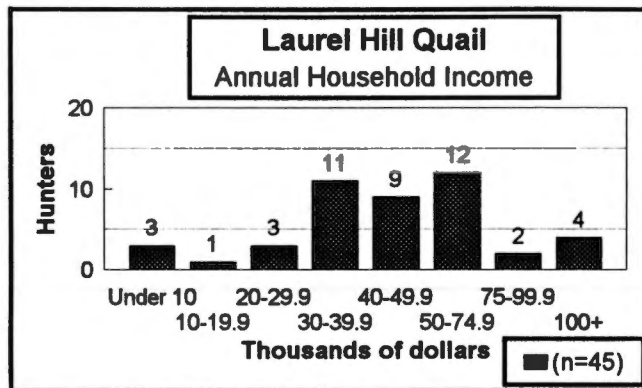


Fig. 10. The responses of quail or rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to report their annual household income.

Three (20%) of the 15 Laurel Hill rabbit hunters had incomes below \$30,000.

Hunting Skill

The hunters were asked to choose the category that best described their skill at hunting quail or rabbits (Fig. 11). They could choose between "Beginner," "Intermediate," "Advanced," and "Expert." Most of the hunters considered themselves to have achieved an advanced level of quail or rabbit hunting skill. Hunter skill did not vary significantly among the 4 hunter groups. Among the 46 Laurel Hill quail hunters, 28 (60.9%) claimed that they were advanced hunters. Of the 14 Laurel Hill rabbit hunters, 6 (42.9%) considered themselves advanced hunters and 6 considered themselves to be expert rabbit hunters. Twenty-two (53.7%) of the 41 Percy Priest quail hunters and 17 (60.7%) of the 28 Percy Priest rabbit hunters assessed their skill as advanced.

Hunting Experience

The hunters were asked to report the total number of years that they have been hunting quail or rabbits over their lifetime. The number of years hunting quail did not vary significantly between Laurel Hill and Percy Priest quail hunters or between Percy Priest quail and rabbit hunters. Laurel Hill rabbit hunters were significantly more experienced than Laurel Hill quail hunters and Percy Priest rabbit hunters. The average number of years that they had been hunting was 33.0 (SD=12.3 years). Laurel Hill quail hunters had 22.3 years (SD=13.8 years) of experience hunting quail and Percy Priest quail hunters had 24.6 years (SD=12.5 years) experience. The average experience of Percy Priest rabbit hunters was 20.5 years (SD=13.5 years).

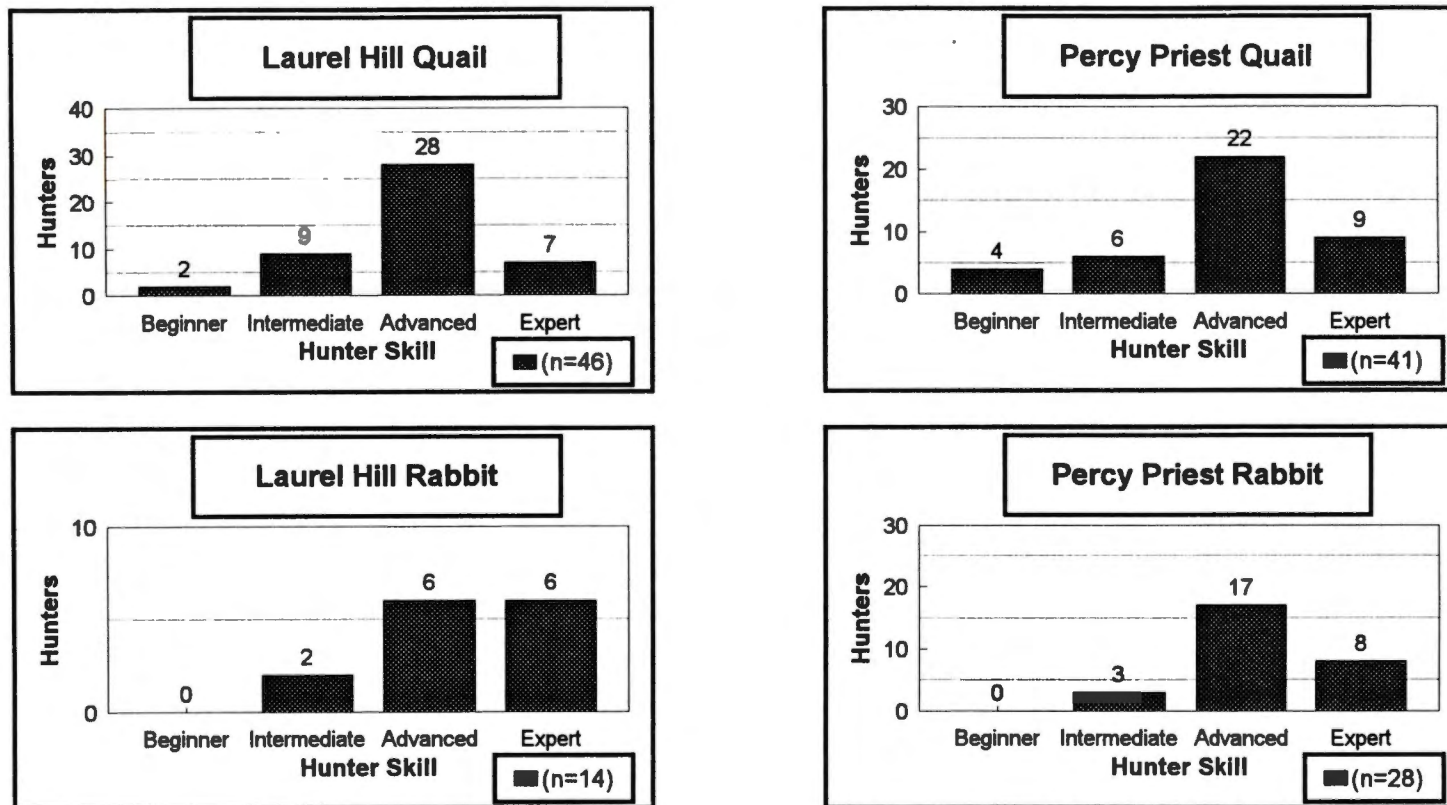


Fig. 11. Hunting skill levels of quail and rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Average Number of Days Hunting Quail or Rabbits per Season

In order to better characterize the hunters' pursuit of their sport, I requested that they estimate the total number of days they spend quail or rabbit hunting both on and off the WMAs during the season. There was no significant difference in the number of days spent hunting quail or rabbits between the 4 hunter groups. On average, quail and rabbit hunters on both WMAs estimated that they spent about 1 month per season hunting. Laurel Hill rabbit hunters spent an average of 21.1 days (SD=17.3 days) and Percy Priest rabbit hunters 30.9 days (SD=15.4 days). Laurel Hill quail hunters hunted 27.1 days (SD=15.3 days), and Percy Priest quail hunters 33.0 days (SD=21.3 days).

Total Bag per Season

The quail and rabbit hunters were also asked to estimate the number of quail or rabbits that they bag during an average season, both on and off the WMAs. The reported bag did not vary significantly between Laurel Hill and Percy Priest quail hunters or between Laurel Hill and Percy Priest rabbit hunters. Laurel Hill quail hunters reported bagging 72.8 quail (SD=55.1 quail) per season; Percy Priest quail hunters claimed that they bagged 90.2 quail (SD=77.4 quail). Laurel Hill rabbit hunters bagged an average of 46.6 rabbits (SD=28.5 rabbits), and Percy Priest rabbit hunters bagged 39.5 rabbits (SD=29.6 rabbits).

Importance of Quail or Rabbit Hunting as an Activity

The hunters were asked to rate the importance of quail and rabbit hunting as an outdoor activity (Fig. 12). They were asked to choose between a response of "not at all important," "slightly important," "moderately important," "very important," and "extremely important." There were no significant differences in the responses of the 4 hunter groups. Not surprisingly, either quail or rabbit hunting was a very or extremely important activity to most hunters. Forty (87.0%) of the 46 Laurel Hill quail hunters held quail hunting to be very or extremely important. Among the 15 Laurel Hill rabbit hunters, 9 (60%) of them stated that hunting was very or extremely important to them. Thirty-four (80.9%) of the 42 Percy Priest quail hunters rated quail hunting as a very or extremely important activity, and 25 of 29 Percy Priest Hill rabbit hunters (86.2%) considered rabbit hunting a very or extremely important activity.

Other WMAs Hunted

To assess the hunters' experience with wildlife management areas, I asked them to report the number of other WMAs on which they had hunted. Experience with other WMAs did not vary significantly among the 4 hunter groups. Most had utilized some WMAs other than Laurel Hill or Percy Priest. Laurel Hill quail hunters had hunted on an average of 3.4 WMAs (SD=8.0 WMAs) other than Laurel Hill. Laurel Hill rabbit hunters had visited 1.9 other WMAs (SD=2.5 WMAs) on average. On average, Percy Priest quail hunters hunted on 2.3 other WMAs (SD=3.4 WMAs) and Percy Priest rabbit hunters hunted on 2.0 other WMAs (SD=2.25 WMAs).

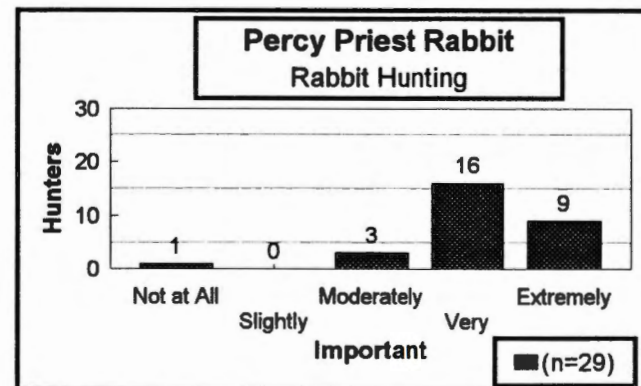
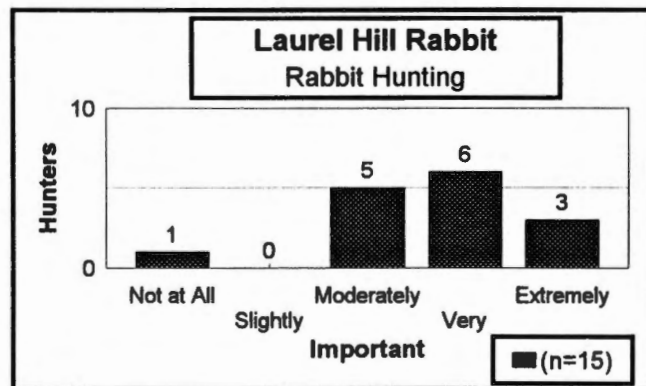
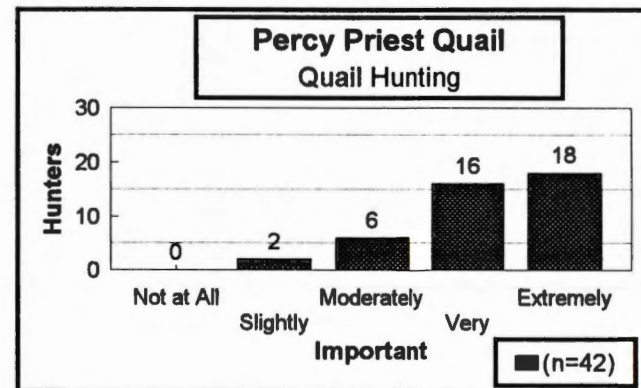
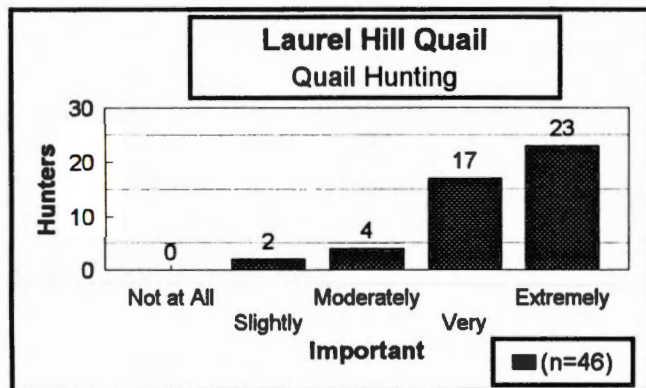


Fig. 12. Responses of quail and rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to rate the importance of quail or rabbit hunting as an outdoor activity.

Seasons Hunting on the WMA

The hunters were asked to report the number of seasons that they have hunted quail or rabbits on Laurel Hill or Percy Priest. There was no significant difference in the responses of the 4 hunter groups. Laurel Hill quail hunters had utilized Laurel Hill 6.8 seasons (SD=5.7 seasons). Laurel Hill rabbit hunters had hunted on Laurel Hill an average of 5.2 seasons (SD=3.7 seasons). Percy Priest quail hunters averaged 8.2 seasons (SD=7.3 seasons), and rabbit hunters averaged 6.4 seasons (SD=4.7 seasons).

Significantly more of the Laurel Hill quail hunters were first time users than were Laurel Hill rabbit hunters or Percy Priest quail hunters. First-time use did not vary significantly between Percy Priest quail and rabbit hunters, nor between Laurel Hill and Percy Priest rabbit hunters. Among the 43 Laurel Hill quail hunters, 15 (34.9%) were hunting on Laurel Hill for their first season. Three (21.4%) of the 14 Laurel Hill rabbit hunters were new to Laurel Hill. Only 4 (10%) of the 40 Percy Priest quail hunters and 3 (10%) of the 30 Percy Priest rabbit hunters were using the WMA for the first time.

HUNTER PERCEPTIONS AND OPINIONS

Crowding

By selecting a value between 1 and 7 on a Likert scale (1 = "not at all crowded," 3 = "slightly crowded," 4 = "moderately crowded," and 7 = "very crowded") (Fig. 13), the hunters ranked the degree of crowding they experienced. The number of hunters that felt crowded did not vary significantly among Laurel Hill quail or rabbit

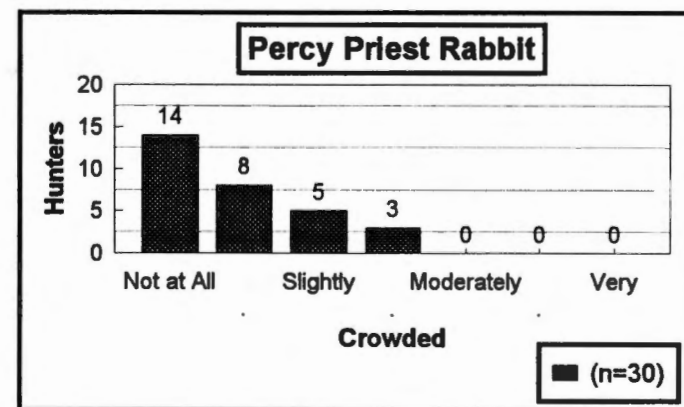
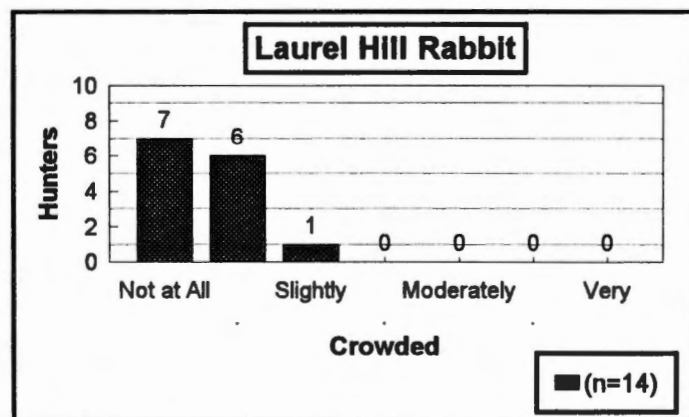
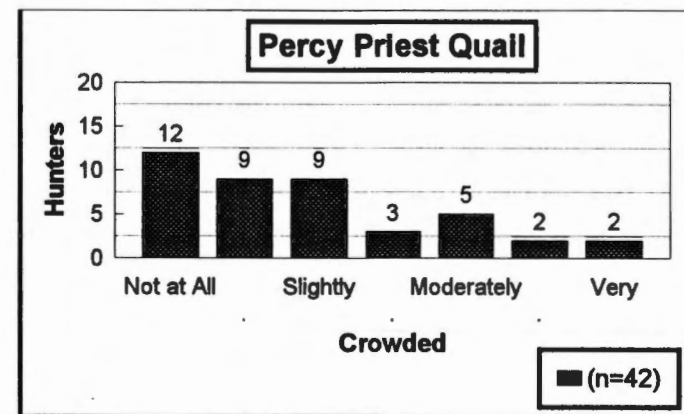
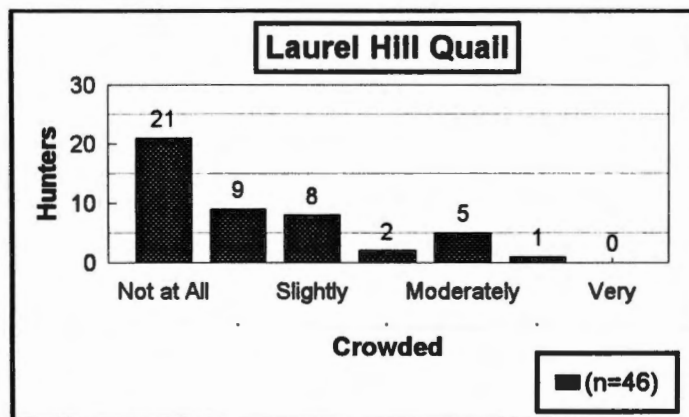


Fig. 13. Hunter responses to the question "Did you feel the area was crowded?" in reference to their quail or rabbit hunting experience on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

hunters and Percy Priest rabbit hunters. Significantly more of the Percy Priest quail hunters felt crowded than did either Percy Priest rabbit hunters or Laurel Hill quail hunters. Among the 42 Percy Priest quail hunters, 9 (21.4%) indicated the WMA was moderately or very crowded. Six (13.0%) of the 46 Laurel Hill quail hunters reported that their WMA was moderately or very crowded. None of the rabbit hunters on Laurel Hill or Percy Priest felt that the WMAs were moderately or very crowded.

Hunter Interference

Respondents were asked to pick the statement that best described the amount that other hunters interfered with their enjoyment from choices of: "not at all," "very little," "some," "quite a bit," and "a lot" (Fig. 14). On average the hunters experienced little interference from other hunters while hunting on the WMAs. Hunter interference did not vary significantly among the 4 hunter groups. Of the 46 Laurel Hill quail hunters, 8 (17.4%) said there was "some" interference and 4 (8.7%) said there was either "quite a bit" or "a lot" of interference. Among the 14 Laurel Hill rabbit hunters, all responded either "not at all" or "very little." Of the 42 Percy Priest quail hunters, 11 (26.2%) said there was "some" interference and 5 (11.9%) said there was either "quite a bit" or "a lot" of interference. Of the 30 Percy Priest rabbit hunters 4 (13.3%) responded "some" and 1 (3.3%) responded "quite a bit."

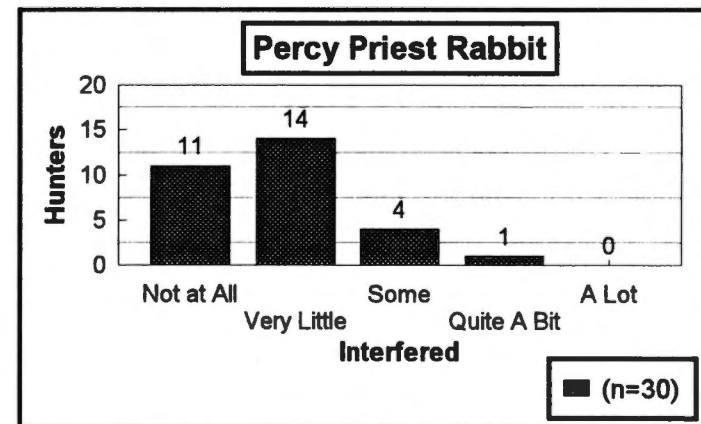
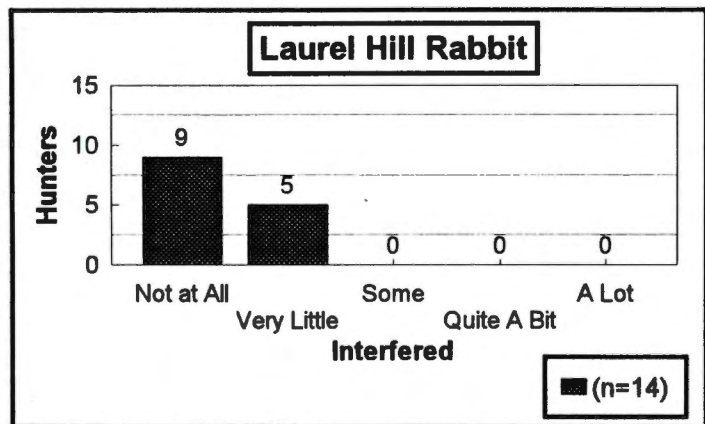
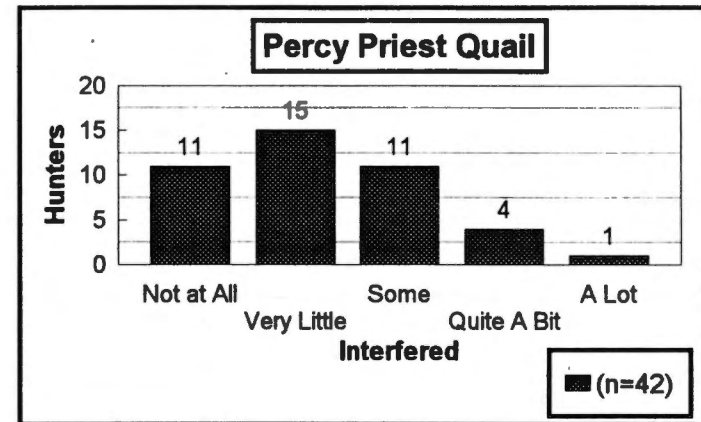
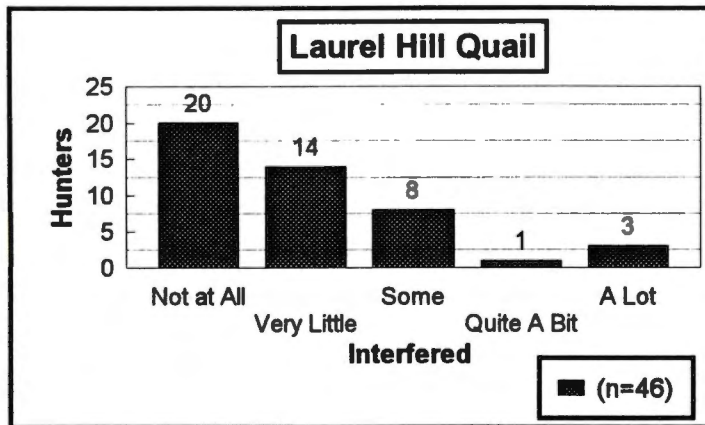


Fig. 14. Hunter responses to the question "To what extent did other hunters interfere with your enjoyment?" in reference to their quail or rabbit hunting experience on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Problems Encountered

In order to help managers identify problems that the WMA users had encountered, I asked the hunters to rank the seriousness of a list of problems that they may have encountered on the WMAs. Their choices were "not a problem," "slight problem," "moderate problem," "serious problem," and "very serious problem." Overall, quail and rabbit hunters that used Percy Priest reported more serious problems than did those that used Laurel Hill. Many of the Percy Priest quail and rabbit hunters indicated parking, litter, and vandalism were problems on the WMA. Many of the quail hunters on both WMAs indicated that a low number of quail was a serious problem. Many of the Percy Priest quail hunters indicated dense brush hampered movement for themselves or their dogs. Many of the Percy Priest rabbit hunters indicated that a lack of information signs and an up-to-date WMA map was a problem. Few of the quail and rabbit hunters using Laurel Hill reported encountering serious problems.

Litter.— Significantly more of the Percy Priest quail and rabbit hunters felt that litter was a problem on the WMA than did hunters that used Laurel Hill (Fig. 15). The responses of Laurel Hill quail and rabbit hunters did not vary significantly, nor did the responses of Percy Priest quail and rabbit hunters. Among the 42 Percy Priest quail hunters, 15 (35.7%) felt that litter was a serious or very serious problem. Nine (33.3%) of the 27 Percy Priest rabbit hunters also reported that litter was a serious or very serious problem on the WMA. In contrast, none of the Laurel Hill quail or rabbit hunters felt that litter was a serious or very serious problem. Only 6 (14.3%) of the 42 Laurel Hill

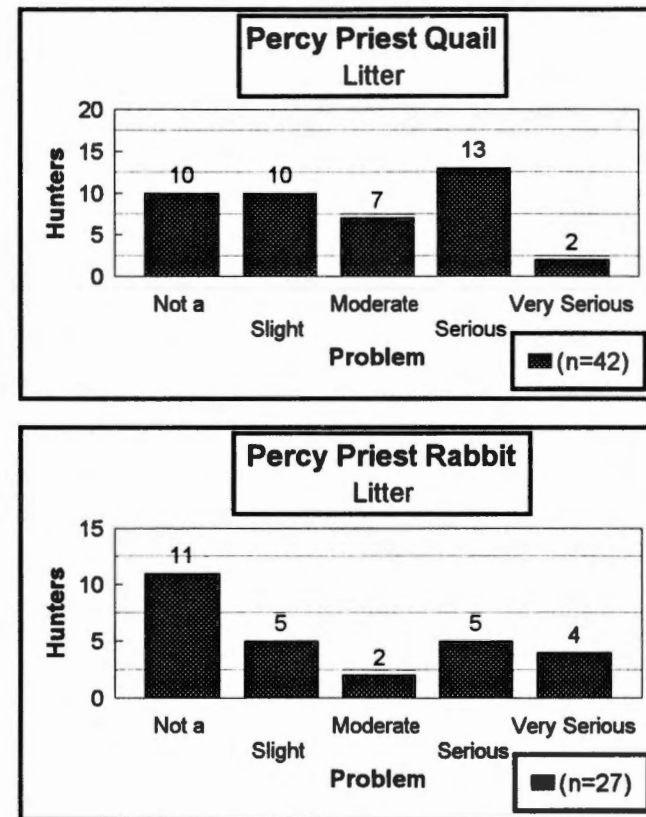
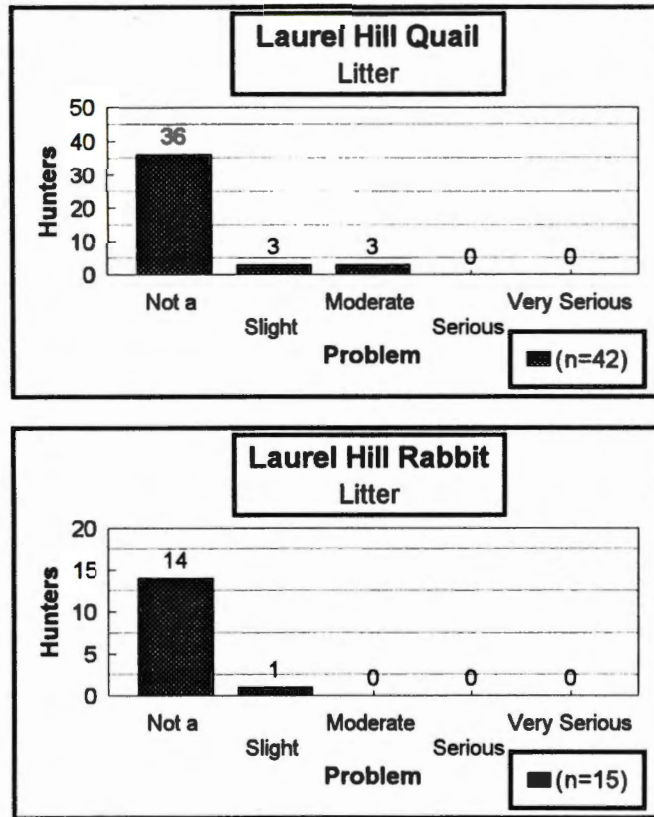


Fig. 15. Quail and rabbit hunter responses when asked to describe how serious a problem "litter" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

quail hunters felt that litter was even a slight or moderate problem. Only 1 (6.7%) of the Laurel Hill rabbit hunters felt that litter was a slight problem on the WMA.

Not Enough Quail or Rabbits.— The number of quail hunters who reported "not enough quail" to be a problem did not vary significantly between Laurel Hill and Percy Priest (Fig. 16). Neither was there a significant difference between the responses of Laurel Hill and Percy Priest rabbit hunters. Of the 42 Percy Priest quail hunters, 33 (78.6%) felt that "not enough quail" was a serious or very serious problem. Among the 45 Laurel Hill quail hunters, 29 (64.4%) felt that it was a serious or very serious problem on the WMA. Among the 15 Laurel Hill rabbit hunters, only 4 (26.7%) reported that "not enough rabbits" was a serious or very serious problem on the WMA. Of the 28 Percy Priest rabbit hunters, 13 (46.4%) reported it as a serious or very serious problem on the WMA.

Parking.— Significantly more of the Percy Priest quail and rabbit hunters reported problems with parking than did quail and rabbit hunters who used Laurel Hill (Fig. 17). There was no significant difference in the responses of the 2 hunter types on Laurel Hill or on Percy Priest. Nine (25%) of the 36 Percy Priest quail hunters and 11 (42.3%) of the 26 Percy Priest rabbit hunters considered parking a serious or very serious problem on the WMA. In contrast, none of the Laurel Hill quail or rabbit hunters felt that parking was a serious or very serious problem.

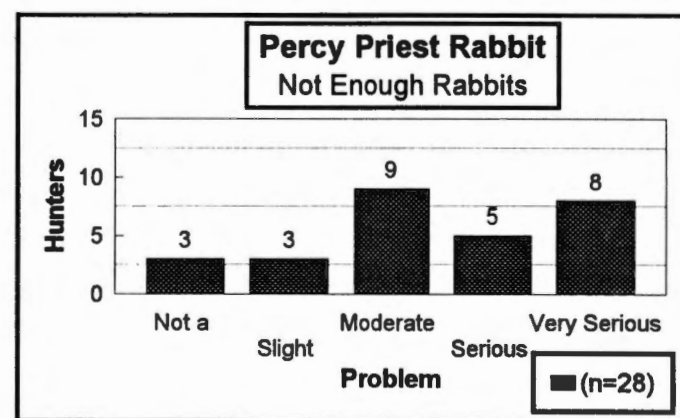
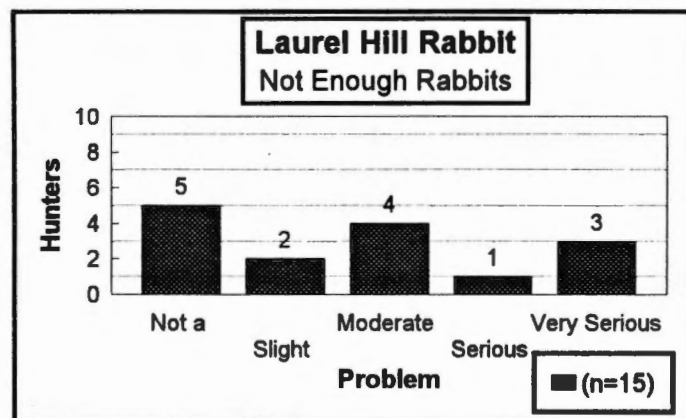
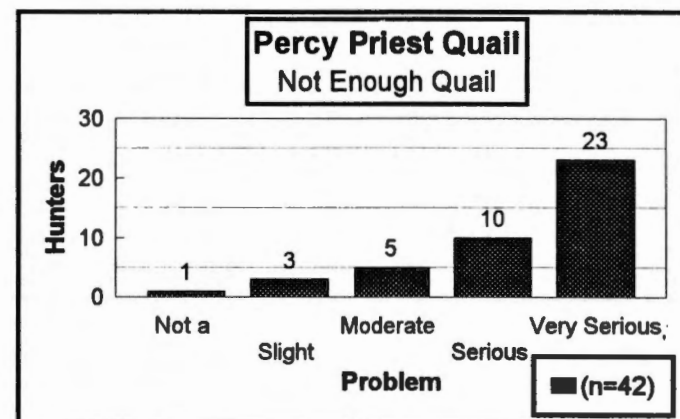
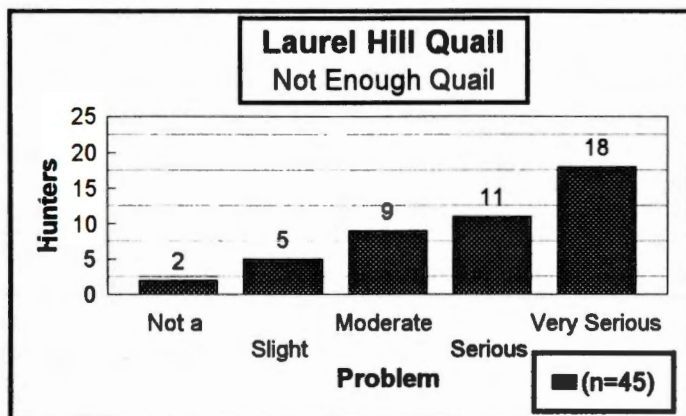


Fig. 16. Quail and rabbit hunter responses when asked to describe how serious a problem "Not enough quail or rabbits" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

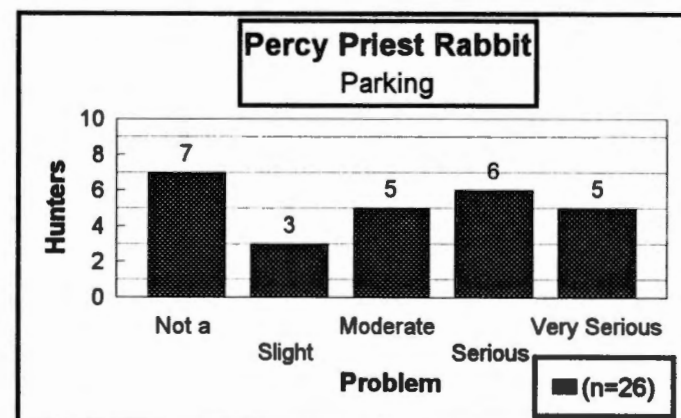
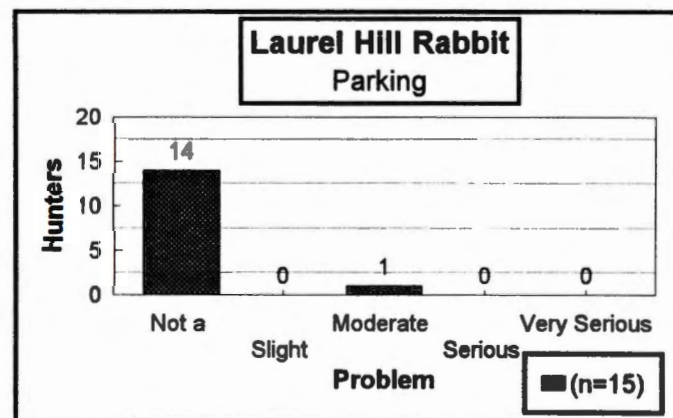
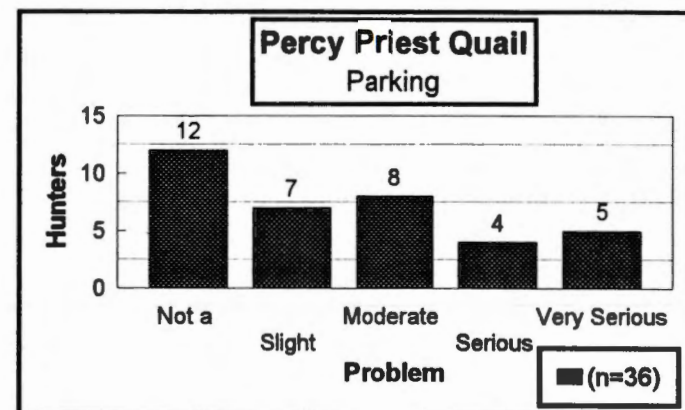
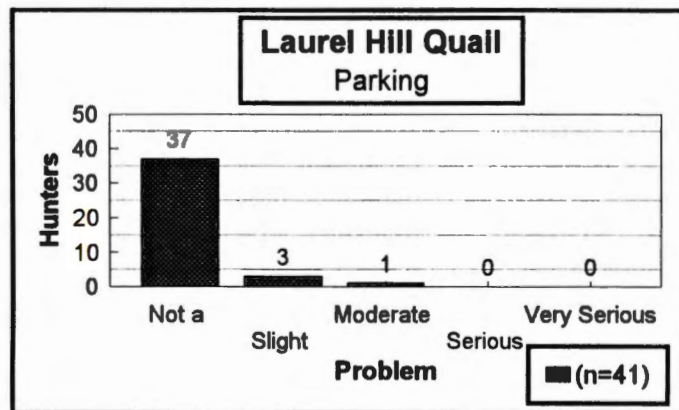


Fig. 17. Quail and rabbit hunter responses when asked to describe how serious a problem "Parking" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Brush Too Thick for Dogs or Hunters.— Significantly more of the Percy Priest quail and rabbit hunters found "brush too thick for dogs or hunters" to be a problem than did Laurel Hill quail or rabbit hunters (Fig. 18). The responses did not vary significantly between Laurel Hill quail and rabbit hunters or between Percy Priest quail and rabbit hunters. Fourteen (35.9%) of the 39 Percy Priest quail hunters and 8 (28.6%) of the 28 Percy Priest rabbit hunters felt that "brush too thick for dogs or hunters" was a serious or very serious problem on the WMA. Of the 45 Laurel Hill quail hunters and 15 Laurel Hill rabbit hunters, only 8 (17.8%) of the quail hunters and 1 (6.7%) of the rabbit hunters felt that it was a serious or very serious problem on the WMA.

No Up-to-Date Map of the WMA.— Significantly more of the Percy Priest rabbit hunters stated "no up-to-date map of the WMA" was a problem than did Laurel Hill rabbit hunters (Fig. 19). The responses did not vary significantly between Laurel Hill and Percy Priest quail hunters, between Laurel Hill quail and rabbit hunters, or between Percy Priest quail and rabbit hunters. Six (24%) of the 25 Percy Priest rabbit hunters indicated it was a serious or very serious problem, compared to only 1 (7.1%) of the 14 Laurel Hill rabbit hunters. Among the 41 Percy Priest quail hunters, 6 (14.6%) reported the lack of a map of the WMA to be a serious or very serious problems. Only 4 (9.8%) of the 41 Laurel Hill quail hunters reported the lack of map to be a serious problem.

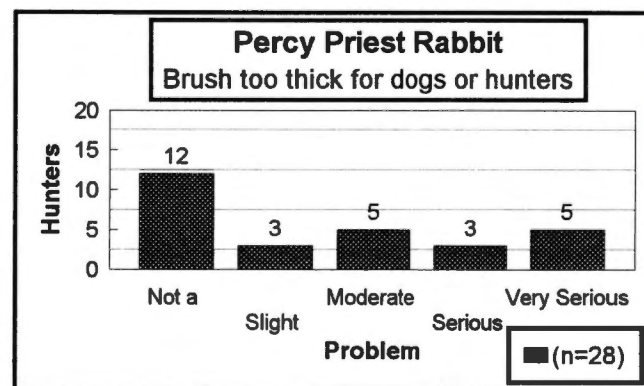
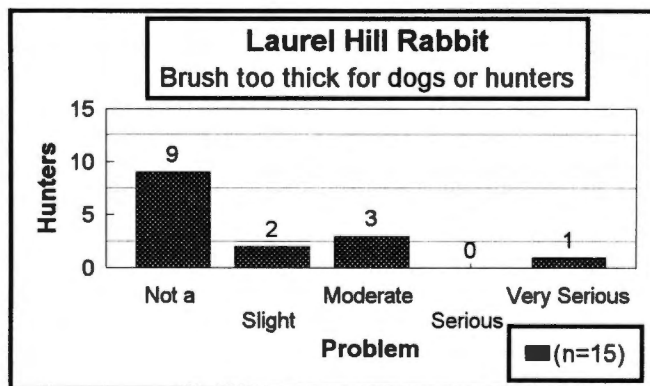
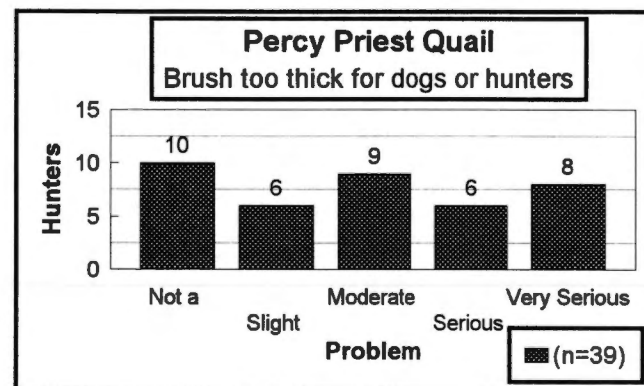
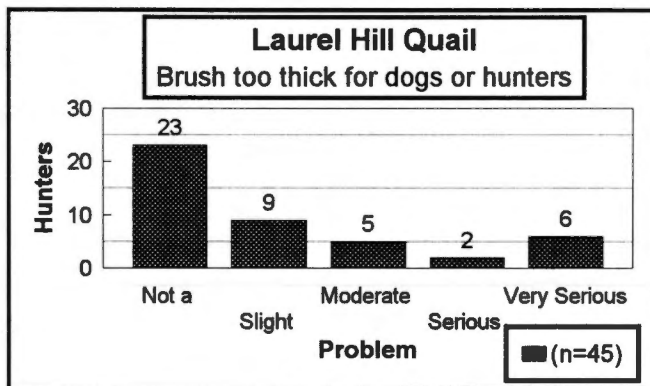


Fig. 18. Quail and rabbit hunter responses when asked to describe how serious a problem "Brush too thick for dogs or hunters" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

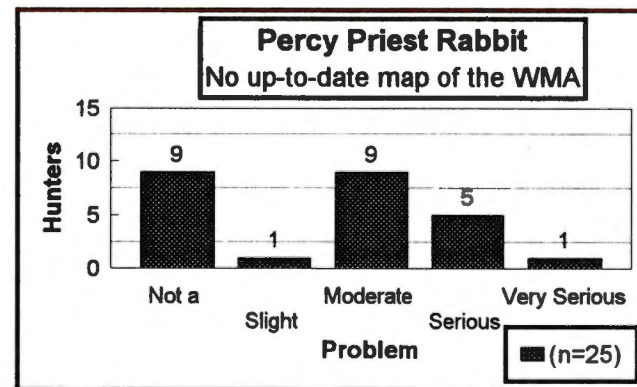
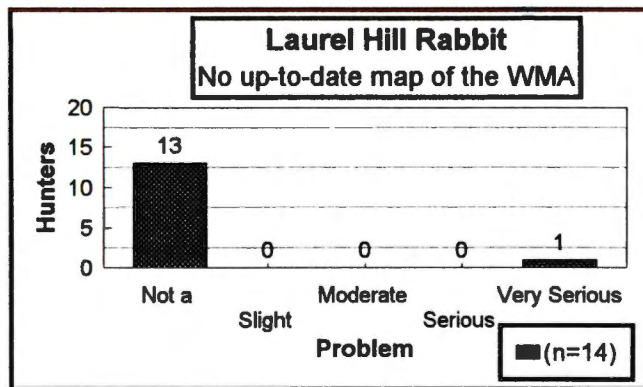
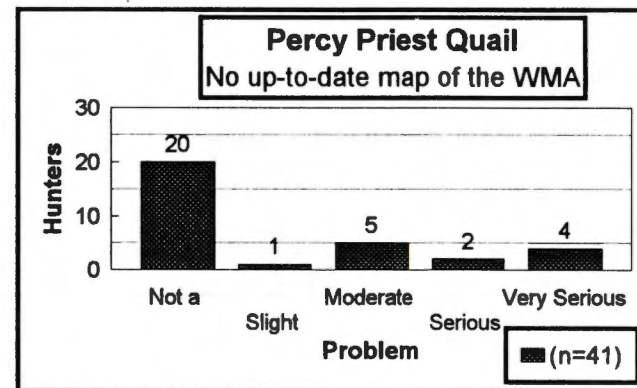
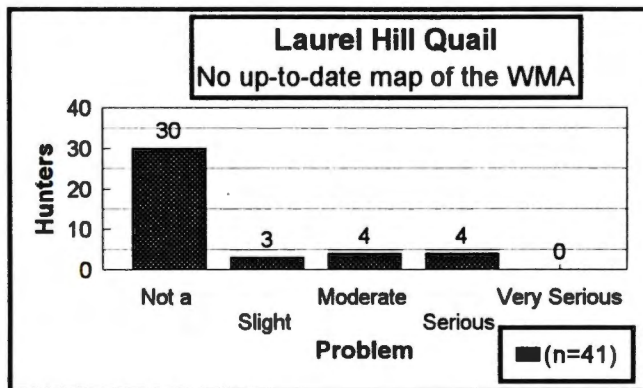


Fig. 19. Quail and rabbit hunter responses when asked to describe how serious a problem "No up-to-date map of the WMA" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Vandalism.— Significantly more of the Percy Priest quail and rabbit hunters stated that vandalism was a problem than did Laurel Hill quail and rabbit hunters (Fig. 20). Hunter responses did not vary significantly between quail hunters and rabbit hunters using the same WMA. Nine (22.5%) of the 40 Percy Priest quail hunters and 6 (21.4%) of the 28 Percy Priest rabbit hunters felt that vandalism is a serious or very serious problem on the WMA. In contrast, all of the Laurel Hill rabbit hunters and 41 (93.2%) of the 44 Laurel Hill quail hunters felt that vandalism was not a problem.

Not Enough Information Signs.— Significantly more of the Percy Priest rabbit hunters found "not enough information signs" to be a problem on the WMA than did Percy Priest quail hunters or Laurel Hill rabbit hunters (Fig. 21). The hunter responses did not vary significantly between Laurel Hill and Percy Priest quail hunters or between Laurel Hill quail hunters and Laurel Hill rabbit hunters. Eleven (37.9%) of the Percy Priest rabbit hunters (n=29) indicated that a lack of information signs was a serious or very serious problem on the WMA, compared to only 2 (5%) of the 40 Percy Priest quail hunters. Only 1 (6.7%) of the 15 Laurel Hill rabbit hunters and 5 (11.4%) of the 44 Laurel Hill quail hunters felt that the lack of information signs was a serious or very serious problem.

Not Enough Wildlife Officer Patrols.— In view of the perceived problems with litter and vandalism, it could have been expected that significantly more of Percy Priest quail and rabbit hunters reported that "not enough Wildlife Officer patrols" was a problem than did

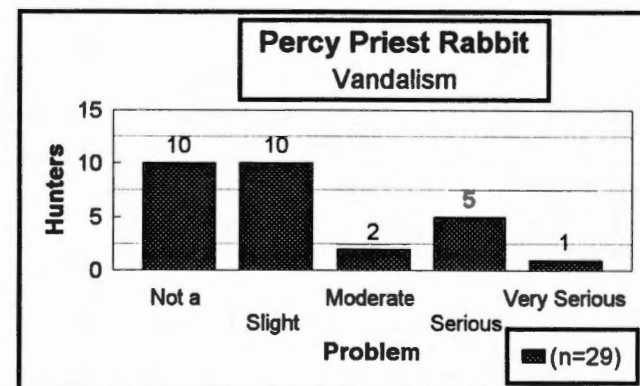
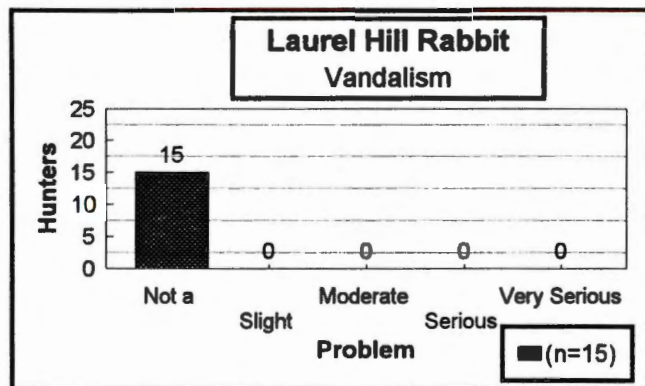
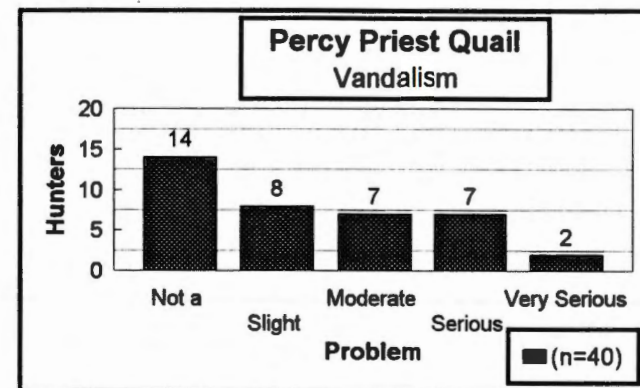
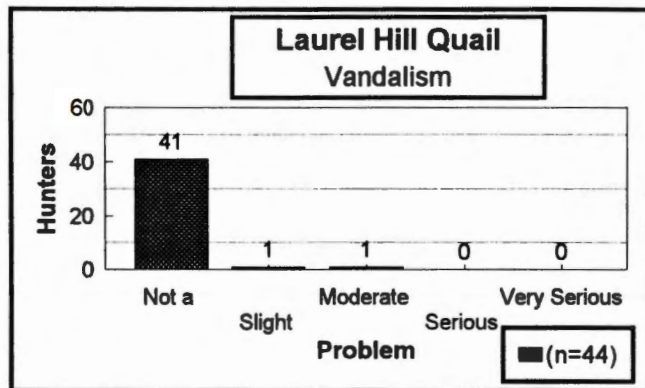


Fig. 20. Quail and rabbit hunter responses when asked to describe how serious a problem "Vandalism" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

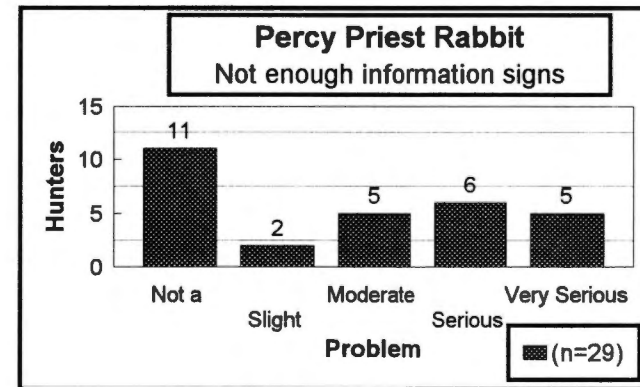
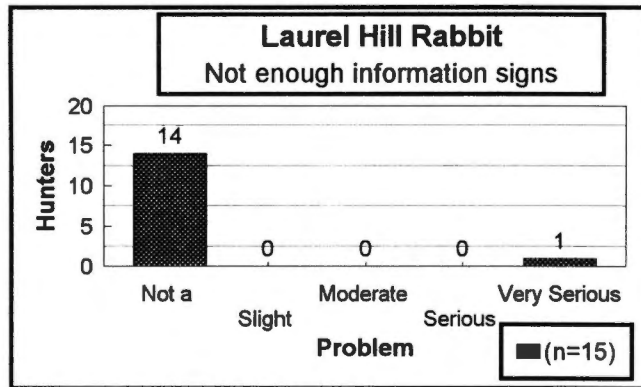
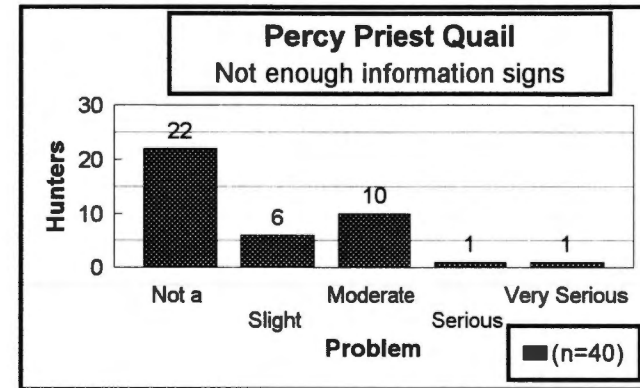
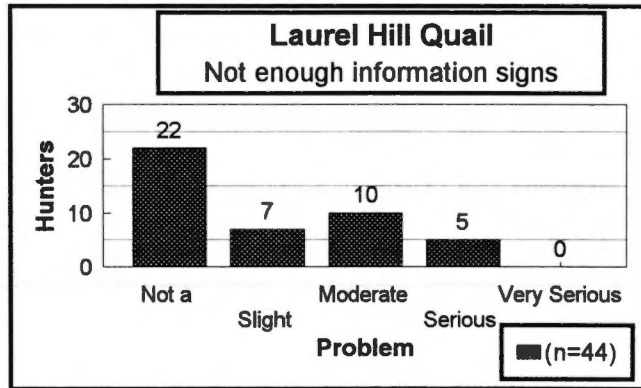


Fig. 21. Quail and rabbit hunter responses when asked to describe how serious a problem "Not enough information signs" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County Tennessee, during the 1990-91 and 1991-92 small game seasons.

Laurel Hill quail and rabbit hunters (Fig. 22). The responses did not vary significantly between quail and rabbit hunters on each WMA. Six (15.4%) of the 39 Percy Priest quail hunters and 4 (14.3%) of the 28 Percy Priest rabbit hunters felt that the lack of patrols was a serious or very serious problem on the WMA. Only 1 (2.4%) Laurel Hill quail hunter indicated that lack of patrols was a serious problem on the WMA. None of the Laurel Hill rabbit hunters reported that it was a serious problem.

Management Preferences

The hunters were asked their opinion of potential management actions that could be performed on the WMA. They were given a list of statements and were asked to choose the response that best described their feelings about the management action. Their choices were "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree."

Improve Parking Areas.— As significantly more of the Percy Priest hunters felt that parking was a problem than did hunters on Laurel Hill, it is not surprising that significantly more of the Percy Priest quail and rabbit hunters agreed with the statement "improve parking areas" than did Laurel Hill quail and rabbit hunters (Fig. 23). There was no significant difference between the responses of the 2 groups of hunters on Laurel Hill or on Percy Priest. Twenty-one (51.2%) of the 41 Percy Priest quail hunters and 19 (65.5%) of the Percy Priest rabbit hunters either agreed or strongly agreed with the statement. Among Laurel Hill hunters, 10 (23.3%) of the 43 responding quail hunters and 3 (20%) of the 15 rabbit hunters either agreed or strongly agreed.

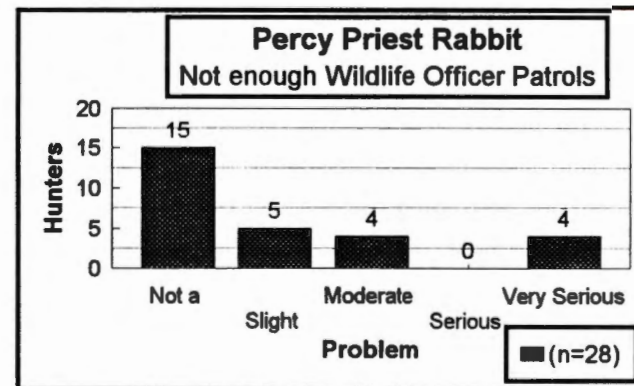
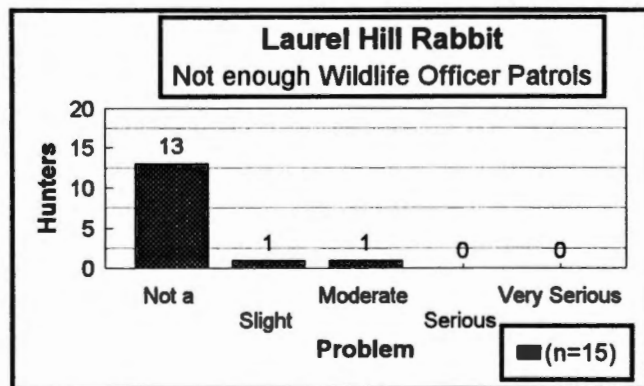
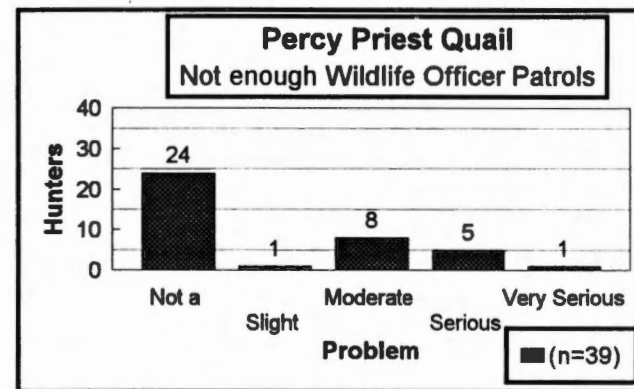
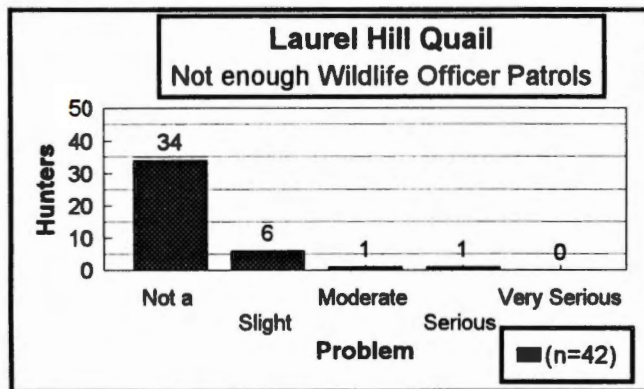
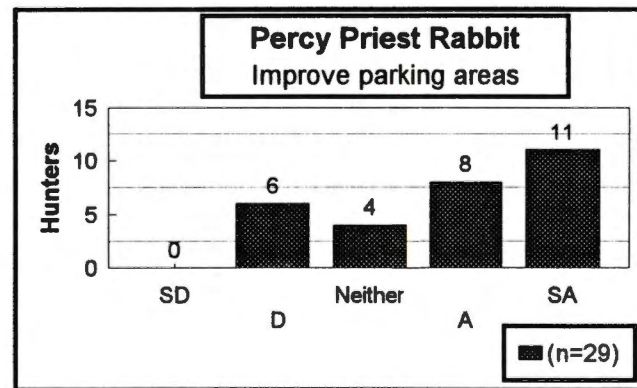
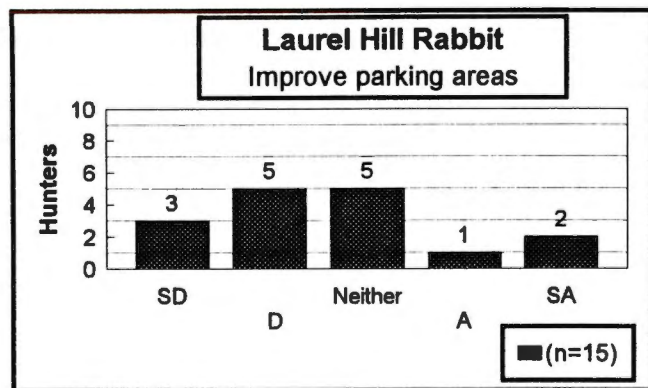
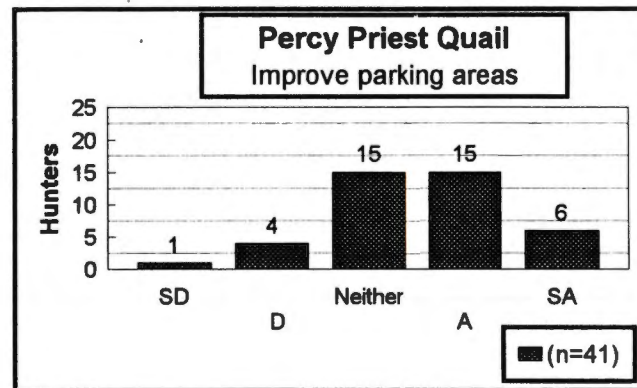
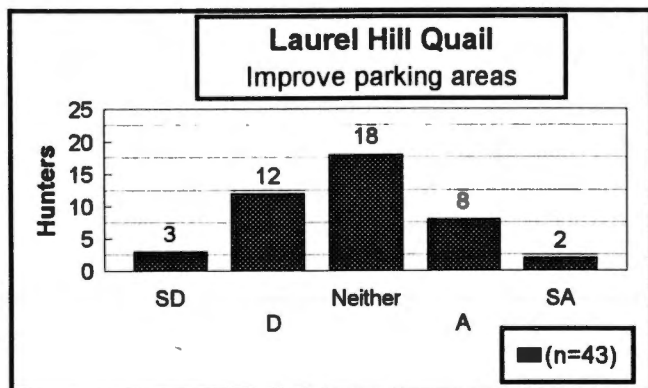


Fig. 22. Quail and rabbit hunter responses when asked to describe how serious a problem "Not enough Wildlife Officer patrols" was on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

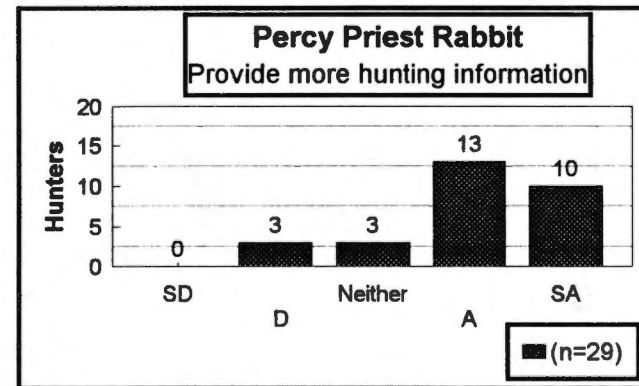
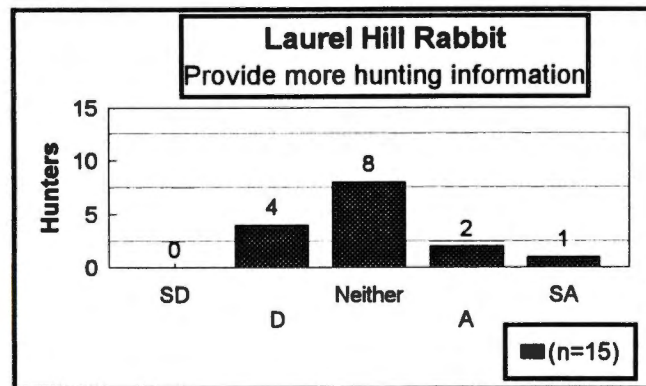
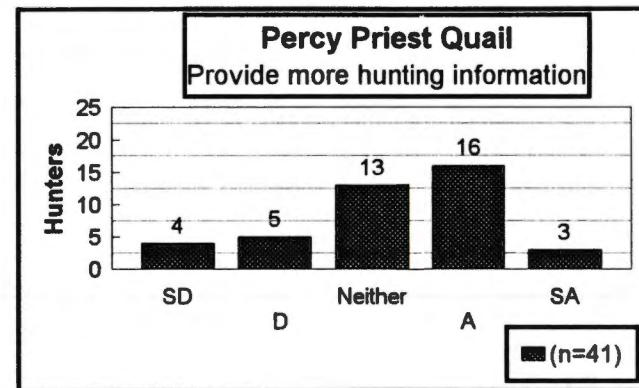
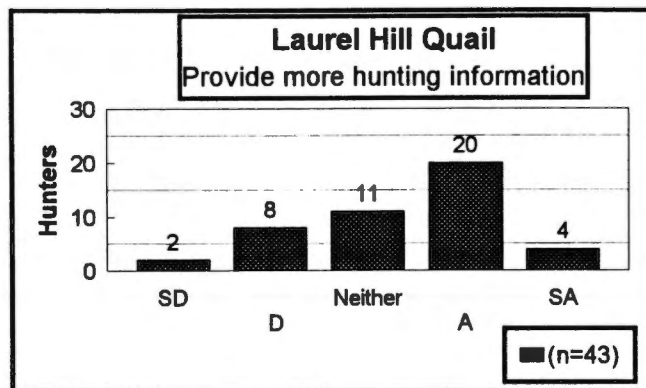


SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 23. Quail and rabbit hunter responses when asked to describe their agreement with the statement "Improve parking areas" in reference to their impressions of Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

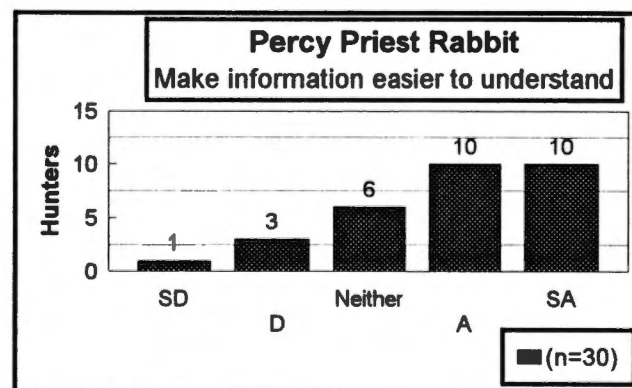
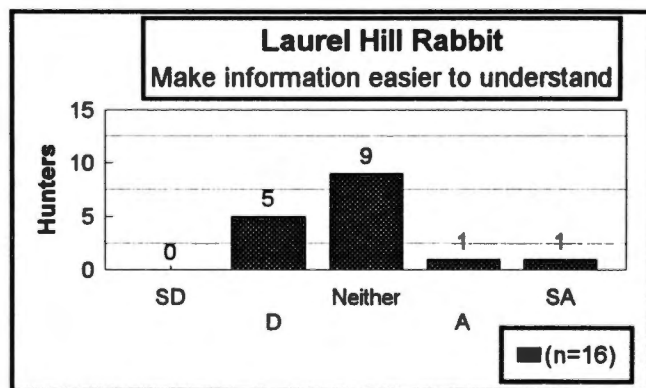
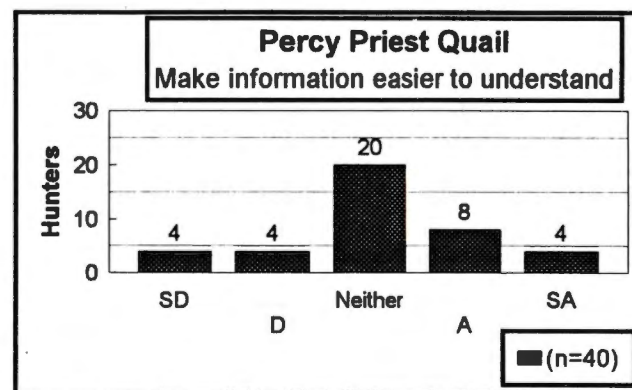
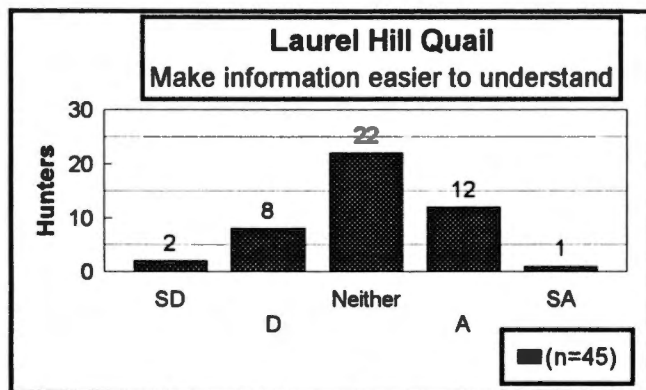
Provide More Hunting Information.— Significantly more of the Percy Priest rabbit hunters agreed with the statement "provide more hunting information" than did Laurel Hill rabbit hunters and Percy Priest quail hunters (Fig. 24). The responses did not vary significantly between Laurel Hill quail hunters and rabbit hunters or between Laurel Hill quail hunters and Percy Priest quail hunters. Twenty-three (79.3%) of the 29 Percy Priest rabbit hunters agreed or strongly agreed that more hunting information should be provided. Among the 41 Percy Priest quail hunters, 19 (46.3%) felt that more hunting information should be provided. Similarly, 24 (53.3%) of the 45 Laurel Hill quail hunters either agreed or strongly agreed with the statement. Only 3 (20%) of the 15 Laurel Hill rabbit hunters either agreed or strongly agreed with the statement.

Make Information Easier to Understand.— Significantly more of the Percy Priest rabbit hunters agreed or strongly agreed with the statement "make information easier to understand" than did Percy Priest quail hunters and Laurel Hill rabbit hunters (Fig. 25). There was no significant difference between the responses of Laurel Hill quail hunters and Laurel Hill rabbit hunters or between Laurel Hill and Percy Priest quail hunters. Of the 30 Percy Priest rabbit hunters, 20 (66.7%) agreed or strongly agreed that the information should be made easier to understand. Only 12 (30%) of the 40 Percy Priest quail hunters agreed or strongly agreed. Thirteen (28.9%) of the 45 Laurel Hill quail hunters and only 2 (12.5%) of the 16 Laurel Hill rabbit hunters either agreed or strongly agreed with the statement.



SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 24. Quail and rabbit hunter responses when asked to describe their agreement with the statement "Provide more hunting information" in reference to their impressions of Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.



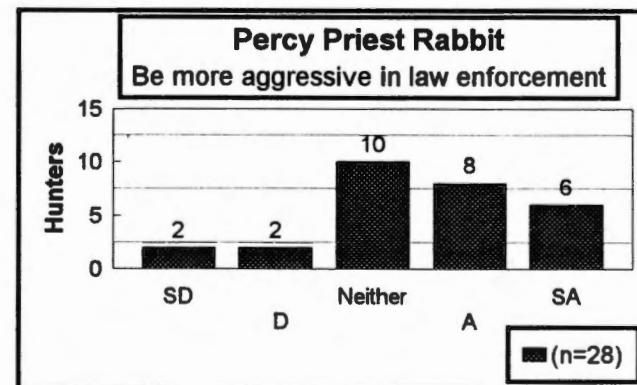
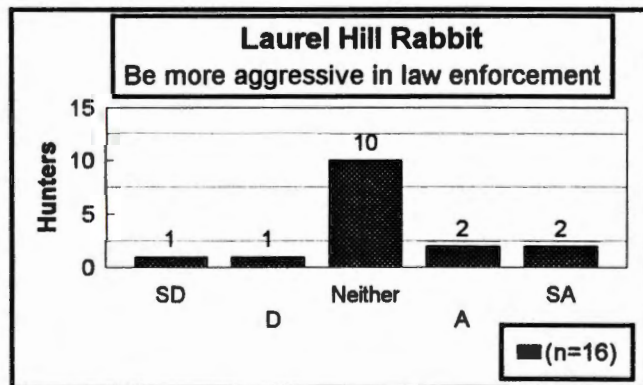
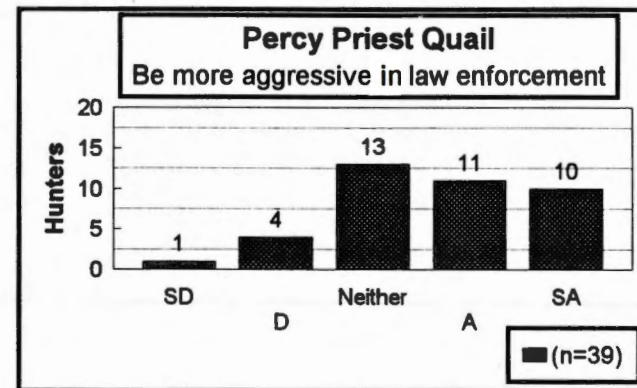
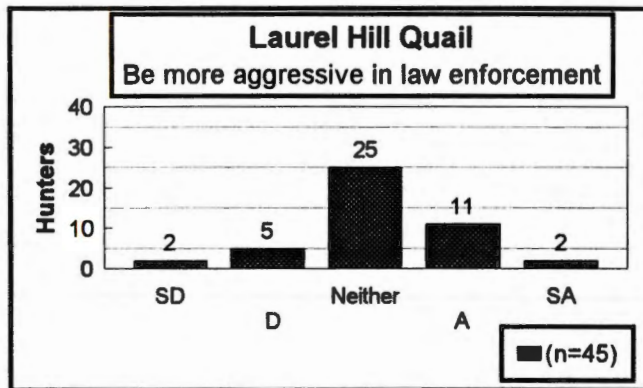
SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 25. Quail and rabbit hunter responses when asked to describe their agreement with the statement "Make information easier to understand" in reference to their impressions of Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Be More Aggressive in Law Enforcement.— Many of the hunters felt that there should be more aggressive law enforcement on the WMA (Fig. 26). Significantly more of the Percy Priest quail hunters agreed with the statement that "more aggressive law enforcement" was needed than did Laurel Hill quail hunters. The responses of Laurel Hill quail and rabbit hunters or Percy Priest quail and rabbit hunters did not vary significantly, nor did the responses of Laurel Hill and Percy Priest rabbit hunters. Of the 39 Percy Priest quail hunters, 21 (53.8) agreed or strongly agreed with the statement. Thirteen (28.9%) of the 45 Laurel Hill quail hunters agreed or strongly agreed. Among the 16 Laurel Hill rabbit hunters, 4 (25%) agreed or strongly agreed that there should be more aggressive law enforcement on the WMA. Half of the 28 Percy Priest rabbit hunters agreed or strongly agreed.

Importance of the WMAs

The hunters were asked to rank the importance of the Percy Priest or Laurel Hill as a quail or rabbit hunting area to them. Their choices were "not at all important" "slightly important," "moderately important," "very important," and "extremely important." The importance of the WMAs did not vary significantly among the 4 hunter groups. Most of the hunters said that the WMAs were very or extremely important to them (Fig. 27). Twenty-four (53.7%) of the 41 Percy Priest quail hunters held the WMA to be very or extremely important to them, compared to only 6 (14.6%) who indicated that Percy Priest was not at all or slightly important to them. Of the 20 responding Percy Priest rabbit hunters, the WMA was very or extremely important to 13 (65%) and was



SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 26. Quail and rabbit hunter responses when asked to describe their agreement with the statement "Be more aggressive in law enforcement" in reference to their impressions of Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

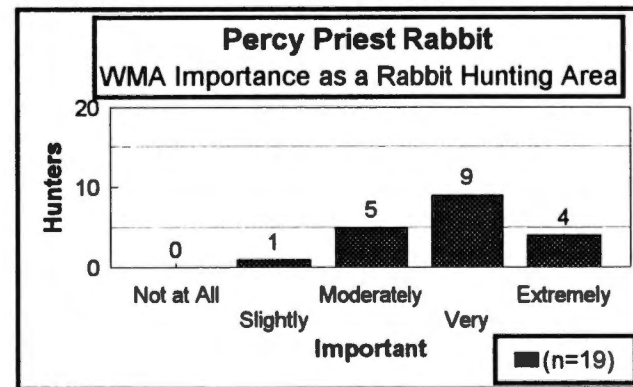
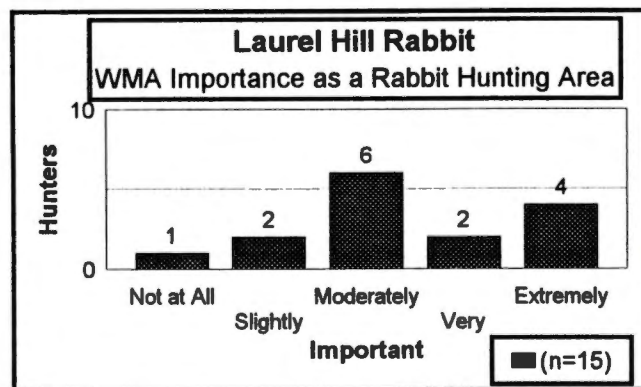
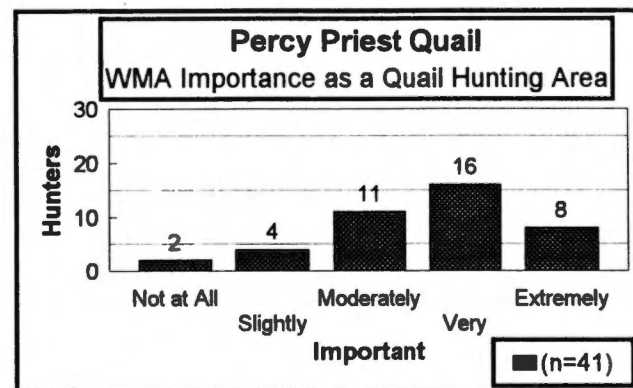
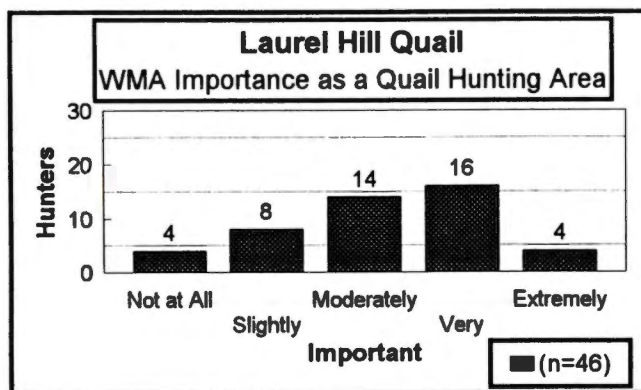


Fig. 27. Responses of quail and rabbit hunters that used Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons when asked to rate the importance of the WMA as a quail or rabbit hunting area.

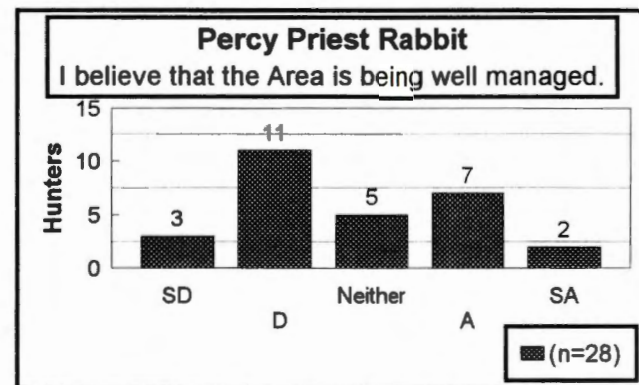
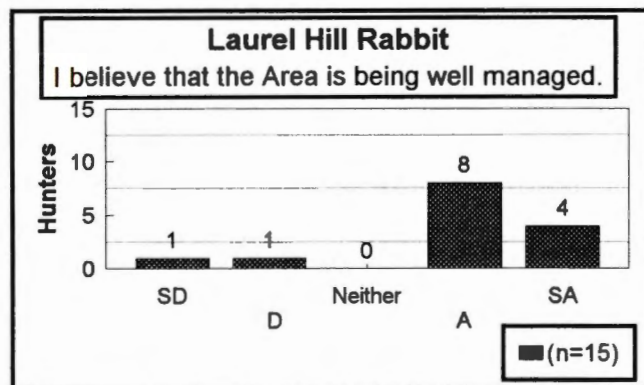
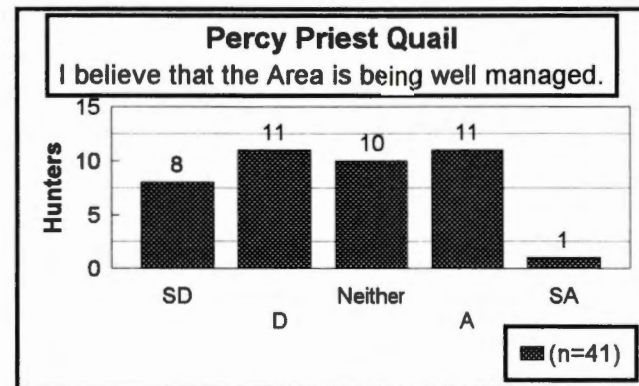
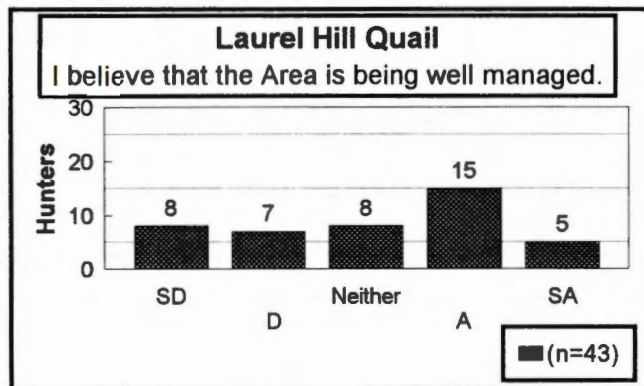
slightly important to only 1 (5%). Among the 46 Laurel Hill quail hunters, 20 (48.8%) indicated that the WMA was very or extremely important to them and 12 (26.1%) reported that it was not at all or only slightly important. Six (40%) of the 15 Laurel Hill rabbit hunters reported that the WMA was very or extremely important to them and 3 (20%) stated that it was not at all or slightly important.

Is the WMA Well Managed?

The hunters were asked to rate the degree to which they agreed with the statement "I believe that the area is being well managed." There was no significant difference among the responses of the 4 hunter groups. Hunter opinions were divided on this topic (Fig. 28). Twenty (46.5%) of the 43 Laurel Hill quail hunters agreed or strongly agreed that the WMA is well managed and 15 (34.9%) disagreed or strongly disagreed. Of the 14 Laurel Hill rabbit hunters, 12 (85.7%) of them agreed the WMA was well managed. Among the 41 responding Percy Priest quail hunters, 19 (46.3%) disagreed or strongly disagreed with the statement and 12 (29.3%) of them agreed or strongly agreed. Similarly, 14 (50%) of 28 Percy Priest rabbit hunters stated that the WMA was not well managed and 9 (32.1%) agreed that it was well managed.

Approval of Hunting Regulations

The hunters were asked if they approved of quail or rabbit hunting regulations on the WMA (Fig. 29). They were asked to choose from the responses "definitely no," "probably no," "probably yes," and "definitely yes" in reference to the statement, "In



SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 28. Quail and rabbit hunter responses when asked to describe their agreement with the statement "I believe that the Area is being well managed." in reference to their hunting visits to Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

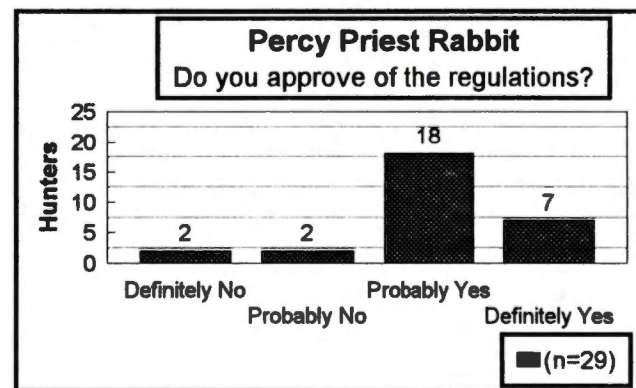
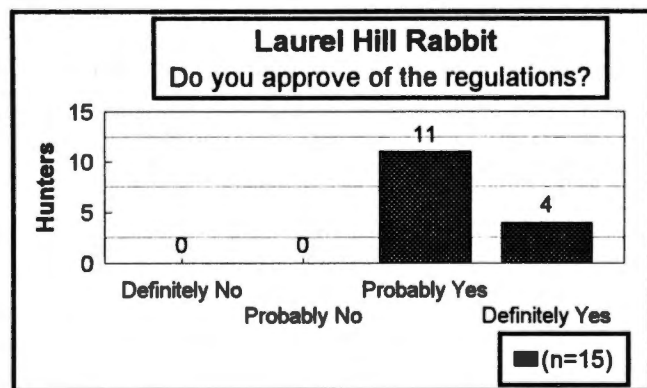
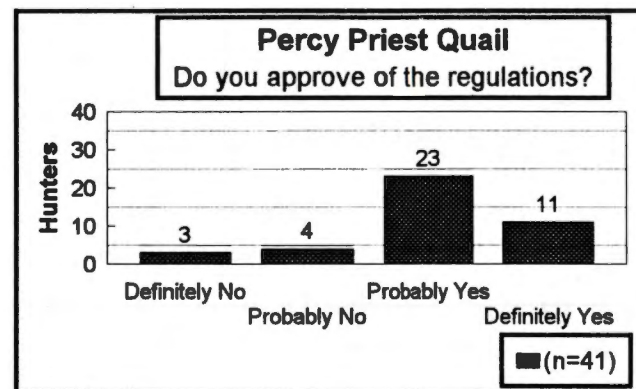
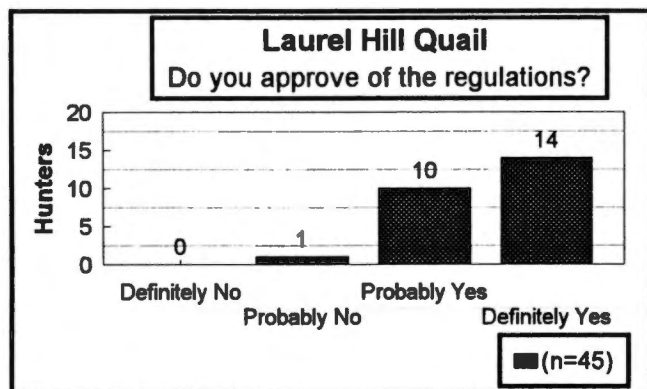


Fig. 29. The responses of quail and rabbit hunters when asked if they approve of the hunting regulations on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

general, do you approve of the present regulations for quail/rabbit hunting in Laurel Hill/Percy Priest Wildlife Management Area?" Approval of the existing regulations did not vary significantly among the 4 hunter groups. Most of the hunters agreed with the regulations on the WMA. All of the Laurel Hill rabbit hunters agreed with the regulations. Only 6 (13.3%) of the 45 Laurel Hill quail hunters disagreed with the hunting regulations on the WMA. Only 7 (17.1%) of the 41 responding Percy Priest quail hunters and 4 (13.8%) of the 29 Percy Priest rabbit hunters disagreed with regulations on the WMA.

The hunters were also asked their opinions of the number of days per week open to hunting, season length, and bag limits. In general, the hunters liked the present regulations.

Days Open per Week.— Significantly more quail hunters than rabbit hunters felt that there were too many days open per week on Percy Priest. There was no significant difference in the opinions of the number of days open per week held by Laurel Hill quail and rabbit hunters. Ten (23.8%) of 42 Percy Priest quail hunters indicated that hunting was permitted too many days per week on the WMA; 32 (76.2%) indicated that the right number of days were open. All of the 29 responding Percy Priest rabbit hunters agreed with the number of days per week that were open to rabbit hunting. Among the 44 Laurel Hill quail hunters, 6 (13.6%) thought that hunting was permitted too few days, 1 (2.3%) thought there were too many days, and 37 (84.1%) indicated that the current hunting opportunity was correct. Among the 15 Laurel Hill rabbit hunters, 5 (33.3%)

thought there were too few days per week open, 2 (13.3%) thought there were too many days per week open, and 8 (53.4%) thought that right number of days were open per week on the WMA.

Season Length.— Significantly more of Laurel Hill rabbit hunters felt that the season was too long than did Percy Priest rabbit hunters. Opinions of season length did not vary significantly between the quail hunters on the 2 WMAs, between Laurel Hill quail and rabbit hunters, or between Percy Priest quail and rabbit hunters. Of the 16 Laurel Hill rabbit hunters, 6 (37.5%) felt that the season was too long, 1 (6.3%) thought that it was too short, and 9 (56.2%) thought the season was the right length. Among the 29 Percy Priest rabbit hunters, 2 (6.9%) thought that the season was too long, 2 thought that the season was too short, and 25 (86.2%) thought that the season was the right length. Of the 45 Laurel Hill quail hunters, 9 (20%) thought the season was too long, 2 (4.4%) thought it was too short, and 34 (75.6%) thought it was the right length. Similarly, of the 42 responding Percy Priest quail hunters, 8 (19.1%) thought that the season was too long, 4 (9.5%) thought that it was too short, and 30 (71.4%) thought that it was the right length.

Bag Limits.— Hunter opinions on bag limit size did not vary significantly among the 4 hunter groups. Except for a few of the Percy Priest rabbit hunters, none of the hunters thought that the legal bag limit was too small. Of the 30 responding Percy Priest rabbit hunters, 2 (6.7%) thought the bag limit was too small, 5 (16.7%) thought that it was too

high, and 23 (76.6%) thought that it the right size. Among the 40 responding Percy Priest quail hunters, 7 (17.5%) thought the bag was too high and 33 (82.5%) thought that it was the right size. Of the 15 Laurel Hill rabbit hunters, 5 (33.3%) thought the bag was too high and 10 (66.7%) thought that it was the right size. Among the 45 responding Laurel Hill quail hunters, 17 (37.8%) thought that the bag limit was too high and 28 (62.2%) thought that it was the right size.

Management Technique Preferences

The hunters were asked to choose from a list of quail or rabbit management practices, those that they believed appropriate for use on the WMA. Most of the Laurel Hill quail hunters approved of perennial and annual food plots and controlled burns, and disapproved of the release of pen-raised quail, allowing the area to develop naturally, and brush and briar removal (Fig. 30). Among the 44 Laurel Hill quail hunters that responded, 40 (90.9%) approved of the planting of perennial food plots, 36 (81.8%) approved of annual food plots, and 30 (68.2%) approved of controlled burns on the WMA. Twenty-five (56.8%) of them did not approve of the release of pen-raised quail, 20 (45.4%) of them disapproved of allowing the area to develop naturally, and 16 (36.4%) of them did not approve of brush and briar removal on Laurel Hill.

Similar to Laurel Hill quail hunters, most of the Percy Priest quail hunters approved of annual and perennial food plots and controlled burns (Fig. 31). Unlike Laurel Hill quail hunters, many of the Percy Priest quail hunters approved of the release of pen-raised quail on their WMA. Percy Priest quail hunters also disapproved of brush and

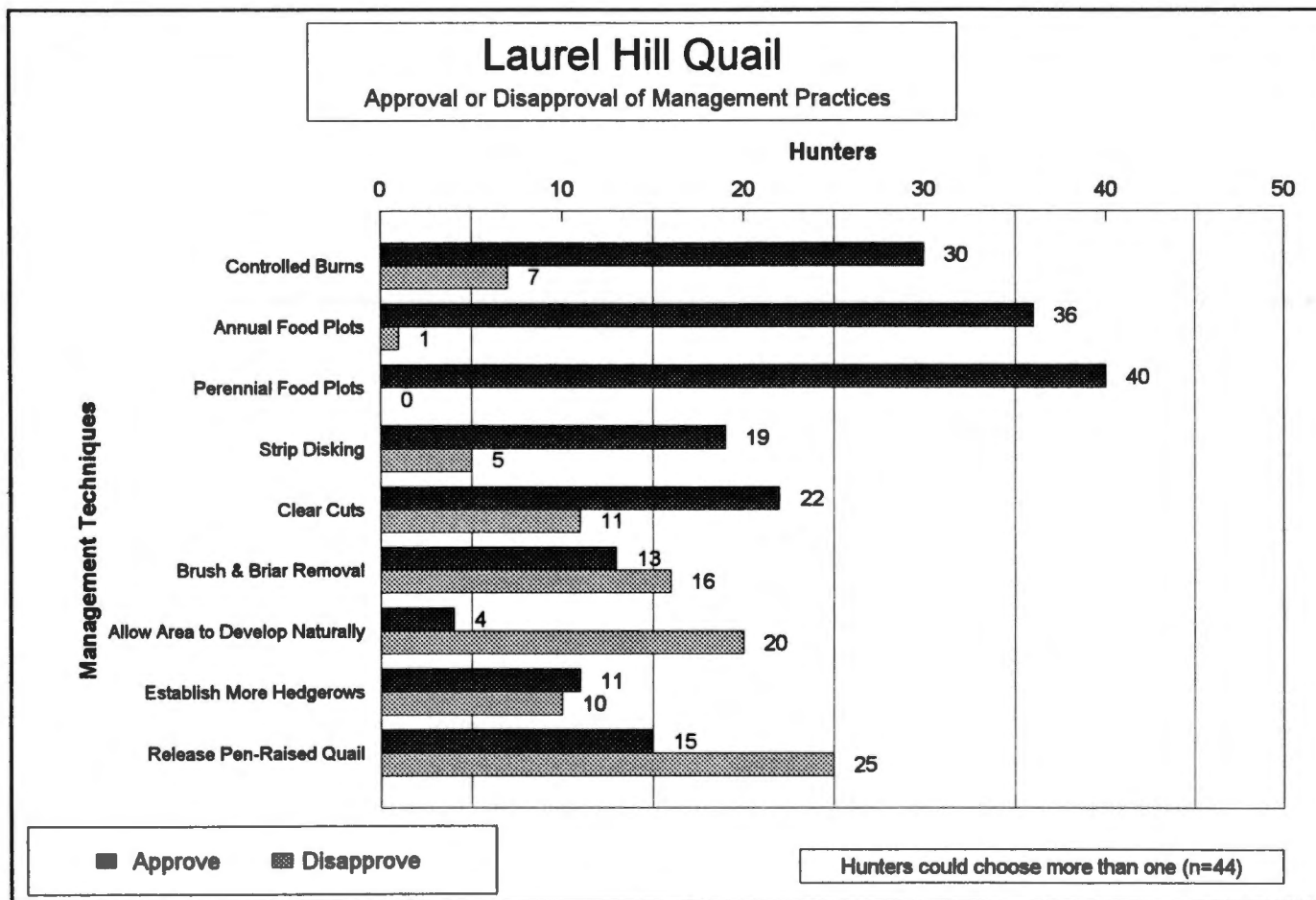


Fig. 30. Quail hunter responses when asked to choose quail management practices of which they approved or disapproved for use on Laurel Hill WMA, Lawrence County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

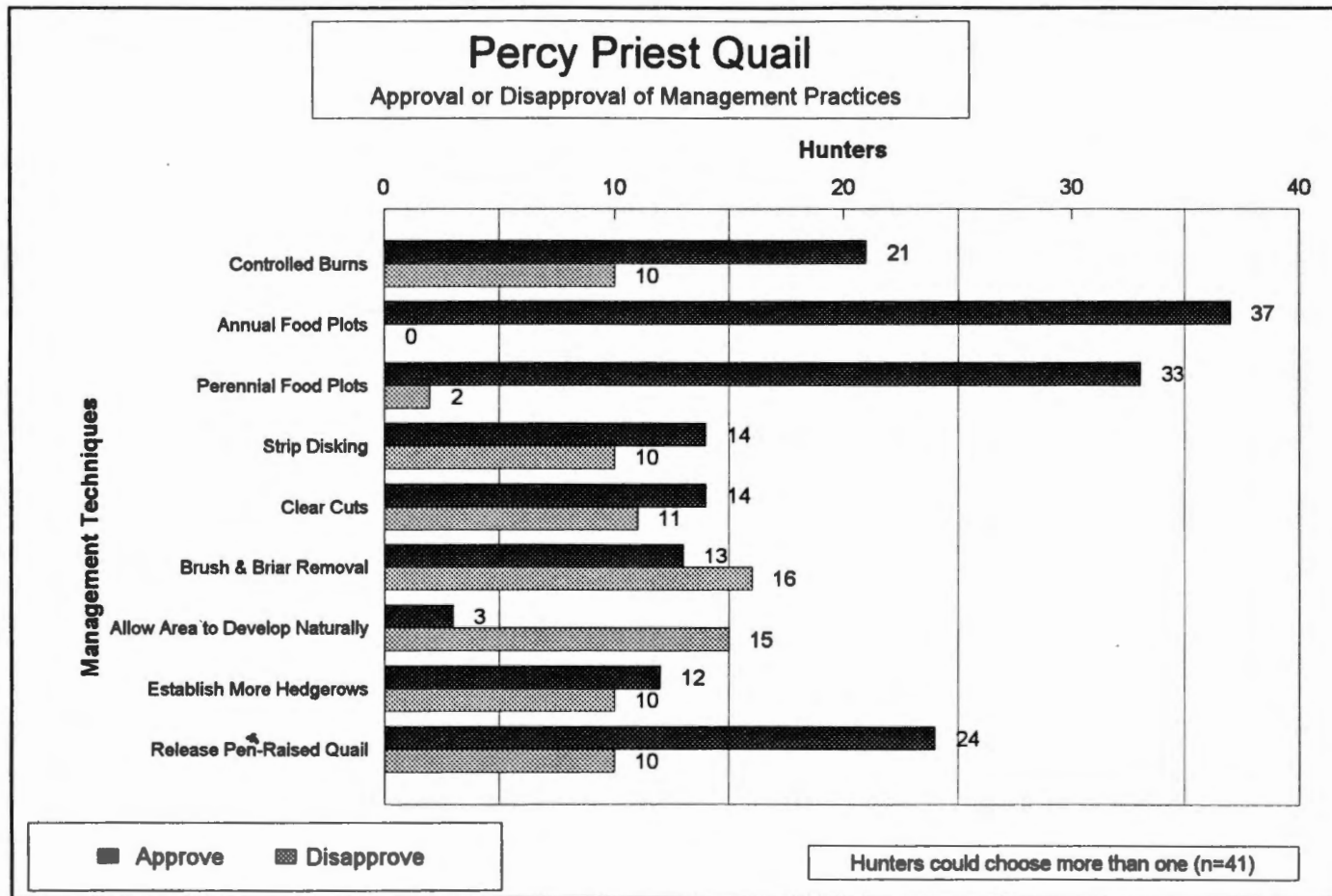


Fig. 31. Quail hunter responses when asked to choose quail management practices of which they approved or disapproved for use on Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

briar removal and allowing the area to develop naturally. Of the 41 Percy Priest quail hunters, 37 (90.2%) approved of annual food plots, 33 (80.5%) approved of perennial food plots, 24 (58.5%) approved of the release of pen-raised quail, 21 (51.2%) approved of controlled burns on Percy Priest. Sixteen (39.0%) of them disapproved of brush and briar removal and 15 (36.6%) of them disapproved of allowing the area to develop naturally.

Laurel Hill rabbit hunters preferred clover and/or bluegrass plantings, brush pile establishment, strip mowing, and the release of rabbits trapped outside the area (Fig. 32). Unlike the quail hunters, Laurel Hill rabbit hunters disapproved of the use of controlled burns on the WMA. Among the 16 responding Laurel Hill rabbit hunters, 10 (62.5%) approved of clover and/or bluegrass plantings, 9 (56.3%) approved of the establishment of brush piles, 9 approved of strip mowing, and 9 approved of the release of rabbits trapped outside the area to Laurel Hill. Ten (62.5%) of them did not like controlled burns and 9 (56.3%) of them did not like brush and briar removal on Laurel Hill.

Many of the Percy Priest rabbit hunters' preferences for and aversions to specific management practices were similar to those of Laurel Hill rabbit hunters (Fig. 33). Among the 29 Percy Priest rabbit hunters, 22 (75.9%) preferred the establishment of brush piles, 22 preferred clover and/or bluegrass plantings, 22 preferred the release of rabbits trapped from outside the area, 17 (58.6%) preferred strip mowing on the WMA. Eighteen (62.1%) of them did not like brush and briar removal and 12 (41.4%) opposed the use of controlled burns on the WMA.

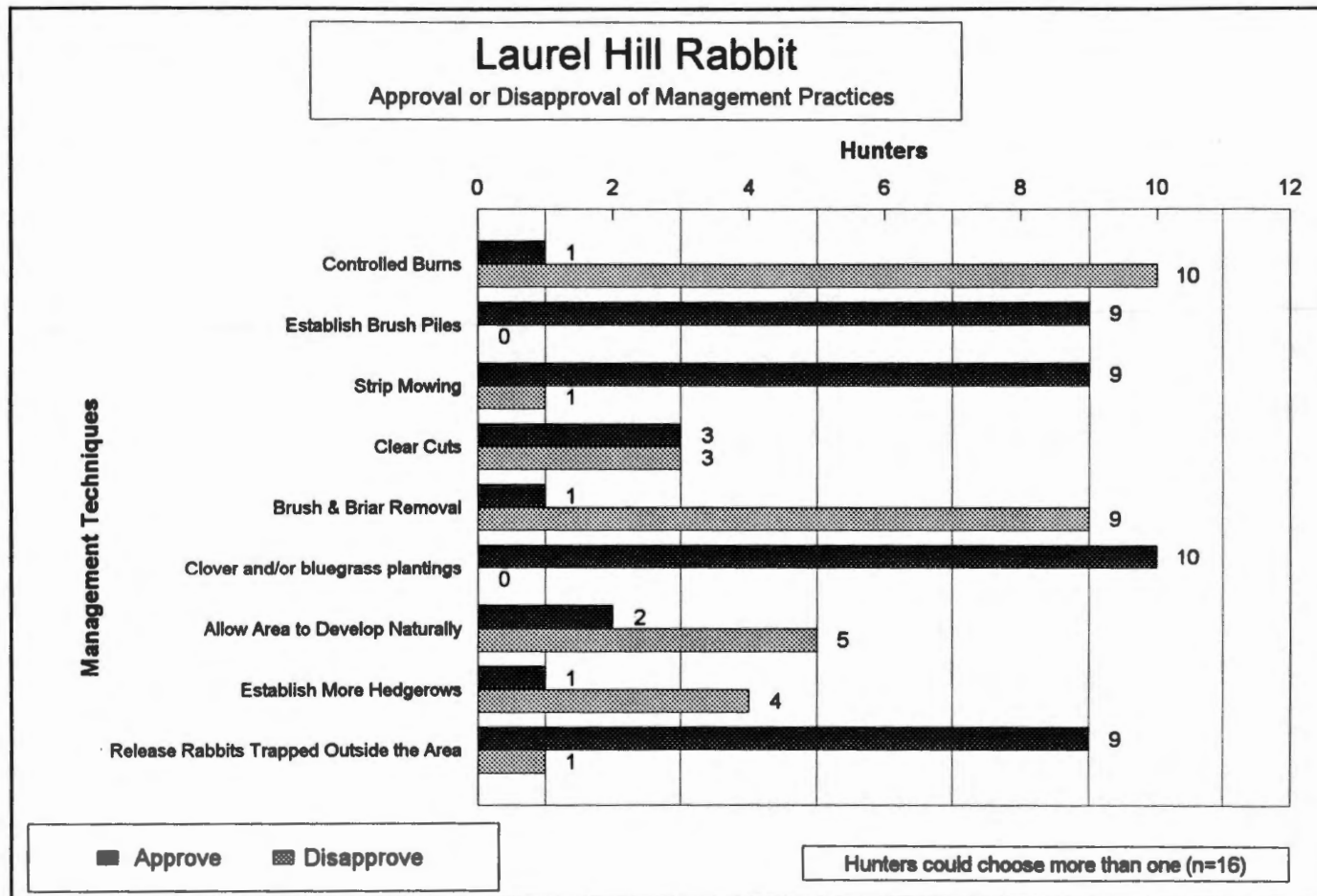


Fig. 32. Rabbit hunter responses when asked to choose rabbit management practices of which they approved or disapproved for use on Laurel Hill WMA, Lawrence County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

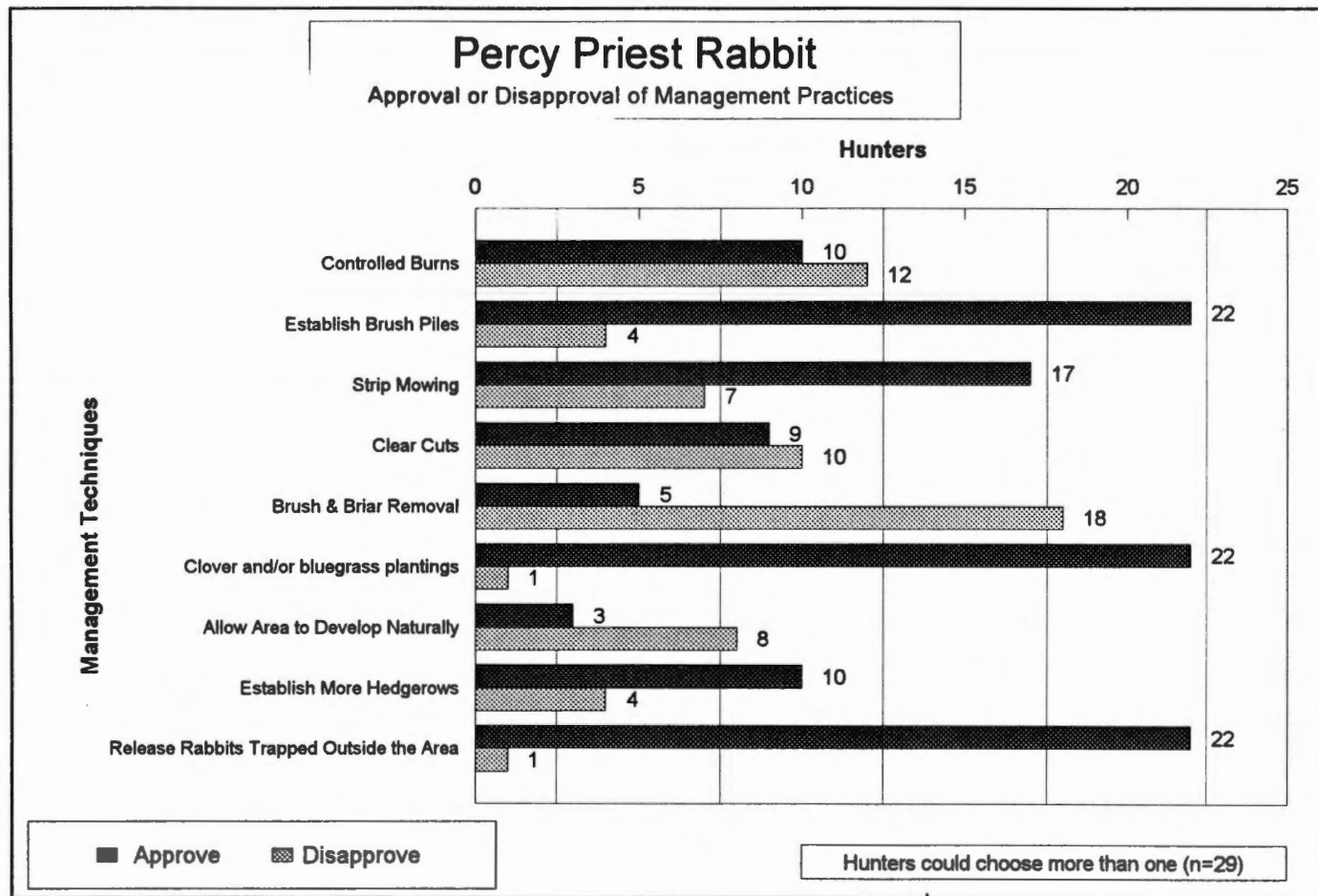


Fig. 33. Rabbit hunter responses when asked to choose rabbit management practices of which they approved or disapproved for use on Percy Priest WMA, Rutherford County, Tennessee during the 1990-91 and 1991-92 small game seasons.

Perceived Quail and Rabbit Abundance

The hunters were asked if the number of quail or rabbits was what they expected. They were also asked to compare the abundance of quail or rabbits on the WMA with those on non-WMAs and other WMAs on which they had hunted. They were also asked to compare quail and rabbit abundance on the WMAs during the two seasons with those of previous seasons.

Quail or Rabbits Seen.— The reported abundance of quail or rabbits seen on the WMAs did not vary significantly between quail or rabbit hunters on the 2 WMAs. Most of the hunters reported seeing fewer quail or rabbits than they had expected (Fig. 34). Twenty-one (67.7%) of the 31 responding Laurel Hill quail hunters reported that they saw fewer quail than expected. Of the 37 Percy Priest quail hunters, 30 (81.0%) saw less quail than expected on the WMA. Among the 10 Laurel Hill rabbit hunters, only 5 (50%) saw fewer rabbits than expected. Of the 27 Percy Priest rabbit hunters, 17 (63.0%) saw fewer rabbits on the WMA than they expected.

Quail or Rabbit Abundance Compared to Non-WMAs.— Hunter perception of quail or rabbit abundance on the WMAs compared with non-WMA areas did not vary significantly between quail or rabbit hunters on the 2 WMAs (Fig. 35). Most of the hunters reported that quail or rabbits were more abundant on non-WMA areas that they had hunted than on Percy Priest or Laurel Hill. Of the 41 responding Laurel Hill quail hunters, 25 (61.0%) felt that quail were less abundant on the WMA than on non-WMAs.

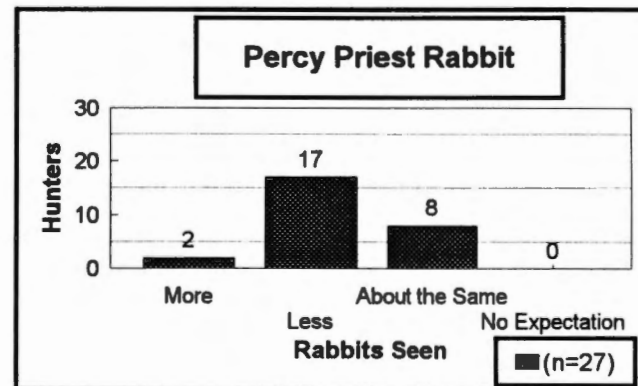
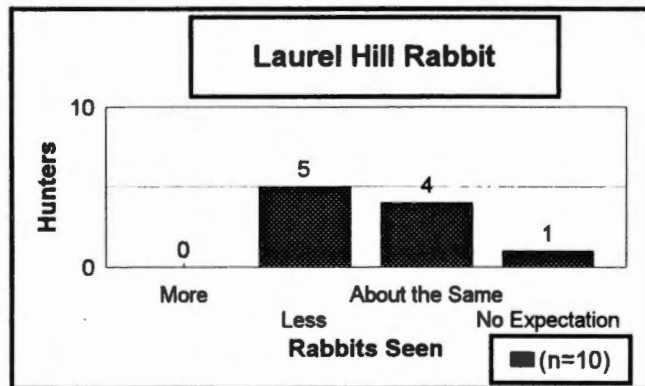
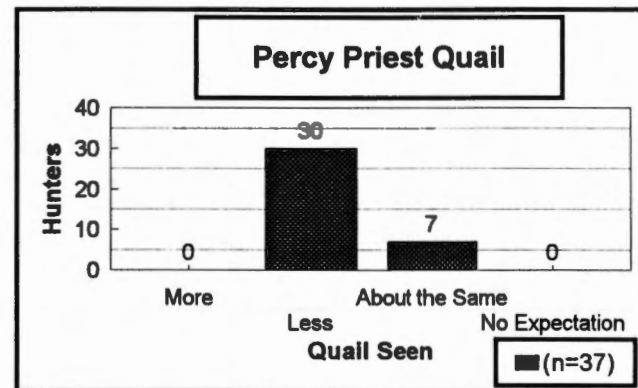
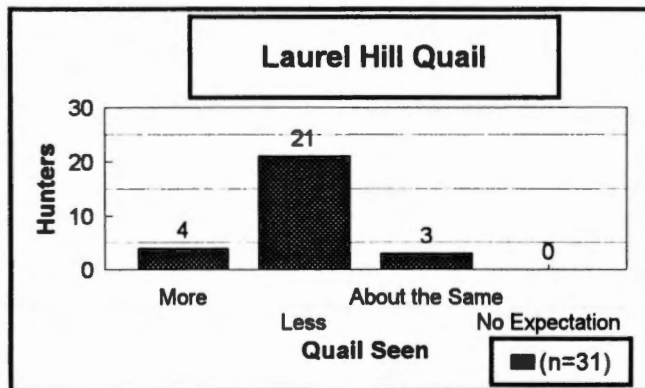


Fig. 34. Quail and rabbit hunter responses when asked if they saw more or less quail or rabbits than they expected on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

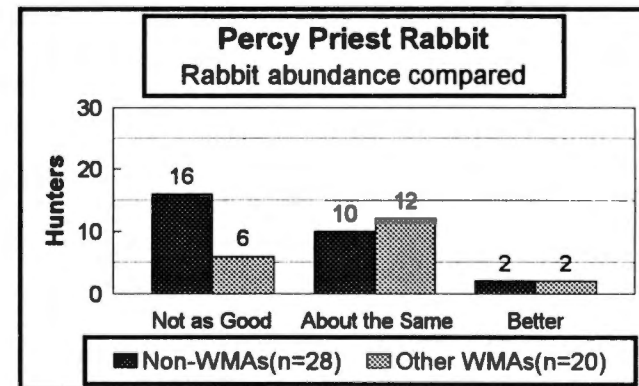
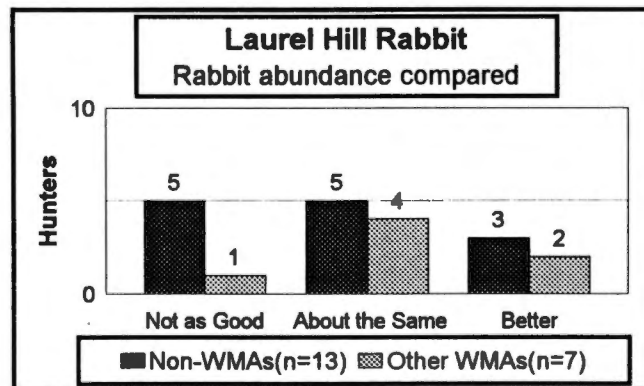
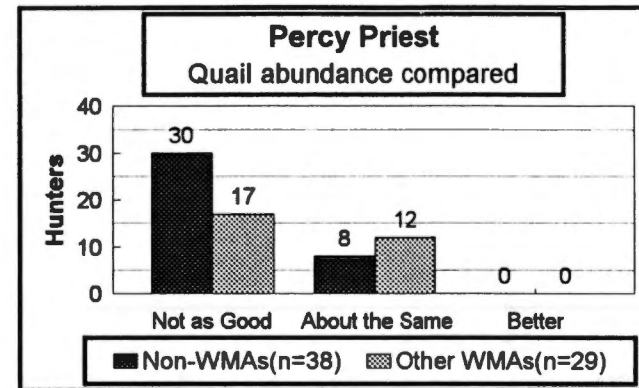
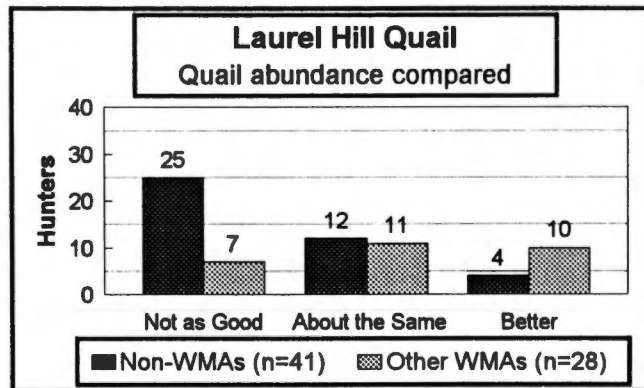


Fig. 35. Quail and rabbit hunter responses when asked to compare the abundance of quail and rabbits on other WMAs and non-WMAs that they had hunted with abundance on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Among the 38 Percy Priest quail hunters, 30 (78.9%) thought that quail were less abundant on Percy Priest than elsewhere. Only 5 (38.5%) of the Laurel Hill rabbit hunters thought that rabbits were more abundant on the non-WMAs that they had hunted. Of the 28 Percy Priest rabbit hunters, 16 (57.1%) felt that rabbits were less abundant on Percy Priest than on non-WMAs.

Quail or Rabbit Abundance Compared to Other WMAs.— The WMAs fared better when compared to other WMAs (Fig. 35). Laurel Hill quail hunters were significantly more positive about the comparative abundance of quail on the WMA than were Percy Priest quail hunters. There was no significant difference in opinion between Laurel Hill and Percy Priest rabbit hunters. Ten (35.7%) of the Laurel Hill quail hunters felt that quail were more abundant on that WMA than on other WMAs. None of Percy Priest quail hunters thought quail were more abundant on Percy Priest than another WMA. Seventeen (58.6%) of the 29 Percy Priest quail hunters thought that quail were less abundant on Percy Priest than on other WMAs. Two (28.6%) of the 7 responding Laurel Hill rabbit hunters felt that rabbits were more abundant on Laurel Hill than elsewhere. Among the 20 Percy Priest rabbit hunters, 2 (10%) thought that rabbits were more abundant there than on other WMAs.

Changes in Quail or Rabbit Abundance on the WMAs.— Most of the hunters felt that quail and rabbit abundance has declined over time on the 2 WMAs (Fig. 36). Quail or rabbit hunter perceptions of changes in quail or rabbit abundance did not vary

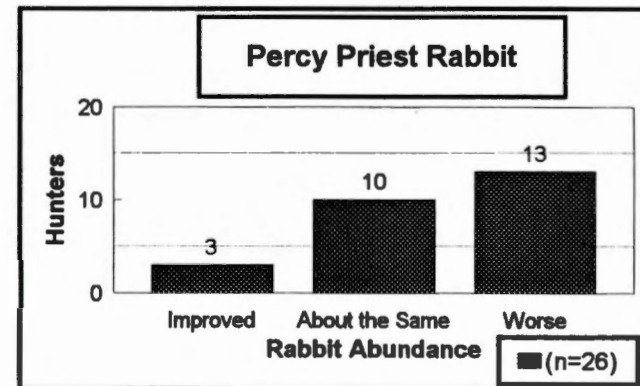
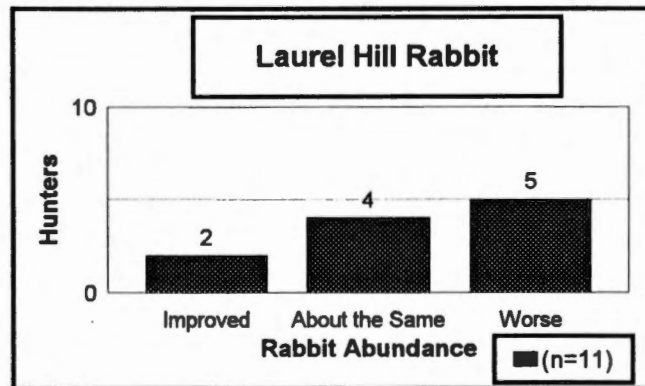
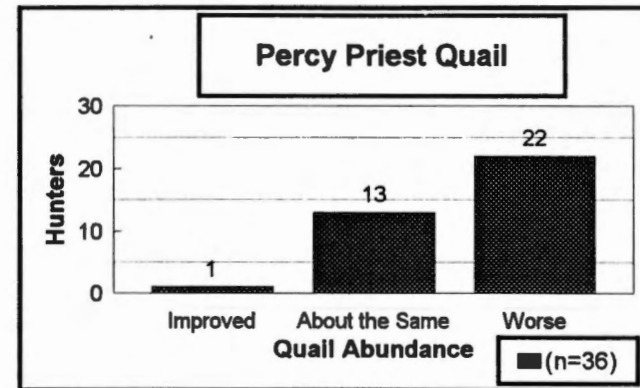
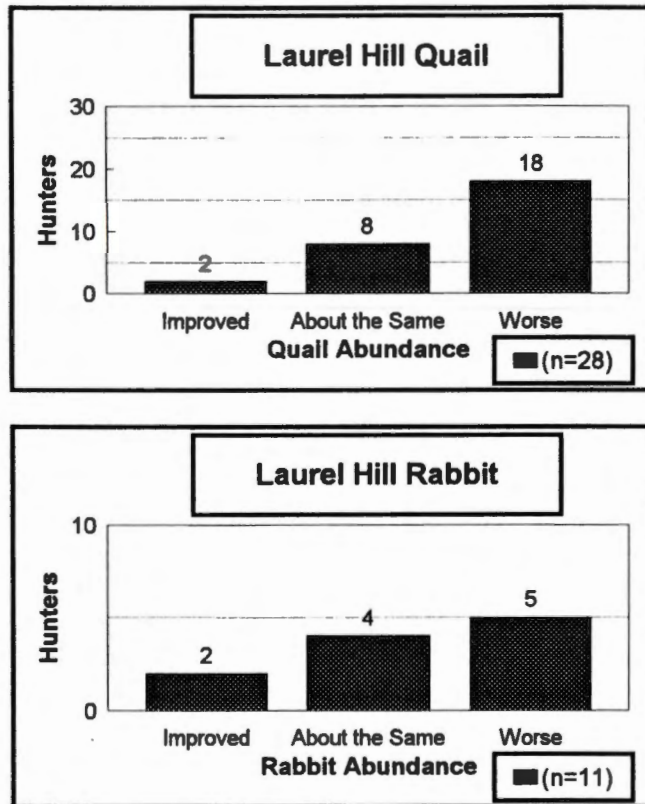


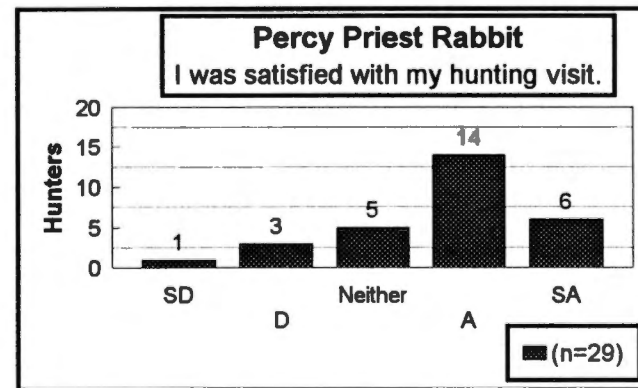
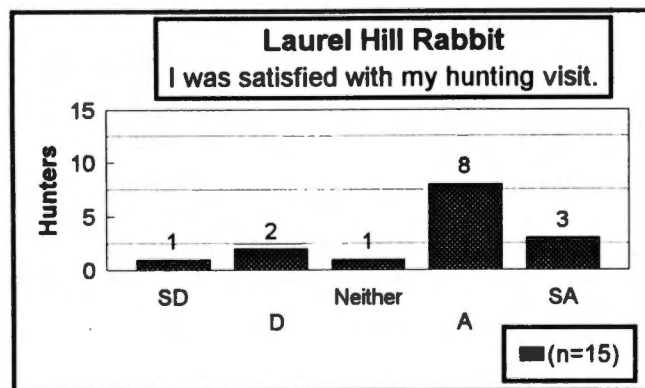
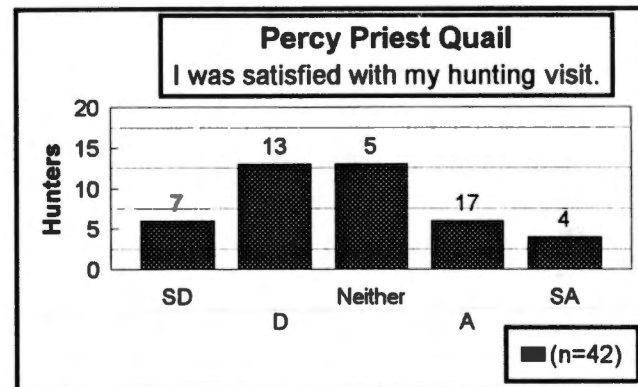
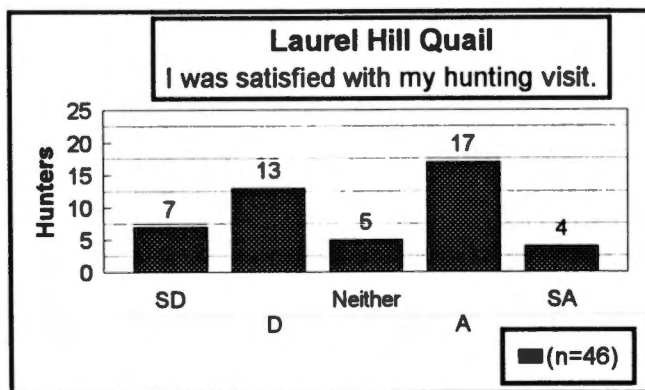
Fig. 36. Quail and rabbit hunter responses when asked if quail or rabbit abundance had improved over the years that they had hunted on Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

significantly between the 2 WMAs. Eighteen (64.3%) of the 28 responding Laurel Hill quail hunters thought that quail abundance had declined over the years that they have hunted on the WMA. Of the 36 Percy Priest quail hunters, 22 (61.1%) thought that quail abundance had declined there. Among the 11 Laurel Hill rabbit hunters that responded, 5 (45.4%) felt that there were fewer rabbits now than previously on the WMA. Of the 26 Percy Priest rabbit hunters, 13 (50%) thought rabbit abundance had declined.

HUNTER SATISFACTION

Satisfaction with Hunting Visits

The hunters were asked to choose the response that described their feelings about the statement "I was satisfied with my hunting visit." Their choices were "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree." Significantly more Percy Priest rabbit hunters were satisfied with their visits than were Percy Priest quail hunters (Fig. 37). Significantly ($p < .10$) more of Laurel Hill rabbit hunters were satisfied with their visits than were Laurel Hill quail hunters. Hunter satisfaction did not vary significantly between rabbit hunters on the 2 WMAs or between quail hunters on the 2 WMAs. Nineteen (45.2%) of the 42 responding Percy Priest quail hunters were not satisfied with their visits, compared to only 4 (13.8%) of the rabbit hunters. Twenty (43.5%) of the 46 Laurel Hill quail hunters disagreed or strongly



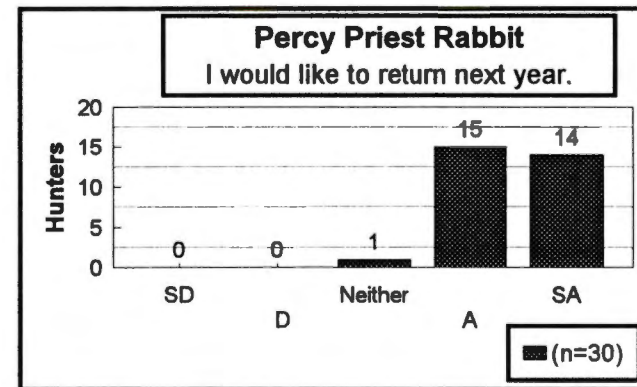
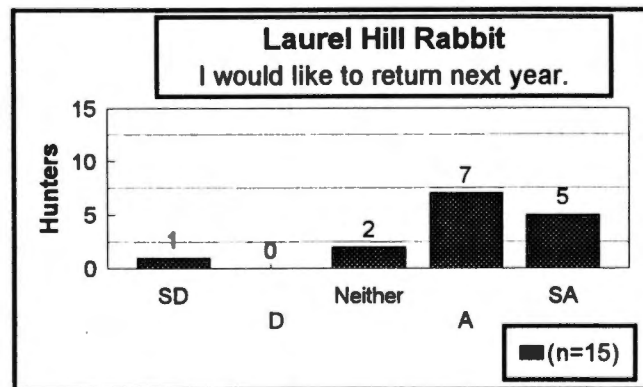
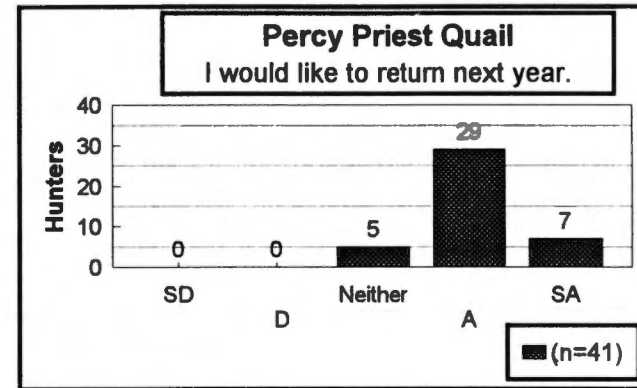
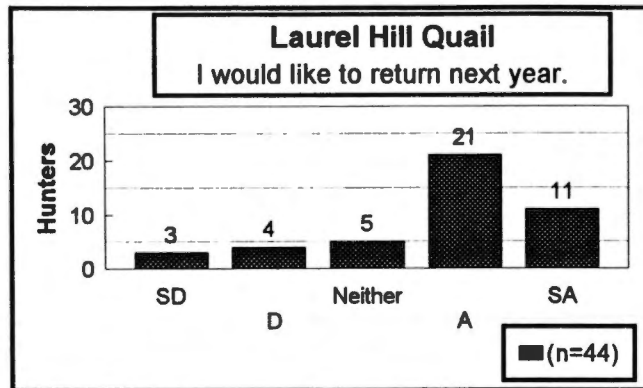
SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 37. Quail and rabbit hunter responses when asked to describe their agreement with the statement "I was satisfied with my hunting visit." in reference to their hunting visits to Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

disagreed with the above statement, compared with only 3 (20%) of the 15 Laurel Hill rabbit hunters.

Plans to Return Next Season

Perhaps a better measure of the hunters' satisfaction with Laurel Hill or Percy Priest is whether or not they plan to return to the WMA during the next season. Similar to the above, the hunters were asked to rate their agreement with the statement "I would like to return next year." Significantly more of the Percy Priest rabbit hunters strongly agreed with the statement than did Percy Priest quail hunters (Fig. 38). Hunter responses did not vary significantly between Laurel Hill and Percy Priest quail hunters, between Laurel Hill and Percy Priest rabbit hunters, or between Laurel Hill quail and rabbit hunters. Most hunters planned to return the following seasons. Although none of the Percy Priest hunters said that they did not wish to return, Percy Priest rabbit hunters were significantly more enthusiastic about their plans to return than were Percy Priest quail hunters. Among the 41 responding Percy Priest quail hunters, only 7 (17.1%) strongly agreed with the statement. In contrast, 14 (46.7%) of the 30 Percy Priest rabbit hunters strongly agreed. Among the 44 Laurel Hill quail hunters, 7 (15.9%) did not wish to return and 32 (72.7%) wished to return the following season. Of the 15 Laurel Hill rabbit hunters, 1 (6.7%) did not want to return and 12 (80%) wanted to return.



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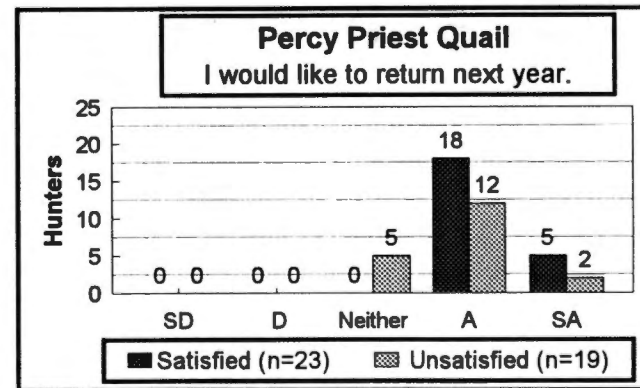
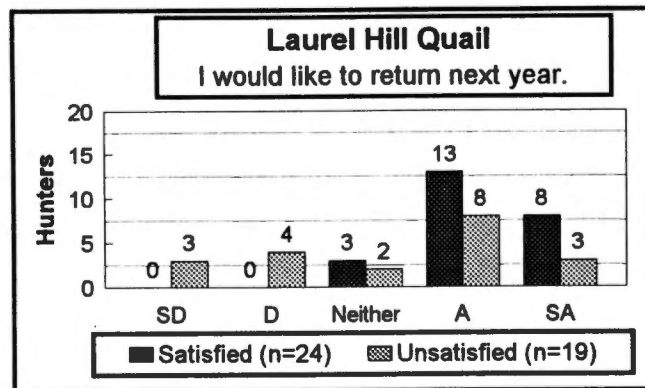
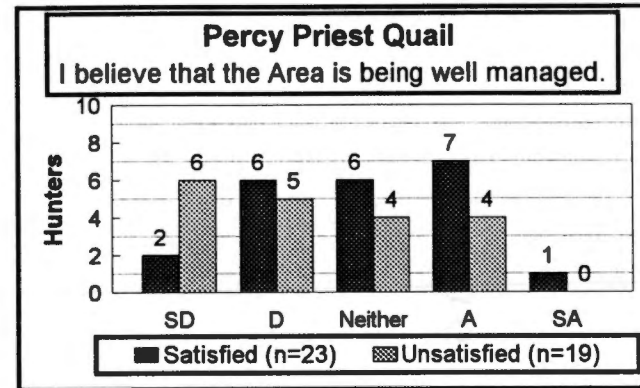
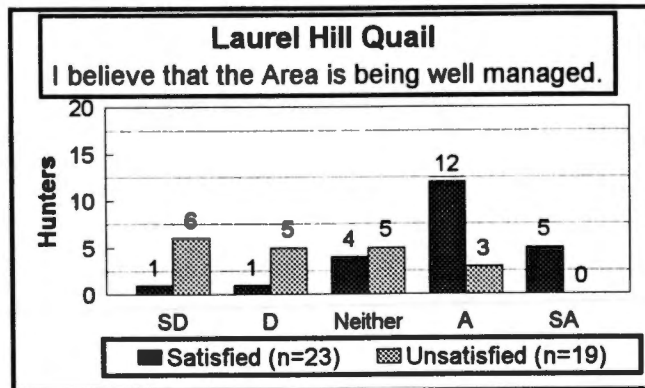
Fig. 38. Quail and rabbit hunter responses when asked to describe their agreement with the statement "I would like to return next year." in reference to their hunting visits to Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

Comparisons of Satisfied and Unsatisfied Quail Hunters

Characteristics of satisfied quail hunters were compared with those who were unsatisfied to identify any differences between the two groups. Hunters who responded "strongly agree," "agree," or "neither agree nor disagree" to the statement "I was satisfied with my visit" were considered satisfied. Hunters who responded "strongly disagree" or "disagree" were considered unsatisfied. Rabbit hunters were not compared because too few of them were unsatisfied.

Significantly ($p < .10$) fewer of the unsatisfied Laurel Hill and Percy Priest quail hunters thought that the WMAs were well managed or planned to return the following season (Fig. 39). Only 3 (15.8%) of the 19 unsatisfied Laurel Hill quail hunters thought that the WMA was well managed, compared to 17 (73.9%) of the 23 satisfied Laurel Hill hunters. Only 4 (21.0%) of the unsatisfied quail hunters using Percy Priest WMA thought that the area was being well managed, compared to 8 (34.8%) of the 23 satisfied Percy Priest quail hunters. Seven (36.8%) of the 19 unsatisfied Laurel Hill quail hunters did not plan to return to the WMA the following season. All of the satisfied Laurel Hill quail hunters planned to return. Fourteen (73.7%) of the 19 unsatisfied Percy Priest quail hunters planned to return, compared to all of the satisfied Percy Priest quail hunters.

Opinions on regulations varied significantly ($p < .10$) between satisfied and unsatisfied Laurel Hill quail hunters (Fig. 40). More of the unsatisfied Laurel Hill quail hunters did not approve of the hunting regulations on the WMA. Five (23.8%) of the 21 unsatisfied hunters did not approve of regulations on Laurel Hill, compared to only 1



SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

Fig. 39. The responses of quail hunters who were satisfied with their visits compared to those that were unsatisfied to the statements "I believe that the Area is being well managed." and "I would like to return next year." in reference to their hunting visits to Laurel Hill WMA, Lawrence County, Tennessee, or Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

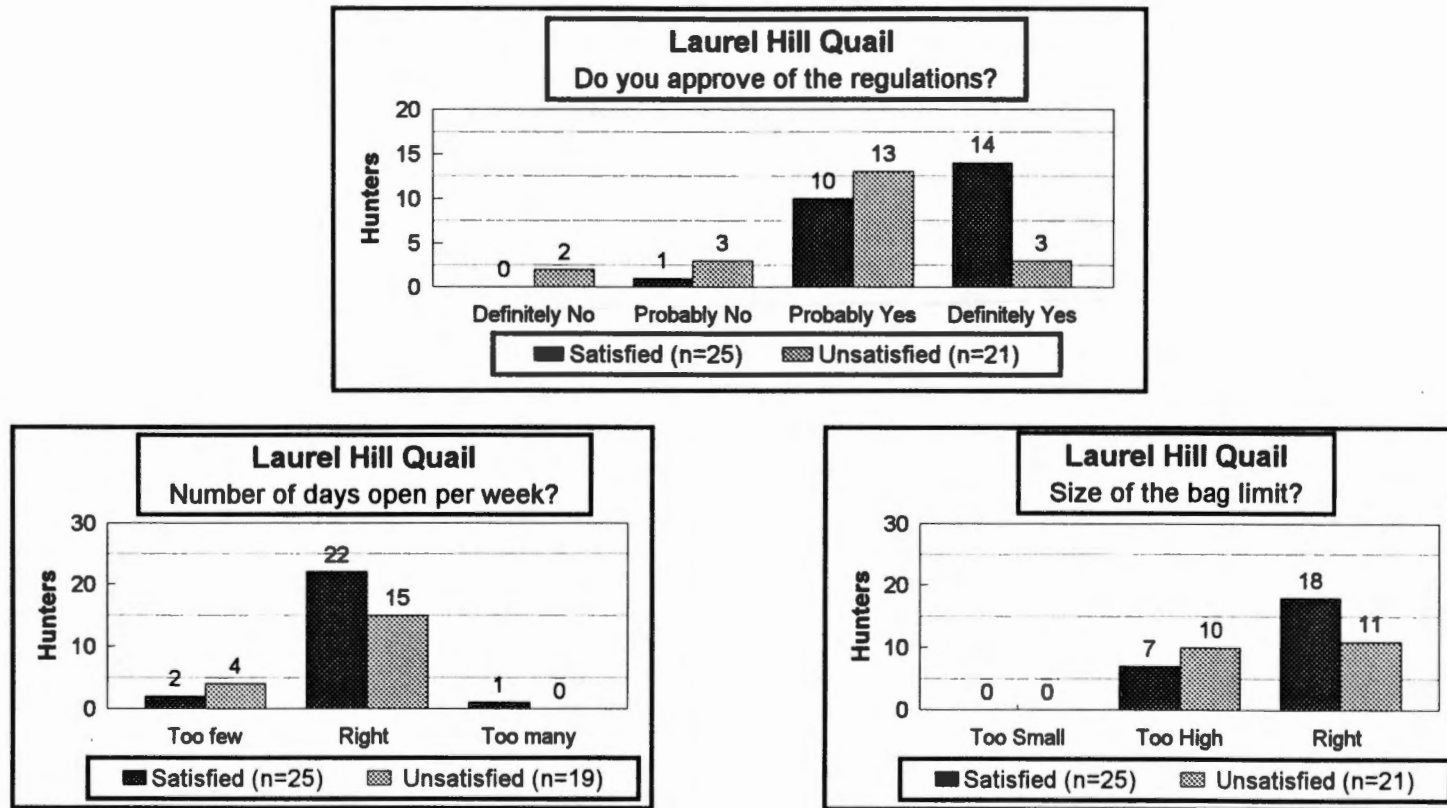


Fig. 40. The responses of quail hunters who were satisfied with their visits compared to those that were unsatisfied when asked their opinion of hunting regulations on Laurel Hill WMA, Lawrence County, Tennessee, during the 1990-91 and 1991-92 small game seasons.

(4%) of the 25 satisfied hunters. Four (21.0%) of the 19 unsatisfied Laurel Hill quail hunters thought that there were too few days per week open to quail hunting on Laurel Hill. Only 2 (8%) of the 25 satisfied Laurel Hill quail hunters thought that too few days were open. Ten (47.6%) of the 21 unsatisfied hunters, compared to 7 (28%) of the 25 satisfied Laurel Hill quail hunters felt that the bag limit was too high.

Many of the unsatisfied Percy Priest quail hunters might be characterized as avid quail hunters. They considered themselves to be significantly ($p < .10$) more skilled than did satisfied hunters (Fig.41). Quail hunting was a significantly ($p < .10$) more important activity to unsatisfied Percy Priest quail hunters (Fig. 41). The unsatisfied Percy Priest quail hunters spent significantly ($p < .10$) more days per season in pursuit of their sport. Among the 19 unsatisfied Percy Priest quail hunters, 11 (57.9%) considered themselves to have reached an advanced skill level at hunting quail and 7 (36.8%) considered themselves to be experts. Of the 23 satisfied hunters, 12 (52.2%) were advanced hunters and only 2 (8.7%) were expert quail hunters. Quail hunting as an outdoor activity was extremely important to 12 (63.2%) of the 19 unsatisfied Percy Priest quail hunters. It was extremely important to only 6 (26.1%) of the satisfied Percy Priest quail hunters. On average unsatisfied Percy Priest quail hunters spent a total of 39.6 days ($SD=24.4$ days) hunting quail, compared to 27.0 days ($SD=15.0$ days) spent quail hunting by satisfied Percy Priest quail hunters.

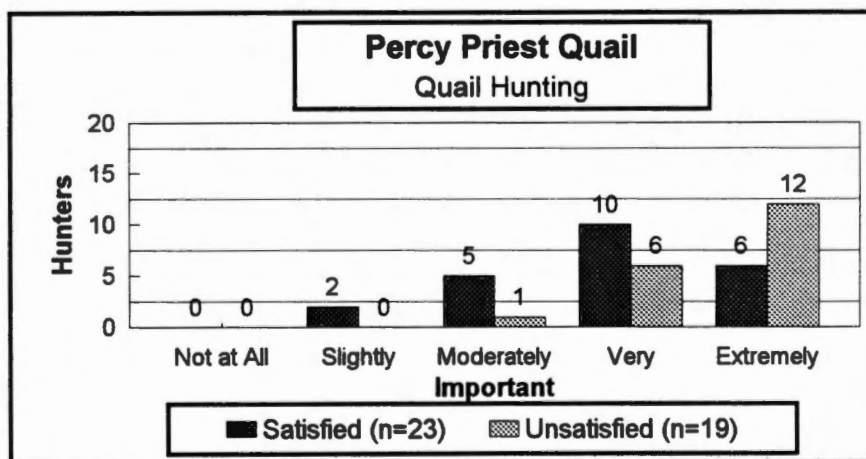
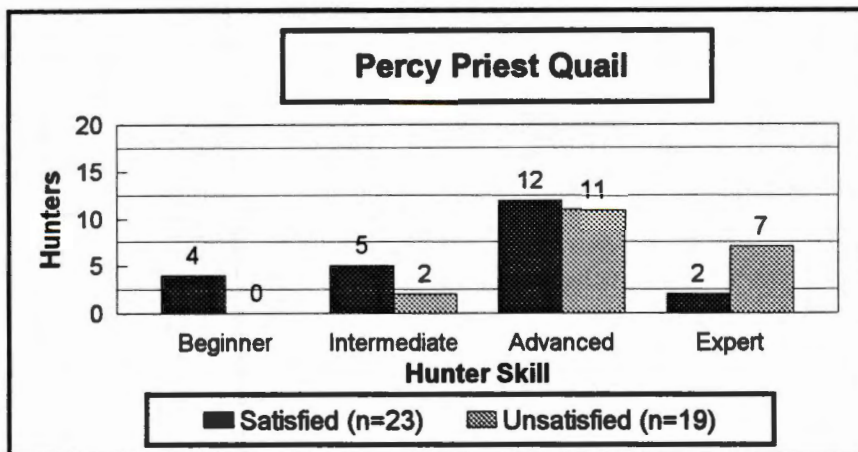


Fig. 41. Hunters that were unsatisfied or satisfied with their hunting visits to Percy Priest WMA, Rutherford County, Tennessee, during the 1990-91 and 1991-92 small game seasons compared by their skill level and by the degree of importance of quail hunting as an activity to them.

CHAPTER V

DISCUSSION AND MANAGEMENT IMPLICATIONS

QUAIL POPULATIONS

In a summary of population densities, Roseberry and Klimstra (1984) reported that throughout portions of its range bobwhite densities ranged from 0.14 to 1.64 quail/ha. Quail population densities on both PSAs were well within this range prior to the hunting season. During the 1991-92 season, pre-hunt quail densities were 0.52 quail/ha on the Laurel Hill PSA and 1.19 quail/ha on the Percy Priest PSA. Dimmick (1992) stated that fall densities of 0.5 - 1 birds/ha may support acceptable recreational hunting. As population densities were within this range, it can be concluded that quail populations on the WMAs can support hunting.

From fall to spring there was an estimated 80% population loss from the Laurel Hill PSA and 84% loss from the Percy Priest PSA during the 1991-92 season. The Laurel Hill and Percy Priest PSAs are managed very differently. The Laurel Hill PSA is planted in annual and perennial food plots that were not harvested, whereas the Percy Priest PSA consisted of large corn and soybean fields that were harvested in the fall. Exum et al. (1982) suggested that harvested soybean fields do not provide adequate winter cover. Despite obvious differences between PSAs in the structure of the vegetation during the winter, fall to spring declines were similar. It appears likely that bobwhites on Percy Priest secured protection in dense brushy habitat comparable to that afforded by extensive bicolor lespedeza strips and food plots on Laurel Hill WMA.

Bobwhite quail are highly fecund. In a stable population mortality rates will balance natality rates. Roseberry and Klimstra (1984) reported that 70% to 80% of autumn populations were comprised of young-of-the year quail. Although both Roseberry (1982) and Pollock et al. (1989) suggested that hunting mortality is additive, Roseberry (1982) believed that quail productivity would increase to compensate for the additional mortality. As quail populations on both WMAs are well within reported norms, hunting pressure has not reduced quail populations below sustainable levels on the PSAs. As over-winter mortality rates on the PSAs are fairly high, continued monitoring of quail populations on the WMAs is advisable to insure quail populations continue to remain at healthy levels.

HUNTER SUCCESS

Several researchers have reported that hunter success may not be the primary factor influencing hunter satisfaction (Arthur and Wilson 1979, Vaske et al. 1986, Hammitt et al. 1989, Rollins and Romano 1989), but hunter success or perceived opportunity for success still play an important part in determining hunter satisfaction (Potter et al. 1973, Schole et al. 1973, Stankey et al. 1973). Stankey et al. (1973) suggested that success may serve as a "catalytic" function, presence or absence of success might influence both the type of satisfactions and their relative importance.

Using 39 years of statewide harvest, TWRA rated hunter success rates by kill per hour hunting effort (TWRA 1992). The "hours afield" data I obtained during the 1991-92 season allowed me to compare the success rates on the WMA with the statewide

rating. TWRA rated a rabbit harvest of 0.50 rabbits per hour of hunting effort or above as "excellent," 0.50-0.45 as "good," and 0.45-0.40 as "fair." Judged by an average rate on Laurel Hill of 0.78 rabbits (SD=0.56 rabbits) killed per hour, the hunter success rate was considered to be "excellent." The average success rate of 0.42 rabbits (SD=0.38 rabbits) killed per hour on Percy Priest was considered to be "fair" compared to statewide data.

TWRA rated a quail harvest rate of 0.65 quail or less killed per hour of hunting effort to be a "poor" success rate. Both the average Laurel Hill rate of 0.34 quail (SD=0.40 quail) killed per hour and the Percy Priest average rate of 0.18 quail (SD=0.26 quail) killed per hour were below this value. As quail hunters experienced more difficulty in bagging their limit than did rabbit hunters and experienced poor success on the WMAs, quail hunter success is a more serious concern than rabbit hunter success on the WMAs.

As quail populations on the PSAs were similar to those on private lands in middle Tennessee (R.W. Dimmick and J.C. Cole, unpubl. annual report to TWRA, 1991), differences in success rates may not be explained by differences in populations. Instead, higher hunting pressure on WMAs may be resulting in lower individual hunter success. Kellogg et al. (1982) and Dimmick (1992) suggested that quail become more wary and adopt evasive techniques when hunted regularly. The employment of additional measures to reduce quail hunting pressure may help improve individual hunter success. Regulations that limit the number of hunter-days per season, that set seasonal bag limits, that restrict hunting on specific courses to once per week, and that restrict shooting to covey rises

only were employed on private lands to reduce hunting pressure (Dimmick 1992, Hurst and Rosene 1983).

Quail hunters using Laurel Hill typically hunted on the fields near the main roads at the periphery of the WMA and rarely hunted the fields and linear food plots on the interior of the WMA (personal observ.). Encouraging use of the interior fields and linear food plots on Laurel Hill may more evenly distribute hunting pressure on the WMA. In 1992 TWRA began distributing a map of Laurel Hill showing the locations of food plots. This may help hunters find new hunting spots on the WMA.

Although some areas were used more than others, all the fields along the route used to distribute contact forms at Percy Priest were heavily used by quail hunters (personal observ.). Unlike Laurel Hill, Percy Priest's Unit II does not appear to have areas that were being under-utilized. Some of the quail hunters that I interviewed on Percy Priest expressed that they would like Unit I to be opened to regular quail hunting. Unit I is used for juvenile hunts and field trials. Although Unit I may be able to support additional hunting pressure, hunting may conflict with the present uses of the unit.

WMA USE

Laurel Hill was open to rabbit hunting on Sundays, Tuesdays, and Thursdays during the 1990-91 season and was open on Saturdays, Mondays and Wednesdays during the following season. Laurel Hill received very low use from rabbit hunters during the 1990-91 season, most of which occurred on weekdays. During the 1991-92 season, the WMA received much higher use, most of which occurred on Saturdays. Although there

was no question addressing specific day preferences in the questionnaire, this shift in rabbit hunter use from season to season suggests that Laurel Hill rabbit hunters preferred to hunt on Saturdays. Conversely, there was no significant change in quail hunter use of Laurel Hill over the two seasons and there was no significant difference between weekday and weekend use by quail hunters. Establishing Saturday as a permanent weekend day open to rabbit hunting and Sunday as a permanent weekend day for quail hunting may increase use of the WMA by rabbit hunters without affecting its use by quail hunters.

Percy Priest quail and rabbit hunters spent nearly twice as many days hunting on the WMA than did hunters on Laurel Hill. Both geographical distance (Francken and van Raij 1981) and lack of opportunity (Witt and Goodale 1981) have been reported as potential barriers to recreational participation. Percy Priest quail and rabbit hunters travelled less than half the distance that Laurel Hill hunters did to reach their chosen WMA. Also, only three days per week were open for either quail or rabbit hunting on Laurel Hill. Perhaps closer proximity and more days open accounted for higher use of Percy Priest by individual hunters.

About one quarter of the hunters hunted more than one species on the 2 WMAs. Although many rabbit hunters hunted quail on the WMAs, few quail hunters reported hunting rabbits. Quail hunters may be better characterized as "bird hunters" as they tended to hunt mostly avian species (quail, dove, woodcock) on the WMAs and rarely hunted mammalian species (deer, rabbits, squirrel) on the WMAs. Rabbit hunters tended to be more general in their choice of game species; they commonly hunted deer, quail,

doves, and squirrels on the WMAs. A management scheme that provides opportunities to hunt a wide range of species may be more attractive to rabbit hunters, whereas a management scheme that features quail and dove hunting may be more attractive to quail hunters.

As doves were the most common secondary species hunted by quail hunters on both WMAs, contacting hunters at the dove fields may provide a relatively quick and easy means for surveying adequate numbers of quail hunters. Similarly, as many rabbit hunters hunted deer and doves on the WMAs, suitable numbers of rabbit hunters could be easily contacted at dove fields or at deer check stations.

HUNTER PROFILES

The hunters in this study share many characteristics with hunters in other studies (Schole et al. 1973, Wright et al. 1977, Decker and Brown 1979, Adams and Thomas 1986). The respondents were male and on average middle aged, had graduated high school, and were employed in either professional or blue collar jobs. Kennedy (1973) expressed a need for wildlife managers to better understand their clients. To facilitate this, I have profiled the demographics of the 4 "hunter types" studied.

Laurel Hill Quail Hunter

The average Laurel Hill quail hunter is male and 42.4 years old. He has completed high school and has furthered his education for at least one year. He is employed in a professional or administrative job. He lives in a small town or in a rural area. His annual household income is over \$30,000. He considers his skill at hunting quail to be advanced. He has 22.3 years of hunting experience. He hunts quail a total of 27.1 days per season on and off the WMAs and bags 72.8 quail per season. Quail hunting is very or extremely important to him as an outdoor activity. He has quail hunted on an average of 3.4 WMAs other than Laurel Hill. He has hunted quail on Laurel Hill for 6.8 seasons.

Percy Priest Quail Hunter

The average Percy Priest quail hunter is male and is 41.0 years old. He has completed high school and may have completed college. He is employed in an administrative or professional job. He lives in a small town or a suburb. His household income is over \$30,000 a year. He considers his skill at quail hunting to be advanced. He has hunted quail for 24.6 years. He spends 33.0 days per season pursuing his sport. On average, he bags 90.2 quail per season. Quail hunting as an outdoor activity is a very or extremely important activity to him. He has hunted on an average of 2.3 WMAs other than Percy Priest. He has had 8.2 seasons of experience hunting quail on Percy Priest.

Laurel Hill Rabbit Hunter

The average Laurel Hill rabbit hunter is male and is 42.4 years old. He has completed high school and may have completed college. He works in an administrative or professional job and lives in a rural area. He has a combined family income of over \$40,000. He considers his skill at rabbit hunting to be advanced or expert. He has hunted rabbits for 33.0 years. During an average season, he hunts rabbits 21.1 days and usually bags 46.6 rabbits. Rabbit hunting is a moderately to very important outdoor activity to him. He has rabbit hunted on Laurel Hill for 5.2 seasons.

Percy Priest Rabbit Hunter

The average Percy Priest rabbit hunter is male and is 39.2 years old. It is likely that he has completed high school. He is employed in a blue collar job and his combined family income is over \$20,000. He lives in a small town or a suburb. He considers his skill at hunting rabbits to be advanced. He has hunted rabbits for 20.5 years. Both on and off the WMA, he spends 30.9 days hunting rabbits and bags 39.5 rabbits during an average season. As an outdoor activity, rabbit hunting is very or extremely important to him. He has hunted rabbits on Percy Priest for 6.4 seasons.

Overall, there were more similarities than differences among the characteristics of quail and rabbit hunters on the 2 WMAs. The characteristics of quail hunters on both WMAs did not vary significantly. Laurel Hill rabbit hunters were significantly more educated than Percy Priest rabbit hunters. Compared to Laurel Hill quail hunters and

Percy Priest rabbit hunters, significantly more of the Laurel Hill rabbit hunters were older and lived in rural areas. Percy Priest quail hunters reported having significantly higher annual incomes than Percy Priest rabbit hunters. This should be considered if user fees are proposed for the WMA, as fees may exclude rabbit hunters from using the WMA.

HUNTER PERCEPTIONS AND OPINIONS

Overcrowding, and a consequent lowering of the enjoyment of the hunting experience may be a concern for resource managers. Shelby and Heberlein (1986) stated that the carrying capacity in a recreation area is exceeded if more than two thirds of the users feel crowded. They also stated that the area is below carrying capacity if fewer than one third feel crowded. Sixteen of the 46 (34.8%) Laurel Hill quail hunters and 21 of the 42 (50%) Percy Priest quail hunters felt that the WMAs were at least slightly crowded. Judged by the standards of Shelby and Heberlein (1986) the WMAs may be near capacity for quail hunters. With only 1 of the 14 (7.1%) Laurel Hill rabbit hunters feeling at least slightly crowded, it appears that Laurel Hill is being under utilized by rabbit hunters. As 8 of the 30 (26.7%) of the Percy Priest rabbit hunters felt at least slightly crowded, Percy Priest may be slightly under used by rabbit hunters. As Percy Priest rabbit hunters reported encountering a similar number of hunting parties (1.2 parties/day) as did Percy Priest quail hunters (1.5 parties/day), Percy Priest quail hunters may have a lower tolerance for crowding than do rabbit hunters. Although the difference was not significant, 38.1% of Percy Priest quail hunters felt some interference from other

hunters, compared to only 16.7% of Percy Priest rabbit hunters. This further suggests that Percy Priest quail hunters are less tolerant of other hunters than are rabbit hunters.

Percy Priest hunters encountered significantly more problems on their chosen WMA (i.e. litter, parking, and vandalism) than did Laurel Hill hunters. In light of problems with litter and vandalism, it is not surprising that some of the hunters on Percy Priest also thought that a lack of Wildlife Officer patrols was a problem and that there should be more aggressive law enforcement on the WMA. Oliver et al. (1985) found that information signs and contact with rangers and guides reduced litter and vandalism in national forest campgrounds. An increased presence of TWRA personnel might also help reduce litter and vandalism on Percy Priest.

Hunters on Percy Priest encountered significantly more problems with parking than did Laurel Hill hunters. Over half of the Percy Priest quail and rabbit hunters felt that parking areas should be improved. Improving parking areas might conflict with a goal of reducing litter and dumping on Percy Priest by providing illegal dumpers more access to the WMA. However, increasing and maintaining garbage receptacles at each parking area may reduce littering.

Many of the Percy Priest quail and rabbit hunters felt that brush was too dense for hunting on the WMA. In 1991 TWRA began a more aggressive controlled burning program on Percy Priest. This may have alleviated part of the brush problem on the WMA. Increasing the amount of bush-hogging may also help accomplish this goal. Ironically, many of the Percy Priest rabbit and quail hunters were opposed to brush and

briar removal and controlled burning. Hunter education programs and burning after the season is over may help improve hunter acceptance of these management techniques.

Although quail hunters on both WMAs felt that more hunting information should be provided, Percy Priest rabbit hunters appear to have a greater need for information about their WMA. Significantly more Percy Priest rabbit hunters indicated that a lack of information signs and an up-to-date map were problems than did any other group. Significantly more of them felt that more hunting information should be provided and that it should be made easier to understand. Although maps and information are presently provided, there may be a need to target these items for rabbit hunters.

IMPORTANCE OF THE WMAs

Although there was no significant difference in the responses of hunters on the two WMAs when asked to rank the importance of the WMAs as a quail or rabbit hunting area to them, Percy Priest appears to be more important to hunters who used the WMA. Only 5% of Percy Priest rabbit hunters and 14.6% of Percy Priest quail hunters said that the WMA was not at all or slightly important to them, compared to 26.1% of the Laurel Hill quail hunters and 20% of the Laurel Hill rabbit hunters. Considering that 34.9% of the Laurel Hill quail hunters and 21.4% of the Laurel Hill rabbit hunters reported that they were using the WMA for the first time, compared with only 10% of Percy Priest quail rabbit hunters, it is reasonable to assume that Percy Priest hunters may have had more time to become accustomed to the WMA than have some of the Laurel Hill hunters.

OPINIONS OF MANAGEMENT AND GAME ABUNDANCE

Laurel Hill quail hunters and Percy Priest quail and rabbit hunters were divided in their opinions regarding the quality of the management of the 2 WMAs. About half of the Percy Priest quail and rabbit hunters and about a third of Laurel Hill quail hunters did not think that their WMA was being well managed. In contrast, nearly all of the Laurel Hill rabbit hunters thought that the WMA was being well managed. As Laurel Hill quail hunters reported encountering few problems on the WMA other than too few quail, their low degree of success may have contributed to some of their negative opinions of WMA management practices. Low success may have also contributed to Percy Priest quail hunters' negative opinions. Many of the hunters reported that the habitat management techniques that they most preferred were annual and perennial food plots. As the main management techniques employed on Percy Priest Unit II are controlled burning, mowing, and administration of agricultural leases, hunters on Percy Priest may not recognize the management practices being utilized on the WMA. To the Percy Priest hunters the WMA lands may appear to be no differently managed than neighboring private lands. Furthermore, the problems with litter, vandalism, and parking that hunters encountered on Percy Priest may have also left them with a negative impression of how the WMA is being managed.

Hunters were asked about their perceptions of the abundance of quail and rabbits on the WMAs. Most of the hunters on the 2 WMAs reported seeing fewer quail or rabbits than they had expected. Most felt that quail and rabbits were more abundant on non-WMA areas that they had hunted than on the WMAs. Laurel Hill was considered

closer to the other WMAs in this respect than was Percy Priest. About one-third of Laurel Hill quail and rabbit hunters felt that their chosen game species is more abundant on the WMA than on other WMAs. Less than one-tenth of Percy Priest quail and rabbit hunters shared this opinion. Even though hunters felt that game was less abundant on the WMAs, a large majority of them still planned to return the following season.

If the hunters believe that there is less game on the WMAs, why are they still using them? I would suggest that many of them may lack easy access to other places to hunt. Lands available for hunting are decreasing annually (Wright and Kaiser 1986). With the exception of Laurel Hill rabbit hunters, most of the hunters lived in small towns and suburbs. They may lack the access to private lands that rural hunters enjoy. Kennedy (1973) suggested that success may be less important to urban hunters than extra-hunt rewards such as being outdoors and companionship with hunting partners.

HUNTER SATISFACTION

Rabbit hunters on both WMAs were significantly more satisfied with their visits than were quail hunters. Less than one-fifth of the rabbit hunters were unsatisfied with their visits, compared to a little under half of the quail hunters on both WMAs. Significantly fewer of the unsatisfied quail hunters thought the WMA was well managed or planned to return to the WMA the following season.

Significantly more of the unsatisfied Laurel Hill quail hunters disagreed with the regulations on the WMA than did satisfied hunters. Regulations on Laurel Hill are more restrictive than statewide regulations. Rollins and Romano (1989) found that hunters who

believed that the more restrictive regulations on moose hunting in Ontario would increase moose numbers were more satisfied with their hunt. Conversely, unsatisfied hunters on Laurel Hill may believe that the restrictive regulations do not benefit quail populations, but do interfere with the hunters' use of the WMA.

Unsatisfied quail hunters on Percy Priest considered themselves to be more skilled at quail hunting than satisfied hunters, and quail hunting as an outdoor activity was more important to them. Applegate and Clark (1987) found that of birdwatchers who visited Forsythe National Wildlife Refuge, the more knowledgeable birders experienced much lower satisfaction with their visits than did less skilled birders. They suggested that the expert birders may have had higher expectations than did the more novice birders. Similarly, the more avid bird hunters on Percy Priest may have had higher expectations than did the other hunters, and also may have had more experience hunting quail in denser populations than typically encountered on the WMA.

CHAPTER VI

SUMMARY AND CONCLUSIONS

1. Laurel Hill and Percy Priest WMAs are both located in middle Tennessee. Laurel Hill is located in a rural area and Percy Priest is located near a large urban center. Laurel Hill is managed for reduced hunter conflicts and quality small game hunting. Percy Priest is managed for maximum small game hunting opportunity.
2. Quail population study areas (PSAs) were established on both WMAs. Quail populations were censused before and after the small game seasons. Quail were censused during the 1990-91 and 1991-92 seasons on the Laurel Hill PSA and during the 1991-92 season on the Percy Priest PSA.
3. In order to obtain bag information and hunter addresses, I placed contact forms on hunter vehicles. During each of the 1990-91 and 1991-92 seasons, researchers spent about thirty days on each WMA distributing contact forms.
4. Hunters who returned their contact forms were asked to fill out a 15-page questionnaire containing questions about hunter demographics, opinions, and satisfaction.

5. The pre-hunt quail density on the Laurel Hill PSA was estimated to be 0.52 quail/ha during the 1991-92 season and the post-hunt density was estimated to be 0.11 quail/ha, an estimated loss of 80% from the population. During the same season, the pre-hunt and post-hunt population density on the Percy Priest PSA were estimated to be 1.19 quail/ha and 0.19 quail/ha, an estimated loss of 84% from the population. Quail populations were well within reported norms for the species across its range.
6. Quail hunters experienced much poorer success than did rabbit hunters on the WMAs. Quail hunters on the 2 WMAs experienced "poor" success rates compared to statewide data. Rabbit hunters on the 2 WMAs experienced "fair" to "excellent" success rates when compared to statewide data. Many of the rabbit hunters were able to harvest their daily bag limit, while few of the quail hunters were able to do so.
7. When Laurel Hill was open to rabbit hunting on Saturdays, it received significantly more use by rabbit hunters both for the season and on weekends. This suggests that rabbit hunters may prefer to hunt on Laurel Hill on Saturdays rather than Sundays. Significantly more of the Percy Priest quail and rabbit hunters used that area on weekends than on weekdays.

8. Laurel Hill quail and rabbit hunters travelled nearly three times the distance to hunt on that WMA (about 60 miles or 97 km) as Percy Priest quail and rabbit hunters travelled to theirs (about 20 miles or 32 km).
9. Hunters that used the WMAs were males and on average had completed high school, worked in professional/administrative or blue collar jobs, lived in small towns or suburbs, and had a combined family income of above \$30,000.
10. Most hunters felt that they were at an advanced level of skill at hunting quail or rabbits.
11. As an outdoor activity, quail and rabbit hunting was very important to the respondents.
12. Most of the hunters had been hunting quail or rabbits on either of the 2 WMAs for about 6 to 8 years.
13. Significantly more of the Percy Priest quail hunters felt crowded than did either Laurel Hill quail hunters or Percy Priest rabbit hunters; neither of the WMAs was crowded beyond an objective measure of capacity.

14. Percy Priest hunters indicated that parking, litter, vandalism, and too few wildlife officer patrols were problems on the WMA. Percy Priest rabbit hunters indicated that a lack of up-to-date maps and information signs were problems on the WMA. Percy Priest quail hunters stated that thick brush was a problem on that WMA. Hunters on both WMAs indicated that low rabbit or quail numbers were problems on the WMAs.
15. Percy Priest quail and rabbit hunters felt that parking areas should be improved. Many hunters on both WMAs indicated that more hunting information should be provided. Percy Priest rabbit hunters felt that hunting information should be made easier to understand. Although significantly more of the Percy Priest quail and rabbit hunters indicated that more aggressive law enforcement is needed on the WMA, many of the Laurel Hill hunters also called for more law enforcement.
16. The WMAs were very important as quail or rabbit hunting areas to more than half of the quail and rabbit hunters that used them.
17. About half of the Laurel Hill quail hunters and Percy Priest quail and rabbit hunters indicated that they felt that their WMA was well managed. Nearly all of the Laurel Hill rabbit hunters thought that WMA was well managed.
18. Most of the hunters agreed with existing hunting regulations on the WMAs.

19. Most of the quail and rabbit hunters indicated that they saw fewer quail or rabbits on Laurel Hill or Percy Priest than they expected. Most hunters felt that quail and rabbits were more abundant on non-WMA areas that they had hunted than on the WMAs. Significantly more of the Laurel Hill quail hunters felt that quail were more abundant on Laurel Hill than on other WMAs. Most hunters indicated that quail and rabbit populations had declined over the years that they had been hunting on the WMAs.
20. Rabbit hunters were significantly more satisfied with their hunting visits than were quail hunters. About one fifth of the Percy Priest and Laurel Hill rabbit hunters were unsatisfied with their visits, compared to about half of the quail hunters on both WMAs.
21. Most of the hunters planned to return to hunt quail or rabbit on their WMA the following season.
22. In comparison with satisfied quail hunters, significantly fewer of the unsatisfied quail hunters thought that the WMAs were well managed, or planned to return the following season. Unsatisfied Laurel Hill quail hunters disapproved of regulations on the WMA. Unsatisfied Percy Priest quail hunters tended be more skilled at quail hunting and held that quail hunting was of greater importance to them than did satisfied quail hunters on Percy Priest.

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APPENDICES

APPENDIX A
HUNTER FIELD CONTACT FORMS

Date_____

#_____

Percy Priest Quail and Rabbit Hunter Field Contact Form

1. Your Name_____

2. Your Address_____

3. How Many Hunters Were In Your Party?_____

4. What Were You Hunting For?(Check one)

_____ Quail _____ Rabbits _____ Both Rabbit and Quail

5. How Many Hours Total Did You Spend Hunting Today?_____Hours

6. How Many Quail Did You Bag?_____

7. How Many Coveys Did You See?_____

8. How Many Birds Were Crippled, But Couldn't Be Retrieved?

9. How Many Bird Dogs Did YOU Bring to Hunt Quail?
(Do not include dogs brought by other party members)

_____ Bird Dogs

What Breed(s)?_____

10. How Many Rabbits Did You Bag?_____

11. How Many Rabbit Dogs Did YOU Bring Hunting?
(Do not include dogs brought by other party members)

_____ Rabbit Dogs

What Breed(s)?_____

12. To Help The Managers Understand The Needs Of Hunters Using This Area, Would You Be Willing To Fill Out A Confidential Questionnaire About Your Hunting Experience Here?

_____ Yes, Please Mail A Questionnaire To Me

_____ No, Do Not Mail A Questionnaire To Me

Date_____

#_____

Laurel Hill Quail Hunter Field Contact Form

1. Your Name_____

2. Your Address_____

3. How Many Hunters Were In Your Party?_____

4. How Many Total Hours Did You Hunt Today?_____Hours

5. How Many Quail Did You Bag?_____

6. How Many Coveys Did You See?_____

7. How Many Birds Were Crippled, But Couldn't Be Retrieved?

8. How Many Bird Dogs Did YOU Bring to Hunt Quail?
(Do not include dogs brought by other party members)

_____ Bird Dogs

What Breed(s)?_____

9. To Help The Managers Understand The Needs Of Hunters Using This Area, Would You Be Willing To Fill Out A Confidential Questionnaire About Your Hunting Experience Here?

_____ Yes, Please Mail A Questionnaire To Me

_____ No, Do Not Mail A Questionnaire To Me

Date_____

#_____

Laurel Hill Rabbit Hunter Field Contact Form

1. Your Name_____
2. Your Address_____

3. How Many Hunters Were In Your Party?_____
4. How Many Rabbits Did You Bag?_____
5. How Many Hours Total Did You Spend Hunting Today?_____Hours
6. How Many Chases Did Your Dogs Get?
_____Chases
7. How Many Rabbit Dogs Did YOU Bring Hunting?
(Do not include dogs brought by other party members)
_____Rabbit Dogs
What Breed(s)?_____

8. To Help The Managers Understand The Needs Of Hunters Using
This Area, Would You Be Willing To Fill Out A Confidential
Questionnaire About Your Hunting Experience Here?
____Yes, Please Mail A Questionnaire To Me
____No, Do Not Mail A Questionnaire To Me

APPENDIX B

HUNTER FIELD CONTACT FORM COVER LETTER



Department of Forestry, Wildlife
and Fisheries
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7126

Dear Hunter,

We were unable to contact you at your vehicle. If you were Hunting for Rabbit or Quail, we would appreciate your help by filling out the enclosed contact form.

We are conducting a study on hunter success and opinions at Percy Priest and Laurel Hill WMA's. Information from you regarding your hunting experience today will assist the managers in meeting the needs of the hunters using the areas.

Postage has already been paid on the envelope supplied. All you need to do is fill out the contact form and mail it in.

If there are more hunters in your party than contact forms, please have the extra hunters put their information on the back of one of the contact forms supplied.

We are looking forward to learning about your hunting trip. Thank you for your time in filling out the contact form and good luck on your next hunting trip.

If you have any concerns about this survey please contact:

Michael A. Wefer
Research Assistant
(615) 974-8749

Ralph W. Dimmick
Professor
(615) 974-8844

Les Brown
Area Manager
Percy Priest WMA
(615) 459-2188

Gene White
Area Manager
Laurel Hill WMA
(615) 762-2079

If you are NOT hunting for rabbit or quail, we apologize for the inconvenience.

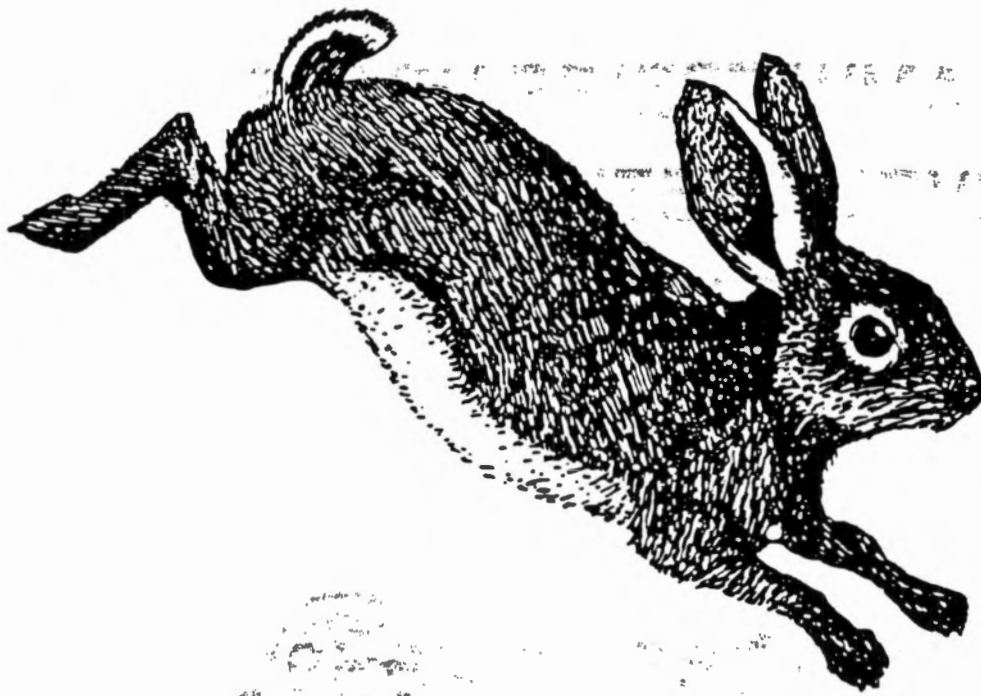
Thank You,

Michael A. Wefer
Research Assistant
University of Tennessee

APPENDIX C

1991-92 RABBIT AND QUAIL HUNTER SURVEYS

PERCY PRIEST WMA RABBIT HUNTER SURVEY 1991-1992



**DEPARTMENT OF FORESTRY, WILDLIFE AND FISHERIES
UNIVERSITY OF TENNESSEE
KNOXVILLE, TN 37921**

Percy Priest Wildlife Management Area
Rabbit Hunter Survey

General Information. We would appreciate a few minutes of your time to answer this survey. The purpose of this study is to help managers do a better job of serving you. You can help by sharing your views with us about your rabbit hunting visit(s). Please base your answers on your rabbit hunting visits to the Percy Priest Wildlife Management Area during the 1991-1992 Rabbit Hunting Season.

=====

SECTION I. QUESTIONS ABOUT YOUR RABBIT HUNTING VISIT(S)

=====

1. What type of hunting party do you hunt with most frequently? (Check one)

_____ Alone
_____ Family
_____ Friends
_____ Family and Friends
_____ Organized Hunting Club or Organization

2. What is the total number of days that you hunted at Percy Priest Wildlife Management Area during the 1991-1992 season?

_____ Total days rabbit hunting

3. To what extent did other hunters interfere with your enjoyment?

_____ Not At All
_____ Very Little
_____ Some
_____ Quite A Bit
_____ A Lot

4. What is the average number of other hunting parties you encountered each day while hunting.

_____ Rabbit hunting parties per day

5. Please indicate the HIGHEST number of people, including yourself, that you will tolerate IN YOUR HUNTING PARTY before your hunting experience becomes unpleasant.

_____ People per Hunting Party

6. Please indicate the HIGHEST number of other Hunting Parties you will tolerate before your hunting trip becomes unpleasant.

_____ Other Hunting Parties you will tolerate

7. Did you feel the area was crowded? (On the scale below, CIRCLE the number that best describes your feeling about the number of other hunters)

1	2	3	4	5	6	7
I		I		I		I
Not at All		Slightly		Moderately		Very
Crowded		Crowded		Crowded		Crowded

8. Which of groups interfered with your hunting enjoyment while hunting at Percy Priest? (mark all that apply)

- _____ 1. Other Rabbit Hunters and Their Dogs
_____ 2. Quail Hunters and Their Dogs
_____ 3. Deer Hunters
_____ 4. Other

- 8 a. List the number of the ONE group that interfered the MOST with your hunting at Percy Priest.

9. About how many miles did you travel to hunt at Percy Priest Wildlife Management Area?

_____ (One way mileage)

10. How long in advance do you usually plan your hunting visit(s) to Percy Priest? (Check one)

_____ Less than one week	_____ 7 to 12 months
_____ 1 week up to one month	_____ Over one year
_____ 1 to 6 months	

11. Do you own your own rabbit dogs?

_____ No _____ Yes

How many? _____ Rabbit dogs

12. Did you train your dogs at Percy Priest before the season?

_____ No _____ Yes

If yes, how many days did you train your dogs on the WMA?

_____ 1-5 days
_____ 6-10 days
_____ 11-20 days
_____ Over 20 days

13. What was your most important reason for hunting at Percy Priest?(Check one)

- ☐ It is close to where I live
- ☐ I have friends in the area
- ☐ I have family in the area
- ☐ Rabbits are plentiful
- ☐ It is a good place to work my dogs
- ☐ Hunting in Percy Priest is challenging
- ☐ Percy Priest is very accessible
- ☐ Other_____

14. Information about problems you may have experienced can help the managers make future hunting visits more enjoyable. To what extent did you find the following to be a PROBLEM during your hunting visit? (CIRCLE the number that best describes how SERIOUS A PROBLEM you found EACH to be)

	Not A Problem	Slight Problem	Moderate Problem	Serious Problem	Very Serious Problem
Litter	1	2	3	4	5
Too few toilet facilities	1	2	3	4	5
Not enough rabbits	1	2	3	4	5
Parking	1	2	3	4	5
Unskilled Hunters	1	2	3	4	5
Brush too thick for dogs or hunters	1	2	3	4	5
Poor access roads	1	2	3	4	5
No up-to-date map of the WMA	1	2	3	4	5
Too many hunters	1	2	3	4	5
Rabbits in poor condition	1	2	3	4	5
Vandalism	1	2	3	4	5
Not enough hunting information in brochures	1	2	3	4	5
ILLEGAL hunters	1	2	3	4	5
Not enough information signs	1	2	3	4	5
Not enough Wildlife Officer Patrols	1	2	3	4	5
Too many Wildlife Officer Patrols	1	2	3	4	5
Other Problems Not Listed					
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

15. How well do the following statements describe your feelings about your rabbit hunting visit(s)? (CIRCLE) the number that best describes how strongly you AGREE or DISAGREE with EACH statement)

	Strongly Disagree	Disagree	Neither Nor Disagree	Agree	Strongly Agree
I was bothered by the actions of other hunters.	1	2	3	4	5
There were too many hunters where I hunted.	1	2	3	4	5
I believe that some hunters took over their legal limit of rabbits.	1	2	3	4	5
I wish I had shot more rabbits.	1	2	3	4	5
I believe that the area is being well managed.	1	2	3	4	5
I was able to get away from the demands of life.	1	2	3	4	5
I was satisfied with my hunting visit.	1	2	3	4	5
I would like to return next year.	1	2	3	4	5
I enjoyed eating the rabbits I bagged.	1	2	3	4	5
I improved my skill at hunting rabbits	1	2	3	4	5
I enjoyed watching the dog(s) work.	1	2	3	4	5
I enjoyed being with my hunting partners.	1	2	3	4	5
I had a problem with my equipment.	1	2	3	4	5
I wish that the weather had been better.	1	2	3	4	5
I enjoyed hunting in the area as much as I expected.	1	2	3	4	5

SECTION II. YOUR RABBIT HUNTING EXPERIENCE

**PLEASE ANSWER THE FOLLOWING QUESTIONS BASED UPON ALL
RABBIT HUNTING TRIPS YOU HAVE TAKEN AT PERCY PRIEST AND
ELSEWHERE.**

1. What type of shotgun do you hunt with the most?
(Check one)
☐ Single-shot ☐ Double-barrel
☐ Pump action ☐ Semi-automatic
2. Was this your first season hunting rabbits?
☐ No ☐ Yes--- If YES, GO TO QUESTION 14
3. How many years have you hunted rabbits? _____ Years
4. On the average, how many days per season do you hunt rabbits?
_____ Days Per Season
5. How many rabbits do you usually bag during a season?
_____ Rabbits Per Season
6. Have you hunted rabbits in areas other than Percy Priest Wildlife Management Area?
☐ Yes ☐ No--- If NO GO TO QUESTION 7
- 6a. How many other places, other than WMA's, have you ever hunted. (Check one)
☐ 0-5 ☐ 21-50
☐ 6-20 ☐ Over 50
- 6b. How many other Wildlife Management Areas have you hunted?
_____ WMA's
- 6c. How would you compare the abundance of rabbits at Percy Priest to the other non-WMA's you have hunted?
☐ Not as good as most places hunted
☐ About the same as other places hunted
☐ Better than most places hunted
- 6d. How would you compare the abundance rabbits at Percy Priest to the other Wildlife Management Areas?
☐ Not as good as most WMA's hunted
☐ About the same as other WMA's hunted
☐ Better than most WMA's hunted

6e. If you have hunted rabbits out of the state of Tennessee how does rabbit abundance in other states compare with rabbit abundance in Tennessee?

- ☐ Not as good in Tennessee as in most states
- ☐ About the same as most states
- ☐ Better than most states
- ☐ I do not hunt rabbits out of state

6f. What percentage of your rabbit hunting NOW occurs at Percy Priest Wildlife Management Area?

_____ %

6g. What percentage of your hunting now occurs on any kind of public lands?

_____ %

7. Have you hunted rabbits at Percy Priest Wildlife Management Area before?

☐ Yes ☐ No ---If NO, GO TO QUESTION 14

8. Did you see more or less rabbits than you expected this season on the management area?

- ☐ More
- ☐ Less
- ☐ About the Same
- ☐ No expectation

9. How many seasons have you hunted rabbits at Percy Priest?

_____ Seasons

10. About how many days per season do you hunt rabbits at Percy Priest?

_____ Days Per Season

11. About how many rabbits per season do you usually bag at Percy Priest?

_____ Rabbits bagged per season

12. During your years hunting at Percy Priest, has the abundance of rabbits improved?

- ☐ Abundance of rabbits on the area has improved
- ☐ Abundance of rabbits on the area is about the same
- ☐ Abundance of rabbits on the area is worse than years before

13. What do you consider your best season hunting on the Area?

19____ - 19____

14. Who first introduced you to rabbit hunting?

☐ Parents ☐ Friends
☐ Relatives ☐ Other, _____

15. How old were you when you first went rabbit hunting?

_____ Years old

16. Have you ever taken a hunter safety course?

☐ No ☐ Yes

17. How do you rate your skill at rabbit hunting?

☐ Beginner
☐ Intermediate
☐ Advanced
☐ Expert

18. As an outdoor activity, how important is rabbit hunting to you?

☐ Not At All Important
☐ Slightly Important
☐ Moderately Important
☐ Very Important
☐ Extremely Important

19. As a rabbit hunting area, how important is Percy Priest to you compared to other areas?

☐ Not At All Important
☐ Slightly Important
☐ Moderately Important
☐ Very Important
☐ Extremely Important

20. What activities do you pursue at Percy Priest throughout the year? (Mark All That Apply)

☐ 1. Hunting
☐ 2. Hiking
☐ 3. Biking
☐ 4. Fishing
☐ 5. Bird watching
☐ 6. Walking the dog
☐ 7. Dog Training
☐ 8. Horseback riding
☐ 9. Field Trials
☐ 10. Other _____

20 a. List the number of the ONE activity that you enjoy MOST at Percy Priest.

21. What type of game do you hunt? (Please CHECK all game that you hunt)

- | | | |
|---------------------------------------|-------------------------------------|---|
| ☐ 1. Squirrel | ☐ 6. Quail | ☐ 11. Woodcock |
| ☐ 2. Deer | ☐ 7. Dove | ☐ 12. Wildboar |
| ☐ 3. Waterfowl | ☐ 8. Snipe | ☐ 13. Bobcat |
| ☐ 4. Opossum | ☐ 9. Raccoon | ☐ 14. Grouse |
| ☐ 5. Turkey | ☐ 10. Rabbit | ☐ 15. Other_____ |

21 a. List the number of the ONE game species that you enjoy hunting the MOST.

22. Please CHECK all the game species that you hunt at Percy Priest Wildlife Management Area.

- | | | |
|---------------------------------------|-------------------------------------|---|
| ☐ 1. Squirrel | ☐ 6. Quail | ☐ 11. Woodcock |
| ☐ 2. Deer | ☐ 7. Dove | ☐ 12. Other_____ |
| ☐ 3. Waterfowl | ☐ 8. Snipe | |
| ☐ 4. Opossum | ☐ 9. Raccoon | |
| ☐ 5. Turkey | ☐ 10. Rabbit | |

22 a. List the number of the ONE game species that you enjoy hunting the MOST at Percy Priest.

23. What sources did you use to gain information about Percy Priest Wildlife Management Area?
(CHECK All sources used)

- | | | |
|-------------------------------------|--|--|
| ☐ Parents | ☐ Newspaper | ☐ Wildlife |
| ☐ Relatives | ☐ State Hunting | ☐ Organizations |
| ☐ Friends | ☐ Brochures | ☐ Sporting |
| ☐ Radio | ☐ Wildlife Officers | ☐ Magazines |
| ☐ TV | ☐ Brochures from | ☐ Wildlife |
| ☐ Wildlife | ☐ Percy Priest | ☐ Biologists |
| ☐ Manager | ☐ Club Newsletters | ☐ County Extension Programs |
| ☐ Club | ☐ Co-workers | |
| ☐ Other_____ | ☐ Other_____ | |

24. Do you belong to any hunting clubs or organizations?

☐ No ☐ Yes---If YES, which one(s)?:

25. Which of the following is the most important reason you hunt rabbit? (Mark one)

- ☐ To be outdoors
- ☐ Test your shooting skill
- ☐ Outsmart game
- ☐ Watch the dog(s) work
- ☐ Get meat for the table
- ☐ To be with friends
- ☐ Get away from the job or house

**SECTION III. YOUR IMPRESSIONS ABOUT THE MANAGEMENT OF
PERCY PRIEST WILDLIFE MANAGEMENT AREA**

1. Your impressions about the management of Percy Priest would be helpful to managers. Given the condition of the area when you were rabbit hunting, how do you feel about EACH of the following management actions? (CIRCLE the number that shows how much you AGREE or DISAGREE with EACH action)

	Strongly Disagree	Disagree	Neither Nor Disagree	Agree	Strongly Agree
Require hunters to carry out their trash	1	2	3	4	5
Increase road access into hunting areas	1	2	3	4	5
Improve existing roads in the area	1	2	3	4	5
Improve parking areas	1	2	3	4	5
Provide toilets	1	2	3	4	5
Provide more hunting information	1	2	3	4	5
Make information easier to understand	1	2	3	4	5
Have up-to-date maps available	1	2	3	4	5
Be more aggressive in Law enforcement	1	2	3	4	5
Enforce severe penalties on poachers	1	2	3	4	5
Manage for more rabbits	1	2	3	4	5

2. In general, do you approve of the present regulations for rabbit hunting in Percy Priest Wildlife Management Area?
(Check one)

☐ Definitely No
☐ Probably No
☐ Probably Yes
☐ Definitely Yes

3. What is your opinion of the number of days a week open for rabbit hunting at Percy Priest? (Check one)
 - ☐ I think there are too many days a week open to rabbit hunting
 - ☐ I do not think there are too many days a week open to rabbit hunting
4. What do you think about the total length of the rabbit hunting season in Tennessee?(Check one)
 - ☐ I think the season is too long
 - ☐ I think the season is the right length
 - ☐ I think the season is not long enough
5. If the length of the rabbit season were going to be changed, which change would you prefer most?(check one)
 - ☐ Lengthening the season by starting earlier in the year
 - ☐ Lengthening the season by extending the end of the season
 - ☐ Leaving the season the same length, but start and end earlier in the year
 - ☐ Leaving the season the same length, but start and end later in the year
 - ☐ Shortening the season by stopping earlier in the year
 - ☐ Shortening the season by starting later in the year
 - ☐ I prefer no change in the length of the season
6. How do you feel about the current regulations setting size of the bag limit?(Check one)
 - ☐ Bag Limit Too Small ☐ Bag Limit Too High
 - ☐ Bag Limit About Right
7. Do you feel there are any management actions needed NOW on the number of rabbit hunters using the Percy Priest Wildlife Management Area?
 - ☐ Yes, some management actions are needed now to correct an existing problem of too many rabbit hunters using the Wildlife Management Area.
 - ☐ Yes, although not too many rabbit hunters use the area now, management actions are needed now to prevent too many rabbit hunters from using the WMA in the future.
 - ☐ No, management actions are not needed now, but should be imposed in the future if and when too many rabbit hunters are using the WMA.
 - ☐ No, there should be no management actions now or in future on the number of rabbit hunters using the WMA.

8. Which of the following habitat management techniques do you think should be used to manage for rabbits at Percy Priest Wildlife Management Area?(Check all that apply)

- ☐ 1. Controlled burns
- ☐ 2. Establish brush piles
- ☐ 3. Strip mowing
- ☐ 4. Clear cuts in forested areas
- ☐ 5. Brush and briar removal
- ☐ 6. Clover and/or bluegrass plantings
- ☐ 7. Allow the area to develop naturally
- ☐ 8. Establish more hedgerows
- ☐ 9. Release rabbits trapped outside the area

- 8 a. List the number of the ONE management technique that you would approve of MOST for managing rabbits on Percy Priest.
- _____

9. Which of the following habitat management techniques do you think SHOULD NOT be used to manage for rabbits at Percy Priest WMA?(mark all that apply)

- ☐ 1. Controlled burns
- ☐ 2. Establish brush piles
- ☐ 3. Strip mowing
- ☐ 4. Clear cuts in forested areas
- ☐ 5. Brush and briar removal
- ☐ 6. Clover and/or bluegrass plantings
- ☐ 7. Allow the area to develop naturally
- ☐ 8. Establish more hedgerows
- ☐ 9. Release rabbits trapped outside the area

- 9 a. List the number of the ONE management technique that you DISAPPROVE of MOST for managing rabbits on Percy Priest.
- _____

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SECTION IV. VISITOR BACKGROUND CHARACTERISTICS

=====

In this final section we would like to ask some questions about your background which will help us compare your answers to those of other people. This information is important to the success of the study and aids in making predictions about rabbit hunting use in the future. **ALL INFORMATION IS STRICTLY CONFIDENTIAL.** HOWEVER, YOUR RESPONSE WILL STILL BE VERY USEFUL IF YOU CHOOSE NOT TO ANSWER SOME OR ALL OF THE QUESTIONS IN THIS SECTION

1. Your present age: _____ Years
2. Your Sex: ___ Male ___ Female
3. What is the highest level of education you have completed so far? (Circle one number)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18+
Elementary								High School				After High School						
School																		
4. What is your occupation? (Be as clear as possible--tell what kind of work you do, not for whom you work. If student, housewife, unemployed or retired; please say so.)

5. Check the one response that best describes the size of the area WHERE YOU GREW UP.

___	Large City (50,000 or more)
___	Suburb of a Large City
___	Small City or Town (Less than 50,000)
___	Rural Area
6. Check the one response that best describes the size of the area WHERE YOU LIVE NOW.

___	Large City (50,000 or more)
___	Suburb of a Large City
___	Small City or Town (Less than 50,000)
___	Rural Area
7. Check the category that includes your 1991 TOTAL HOUSEHOLD INCOME before taxes.

___	Under \$10,000	___	\$40,000 to \$49,999
___	\$10,000 to \$19,999	___	\$50,000 to \$74,999
___	\$20,000 to \$29,999	___	\$75,000 to \$99,999
___	\$30,000 to \$39,999	___	\$100,000 and over

8. What information would you desire about rabbit hunting at
Percy Priest Wildlife Management Area

(Check all you would desire)

- | | |
|--|--|
| ☐ Hunting locations | ☐ Hunting regulations |
| ☐ Hunting techniques | ☐ Access locations |
| ☐ Wildlife management | ☐ Hunter safety |
| ☐ programs | ☐ programs |
| ☐ Bag statistics | ☐ Map of area |
| ☐ Trail maps | ☐ Parking areas |
| ☐ Check stations | ☐ Information sources |
| ☐ Other _____ | |
| ☐ Other _____ | |

USE THE REMAINING SPACE FOR ANY COMMENTS YOU WOULD LIKE TO MAKE:

PLEASE MAIL THE COMPLETED SURVEY IN THE SELF-ADDRESSED ENVELOPE.
NO STAMP IS NEEDED, THE POSTAGE HAS ALREADY BEEN ATTACHED.

THANKS FOR YOUR HELP AND COOPERATION

THE UNIVERSITY OF TENNESSEE

**LAUREL HILL WMA
QUAIL HUNTER SURVEY
1991-1992**



**DEPARTMENT OF FORESTRY, WILDLIFE AND FISHERIES
UNIVERSITY OF TENNESSEE
KNOXVILLE, TN 37921**

**Laurel Hill Wildlife Management Area
Quail Hunter Survey**

General Information. We would appreciate a few minutes of your time to answer this survey. The purpose of this study is to help managers do a better job of serving you. You can help by sharing your views with us about your quail hunting visit(s). Please base your answers on your quail hunting visits to the Laurel Hill Wildlife Management Area during the 1991-1992 Quail Hunting Season.

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SECTION 1. QUESTIONS ABOUT YOUR QUAIL HUNTING VISIT(S)

=====

1. What type of hunting party do you hunt with most frequently? (Check one)

☐ Alone
☐ Family
☐ Friends
☐ Family and Friends
☐ Organized Hunting Club or Organization

2. What is the total number of days that you hunted at Laurel Hill Wildlife Management Area during the 1991-1992 season?

_____ Total days quail hunting

3. To what extent did other quail hunters interfere with your enjoyment?

☐ Not At All
☐ Very Little
☐ Some
☐ Quite A Bit
☐ A Lot

4. What is the average number of other hunting parties you encountered each day while hunting.

_____ Quail hunting parties per day

5. Please indicate the HIGHEST number of people, including yourself, that you will tolerate IN YOUR HUNTING PARTY before your hunting experience becomes unpleasant.

_____ People per hunting party

6. Please indicate the HIGHEST number of other Hunting Parties you will tolerate before your hunting trip becomes unpleasant.

_____ Other Hunting Parties you will tolerate

7. Did you feel the area was crowded? (On the scale below, CIRCLE the number that best describes your feeling about the number of other hunters)

1	2	3	4	5	6	7
1		1		1		1
Not at All		Slightly		Moderately		Very
Crowded		Crowded		Crowded		Crowded

8. About how many miles did you travel to hunt at Laurel Hill Wildlife Management Area?

_____ (One way mileage)

9. How long in advance do you usually plan your hunting visit(s) to Laurel Hill?(Check one)

_____ Less than one week	_____ 7 to 12 months
_____ 1 week up to one month	_____ Over one year
_____ 1 to 6 months	

10. Do you own your own bird dogs?

_____ No _____ Yes

How many? _____ Bird dogs

11. Did you train your dog at Laurel Hill before the season?

_____ No _____ Yes

If Yes, how many days did you train your dog on the WMA?

_____ 1-5 days
_____ 6-10 days
_____ 11-20 days
_____ Over 20 days

12. What was your most important reason for hunting at Laurel Hill?(Check one)

- ☐ It is close to where I live
- ☐ I have friends in the area
- ☐ I have family in the area
- ☐ Quail are plentiful
- ☐ There are no rabbit or deer hunters where I hunt
- ☐ It is a good place to work my dogs
- ☐ Hunting in Laurel Hill is challenging
- ☐ Laurel Hill is very accessible
- ☐ Other_____

13. How would you describe your hunting visits during the years you have hunted at Laurel Hill?

- | | |
|--|--|
| ☐ This is my first season hunting on Laurel Hill. | ☐ Hunting stayed about the same |
| ☐ Hunting has improved | ☐ Hunting has gotten worse |

14. Information about problems you may have experienced can help the managers make future hunting visits more enjoyable. To what extent did you find the following to be a PROBLEM during your hunting visit? (CIRCLE the number that best describes how SERIOUS A PROBLEM you found EACH to be)

	Not A Problem	Slight Problem	Moderate Problem	Serious Problem	Very Serious Problem
Litter	1	2	3	4	5
Off- roaders	1	2	3	4	5
Not enough quail	1	2	3	4	5
Parking	1	2	3	4	5
Unskilled hunters	1	2	3	4	5
Brush too thick for dogs or hunters	1	2	3	4	5
Poor access roads	1	2	3	4	5
No up-to-date map of the WMA	1	2	3	4	5
Too many hunters	1	2	3	4	5
Quail in poor condition	1	2	3	4	5
Vandalism	1	2	3	4	5
Not enough hunting information in brochures	1	2	3	4	5
ILLEGAL hunters	1	2	3	4	5
Not enough information signs	1	2	3	4	5
Not enough Wildlife Officer Patrols	1	2	3	4	5
Too many Wildlife Officer Patrols	1	2	3	4	5
Other Problems Not Listed					
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

15. How well do the following statements describe your feelings about your quail hunting visit(s)? (CIRCLE) the number that best describes how strongly you AGREE or DISAGREE with EACH statement)

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
I was bothered by the actions of other hunters.	1	2	3	4	5
There were too many hunters where I hunted.	1	2	3	4	5
I believe that some hunters took over their legal limit of quail.	1	2	3	4	5
I wish I had shot more quail.	1	2	3	4	5
I believe that the area is being well managed.	1	2	3	4	5
I was able to get away from the demands of life.	1	2	3	4	5
I was satisfied with my hunting visit.	1	2	3	4	5
I would like to return next year.	1	2	3	4	5
I enjoyed eating the quail I bagged.	1	2	3	4	5
I improved my skill at hunting quail	1	2	3	4	5
I enjoyed watching the dog(s) work.	1	2	3	4	5
I enjoyed being with my hunting partners.	1	2	3	4	5
I had a problem with my equipment.	1	2	3	4	5
I wish that the weather had been better.	1	2	3	4	5
I enjoyed hunting in the area as much as I expected.	1	2	3	4	5

=====

SECTION II. YOUR QUAIL HUNTING EXPERIENCE

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PLEASE ANSWER THE FOLLOWING QUESTIONS BASED UPON ALL
QUAIL HUNTING TRIPS YOU HAVE TAKEN AT LAUREL HILL AND
ELSEWHERE.

1. What type of shotgun do you hunt with the most?
(Check one)
☐ Single-shot ☐ Double-barrel
☐ Pump action ☐ Semi-automatic
2. Was this your first season hunting quail?
☐ No ☐ Yes--- If YES, GO TO QUESTION 14
3. How many years have you hunted quail? Years
4. On the average, how many days per season do you hunt
quail? Days Per Season
5. How many quail do you usually bag during a season?
 Quail Per Season
6. Have you hunted quail in areas other than Laurel Hill
Wildlife Management Area?
☐ Yes ☐ No--- If NO GO TO QUESTION 7
- 6a. How many places, other than WMA's, have you ever
hunted? (Check one)
☐ 0-5 ☐ 21-50
☐ 6-20 ☐ Over 50
- 6b. How many other Wildlife Management Areas have you
hunted?
 WMA's
- 6c. How would you compare the abundance of quail at
Laurel Hill to the non-WMA's you have hunted?
☐ Not as good as most places hunted
☐ About the same as other places hunted
☐ Better than most places hunted
- 6d. How would you compare the abundance quail at Laurel
Hill to the other Wildlife Management Areas?
☐ Not as good as most WMA's hunted
☐ About the same as other WMA's hunted
☐ Better than most WMA's hunted

6e. If you have hunted quail out of the state of Tennessee how does quail abundance in other states compare with quail abundance in Tennessee?

- ☐ Not as good in Tennessee as in most states
- ☐ About the same as most states
- ☐ Better than most states
- ☐ I do not hunt quail out of state

6f. What percentage of your quail hunting NOW occurs at Laurel Hill Wildlife Management Area?

_____ %

6g. What percentage of your quail hunting occurs on any kind of public lands?

_____ %

7. Have you hunted quail at Laurel Hill Wildlife Management Area before?

☐ Yes ☐ No ---If NO, GO TO QUESTION 14

8. Did you see more or less quail than you expected this season on the management area?

- ☐ More
- ☐ Less
- ☐ About the Same
- ☐ No expectation

9. How many seasons have you hunted quail at Laurel Hill?

_____ Seasons

10. About how many days per season do you hunt quail at Laurel Hill?

_____ Days Per Season

11. About how many quail per season do you usually bag at Laurel Hill?

_____ Quail bagged per season

12. During your time hunting at Laurel Hill, has the abundance of quail improved?

- ☐ Abundance of quail on the area has improved
- ☐ Abundance of quail on the area is about the same
- ☐ Abundance of quail on the area is worse than years before

13. What do you consider your best season hunting on the Area?

14. Who first introduced you to quail hunting?

☐ Parents ☐ Friends
☐ Relatives ☐ Other, _____

15. How old were you when you first went quail hunting?

_____ Years Old

16. Have you ever taken a hunter safety course?

☐ No ☐ Yes

17. How do you rate your skill at quail hunting?

☐ Beginner
☐ Intermediate
☐ Advanced
☐ Expert

18. As an outdoor activity, how important is quail hunting to you?

☐ Not At All Important
☐ Slightly Important
☐ Moderately Important
☐ Very Important
☐ Extremely Important

19. As a quail hunting area, how important is Laurel Hill to you compared to other areas?

☐ Not At All Important
☐ Slightly Important
☐ Moderately Important
☐ Very Important
☐ Extremely Important

20. What activities do you pursue at Laurel Hill throughout the year? (Check All That Apply)

☐ 1. Hunting
☐ 2. Hiking
☐ 3. Biking
☐ 4. Fishing
☐ 5. Bird watching
☐ 6. Walking the dog
☐ 7. Dog Training
☐ 8. Horseback riding
☐ 9. Other _____

20 a. List the number of the ONE activity you enjoy the MOST at Laurel Hill.

21. What type of game do you hunt? (Please CHECK all game that you hunt)

☐ 1. Squirrel	☐ 6. Quail	☐ 11. Woodcock
☐ 2. Deer	☐ 7. Dove	☐ 12. Wildboar
☐ 3. Waterfowl	☐ 8. Snipe	☐ 13. Bobcat
☐ 4. Opossum	☐ 9. Raccoon	☐ 14. Grouse
☐ 5. Turkey	☐ 10. Rabbit	☐ 15. Other_____

21 a. List the number of the ONE game animal that you enjoy hunting the MOST.

22. Please CHECK all the game species that you hunt at Laurel Hill Wildlife Management Area.

☐ 1. Squirrel	☐ 6. Quail	☐ 11. Woodcock
☐ 2. Deer	☐ 7. Dove	☐ 12. Other_____
☐ 3. Waterfowl	☐ 8. Snipe	
☐ 4. Opossum	☐ 9. Raccoon	
☐ 5. Turkey	☐ 10. Rabbit	

22 a. List the number of the ONE game animal that you enjoy hunting the MOST at Laurel Hill.

23. What sources did you use to gain information about Laurel Hill Wildlife Management Area?
(CHECK All sources used)

☐ Parents	☐ Newspaper	☐ Wildlife Organizations
☐ Relatives	☐ State Hunting	☐ Sporting Magazines
☐ Friends	☐ Brochures	☐ Wildlife Biologists
☐ Radio	☐ Wildlife Officers	☐ County Extension Programs
☐ TV	☐ Brochures from Laurel Hill	
☐ Wildlife Manager	☐ Club Newsletters	
☐ Club	☐ Co-workers	
☐ Other_____	☐ Other_____	

24. Do you belong to any hunting clubs or organizations?

☐ No ☐ Yes---If YES, which one(s)?:

25. Which of the following is the most important reason you hunt quail? (Mark one)

- ☐ To be outdoors
- ☐ Test your shooting skill
- ☐ Outsmart game
- ☐ Watch the dog(s) work
- ☐ Get meat for the table
- ☐ To be with friends
- ☐ Get away from the job or house

**SECTION III. YOUR IMPRESSIONS ABOUT THE MANAGEMENT OF
LAUREL HILL WILDLIFE MANAGEMENT AREA**

1. Your impressions about the management of Laurel Hill would be helpful to managers. Given the condition of the area when you were quail hunting, how do you feel about EACH of the following management actions? (CIRCLE the number that shows how much you AGREE or DISAGREE with EACH action)

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
Require hunters to carry out their trash	1	2	3	4	5
Increase road access into hunting areas	1	2	3	4	5
Improve existing roads in the area	1	2	3	4	5
Improve parking areas	1	2	3	4	5
Provide toilets	1	2	3	4	5
Provide more hunting information	1	2	3	4	5
Make information easier to understand	1	2	3	4	5
Have up-to-date maps available	1	2	3	4	5
Be more aggressive in Law enforcement	1	2	3	4	5
Enforce severe penalties on poachers	1	2	3	4	5
Manage for more quail	1	2	3	4	5

2. In general, do you approve of the present regulations for quail hunting in Laurel Hill Wildlife Management Area?
(Check one)

☐ Definitely No
☐ Probably No
☐ Probably Yes
☐ Definitely Yes

3. What is your opinion on the number of days a week open for quail hunting at Laurel Hill? (Check one)
- ☐ I think there are too few days a week open to quail hunting
 - ☐ I like the days they have open now
 - ☐ I think there are too many days a week open to quail hunting
4. What do you think about the total length of the quail hunting season in Tennessee ?(Check one)
- ☐ I think the season is too long
 - ☐ I think the season is the right length
 - ☐ I think the season is not long enough
5. If the length of the quail season were going to be changed, which change would you prefer most?(check one)
- ☐ Lengthening the season by starting earlier in the year
 - ☐ Lengthening the season by extending the end of the season
 - ☐ Leaving the season the same length, but start and end earlier in the year
 - ☐ Leaving the season the same length, but start and end later in the year
 - ☐ Shortening the season by stopping earlier in the year
 - ☐ Shortening the season by starting later in the year
 - ☐ I prefer no change in the length of the season
6. How do you feel about the current regulations setting size of the bag limit?(Check one)
- ☐ Bag Limit Too Small ☐ Bag Limit Too High
 - ☐ Bag Limit About Right
7. Do you feel there are any management actions needed NOW on the number of quail hunters using the Laurel Hill Wildlife Management Area?
- ☐ Yes, some management actions are needed now to correct an existing problem of too many quail hunters using the Wildlife Management Area.
 - ☐ Yes, although not too many quail hunters use the area now, management actions are needed now to prevent too many quail hunters from using the WMA in the future.
 - ☐ No, management actions are not needed now, but should be imposed in the future if and when too many quail hunters are using the WMA.
 - ☐ No, there should be no management actions now or in future on the number of quail hunters using the WMA.

8. Which of the following habitat management techniques do you think should be used to manage for quail at Laurel Hill WMA.

- ☐ 1. Controlled burns
- ☐ 2. Planting of annual food plots (soybeans, wheat, milo)
- ☐ 3. Planting of perennial food plots (Kobe or Korean lespedeza, Bi-color lespedeza)
- ☐ 4. Strip disking
- ☐ 5. Clear cuts in forested areas
- ☐ 6. Brush and briar removal
- ☐ 7. Allow the area to develop naturally
- ☐ 8. Establish more hedgerows
- ☐ 9. Release pen-raised quail

- 8a. List the number of the management technique that you APPROVE of MOST for managing quail on Laurel Hill.
-

9. Which of the following habitat management techniques do you think should be NOT used to manage for quail at Laurel Hill WMA.

- ☐ 1. Controlled burns
- ☐ 2. Planting of annual food plots (soybeans, wheat, milo)
- ☐ 3. Planting of perennial food plots (Kobe or Korean lespedeza, Bi-color lespedeza)
- ☐ 4. Strip disking
- ☐ 5. Clear cuts in forested areas
- ☐ 6. Brush and briar removal
- ☐ 7. Allow the area to develop naturally
- ☐ 8. Establish more hedgerows
- ☐ 9. Release pen-raised quail

- 9a. List the number of the management technique that you APPROVE of the LEAST for managing quail at Laurel Hill.
-

SECTION IV. VISITOR BACKGROUND CHARACTERISTICS

In this final section we would like to ask some questions about your background which will help us compare your answers to those of other people. This information is important to the success of the study and aids in making predictions about quail hunting use in the future. ALL INFORMATION IS STRICTLY CONFIDENTIAL. HOWEVER, YOUR RESPONSE WILL STILL BE VERY USEFUL IF YOU CHOOSE NOT TO ANSWER SOME OR ALL OF THE QUESTIONS IN THIS SECTION

1. Your present age: _____ Years
2. Your Sex: _____ Male _____ Female
3. What is the highest level of education you have completed so far? (Circle one number)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18+
Elementary School								High School				After High School						
4. What is your occupation? (Be as clear as possible--tell what kind of work you do, not for whom you work. If student, housewife, unemployed or retired; please say so.)

5. Check the one response that best describes the size of the area WHERE YOU GREW UP.

_____	Large City (50,000 or more)
_____	Suburb of a Large City
_____	Small City or Town (Less than 50,000)
_____	Rural Area
6. Check the one response that best describes the size of the area WHERE YOU LIVE NOW.

_____	Large City (50,000 or more)
_____	Suburb of a Large City
_____	Small City or Town (Less than 50,000)
_____	Rural Area
7. Check the category that includes your 1991 TOTAL HOUSEHOLD INCOME before taxes.

_____	Under \$10,000	_____	\$40,000 to \$49,999
_____	\$10,000 to \$19,999	_____	\$50,000 to \$74,999
_____	\$20,000 to \$29,999	_____	\$75,000 to \$99,999
_____	\$30,000 to \$39,999	_____	\$100,000 and over

8. What information would you desire about quail hunting at
Laurel Hill Wildlife Management Area

(Check all you would desire)

- | | |
|--|--|
| ☐ Hunting locations | ☐ Hunting regulations |
| ☐ Hunting techniques | ☐ Access locations |
| ☐ Wildlife management | ☐ Hunter safety |
| ☐ programs | ☐ programs |
| ☐ Bag statistics | ☐ Map of area |
| ☐ Trail maps | ☐ Parking areas |
| ☐ Check stations | ☐ Information sources |
| ☐ Other _____ | |
| ☐ Other _____ | |

USE THE REMAINING SPACE FOR ANY COMMENTS YOU WOULD LIKE TO MAKE:

PLEASE MAIL THE COMPLETED SURVEY IN THE SELF-ADDRESSED ENVELOPE.
NO STAMP IS NEEDED, THE POSTAGE HAS ALREADY BEEN ATTACHED.

THANKS FOR YOUR HELP AND COOPERATION

THE UNIVERSITY OF TENNESSEE

APPENDIX D

THANK YOU LETTER TO SURVEY PARTICIPANTS



Department of Forestry, Wildlife
and Fisheries
P. O. Box 1071
Knoxville, TN 37901-1071
(615) 974-7126

Dear Hunter:

Thank you for choosing to participate in this survey. Your input will help TWRA better understand the needs of the small game hunter on their Wildlife Management Areas. Your opinions are important to us; please complete and return your questionnaire as soon as possible.

This study involves research to be conducted by a graduate student in Wildlife and Fisheries Science, Mr. Michael Wefer, under the supervision of Dr. Ralph W. Dimmick, Professor of Wildlife and Fisheries Science.

Your participation is voluntary. We do not foresee any risk to you from participating in our survey but you may refuse to participate or withdraw from participation at any time with no penalty.

Confidentiality of all your answers will be maintained by restricting access to your questionnaire to the supervisor and researcher. Only Michael Wefer and Ralph Dimmick will have access to names and data. Questionnaires will be secured in Plant Science Building Room 203 on the University of Tennessee campus.

When you return the questionnaire, we consider this your consent for us to use the data, but not your name, in our research project.

We thank you for your willingness to participate in our research project.

Sincerely,

Ralph W. Dimmick
Professor

Sincerely,

Michael Wefer
Graduate Student

APPENDIX E
FOLLOW-UP LETTER

Department of Forestry, Wildlife
and Fisheries
P O Box 1071
Knoxville, TN 37901-1071
(615) 974-7126

Dear Hunter:

You were mailed a hunter survey about two weeks ago from the University of Tennessee. We have not yet recieved your completed survey. Please consider taking a few minutes to complete the survey and mailing it to us.

Since we are able to contact only a small number of hunters, your response is very important to us. Your views are needed in making this a successful study. Your opinions can help improve the way the WMA you hunted on is managed.

In case the first survey was misplaced or lost in the mail, another survey has been enclosed. Your participation is greatly appreciated.

If you have already mailed your survey in, thanks once again for your participation.

Sincerely,

Michael Wefer
Graduate Assistant

APPENDIX F
FOLLOW-UP POSTCARD

Department of Forestry, Wildlife
and Fisheries
P. O. Box 1071
Knoxville, TN 37901-1071

Dear Hunter:

About two weeks ago you were sent a hunter survey from the University of Tennessee. As of yet we have not received your survey.

If you have not already done so, we ask that you complete the survey and return it as soon as possible. Your views are important to us and your help will be greatly appreciated. If you have all ready mailed the survey, thank you once again for your cooperation.

Michael Wefer
Research Assistant

VITA

Michael A. Wefer was born in Peoria Illinois, on October 3, 1967. He graduated from Vandalia High School in Vandalia, Illinois in 1985. In 1988, he received his Bachelor of Science degree in Zoology from Eastern Illinois University, Charleston. In August of 1990, he accepted a graduate research assistantship with the University of Tennessee's Department of Forestry, Wildlife, and Fisheries Science. He received his Master of Science degree in Wildlife and Fisheries Science in the Summer of 1995.

Mike has worked for the Forest Preserve District of DuPage County, Illinois and is currently working on contract to the Tennessee Valley Authority as a wildlife biologist.

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