

DEPARTMENT OF NATURAL RESOURCES
RESEARCH

By
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Bureau of Research, Madison

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ABSTRACT

We sent Turkey Hunting Questionnaires (TQ) to 1,200 persons who received hunting permits for the 1983 spring gobbler season. The questionnaire was designed to obtain information on turkey harvest and hunter activity. Nearly 80% of the respondents actively hunted, and 25% of these hunters bagged a turkey. Successful hunters reported harvesting 148 of the 180 turkeys that were registered at Wisconsin Department of Natural Resources (DNR) stations. Bag success was not influenced by previous turkey hunting experience, attendance at a DNR training session, or receipt of a landowner preference permit. The more days that a hunter spent preseason scouting, the less days that hunter required to bag a turkey. Turkey weights ranged from 12-28 lb with Zone 9 birds weighing less than birds from other zones. Beard lengths varied from 20-300 mm and spur lengths from 2.5-35.0 mm.

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INTRODUCTION

Historically, the eastern wild turkey (Meleagris gallopavo silvestris) occupied an area of Wisconsin south of a line from Prairie du Chien to Green Bay (Wis. Dep. Nat. Resour. 1982). Early logging practices, unregulated hunting, and domestic fowl diseases are believed to have led to their extirpation from Wisconsin by the late 1800s (Burke 1983).

Early restocking programs failed to establish self-sustaining populations because of domestic traits in the lineage of the introduced birds and diseases such as blackhead (Dreis et al. 1973). Restocking efforts at Meadow Valley Wildlife Area-Necedah National Wildlife Refuge (MVWA-NNWR) between 1954 and 1957, however, established a population of nearly 1,000 birds (Wis. Dep. Nat. Resour. 1978). Although the population estimate was as low as 75 birds in 1958, the population increased and spring gobbler seasons were held in 1966-68. Hunter success was low in these years, less than 1% for the 2,500 permit holders (Burke 1983). After 1968, the population declined again and a season was not held until 1983.

In 1974, the Department of Natural Resources (DNR) began a restoration program with the Missouri Department of Conservation. Wisconsin received wild turkeys from Missouri in exchange for ruffed grouse (Bonasa umbellus). Restocking efforts began in southwest Wisconsin in areas of the turkey's original range, but did not include MVWA-NNWR.

In 1979, the DNR also began live-trapping and transplanting Wisconsin turkeys to other areas of southwest Wisconsin. This activity accelerated the turkey's natural redistribution and reduced the risk of disease to turkeys concentrated in just one area (Burke 1983). These latest range extension efforts were successful and, consequently, the DNR implemented a spring gobbler season in 1983 in 4 zones of the state (Fig. 1).

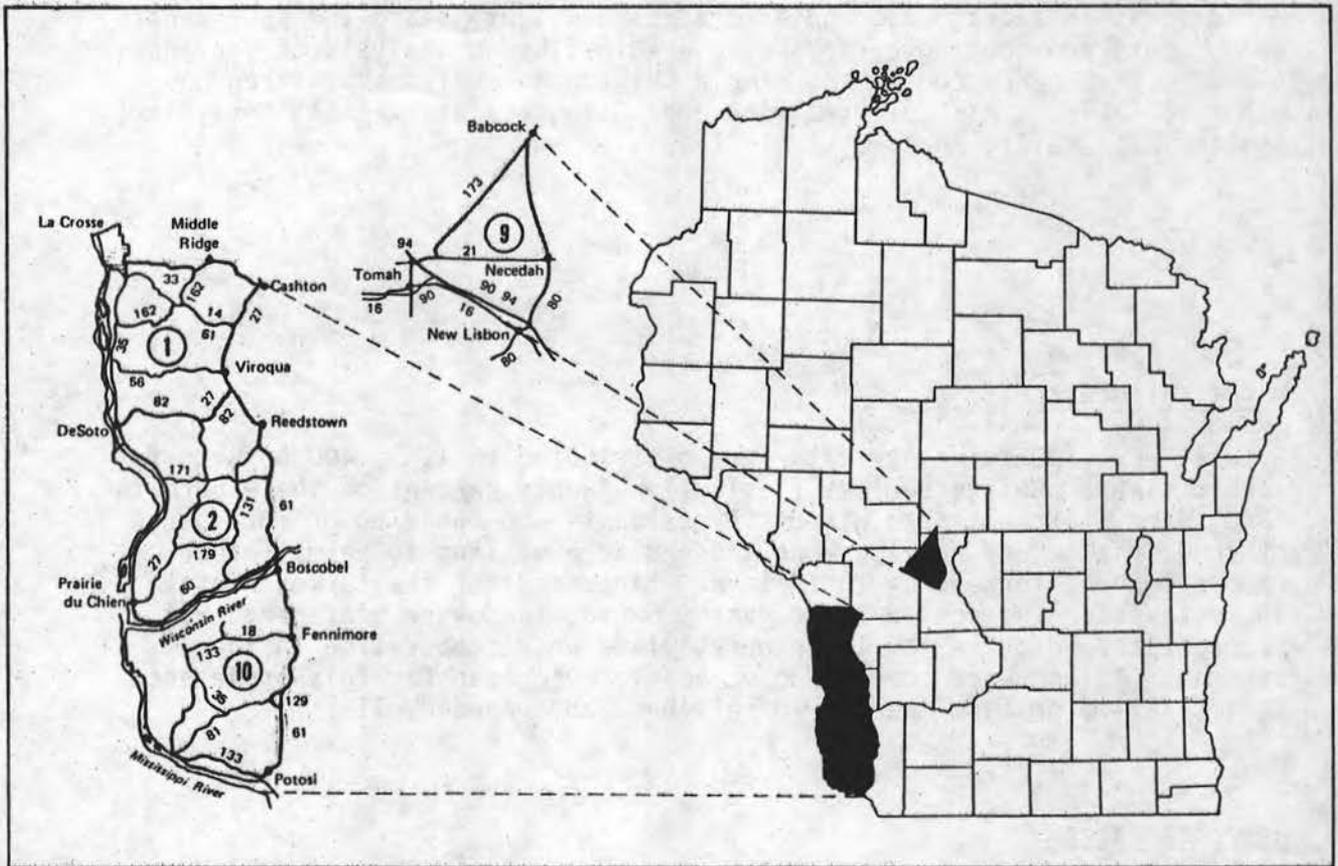


FIGURE 1. Hunting zones for wild turkey in Wisconsin, 1983.

METHODS

All persons who received a turkey permit for the spring gobbler hunt were sent a 1983 Turkey Hunting Questionnaire (TQ) on the last day of the hunting period for which they had a permit (Append. I). The TQ was mailed only once to each hunter. The TQ was designed to obtain information such as previous turkey hunting experience or training, landowner preference, active hunting, days afield, and success in bagging a turkey.

All turkeys bagged were registered and tagged at a DNR field station. The following information was recorded: hunter's name and address; zone and time of kill; and the turkey's age class, weight, spur and beard length.

Differences in average bag and effort, bird weight, beard and spur length among zones and hunting periods were examined by an analysis of variance (ANOVA). Frequency counts and simple Chi-square analyses were run on other variables. All analyses were done using the Statistical Analysis System (SAS) (Stat. Anal. Syst. 1982).

RESULTS

Permit Allocations

A total of 1,200 turkey permits were distributed in 1983, 400 permits for each of the 3 hunting periods (Table 1). Twenty percent of these permits (240) were distributed to Wisconsin residents who owned 50 or more acres of land in a turkey hunting zone and who were willing to permit other people to hunt turkeys on their land. Since most of the turkey habitat in southwestern Wisconsin is privately owned, landowner preference was incorporated into the law to encourage landowner cooperation in the program. A landowner could choose, however, to transfer this preference to a relative or farm operator of his/her land (Append. II).

Response Rates

Overall, 62% of the permittees responded to the TQ (Table 2). Zone 9 had the highest response rate, over 65%. Nearly 80% of all the respondents actively hunted, with the highest rate in Zone 1. The lowest number of respondents and active hunters was reported in Zone 10, which also had the highest percentage (34%) of successful hunters. Zone 9 had only a 13% success rate. Overall, 25% of the active hunters reported bagging turkeys.

Comparison of Reported and Registered Harvest

Because each turkey was registered, we could check for bias in the TQ introduced by persons who, for whatever reason, incorrectly reported their harvest. One hunter reported bagging a turkey when he did not, and another apparently failed to report a registered turkey. By dividing these 2 respondents by the total number of TQ respondents (742), a reporting bias of only 0.27% was obtained.

In contrast, there was an unexpectedly high nonresponse bias, that bias caused by differences between respondents and nonrespondents. Those responding to the TQ reported 148 of the registered harvest of 180 turkeys (Table 3). From a simple expansion of the respondents' harvest rate, we estimated a total harvest of 230 turkeys, or a 28% overestimate. This means that unsuccessful (and perhaps also inactive hunters) responded less frequently to the TQ than did successful hunters.

TABLE 1. Season dates and permit allocations for wild turkey, 1983.

Parameter	Period I	Period II	Period III
Season dates*	April 21-25	April 28-May 2	May 5-9
Season length (days)	5	5	5
Allowed harvest	1/season	1/season	1/season
Number of permits	400	400	400

*Season dates were the same for each of the 4 zones.

TABLE 2. Percent of respondents and active and successful hunters.

Parameter	Zone 1	Zone 2	Zone 9	Zone 10	Totals
Questionnaires mailed	297	300	298	297	1,192
Respondents (%)	62	61	65	60	62
Active hunters (%)	83	79	80	76	80
Successful hunters (%)	31	23	13	34	25

TABLE 3. Comparison of registered and reported turkey harvest, 1983.

Zone	Period I (April 21-25)	Period II (April 28-May 2)	Period II (May 5-9)	Total
Zone 1	22 (17)*	16 (14)	18 (16)	56 (47)
Zone 2	16 (15)	9 (9)	12 (10)	37 (34)
Zone 9	14 (10)	12 (7)	6 (4)	32 (21)
Zone 10	19 (16)	17 (13)	20 (17)	56 (46)
TOTAL	71 (58)	54 (43)	56 (47)	181** (148)

*Reported turkey harvest in parentheses.

**One hunter killed 2 turkeys with one shot. The extra bird was confiscated.

Turkey Hunting Experience and Training

Ninety-one (12.3%) respondents, of whom 74 (12.5%) were active hunters, had previous turkey hunting experience. In contrast, 478 (64.4%) respondents and 413 (69.8%) active hunters attended a training session on Wisconsin turkey hunting held in 1982-83. The training sessions, taught by DNR personnel and volunteers, included a 4-hour review of turkey management and natural history, hunter-landowner relations, hunter safety, and hunting techniques. We anticipated that previous hunting experience or training would increase a hunter's likelihood of bagging a turkey; however, no significant differences in bag rates were found ($X^2 = 1.16$, $P = 28.1\%$, Table 4.).

Landowner Preference

Landowner preference permits were received by 144 (19.8%) of the respondents. When asked whether they received this preference, 131 respondents (91.0%) confirmed that they did. Unexpectedly, 45 (7.7%) of the 583 nonpreference respondents claimed to have preference permits, when they did not. The latter may include people who applied for preference permits and received regular permits, then mistakenly assumed that their permits were preferential.

Active hunters who received preference permits had no better success bagging a turkey than nonpreference permit holders ($X^2 = 1.20$, $P = 27.3\%$, Table 5).

Preseason Scouting and Hunting Days

Active hunters reported averages of 3.1 preseason scouting days and 3.0 actual hunting days (Table 6). Significant differences ($P = 0.05$) were found among zones. Zone 1 hunters spent the most days afield during both preseason scouting and the hunting season. Zone 9 and 10 hunters spent less days scouting than hunting. No significant differences were found among hunting time periods in either the number of days spent preseason scouting or hunting.

Relationships between Preseason Scouting and Hunting Success

Successful hunters for all zones consistently spent more days preseason scouting than hunting (Table 7). These hunters spent 3-5 days scouting before the season and required only 2.4 days to bag a turkey. Unsuccessful hunters, with the exception of hunters from Zone 1, spent less days scouting and averaged 3.2 days hunting. Overall, preseason scouting in the hunting zones increased a hunter's success, and the more days that a hunter spent scouting, the less days were required to bag a turkey.

TABLE 4. Distribution of harvest by hunter experience or training.

Harvest	Active Hunters with Training or Experience		Total
	No	Yes	
0	122 (78)*	322 (74)	444
1	34 (22)	114 (26)	148
Total	156	436	592

($X^2 = 1.16$, $P = 28.1\%$)

*Percent of column total in parentheses.

TABLE 5. Distribution of harvest by permit type.

Harvest	Active Hunters Who Held Landowner Preference Permit		Total
	No	Yes	
0	334 (77)*	106 (72)	440
1	102 (23)	41 (28)	143*
Total	436	147	583

($X^2 = 1.20$, $P = 27.3\%$)

*Percent of column total in parentheses.

TABLE 6. Preseason scouting and actual hunting days.

Zone	Preseason Scouting Days/ Active Hunter	Hunting Days/ Active Hunter
1	4.0 (151)*	3.2 (152)
2	3.3 (145)	3.0 (146)
9	2.7 (154)	3.1 (157)
10	2.6 (133)	2.7 (136)
Total	3.1 (583)	3.0 (591)

*Number of active hunters in parentheses.

Turkeys Bagged on Private and Public Lands

Of the 148 turkeys reported to have been bagged by TQ respondents, 122 were bagged on private land and 17 on public land (Table 8). Nine turkeys were harvested by hunters who hunted on both public and private lands. We presumed that more turkeys were harvested on private land because most turkey habitat is privately owned. In 1983, over 90% of the designated turkey zones were privately owned (R. Nicklaus, Wis. Dep. Nat. Resour., pers. comm.). Zone 9 (MVWA-NNWR), the only zone composed mostly of public land, had the lowest turkey harvest rate per active hunter (Table 3). This rate may be due to the zone's different habitat and turkey population, rather than its management or land ownership. When stocking operations were conducted in 1954, DNR personnel chose MVWA-NNWR more for the public ownership of most of its land, rather than its suitability as turkey habitat (DNR 1978). In contrast, locations of later stocking efforts were based on the suitability of the habitat regardless of whether the land was publicly or privately owned.

Weight Classes

Figure 2 illustrates the frequency of turkey weights for the 1983 hunting season. The weight of both immature and adult turkeys ranged from 12-28 lb. Birds bagged in Zone 1 were heaviest, while the classes of birds bagged in Zone 9 were the lightest overall. Midpoint weights from 12-18 lb included nearly all of the immatures.

Beard and Spur Lengths

The beard is a tuft of coarse modified feathers on the breast of an adult male turkey. Beard lengths ranged from 20-140 mm for immatures and 40-300 mm for adults (Fig. 3). Leg spur lengths varied between 2.5 and 12.5 mm for immatures and 12.5 and 35.0 mm for adults (Fig. 4).

Kelly (1975) found spur lengths, or a combination of spur and beard lengths and body weight, to be a reliable way of aging turkey gobblers in the spring harvest (Table 9). Birds in Zone 9 weighed less than birds in other zones. Although lighter, these birds are indeed adults, some of which belong to an age class between 2 and 4 years (Table 9). The smaller weights of comparably aged Zone 9 birds may indicate that MVWA-NNWR is marginal turkey habitat or may be due to the different genetic lineage of the birds. The MVWA-NNWR birds represent offspring of turkeys stocked from 1954-57 and are not part of the Missouri turkey lineage first introduced in 1974.

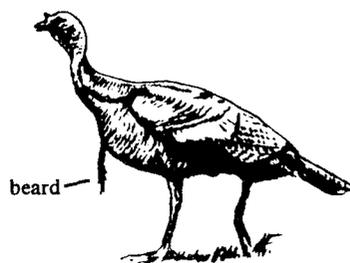


TABLE 7. Differences in days hunted and days scouted between successful and unsuccessful hunters.

Zone	Successful Hunters		Unsuccessful Hunters	
	Average Scouting Days	Average Hunting Days	Average Scouting Days	Average Hunting Days
1	4.8 (47)*	2.7 (47)	3.6 (104)	3.4 (105)
2	5.1 (34)	2.5 (34)	2.8 (111)	3.1 (112)
9	3.6 (20)	2.4 (21)	2.6 (134)	3.2 (136)
10	3.1 (44)	1.9 (46)	2.3 (89)	3.0 (90)
Total	4.2 (145)	2.4 (148)	2.8 (438)	3.2 (443)

*Number of active hunters in parentheses.

TABLE 8. Turkeys bagged by hunters using private, public, and both types of land.

Harvest	Number of Hunters Using			Total
	Private Land	Public Land	Both	
No	290	103	50	443
Yes	122	17	9	148
Total	412	120	59	591

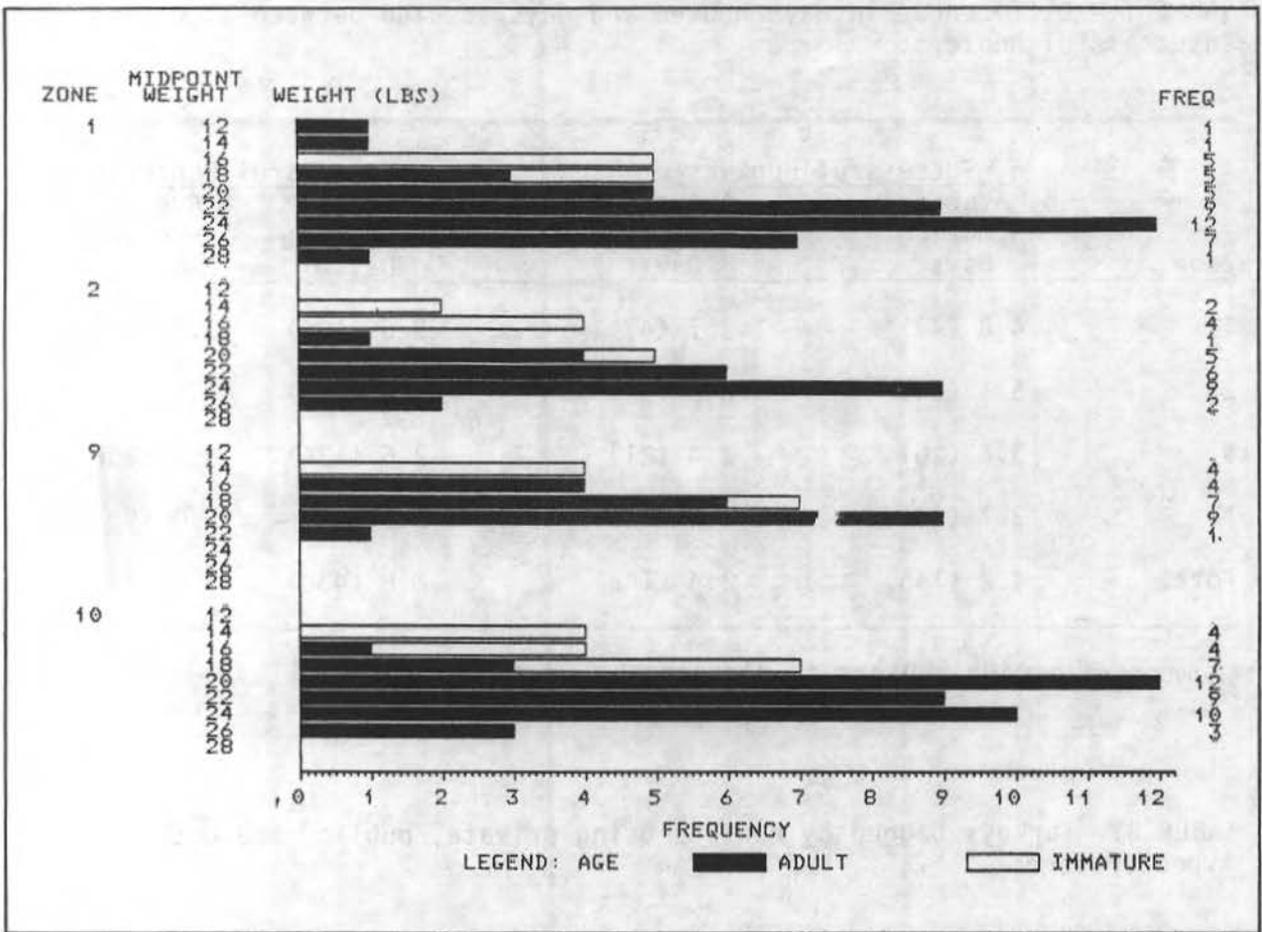


FIGURE 2. Frequency of turkey weights for the 1983 hunting season. Frequency refers to the number of registered turkeys, but does not include field-dressed birds.

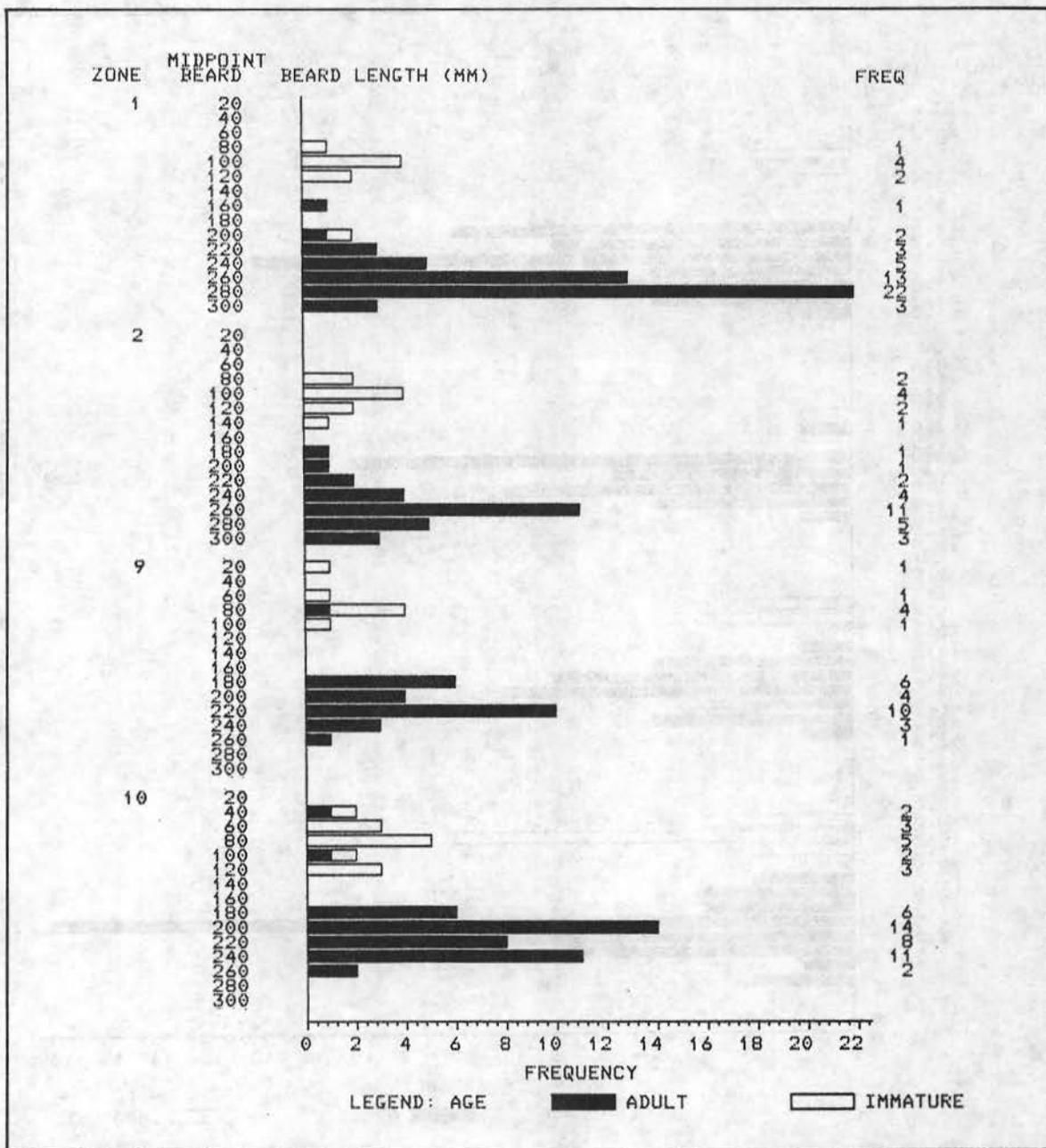


FIGURE 3. Frequency of turkey beard lengths for the 1983 hunting season.

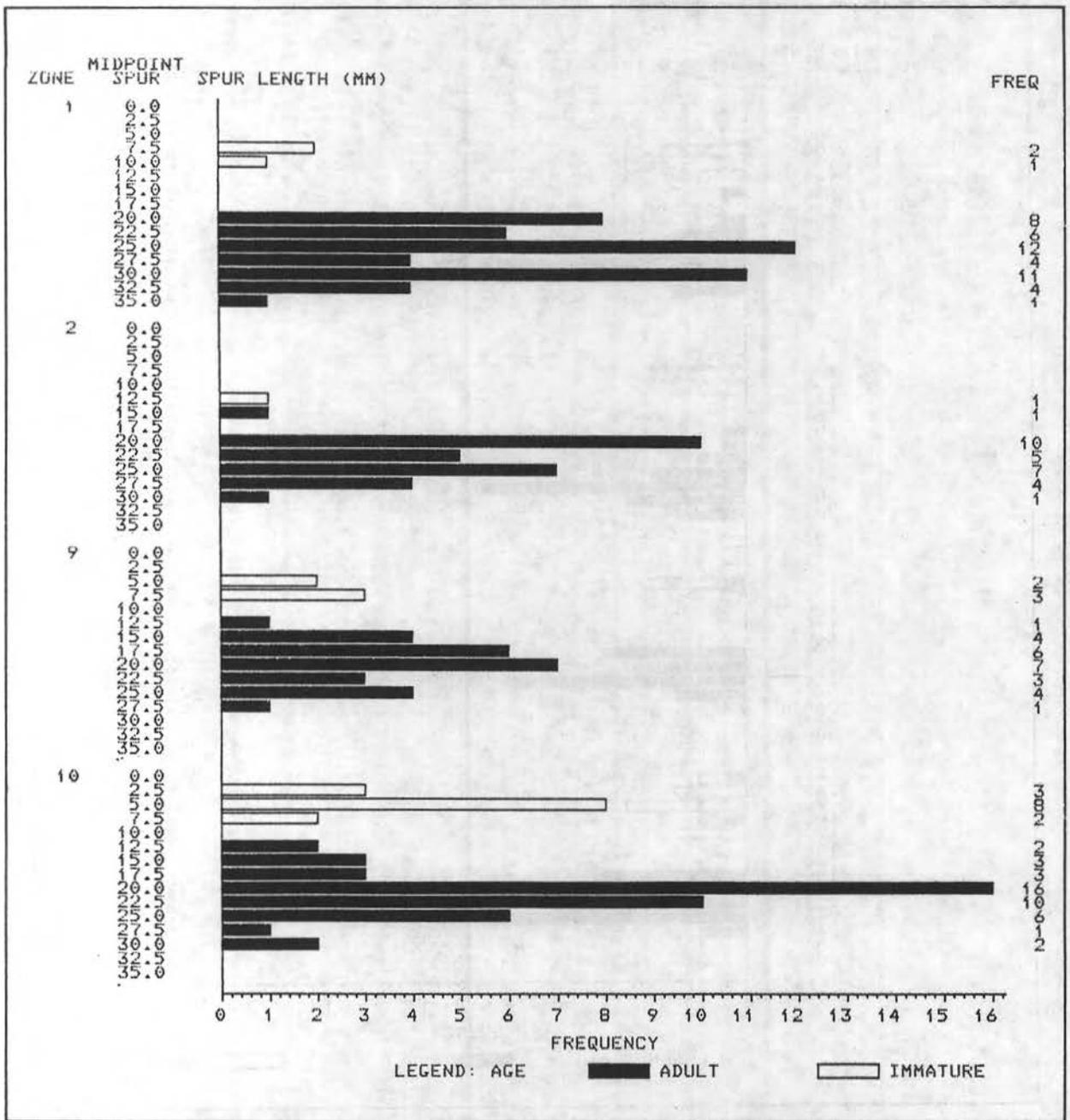


FIGURE 4. Frequency of turkey spur lengths for the 1983 hunting season.

TABLE 9. Spur and beard lengths and body weights of gobblers in known age classes (Kelly 1975).

Age (years)	Number	Spur Length (mm)		Beard Length (mm)		Body Weight (kg)	
		Mean	SD	Mean	SD	Mean	SD
1	25	6.64	2.27	112.84	26.31	34.04	3.48
2	27	21.96	2.86	240.56 ^{a*}	25.88	46.50 ^a	3.58
3	11	25.73	4.17	240.40 ^a	21.59	48.19 ^a	5.64
4	7	27.43 ^a	5.09	228.57 ^a	54.80	49.45 ^a	5.84
5	2	29.50 ^{a, b}	6.36	277.50	3.54	52.36	0.77
7	2	35.00	7.07	275.00	21.21	51.26	0.77
9	1	35.00		265.00		44.09	
5**	19	30.05 ^b	4.24	281.63	28.34	49.85 ^a	3.84

*a, ab, and b are not significantly different ($P = 0.05$).

**A minimum known age of at least 5 years.

SUMMARY

1. A total of 1,200 turkey permits were available in 1983, 400 permits for each of the three spring hunting periods. Twenty percent of the permits (240) were issued as landowner preference permits.
2. All persons receiving turkey permits were sent a 1983 Turkey Hunting Questionnaire (TQ). Overall, 62% of the permittees (742) responded to the TQ. Eighty percent of the respondents (591) actively hunted and an average of 25% of the active hunters (148) bagged a turkey.
3. The TQ respondents reported bagging 148 turkeys, while 180 turkeys were registered at the DNR's mandatory registration stations during the season. Reporting bias was insignificant among TQ respondents, whereas a high nonresponse bias (28%) was determined.
4. Neither previous turkey hunting experience, attendance at a turkey hunting training session, nor receipt of a landowner preference permit significantly influenced a hunter's likelihood of bagging a turkey.
5. Successful hunters spent 3-5 days scouting and required 2.4 days to bag a turkey. Unsuccessful hunters spent less days scouting than hunting and averaged 3.2 days hunting.
6. Of the 148 turkeys bagged by TQ respondents, 82% (122) were harvested on private land and 11% (17) on public land. Six percent of the turkeys (9) were harvested by hunters who hunted on both private and public lands.
7. Turkey weights ranged between 12 and 28 lb with all immatures weighing less than 20 lb. Beard lengths ranged from 20-140 mm for immatures and 40-300 mm for adults. Leg spur lengths ranged from 2.5-12.5 mm for immatures and 12.5-35.0 for adults.

APPENDIX I. 1983 Turkey Hunting Questionnaire (TQ).

LEAVE BLANK — DNR USE ONLY

1. Have you hunted wild turkeys prior to this season? Yes ₁ No ₂
2. Did you attend a 1982-1983 Wisconsin turkey hunting training session? Yes ₁ No ₂
3. Did you have a landowner preference permit or receive one by transfer? Yes ₁ No ₂
4. Did you hunt turkeys in Wisconsin this spring? Yes ₁ No ₂
 If you did hunt, please answer questions 5 through 12 also.
 If you did not hunt, go directly to question 12 and return this questionnaire.
5. How many days did you spend pre-season scouting for a place to hunt? _____
6. How many days did you spend hunting turkeys in Wisconsin this spring? _____
7. What was the ownership of the land on which you hunted?
 Private Land ₁ Public Land ₂ Private & Public ₃ Don't Know ₄
8. If you hunted on private land, did you hunt on
 Land that you own ₁ Somebody else's land ₂ Both your land & others ₃
9. If you hunted on somebody else's land, did they have a landowner preference permit?
 Yes ₁ No ₂ Don't Know ₃
 (Note: 20% of all turkey hunting permits were reserved for landowners with 50 or more acres of land.)
10. If you hunted on your own land, did any other hunters hunt turkeys on your land?
 Yes ₁ No ₂ Don't Know ₃
 If yes, how many? _____
11. Did you harvest a turkey in Wisconsin this spring? Yes ₁ No ₂
12. Please share any comments or suggestions you have regarding turkey hunting in Wisconsin.

DETACH HERE

State of Wisconsin
 Department of Natural Resources

1983 TURKEY HUNTING QUESTIONNAIRE
 SECTION 29.125, WISCONSIN STATUTE.
 FORM 2300-117 5-82

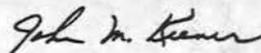
May 15, 1983

Dear Turkey Hunter:

Wisconsin's first turkey season since 1968 has recently ended. We are surveying all permit holders to obtain needed information. Please take a few minutes to complete the attached questionnaire. Your participation in this survey will help us continue to progress in restoring wild turkeys to Wisconsin, and in providing Wisconsin hunters with a quality hunt. You should complete this questionnaire regardless of whether or not you were able to hunt or harvest a turkey.

When you have finished, simply reverse the flap on this questionnaire and tape the edge and mail. Using your stamp will save DNR funds needed for management, even though no postage is required to return the questionnaire.

Sincerely,



John M. Keener
 Director, Bureau of Wildlife Management

DID YOU KNOW THAT:

TURKEY HENS BEGIN LAYING EGGS IN LATE MARCH AND EARLY APRIL. AVERAGE CLUTCH SIZE IS 12 EGGS. EGGS ARE LAID OVER A TWO WEEK PERIOD. THE TURKEY HEN BEGINS INCUBATING THE EGGS A DAY OR TWO AFTER THE LAST EGG IS LAID. TOTAL INCUBATION LASTS 28 DAYS. MOST OF THE EGGS HATCH WITHIN A ONE DAY PERIOD. YOUNG TURKEYS ARE CALLED POULTS. BY 18 DAYS OF AGE, POULTS ARE STRONG FLIERS. BY MID-OCTOBER, HEN POULTS WEIGH 5 TO 7 POUNDS AND MALES WEIGH 6 TO 10.

DETACH HERE

15

State of Wisconsin
 Department of Natural Resources
 Turkey Hunt
 Room 108
 3550 Mormon Coulee Road
 La Crosse, WI 54601

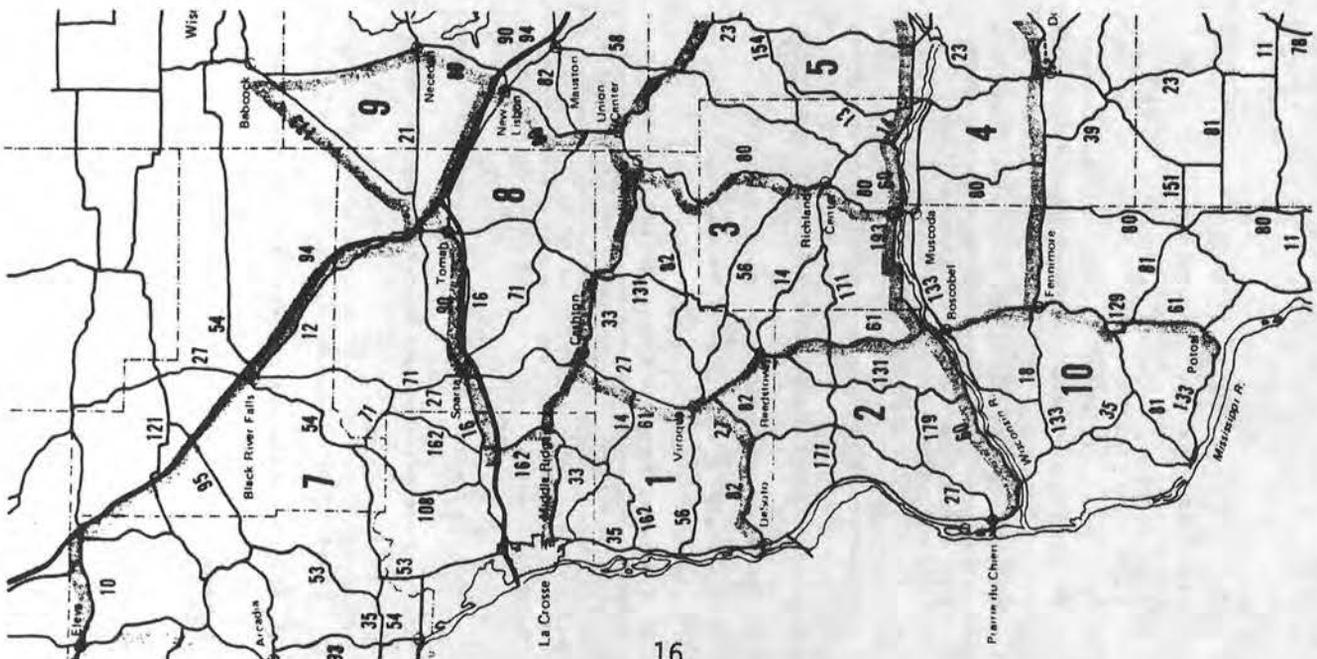
1983 WILD TURKEY HUNTING PERMIT APPLICATION
 Section 29.103, Wis. Stats.
 Form 2300-118

6-82

PLEASE READ THE FOLLOWING INSTRUCTIONS BEFORE COMPLETING FORM.

1. Application Options:
 - A. Applicants applying for a hunting permit for wild turkey under the general drawing, complete Sections A & D.
 - B. Landowner applicants applying for a hunting permit for wild turkey only under the landowner preference alternative, complete Sections B & D.
 - C. Landowner applicants applying for a hunting permit for wild turkey under the landowner preference drawing, as well as the general drawing, complete Sections A, B & D.
 - D. Landowner applicants transferring their wild turkey preference permit application complete only Section B.
 - E. Transferee information must appear in sections C & D. The transferee must also fill in Section A if applying for the general drawing as well.
2. Please print or type form.
3. **FALSE REPRESENTATION OF FACTS WILL RESULT IN PROSECUTION, PENALTY AND REVOCATION OF LICENSE.**
4. Two people may apply as a group. The group will have the same chance in the drawing as a single individual. Both applications should be placed in one envelope clearly marked "Group Application."
5. Mail all completed applications to:

Department of Natural Resources
 Turkey Hunt
 Room 108
 3550 Mormon Coulee Road
 La Crosse, WI 54601
6. Applications must be post marked on or before Oct. 1, 1982.



SECTION A

Applicant's Name _____
 Street or Route _____
 City, State, Zip Code _____
 1982-83 Small Game or Sports Lic. Number _____
 Telephone Number _____
 Date of Birth (Month, Day, Year) _____
 I am a:
 Wisconsin Resident
 Nonresident
 I hereby make application for a wild turkey hunting permit for the time period and zone in the preference marked below and all the information given in this application is correct and complete.
 Applicant's Signature _____

First Choice
 Zone (✓One) 1 2 9 10
 Time Period (✓One) 4-21 thru 4-25 4-28 thru 5-2 5-5 thru 5-9
 Second Choice
 Zone (✓One) 1 2 9 10
 Time Period (✓One) 4-21 thru 4-25 4-28 thru 5-2 5-5 thru 5-9

SECTION B

THOSE APPLYING FOR LANDOWNER PREFERENCE COMPLETE THE FOLLOWING.
 I certify that I am a Wisconsin resident landowner of 50 acres or more located in wild turkey hunting zone _____ in _____ County, _____ Township, Section No. _____. I understand that under the preference system I can apply for a permit only in this zone and if successful in obtaining a permit agree to allow other turkey hunters on my property to hunt with permission only.

Landowner's Name	1982-83 Small Game or Sports License Number
Street or Route	Telephone Number
City, State, Zip Code	Date of Birth

First Choice — Time Period (Check ✓One)
 4-21 thru 4-25 4-28 thru 5-2 5-5 thru 5-9
 Second Choice — Time Period (Check ✓One)
 4-21 thru 4-25 4-28 thru 5-2 5-5 thru 5-9

I hereby certify that the above information is correct and complete.
 Landowner's Signature _____
 I wish to transfer my permit to:

SECTION C

Transferee's Name	1982-83 Small Game or Sports License Number
Street or Route	Telephone Number
City, State, Zip Code	Date of Birth

I, the above named person, am a Wisconsin resident and qualified for transfer as marked. (Check ✓One)
 Mother Father Sister Brother Son
 Daughter Wife Husband Farm Operator of that parcel

I hereby certify that the above information is correct and complete.
 Transferee's Signature _____

SECTION D

Wisconsin Permit to Hunt Wild Turkey 1983

This permit authorizes the person named below to hunt and possess a wild turkey in accordance with state regulations. This permit must be in possession of the person named below while hunting wild turkeys. This permit and permit number is not transferable or replaceable.

Name
Street or Route
City, State, Zip Code

LEAVE BLANK — DNR USE ONLY	
Permit — Tag Number	
Zone	Time Period
_____ Thru _____	

1982-83 Small Game or Sports License Number
Date of Birth

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