MIDWEST DEER AND TURKEY STUDY GROUP

Camp-of-the-Cross
Garrison, North Dakota
January 20-23, 1986

MIDWEST DEER AND TURKEY STUDY GROUP

JANUARY 20-23, 1986

The tenth annual Midwest Deer and Turkey Study Group meeting was held at the Camp-of-the-Cross near Garrison, North Dakota. Status reports from each state and a list of attendees are presented in this report.

A joint session was held on the morning of January 21 during which Dr. Martin J. Marchello reported on the "Nutrient Value of Wild Game Meats". A brief field trip to wildlife management areas and Garrison Dam was conducted on January 22.

Missouri presented a sneak preview of their deer movie. It was very well received by all participants. Dr. James Earl Kennamer showed parts of a video tape recorded at the recent mycoplasmosis workshop held in Kentucky.

The annual business meeting was held on the evening of January 22. It was suggested that future meetings have a half-day (or more if needed) session with both the turkey and deer groups combined to discuss a topic of mutual concern. It was also brought out that when the two groups split, it may be of benefit to have special topic discussions within each group in addition to the state-by-state reports. A number of topics were suggested and this list will be forwarded to the next host state.

Following the business meeting, an invitation was extended to Michigan to host the 1987 meeting. Michigan agreed, and invites the Midwest Deer and Turkey Study Group to meet in their state in 1987.

We enjoyed having the group meet in North Dakota.

Lowell Tripp

Roger Johnson

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Midwest Deer and Turkey Study Group
Camp-of-the-Cross
Garrison, North Dakota
January 20-23, 1986

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*Unable to attend meeting.

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Midwest Deer and Turkey Study Group
Camp-of-the-Cross
Garrison, North Dakota
January 20-23, 1986

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*Unable to attend meeting.

ORGANIZATIONAL GUIDELINES OF THE MIDWEST DEER AND WILD TURKEY GROUP

OBJECTIVES: The Midwest Deer and Wild Turkey Group was formed to:

1. Provide a forum for discussion of common management problems concerning the white-tailed deer and the wild turkey in farmland habitat typical of the midwest region.

2. Provide an opportunity to define common problems and goals and formulate priorities for investigations into these problems, to minimize duplication of efforts among the member states.

3. Stimulate an exchange of information between states on survey techniques and results, harvest regulations and results, research projects, and habitat management.

4. Act as a source of detailed information on deer and turkeys in the midwest for the public and other resource agencies.

5. Formulate long-range guidelines for species management in the midwest region.

ORGANIZATION: The Midwest Deer and Wild Turkey Group shall consist of representatives from member states who, as wildlife biologists, are directly responsible for the management of deer and wild turkeys in farmland habitat. States invited to join the group are Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

OFFICERS: The offices of chairman and secretary shall be filled by biologists from the state selected to host the next meeting. Their term of office shall be from their selection until completion of all responsibilities for their group meeting. Officers will be selected by the host state with recommendations made by the group. Their responsibilities will include organizing the meeting to be held in their state, selecting a meeting site and dates, arranging for lodging and meeting rooms, formulating an informal program, publicity and meeting announcement to member states, and publication of a post-meeting Newsletter.

COMMITTEE: Committees may be selected to investigate specific problem areas and make recommendations to the entire membership. The important work of the group will be performed by assigned committees. Committees will be selected by the chairman after reviewing requests for committee action submitted by the membership. Possible committees include: research review, information and education, future programs, and position statements.

MEETING: At each group meeting the time and host state for the next meeting will be decided. Group meetings will be held on an irregular basis as determined by the needs of the membership. Meeting sites will be rotated among member states on a volunteer basis. If no volunteer comes forward, the first member state (proceeding alphabetically) that has not yet hosted

a meeting, or the member state with the longest elapsed time period since it last hosted a meeting will be chosen (if agreeable to that state). Meetings will generally be of 2-3 days in duration. A general theme shall be selected for each meeting, if possible, with a meeting site chosen to enhance the discussion of the selected topic.

Notice of arrangements for the meeting shall be distributed to member states at least 4 months in advance to allow time for securing out-of-state travel authority and preparation of presentations.

MEETING AGENDA: The program shall be as informal as possible with plenty of time allotted for discussion. (One aspect of the program should be a report from each state on hunting regulations and harvest, population surveys, new research and management projects, university research, and any other topics the state may feel is important to the group.) Also the chairman may invite guest speakers to present reports on the selected theme of the meeting or other topics which may be of interest to the group. Short field trips may be utilized to point out areas of special interest to the group. Better efficiency and exchange of ideas will be realized by breaking down the group into separate deer and turkey workshops to discuss pertinent research and management programs. The business meeting and certain topics of interest to the entire group will require a combined meeting of the membership.

ATTENDANCE: To enhance an atmosphere of total participation and exchange of ideas, the attendance shall be held to 35 persons. The chairman will be responsible for limiting the size of the meeting to this number. He shall allocate the 35 seats in a manner that allows the 10 non-host member states to send a maximum of 3 individuals apiece, while the host state is allowed 5 seats. If pre-meeting registration indicates that some states will not send their full allotment, the chairman can delegate unfilled seats to the host state or to states requesting extra attendance. Persons invited by the host state to participate in the program would not be counted towards the allotment.

BUSINESS MEETING: A short business meeting will be scheduled on the meeting agenda. Topics of discussion will include selection of the next host state, year of the next group meeting, future topic(s) of interest, selection of officers, committee reports, and any other information pertinent to the operation of the group.

NEWSLETTER: The secretary for the group shall be responsible for sending out a Newsletter immediately following each meeting to the Chairman of the Midwest Fish and Game Commissioners, the Director of all member states, persons attending the meeting, and any other organization or agency making a request. This Newsletter shall contain a summary of information presented in the program, discussion, and items covered at the business meeting including committee reports. Any written reports submitted at the meeting shall be included as well as a list of persons attending the meeting and their addresses. Funds for distribution of the Newsletter and other materials will be furnished by the host state or obtained through the charge of a small registration fee.

DEER

STATUS

REPORTS

DEER IN INDIANA - 1985

Lori Pruitt, Deer Research Biologist

For the fifth consecutive year, the Indiana deer harvest was the best on record (Figure 1). The total 1985 harvest was 32,231 deer. The highest harvest among the 7 deer management zones was in the Southcentral Hills: Zone 6 (Table 1, Figure 2).

The Division of Fish and Wildlife held special either-sex hunts in 31 counties; 15,800 permits were issued. In each special-hunt county, 50% of the permits were set aside for individuals owning 40 acres or more in that county. Successful applicants were permitted to shoot 1 either-sex deer in the county for which they were drawn. Special-hunts were also conducted on 4 military areas and Muscatatuck National Wildlife Refuge. Bonus hunts were conducted in Brown, Ohio, and Switzerland counties. Successful bonus-hunt applicants were issued an either-sex permit and could purchase a license to harvest a second antlerless-only deer during the regular firearm season.

Mandatory deer checking, established in 1981, was continued. Efforts to collect biological data at check-stations were expanded. Biological data were collected for approximately 10% of the deer harvested.

Deer Depredation Zones were established in areas of the state where localized damage was severe and additional hunting pressure was needed. Within the zone, either-sex permits were given to the landowners who, in turn, issued the permits to the hunters of their choice. Depredation zones were established and administered by a district wildlife biologist and the local conservation officer.

Several regulation changes have been proposed for the 1986 deer season. Major changes include: 1)Establishing a 2-deer limit for archery hunters statewide. 2)Establishing bonus antlerless-only permits for the 34 counties previously in the special-hunt or bonus-hunt program. Successful applicants would be given the opportunity to purchase a license to harvest an antlerless-only deer, in addition to their bucks-only firearm license. 3)Allowing handgun hunting for deer.

We are entering our second year of data collection in a deer telemetry study in southcentral Indiana. The objective of this research is to evaluate deer movements in relationship to agricultural damage. Of 10 does radio-collared during the winter of 1984-85, 4 transmitters are still functioning. Last winter, 24 deer were captured; 5 does were radio-collard and the remainder were ear-tagged only. We experienced difficulty in attracting deer to bait, possibly due to an abundant acorn crop in the fall of 1985 and lack of snow cover. Trapping efforts will resume in late spring and early summer.

John Olson, Deer Biologist with the Division of Fish and Wildlife for 15 years, has been promoted to the position of Wildlife Staff Specialist. Craig Albright filled the Deer Management Biologist position.

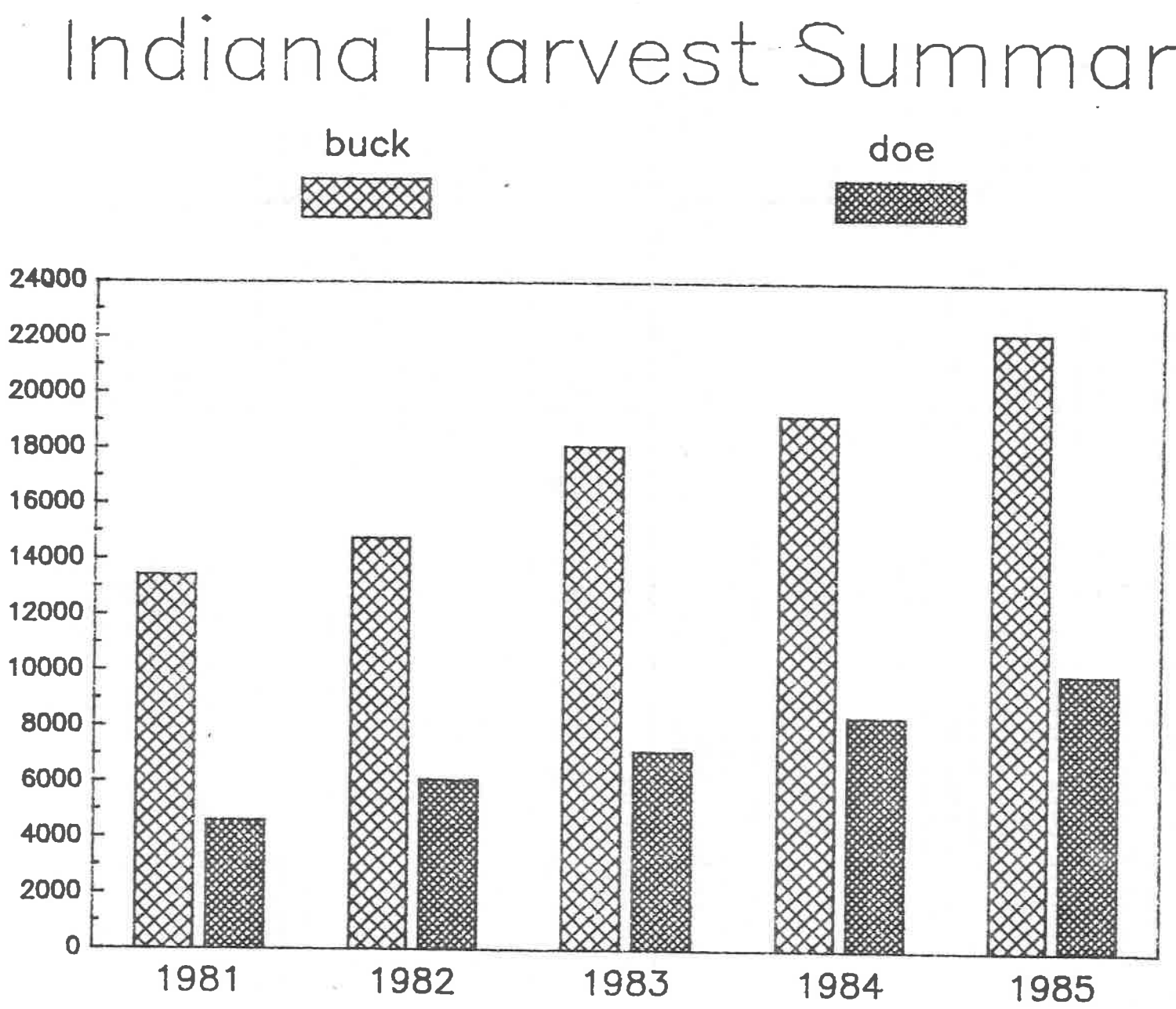

Figure 1. Harvest summary.

Table 1. 1985 Indiana deer harvest by season and Deer Management Zone.

Zone	Sex	Season				
		Early Bow	Firearm	Muzzle-Loader	Late Bow	Total
1 Northeast Lakes	Buck	600	2358	456	38	3452
	Doe	413	366	756	88	1618
2 Northwest Sands	Buck	497	1334	370	58	2259
	Doe	257	17	573	79	926
3 Northeast Tipton Till	Buck	184	762	156	10	1112
	Doe	101	40	216	11	368
4 Central Till and Prarie	Buck	305	1236	206	14	1761
	Doe	173	72	320	28	593
5 Southeast Low-lands	Buck	497	2645	220	32	3394
	Doe	251	1297	341	35	1924
6 Southcentral Hills	Buck	948	5478	511	68	7005
	Doe	493	1748	881	100	3258
7 Wabash Lowlands	Buck	655	2218	299	39	3211
	Doe	341	338	506	54	1239
Total		5715	19945	5811	654	32125[a]

[a] Total harvest was 32,231; season or zone of harvest was unknown for 106 deer.

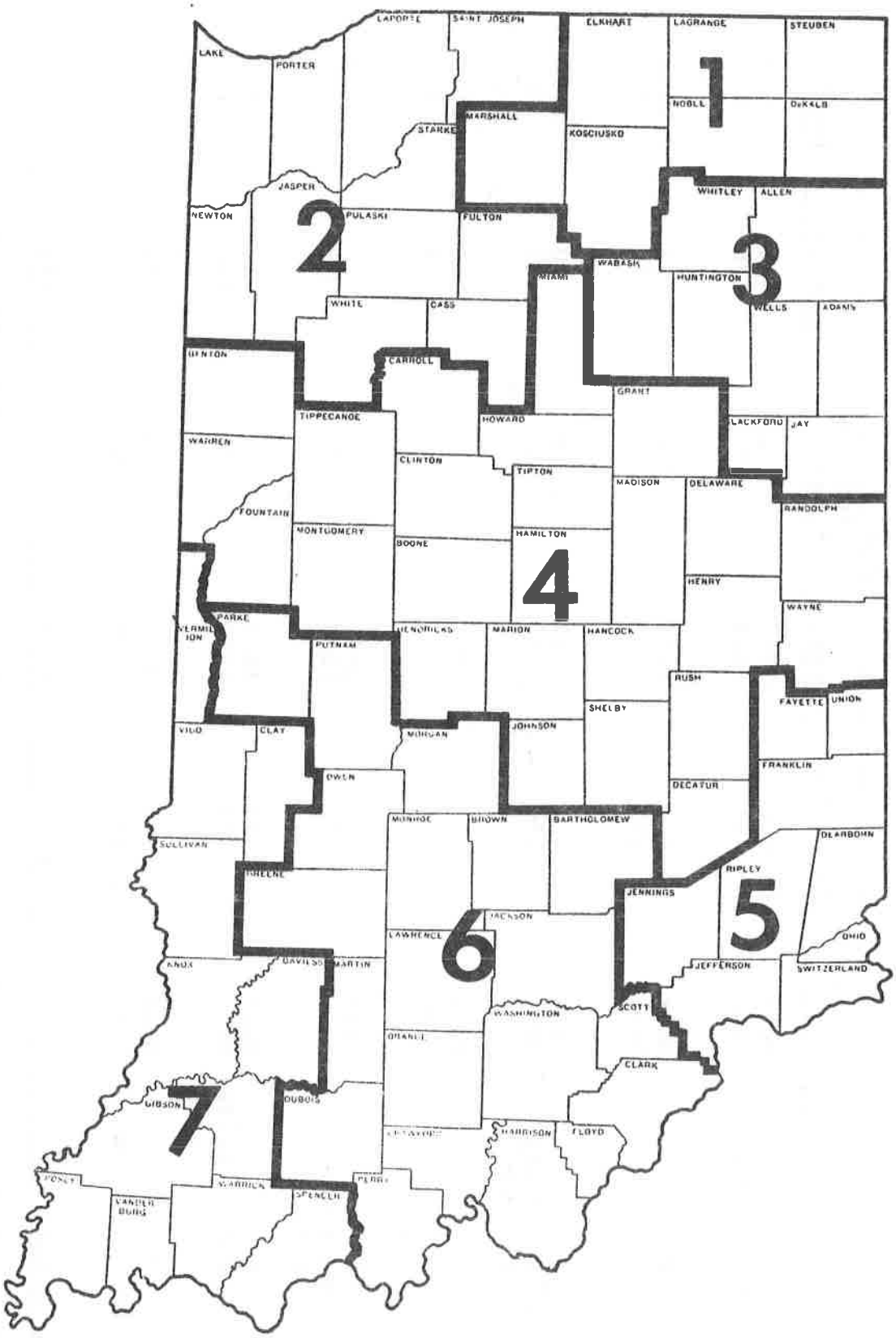

Figure 2. Indiana Deer Management Zones.

DEER IN IOWA - 1985

by

Lee Gladfelter and DeWaine Jackson

Hunting Season - Two separate shotgun seasons were held in 1985 with the first season from 7-11 December (5 days) and the second from 14-20 December (7 days). Hunters were required to apply for their choice of 1 of 10 hunting zones (Fig. 1) and 1 of 2 hunting seasons during a 45-day application period in August and early September. An any-deer license quota was established for each hunting zone and season combination. A random drawing was then held to designate recipients of any-deer licenses with preference being given to hunters returning a preference certificate from their 1984 bucks-only license. About 45% of the eligible hunters return their preference certificates each year. The first hunting season continued to be the favorite with 59% of the hunters selecting that season. Hunters were enticed into applying for the second season by issuing twice as many any-deer licenses and allowing 2 additional days of hunting. In 2 hunting zones (Zones 1 and 10), the entire any-deer quota was issued the second season making the first season bucks-only. This technique has been helpful in manipulating hunters into the later season. All hunters that were unsuccessful in the any-deer drawing and those that checked a bucks-only option on their application (about 10,000 hunters) received a bucks-only license valid statewide. Only persons with any-deer licenses are restricted to hunting zones to allow herd control on a regional basis. Firearms shooting hours were sunrise to sunset and the season limit was 1 deer. The license fee was raised from $15 to $20 with deer hunting restricted to Iowa residents only.

In response to growing pressure from landowners concerning deer damage to agricultural crops the Iowa Conservation Commission (ICC) decided to give a free any-deer license to all landowners applying for the second hunting season. This option was very popular with landowners and stimulated increased license issue for that group. The ICC will probably extend this option to first season free landowner-tenant license applicants in 1986.

A special late deer depredation season was held in a 360 sq. mi. area in southeastern Iowa. This season was held from 21 December to 5 January 1986 with 4,000 shotgun any-deer licenses distributed by phone on a first come-first served basis. It only took 1 1/2 days to distribute the free licenses. Hunters were allowed to take a deer even if they were successful during a previous season. Multiple deer seasons have finally arrived in Iowa!

The 56-day archery season was held from 12 October to 6 December. All archers received an any-deer license valid statewide. Bow licenses were sold at county recorders offices for $20. Shooting hours were 1/2 hour before sunrise to 1/2 hour after sunset. If a bow hunter harvested a deer, he could not legally harvest another deer during the firearms season even though he may have purchased a shotgun license. This will probably change in 1986 when hunters with both licenses may be allowed to harvest 2 deer.

The special muzzleloader season initiated in 1984 was held on 21-27 December. Muzzleloading rifles can also be used during the shotgun seasons, but hunters can only hunt 1 of the 3 firearms seasons. A quota of 1500 any-deer licenses was set for the special muzzleloader season. Muzzleloader hunters were required to wear at least one article of blaze orange clothing, and they could hunt statewide from sunrise to sunset.

License Issue - A total of 78,144 shotgun licenses were sold in 1985, a decrease of 2% from the previous year. Increased license fees and the switch from paid shotgun licenses to free landowner-tenant licenses (created by the any-deer second season license guarantee) were responsible for the slight decline. In addition, 20,674 free landowner-tenant licenses were issued representing a 23% increase from 1984 in this category. Landowners must reside on their land and are restricted to hunting only on the land they own. A limit of 1 free license per farm unit is allowed. A farm unit is defined as that area used by the landowner to derive family income. A record total of 98,818 shotgun licenses were issued in 1985 for an increase of 2% from the previous year. Increased license issue is probably a result of favorable publicity about increasing deer populations and liberal license quotas.

In addition to shotgun licenses there were about 22,000 bow and arrow licenses issued in 1985. This is about the same as 1984 which is encouraging in light of the license fee increase. There were 1522 special muzzleloader licenses issued in 1985, down slightly from 1984. A total of 122,340 licenses were issued in 1985 which continues the annual record breaking pace for the states' deer hunters.

Harvest - The post-season hunter questionnaires for 1985 have not been completely analyzed at this time. However it is apparent that we will set another record for total deer harvest. I would predict that the harvest will be around 43,000 deer compared to 39,355 in 1984. Higher any-deer license quotas, increased license issue and excellent fall deer numbers were responsible for the increase.

Success rates for bucks-only shotgun hunters will be around 30% while hunters with any-deer licenses will be about 60%. This is about the same or slightly lower than 1984. Archers should post a 27% success rate which is comparable with past years. Muzzleloader success rates will be around 40% which is much higher than the 22% success recorded in 1984.

1986 Season - There are several changes that we anticipate may occur in 1986 or 1987.

1. Allow hunters to harvest a deer on an archery license and a firearms license.

2. All free landowner-tenant licenses will be valid for any-deer.

3. Liberalized any-deer quotas for paid shotgun hunters.

4. Allow a limited number of nonresidents to purchase a deer hunting license in Iowa.

5. Change fluorescent orange clothing regulation to a mandatory 2 articles of clothing instead of 1.

6. Conduct 2 special muzzleloader seasons--the first in late October (bucks-only) and the second in late December (any-deer). Hunters would be required to choose 1 of these 2 seasons.

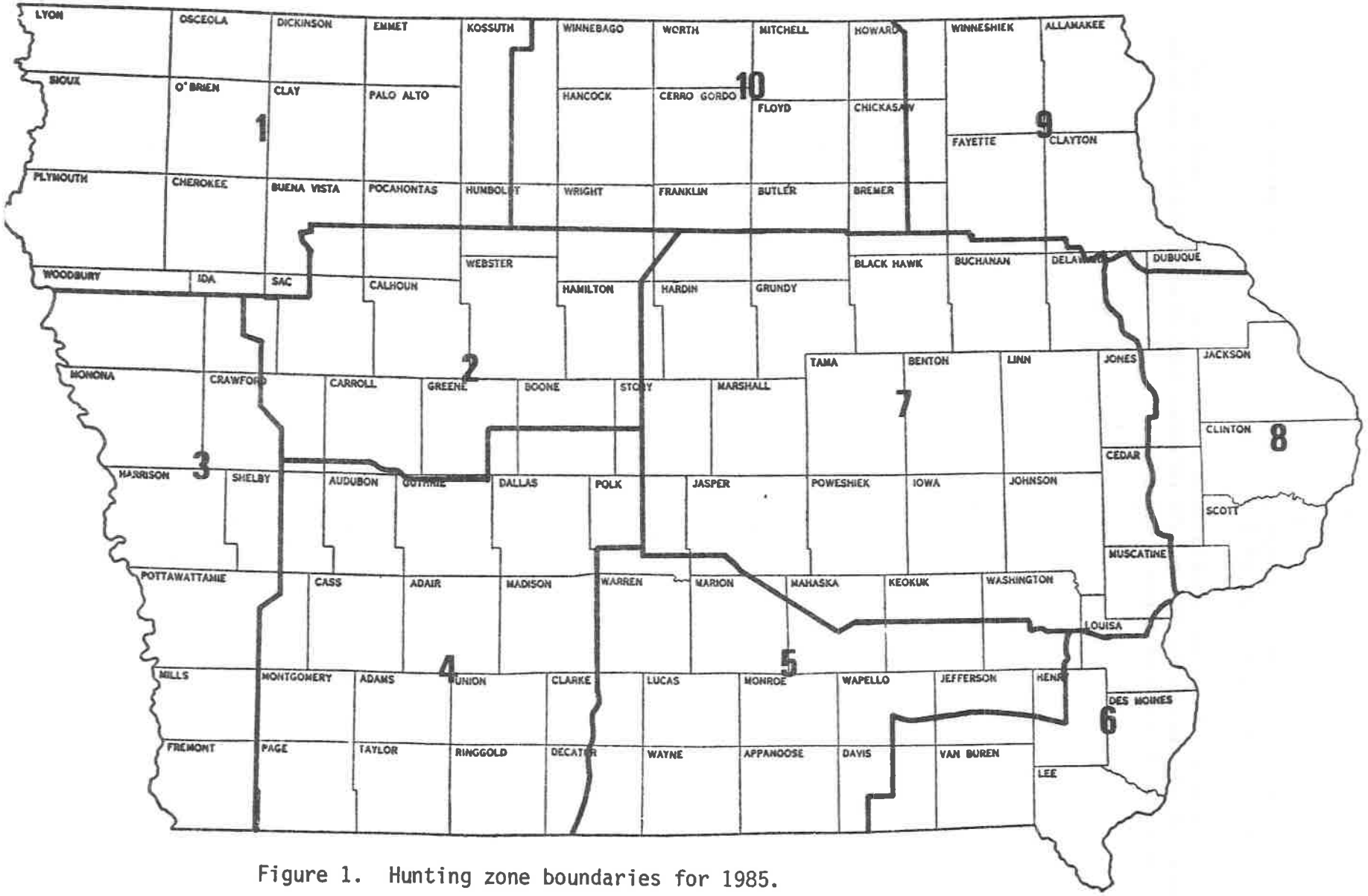

Figure 1. Hunting zone boundaries for 1985.

RESEARCH

Growing deer populations in some parts of Iowa have created problems for landowners because deer utilize agricultural crops as a primary food source (Mustard and Wright 1964). These problems are magnified on agricultural areas surrounding state parks which provide a refuge for deer and have correspondingly high deer densities. Also, high deer densities may be adversely affecting natural vegetation within parks, which were established to preserve the flora and fauna of the area. There is need for baseline data on the extent of depredation and how it is affected by deer density, feeding behavior, movements, dispersal, weather, time of the year, and crop practices.

In January 1985, a study was initiated at Springbrook State Park (SSP) in central Iowa to gather the required information to evaluate damage on private lands, predict depredation areas that may need deer population reductions, and obtain data which is critical to the proper management of state parks in Iowa.

METHODS

Deer were captured in baited box traps (Seglin 1965) and with rocket nets (Hawkins et al. 1968). All deer were sedated with an intramuscular injection of xylazine hydrochloride at 0.5-1.5 mg/kg body weight (Scanlon and Brunjak 1984), vaccinated for blackleg and general infections, and eartagged with plastic, numbered tags. Radio-transmitters (148-149 MHz) were placed on selected deer.

Attempts were made to monitor all radio-marked deer a minimum of four times/week. In addition, a randomly selected set of deer was monitored intensively (one location/hour) for 6 hr periods, in four time blocks (0601-1200, 1201-1800, 1801-2400, 2401-0600). Deer that dispersed from SSP were located once/week if possible. Locations of radio-marked deer were determined by intersecting at least three azimuths taken from towers located on the study area or from vehicle-mounted antennas. Locations were not accepted if the error polygon was >1 ha. All locations were plotted on 7 1/2 minute topographic maps, converted to universal transmercator (UTM) coordinates, and recorded onto standardized computer forms along with its associated habitat, topography, and weather data. Program TELEM was used to determine movement rates and home range size. Standardized statistical computer programs were used to determine habitat use and activity patterns.

Deer-proof exclosures (24 m^2) were randomly placed in two strata (first 6 m in a crop bordering a timbered edge of the park, beyond the first 6 m of a crop) of crop fields surrounding SSP. Exclosures were four, 4.9 m x 1.3 m welded wire cattle panels attached at the corners to form a square quadrant, elevated 20.3 cm off the ground and wired to 4 steel posts located at the center of each panel. For oats, wheat and soybeans, a .004 ha (1/1000 ac) plot was clipped of all plants which were oven dried to constant moisture content, and then thrashed with a stationary plot thrasher. A least squares linear regression was

used to test differences in plant height and yield between exclosures and control plots. For corn, all ears within a .004 ha plot were removed, oven-dried and shelled. A least squares linear regression was used to test differences in yield between exclosures and control plots.

RESULTS

Sixty-seven white-tailed deer (34 does, 33 bucks) were captured in box traps and rocket nets during 160 trap-nights and 13 rocket netting attempts between 17 January-22 March 1985. All deer were marked with eartags, and 40 (30 does, 10 bucks) were fitted with radio transmitters. Thirteen adult and 17 fawn does were fitted with fixed-size radio transmitter collars. One yearling buck and four buck fawns were fitted with eartag transmitters. One yearling buck and four buck fawns were fitted with expandable transmitter collars.

For deer with >30 radio-locations obtained between 17 January- 15 August 1985, ten adult doe home ranges averaged 188 ha, ten yearling doe home ranges averaged 219 ha, and four yearling buck home ranges averaged 220 ha.

Based on 1,569 radio-locations obtained between 17 January- 15 August, 67% of the locations were in timber habitat, 9% in corn, 8% in beans, 4.5% in idle uplands, and the remainder (11.5%) in 15 various other habitats. There was no difference in the habitat use between bucks and does. The highest use of timber habitat by radio-marked deer was from 0601-1800 hr and of crops from 1801-0600 hr. During 1801-0600, approximately 17% of the radio-locations were in corn and 15% in beans (Table 1).

Between 17 January-15 August, five radio-marked deer were road-killed, two were poached, six dispersed >3.2 km from SSP, three moved off SSP but remained within 3.2 km, and radio contact was lost with four. The remaining 20 radio-marked deer confined their movements to the immediate vicinity of SSP during this time (<1.6 km from the park boundary). Only yearlings dispersed >3.2 km, and the maximum straight-line dispersal distance was 72 km.

Twenty-three exclosures and 46 control plots were placed in 14 different fields consisting of four crop types (corn, beans, oats, wheat). Ten exclosures (20 controls) were placed in five fields of corn, ten exclosures (20 controls) in seven fields of beans, two exclosures (four controls) in one field of oats, and one exclosure (two controls) in one field of wheat. We did not detect a significant difference ($P > .05$) between the exclosures and controls in yield or in height of the plant for oats or for wheat. Preliminary analysis indicates no treatment effects ($P = .11$) in corn yield. However, interior strata (beyond 6 m of the crop) had higher yields than did edge strata (location effect, $P = .03$). Analysis on bean plant height and yield has not been completed.

These results are based on preliminary analyses of only six month's data and are subject to change as more data and final analyses are completed. No information presented here should be cited without permission of the author.

LITERATURE CITED

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Seglin, R.J. 1965. A literature review on mule deer movements and capture techniques. Spec. Rept. No. 4 Dept. Game Fish and Parks. Game Res. Div. and Coop. Wildl. Res. Unit. Colo. 39 pp.

Table 1. Habitat use by radio-marked deer at Springbrook State Park, 17 January-15 August 1985.

Time	Habitat			
	Timber (%)[1]	Corn (%)	Beans (%)	Other (%)
1201-1800	91.9	.3	1.6	6.2
1801-2400	47.4	17.3	15.4	19.9
2401-0600	40.0	17.9	11.9	30.2
0601-1200	84.4	1.0	.6	14.0

[1] Percent of locations obtained in that time block.

KANSAS DEER STATUS REPORT

1984 - 85

Keith Sexson

PERMIT SYSTEM

The archery permit application period is July 1 - Sept. 30. Permits are available "across the counter" at 7 field offices and the Fish and Game Headquarters or permits may be obtained by sending an application to the headquarters office. Archery permit numbers are unlimited, can be used anywhere in the state, and are of an "any deer" type. Archery permits cost $30.00 for both general resident and landowner. Archery permits are available to Kansas residents only.

Firearm permit applications are available July 1-23. Permit quotas are established for 18 deer management units and 3 military installations. Fifty percent (50%) of the permits authorized are for owners or tenants of 80 acres or more of rural farmland. Owner or tenants are eligible for landowner-tenant permits only within the management unit which includes the land owned or operated. General resident firearm permits cost $30.00 and landowner-tenant cost $20.00. Special muzzleloader only permits are available to those who prefer to hunt with a muzzleloader. The regular firearms permit allows the use of rifles, shotguns, or muzzleloaders.

Successful firearm applicants are selected via a computer drawing of applications received. Applicants who had a permit the previous season are not included in the drawing unless there are permits left after drawing from those who had no permit the previous year.

Handguns have been illegal for deer hunting in Kansas; however, they have been legalized for use during the 1985 season. No special permit or season is provided.

Of the 30,632 firearm permits authorized for 1984; 16% were for "bucks only", 63% were for "any deer" and 21% were for "antlerless deer only". Within the "any deer" category, 14% were for "white-tails only"; and 54% of the "antlerless only" permits were for "white-tail only".

Approximately 35,000 firearms applications were received in 1984.

ARCHERY DEER SEASON

A total of 15,240 archery deer hunting permits was issued in 1984, down 3.3% from 1983. Post-season questionnaires were received from 14,223 permittees for a 93.3% response rate. A total of 942 (6.6%) of the responding permittees indicated they "did not hunt", leaving 13,281 active archers.

A total of 4,167 deer was harvested by 13,281 active hunters in 1984, a 6.4% increase in the harvest when compared to 1983. Hunter success in 1984 was 31.4% as compared to 28.6 in 1983.

The 83 day, 2-segment season (Oct. 1-Nov. 30 and Dec. 10-31) in 1984 provided for a total of 243,312 hunter-days of recreation, up 4.0% from 233,872 hunter-days in 1983. The 1984 bowhunters spent 18.3 days afield per active archer and it took 58.4 hunter-days per deer harvested. Successful archers spent 16.0 days afield and the unsuccessful archer spent 19.4 days in 1984.

White-tailed deer comprised 85.7% of the archery harvest with 14.3% being mule deer. Antlered deer made up 64.3% of the total harvest. Adult does comprised 25.4% and the fawns made up 10.2% of the total harvest as reported from hunter questionnaires.

The first segment of the season (October 1 - November 30) accounted for 77.3% of the total harvest. Approximately 40% of the archers hunted only during the first segment, 2% hunted only during the second segment, and 58% hunted sometime during both segments of the season.

Table 1 presents a summary of archery data since 1965.

FIREARMS DEER SEASON

In 1984, a total of 30,599 firearms deer permits was issued in 18 deer management units and 3 military installations. This represents an increase of 7,567 (33%) permits as compared to 1983. The 1984 season was 9-days in length, from December 1-9, except on Ft. Riley where the season was November 21-25 and December 18-22; Ft. Leavenworth where the season was December 1-4, 8-10 and 15-16; and Smoky Hill Bombing Range where the season was December 1-3, 8-10 and 15-19.

Post-season questionnaires were received from 29,754 firearm permittees for a 97.2% response rate. Of those responding to the survey, 96.0% (28,565) indicated they "did hunt", while 1,189 respondents indicated the "did not hunt".

A total of 19,433 deer was harvested by 28,565 active firearm hunters in 1984, a 42.5% increase in harvest as compared to 1983. Hunter success was 68.0% and compares to 64.2% in 1983.

The 1984 season provided for a total of 100,438 hunter-days of recreation, up 31.2% from 76,548 hunter-days in 1983. Active firearm hunters spent an average of 3.5 days afield and it took 5.2 hunter-days to harvest a deer; these compare to 3.6 days afield and 5.6 hunter-days per deer in 1983. Successful hunters spent an average of 3.0 days afield and unsuccessful hunters spent 4.6 days afield.

The opening weekend of the firearm season accounted for 45.4% of the total harvest, with 24.1% of the harvest occurring on the last weekend. In 1983, 45.0% of the harvest occurred on the first weekend, with 23.1% occurring on the last weekend.

The 1984 harvest was comprised of 90.5% white-tailed deer and 9.5% mule deer. Antlered deer comprised 46.9% of the white-tail harvest and 80.0% of the mule deer harvest.

Table 2 presents a summary of firearm data since 1965.

Muzzleloader Hunting

The 1984 season marked the seventh year in which "muzzleloader only" permits were issued to hunters who wanted to hunt with a muzzleloading firearm only; 1,810 permits were authorized with 1,412 being issued. All unused permits were converted to "any firearm" permits. Muzzleloader permittees are required to hunt during the regular 9-day firearms deer season.

A total of 1,331 active muzzleloader hunters reported harvesting 783 deer in 1984, compared to 1,142 hunters and 667 deer harvested in 1983. Hunter success in 1984 was 58.8%, compared to 58.4% in 1983. It took an average of 7.0 hunter-days to harvest a deer in 1984, compared to 6.8 in 1983. Muzzleloader hunters expended a total of 5,512 hunter-days in 1984, compared to 4,526 days in 1983. Successful muzzleloaders spent an average of 3.4 days afield in 1984 (3.4 in 1983) and unsuccessful hunters in 1984 spent 5.2 days (4.8 in 1983).

White-tailed Deer Permits

In 1984, 8 deer management units were included in the "white-tail only" permit system. A total of 6,109 permits was issued. Post-season questionnaires were received from 5,971 of the 6,109 permittees. Of those responding to the survey, 246 indicated they "did not hunt" leaving 5,725 active hunters. A total of 4,174 deer was harvested, including 28 mule deer, for a hunter success of 72.9%.

SEX AND AGE

Age data for the firearm deer harvest were obtained via the dental cementum technique. Teeth were prepared and ages determined by Mr. Gary Matson, Milltown, Montana. Incisor size and structure (hollow root) were used for separating fawns, and crown wear was used for separating yearlings from older deer. Where sample sizes were small (female segment), teeth were not sent to Matson's and ages were determined as fawns, yearlings, and adults (2-1/2+). A total of 12,349 usable incisors (11,058 white-tails and 1,291 mule deer) was received in 1984. This represents a usable sample of 64% of the total harvest. As a result of the sampling, 1,816 incisors were used for age determinations via the dental cementum technique.

Yearlings accounted for 52.7% of the antlered mule deer harvest in 1984, compared to 50.6% in 1983. The 1984 antlered white-tail deer harvest was comprised of 53.6% yearlings, compared to 54.0% in 1983. Fawns accounted for 21.9% of the total 1984 firearms white-tail harvest of 34.4% of the total white-tail antlerless deer harvest. Virtually no mule deer antlerless deer were harvested in the primary mule deer units since the harvesting of antlerless deer in those units was limited to white-tails only.

DEER VEHICLE COLLISIONS

A total of 3,003 deer was reported killed by vehicles in 1984, compared to 2,664 in 1983, a 12.7% increase. The 1984 road-kill index (deer killed/billion miles) was up 9.2% when compared to 1983; from 388.3 deer killed per billion miles of travel in 1983 to 424.0 in 1984. Traffic volume increased 3.2% from 1983.

Of the total highway deer mortalities reported, 91.8% were white-tailed deer and 8.2% were mule deer; 53.1% were does, 40.2% were bucks, and 6.7% were unknown sex. November accounted for 23.3% of the total mortalities with October accounting for 11.6%.

LANDOWNER DEER SURVEY

Periodic landowner deer surveys have been conducted in Kansas since February, 1964. Surveys were conducted in the winters of 1963-64, 1966-67, 1971-72, 1975-76, 1979-80, and the most recent in 1984-85. The purpose of the survey is to determine deer population trends, assess the impact that deer may have on farm-ranch operations, and to determine landowner attitudes toward the deer population and the management of that population.

Survey forms are mailed to a stratified, random sample of 3,500 farm owner-operators.

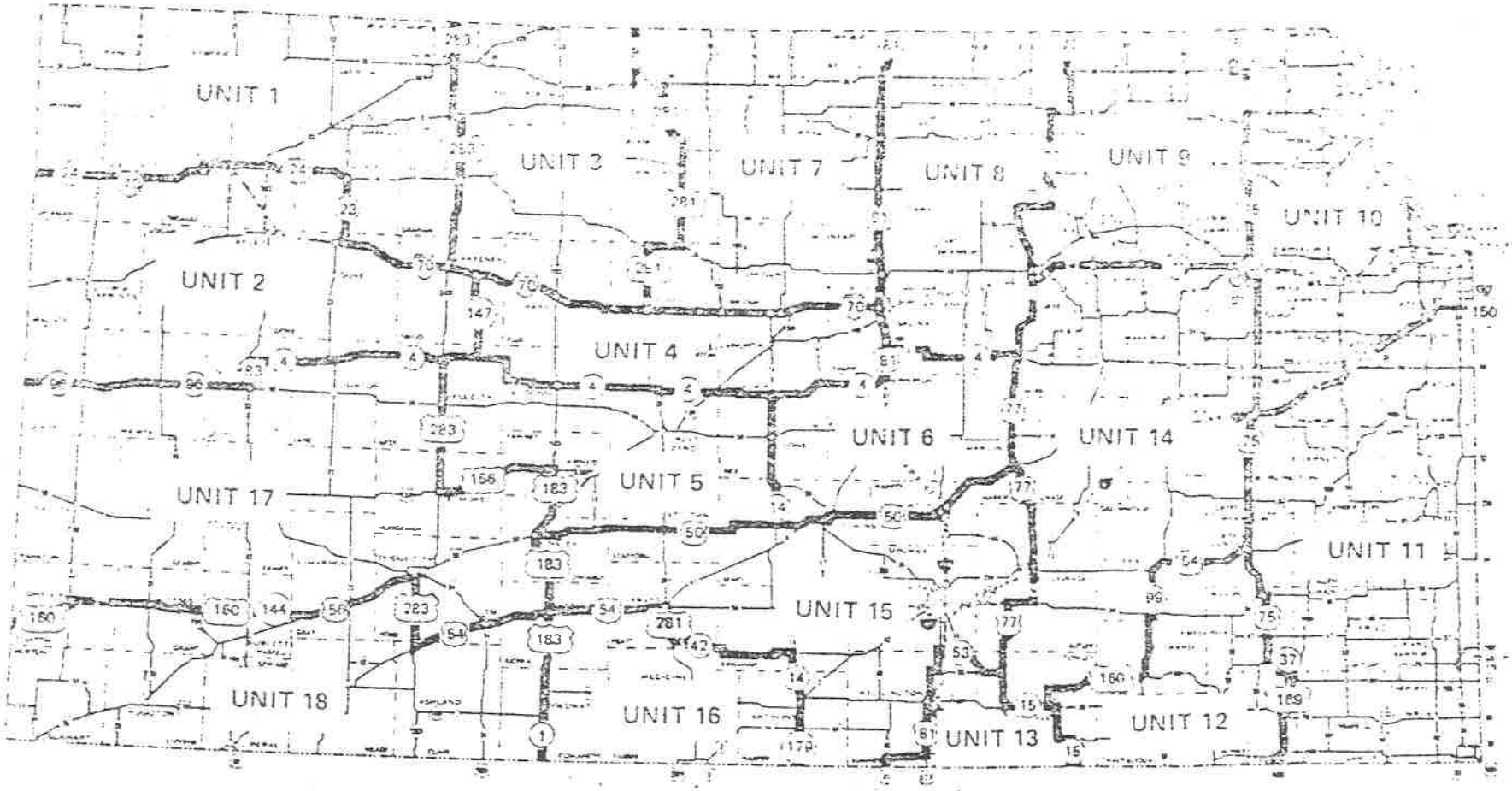
Reporting of the results is in progress and will be sent to the Midwest Deer Workshop members when completed.

Table 1. Summary of archery deer hunting seasons, 1965-1984.

Year	No. Days	Permits	Active Hunters	Harvest	% Success	Hunter Days	Hunter-Days Per Deer	Days Per Hunter
1965	46	1,220	1,151	164	14.2	8,552	52.1	7.4
1966	70	2,345	2,234	376	16.8	31,301	83.2	14.0
1967	57	2,988	2,739	434	15.8	33,822	77.9	12.3
1968	62	3,807	3,491	614	17.6	45,819	74.6	13.1
1969	61	3,936	3,539	563	15.9	45,365	80.6	12.8
1970	61	4,479	4,083	796	19.5	56,403	70.8	13.8
1971	62	4,672	4,173	576	13.8	53,831	93.4	12.9
1972	61	4,123	3,660	664	18.1	49,651	74.8	13.6
1973	73	5,400	4,730	892	18.8	66,276	74.3	14.0
1974	72	6,243	5,532	1,130	20.4	85,507	75.7	15.5
1975	73	5,609	5,043	1,136	22.5	80,452	70.8	16.0
1976	75	6,054	5,259	1,114	21.2	85,729	77.0	16.3
1977	76	6,466	5,333	1,174	22.0	90,847	77.4	17.0
1978	77	8,704	7,395	1,738	23.5	123,824	71.2	16.7
1979	79	11,679	9,691	2,259	23.3	161,432	71.5	16.7
1980	79	12,937	11,189	3,007	26.9	195,743	65.1	17.5
1981	79	14,509	12,332	2,939	23.8	217,790	74.1	17.7
1982	79	14,924	12,975	3,441	26.5	233,185	67.8	18.0
1983	81	15,764	13,694	3,916	28.6	233,872	59.7	17.1
1984	84	15,240	13,281	4,167	31.4	243,312	58.4	18.3

Table 2. Summary of firearms deer hunting season, 1965-1984.

Year	No. Days	Permits Authorized	Permits Issued	Active Hunters	Harvest	% Success	Hunter Days	Hunter-Days Per Deer	Days Per Hunter
1965	5	4,575	3,925	3,546	1,340	37.8	10,381	7.7	2.9
1966	5	6,000	5,805	5,433	2,139	39.4	17,618	8.2	3.2
1967	5	6,450	6,450	6,030	1,542	25.6	19,237	12.5	3.2
1968	5	6,500	6,372	5,994	1,648	27.5	19,239	11.7	3.2
1969	5	7,750	7,593	7,143	1,668	23.4	22,707	13.6	3.2
1970	5-West 9-East	9,034	8,956	8,402	2,418	28.8	37,244	15.4	4.4
1971	5-West 9-East	8,665	8,618	8,022	2,569	32.0	34,237	13.3	4.3
1972	5-West 9-East	8,065	8,059	7,490	2,318	30.9	29,747	12.8	4.0
1973	9	8,960	8,952	8,349	3,220	38.5	35,044	10.9	4.2
1974	9	10,968	10,961	10,246	4,347	42.4	43,610	10.0	4.2
1975	9	11,200	11,056	10,442	4,352	41.7	43,274	9.9	4.1
1976	9	11,125	11,124	10,267	3,955	38.5	43,873	11.1	4.3
1977	9	11,625	11,625	10,541	3,766	35.7	46,127	12.2	4.4
1978	9	12,405	12,446	11,484	4,942	43.0	48,920	9.9	4.3
1979	9	13,375	13,399	12,243	5,810	47.5	50,963	8.8	4.2
1980	9	15,010	15,014	13,784	7,296	52.9	57,464	7.9	4.2
1981	9	19,420	19,430	17,948	9,413	52.4	73,937	7.9	4.1
1982	9	21,215	21,079	19,633	11,446	58.3	79,091	6.9	4.0
1983	9	23,160	23,032	21,232	13,640	64.2	76,548	5.6	3.6
1984	9	30,632	30,539	28,565	19,433	68.0	100,438	5.2	3.5



DEER MANAGEMENT UNITS, 1984

MINNESOTA FARMLAND DEER - 1985

Midwest Deer and Turkey Group
Garrison, North Dakota
January 20-23, 1986

Dave Ingebrigtsen

The average winter conditions in 1984-85 allowed reproduction to recover to normal. Fetus collections from 222 known-age does (ages from tooth sectioning) indicated that gross productivity had rebounded to 1.31 fetuses/doe from the 6 year low of 1.19 in 1984 (Table 1).

Deer populations in the farmland zone have continued to increase steadily, although at a reduced rate in the past few years. Road-kills reflect this by leveling off somewhat in the outstate areas. A high number of deer-vehicle collisions in the metro area, however, inflates the statewide total (Figure 1).

Because virtually all permit area deer populations were above goals, the 1985 deer season was designed to result in an increased farmland deer kill. The 1985 zones, lengths of seasons, and permit areas were similar to 1984 (Figure 2). However, the opening day was set one week later to take advantage of the peak of the rut and increase the probability of fewer crops in the fields.

Antlerless permits available in 1985 totaled 167,725, a 5-fold increase since 1977 and a 12% increase over 1984 (Table 2). Farmland permits offered (97,275) were up 35%, while forest permits (70,450) were down 10%.

Our 1985 season resulted in another record statewide registered firearms harvest of 141,592. Corrected for non-registration, the harvest will be around 156,000. In the past 3 years, we have had the 3 largest harvests in history (Figure 3). Despite 1985's late crop harvest and severe winter weather in parts of the state on both weekends of the hunt, the deer harvest surpassed 1984's in almost every farmland permit area. The farmland zone harvest has surpassed the forest zone for the first time.

License ($15 resident, $75 non-resident) sales continued to increase and 1985 sales should be over 400,000 (Figure 4). A projected archery license sale of 65,000 and muzzleloader license sale of 2400 should bring the total deer license sales close to near ½ million (Table 3).

Projected success rates are 35% for the firearms harvest, 10% for the archery harvest and 32% for the muzzleloader harvest. No preliminary archery and muzzleloader harvest figures are available.

Our 1985 regulations allowed some hunters to take 2 deer for the first time since 1910. Bonus Deer licenses were offered in undersubscribed permit areas for an additional license fee ($15). Twice the number of antlerless permits remaining were offered as Bonus Deer licenses to permit holders in anticipation of a 50% participation rate. Of the 16,440 Bonus Deer licenses offered, 8439 hunters took advantage of the opportunity (Table 2). A total of 23 antlerless permit areas were undersubscribed in 1985; 7 of these areas were still undersubscribed after the bonus deer licenses were sold. The Bonus Deer licenses enabled us to give out 99% of the antlerless permits.

With the increased number of permits in the 3B season, hunter pressure continued to concentrate in the second season (Table 4). Zone 4 had 2-day and 4-day seasons, both of them antlered deer or antlerless-with-permit. Antlerless permits were available in proportion to the number of hunters applying for each season. We are satisfied with the 55:45 split in hunter pressure that we have achieved with this setup.

Preliminary analysis of 6 years fetus survey data indicates that there is a highly negative correlation between productivity and number of heating-degree days in the previous December. Therefore, 1986 productivity should be near the all-time low because of the extremely cold weather in December, 1985.

Why is December weather so critical to gross productivity? Most of the variation in our productivity rate is in the pregnancy rate of fawns. About 90% of adult and yearling deer are bred before December (Figure 5), whereas 50% of the breeding fawns are normally bred in December. It appears that subnormal December temperatures curtail fawn breeding.

We now have a second Swareflex reflector site by Sibley State Park. Our Department of Transportation is enthusiastic about installing more reflectors and is developing criteria for determining site priorities.

We are presently developing a research project proposal with Big Stone National Wildlife Refuge near the South Dakota border in west central Minnesota. Big Stone is a new refuge (1975) which has developed a large wintering deer population. Depredation problems are the impetus behind their interest in studying the deer. We are hoping to begin a cooperative project within a year to investigate population dynamics, movement patterns, fawn mortality, and management techniques to change deer traditions.

Our inventory of deer wintering areas in nearing completion. Those portions of the state with less than 10% of the area in forested habitat were mapped with information from aerial censuses, ground counts and cover types. Inventory results concerning ownership, cover types, and acreages will be invaluable for planning efforts to preserve these areas and manage them for a more even distribution of deer.

Tooth sectioning has been completed for 1979-1983 as part of our Minnesota Deer Management Cooperator Program. Age structures show the expected decline in older age classes of bucks due to unlimited buck-only seasons, while does still reach 15.5 year class. No sources of funding have been found to reestablish the program.

Table 1. Gross reproductive rates calculated from car-killed females collected in the Farmland zone, 1980-1985.

Year	Fawns N	Fawns %Preg.	Fawns Fet./F	Yearlings N	Yearlings %Preg.	Yearlings Fet./F	Adults N	Adults %Preg.	Adults Fet./F	Estimated[a] Gross Repro.
1980	171	59	0.68	39	97	1.74	78	92	1.77	1.38
1981	142	55	0.59	55	95	1.65	93	96	1.87	1.37
1982	154	44	0.52	63	89	1.56	173	96	1.87	1.33
1983	142	54	0.67	64	91	1.73	92	97	1.86	1.41
1984	117	25	0.32	69	93	1.73	106	92	1.70	1.19
1985	87	45	0.49	41	98	1.63	94	94	1.85	1.31

[a] Productivity calculated using the age structure determined from population modeling and the previous years tooth collection results.

Table 2. Antlerless deer permits for Minnesota deer hunting seasons, 1980-1984.

Year	Permits Available	Valid Applications	Permits Issued	Areas Underscribed
1980	66,765	165,679	56,250 (84%)	52 of 94
1981	84,405	204,717	75,737 (90%)	34 of 99
1982	89,925	199,640	81,812 (91%)	28 of 105
1983	156,530	239,937	150,280 (96%)	30 of 105
1984	150,375	260,458	147,290 (98%)	13 of 105
1985	167,725	264,990	157,526	23 of 105
1985* (Bonus Deer)	16,440	8,439	8,439 (99%)	7 of 23

* Projected figures

Table 3. Minnesota's resident deer hunting license sales, 1960-1984.

	Licenses Sold			
	Firearms	Archery	Muzzel-loader	Total
1960	233,593	11,834		245,427
1961	250,031	13,229		263,260
1962	244,166	11,776		255,942
1963	257,333	11,724		269,057
1964	278,032	13,472		291,504
1965	289,918	15,628		305,546
1966	284,195	17,203		301,398
1967	305,717	18,405		324,122
1968	302,216	20,188		322,404
1969	253,891	15,658		269,549
1970	188,166	12,277		200,443
1971	0	17,630		17,630
1972	257,998	21,985		279,983
1973	294,349	29,169		323,518
1974	296,248	30,701		326,949
1975	327,596	31,836		359,432
1976	263,868	21,773		285,641
1977	287,271	29,404	1,000	317,675
1978	307,910	32,546	3,145	343,601
1979	312,754	35,657	3,128	351,530
1980	344,516	41,328	2,089	387,933
1981	369,425	50,063	2,238	421,726
1982	369,018	54,062	2,325	425,405
1983	391,099	55,803	2,400	449,302
1984	396,074	61,576	2,376	460,026
1985*	408,000	65,000	2,400	475,400

* Projected (includes 8,439 Bonus Deer)

Table 4. Estimated deer hunter split per season option in the farmland zone, 1980-1984. Data expressed as percent of the zone total.

	YEAR					
Zone	1980	1981	1982	1983	1984	1985*
2	0:0	0:0	0:0	100:0	100:0	100:0
3	46:54	54:46	51:49	36:64	32:68	33:67
4 & OR 5	46:54	37:63	30:70	26:74	55:45	56:44

* Preliminary data

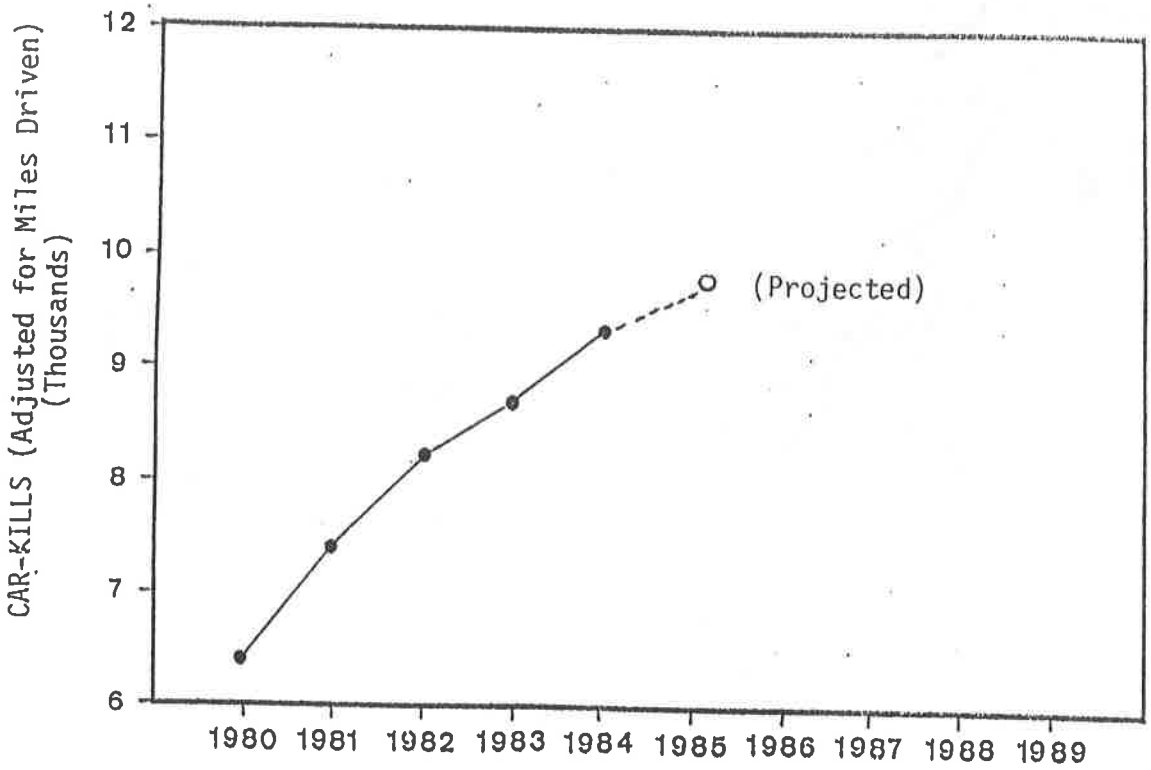
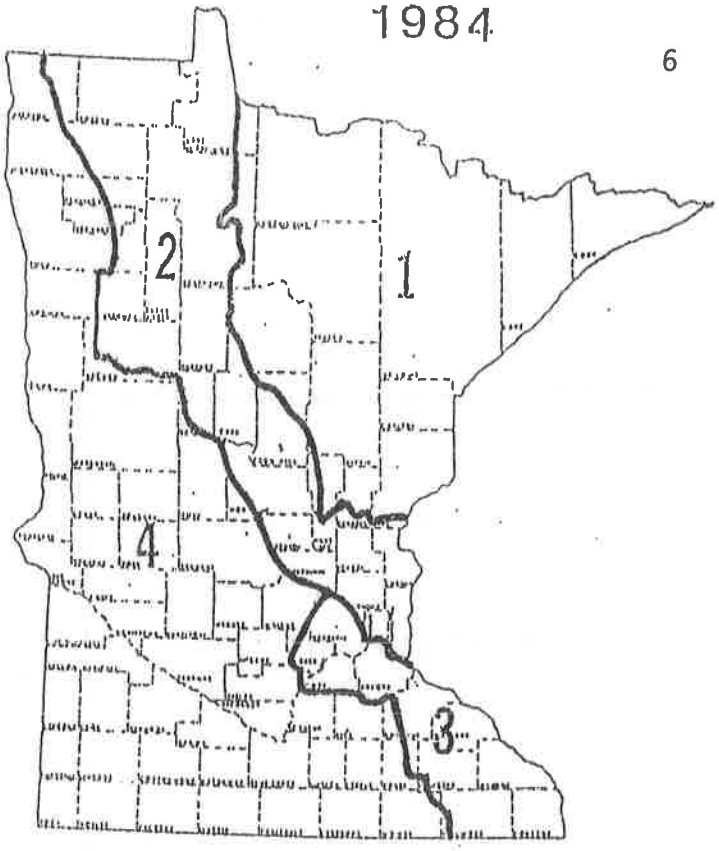


Figure 1. Total car-killed deer confiscated in Minnesota's farmland zone.



FIREARMS DEER SEASON (Hunters must select ONE of the options listed below)

ZONE 1..LEGAL BUCK .....NOV. 3-18
and antlerless deer by permit

ZONE 2..LEGAL BUCK .....NOV. 3-12
and antlerless deer by permit

ZONE 3..LEGAL BUCK.....NOV. 3-12

ZONE 3..LEGAL BUCK.....NOV. 17-23
and antlerless deer by permit

ZONE 4..LEGAL BUCK.....NOV. 3-4 OR NOV. 10-13
and antlerless deer by permit

SPECIAL MUZZLELOADER SEASON
either sex....NOV. 24-DEC. 9

ARCHERY SEASON
Southwest.....SEP. 15-NOV. 30
Southeast.....SEP. 15-DEC. 31
North.....SEP. 15-DEC. 9

FIREARMS DEER SEASON (Hunters must select ONE of the options listed below)

ZONE 1..LEGAL BUCK .....NOV. 9-24
and antlerless deer by permit

ZONE 2..LEGAL BUCK .....NOV. 9-17
and antlerless deer by permit

ZONE 3..LEGAL BUCK.....NOV. 9-17

ZONE 3..LEGAL BUCK.....NOV. 23-29
and antlerless deer by permit

ZONE 4..LEGAL BUCK.....NOV. 9-10 OR NOV. 16-19
and antlerless deer by permit

SPECIAL MUZZLELOADER SEASON
either sex....NOV. 30-DEC. 15

ARCHERY SEASON
Southwest.....SEP. 14-NOV. 30
Southeast.....SEP. 14-DEC. 31
North.....SEP. 14-DEC. 8

Figure 2. 1984-85 firearms deer seasons.

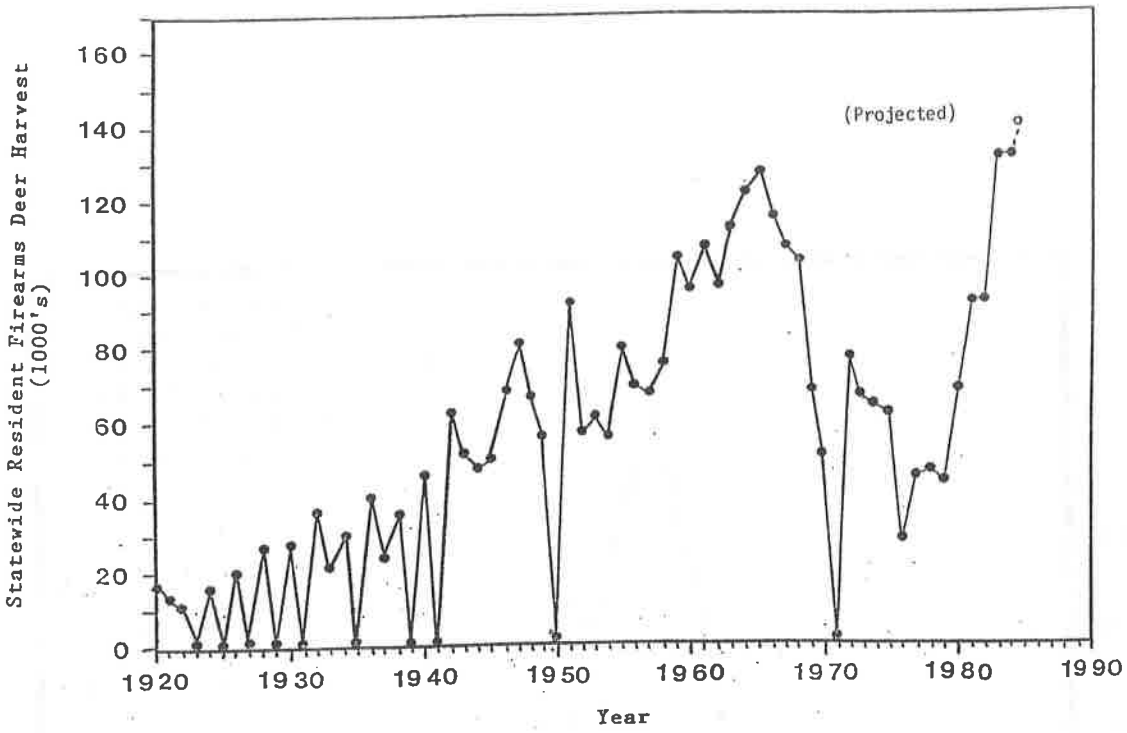


Figure 3. Statewide resident firearms deer harvest, 1920-1984

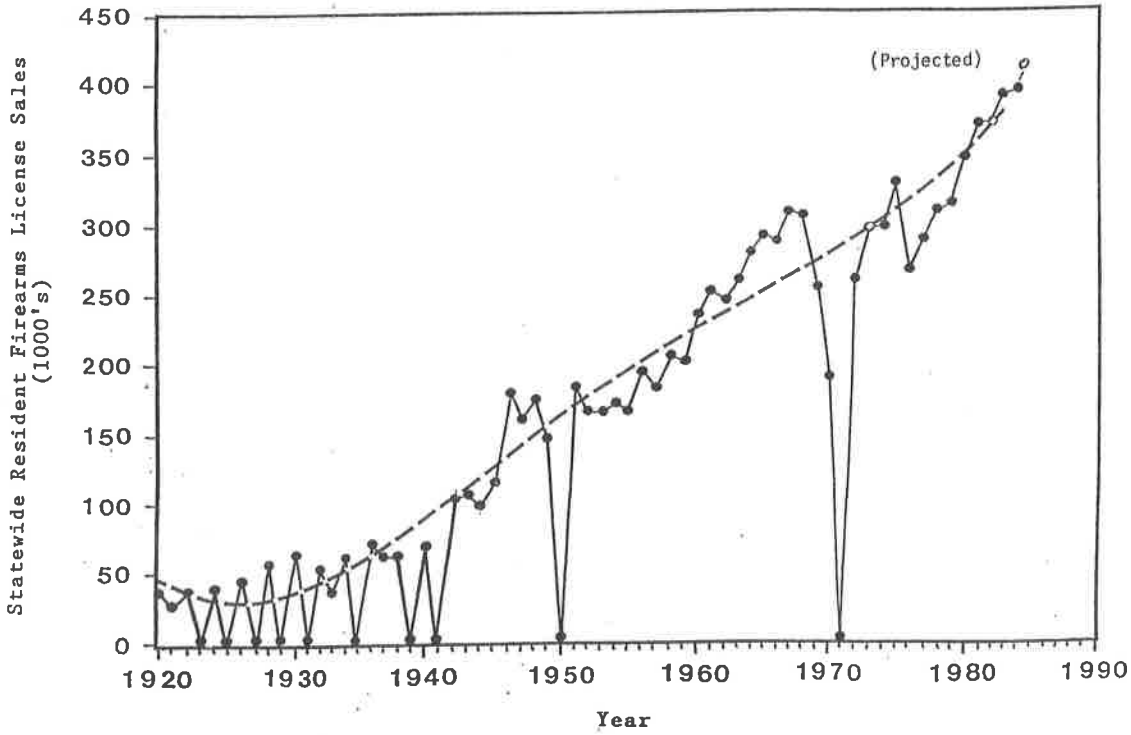


Figure 4. Statewide resident firearms deer license sales, 1920-1984

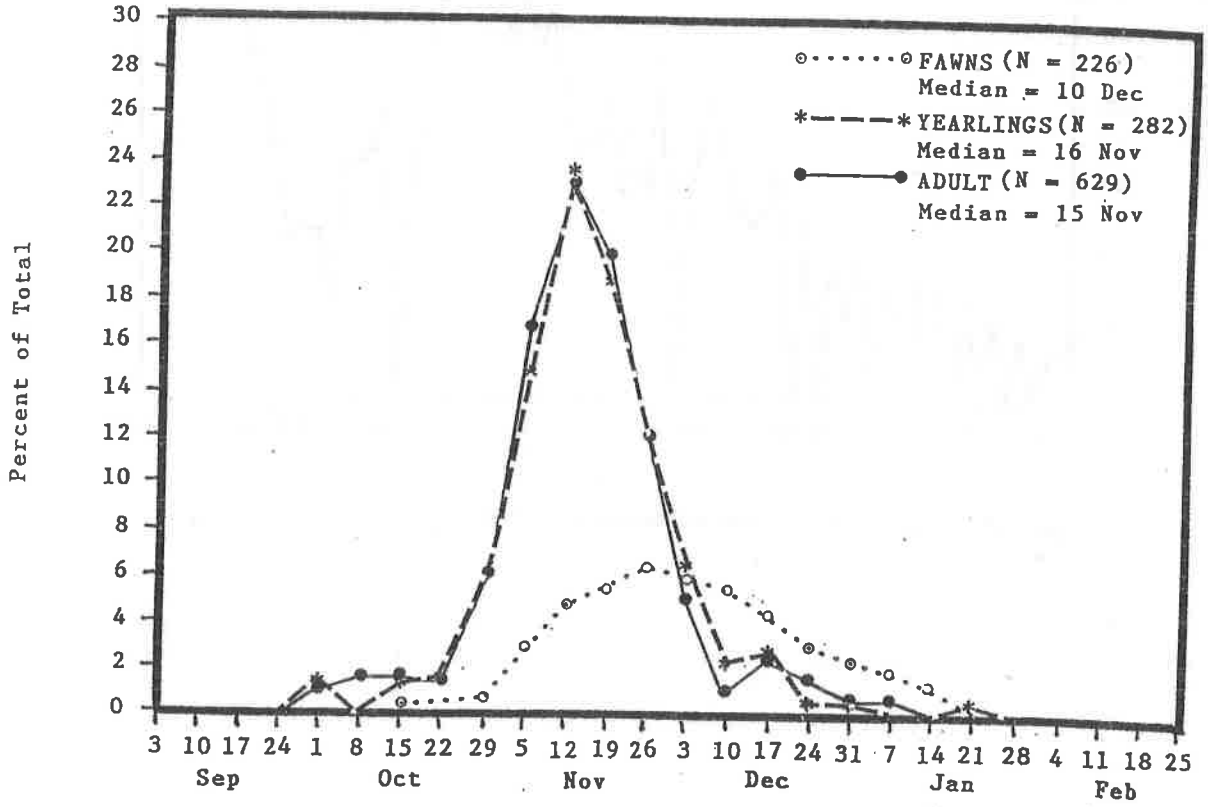


Figure 5. Conception dates for Minnesota's farmland deer by age class, 1980-1985

MIDWEST DEER STUDY GROUP

MISSOURI - 1986 REPORT

NORB GIESSMAN

1985 DEER HUNTING SEASONS

FIREARMS SEASON

Regulations

Regulations for the 1985 firearms deer season were established using 23 Management Units (Figure 1). Unit boundaries were based on a forest cover map devised from 1972-76 LANDSAT photography. Major highways and rivers serve as boundary markers. Season dates were November 16 thru November 24. Two types of seasons were utilized in 1985:

1. Antlered bucks-only, and
2. Antlered bucks plus a quota of any-deer permits.

In units 1-6, 8-16, and 19-22, any-deer permits were available to permittees on a random drawing basis (Table 1). Landowners with five acres or more could hunt antlered deer without a permit on their property. Landowners with 75 acres were eligible for one free, guaranteed any-deer permit; landowners with 300 acres could receive two any-deer permits; landowners with 1,000 acres could receive three any-deer permits; co-owners of 150 acres could receive one any-deer permit each. Twenty-four thousand six hundred and seventy-five (24,675) landowner any-deer permits were issued, a 32 percent increase over 1984. Non-residents, except those owning 75 acres or more within a quota unit, could take only antlered deer. Non-residents with 75 acres were eligible for one guaranteed any-deer permit. Units 7, 17, 18, and 23 were restricted to antlered bucks-only. Special any-deer permits were available statewide in cases of severe crop damage. Three thousand six hundred and ninety-seven (3,697) crop damage permits were issued, a 29 percent increase over 1984. Hunters were limited to one deer, and all successful hunters were required to check their kill on the day taken.

Harvest

Reported (preliminary) deer harvest for the 1985 firearms season was 80,720, a new record harvest by 7,255 animals. Of this total harvest, 35 percent were does. Actual doe harvest was 28,201, a 54 percent increase over 1984. Generally poor weather hampered hunters during the week, however weather through the weekends was more favorable.

ARCHERY SEASON

Regulations

Archers were allowed to take one deer of either sex from October 1 through November 15 and November 25 through December 31. Shooting hours were one-half hour before sunrise to one-half hour after sunset. These regulations applied statewide and successful hunters were required to check their kill within 24 hours via a mail-in report stub.

Harvest

Archery deer harvest is expected to break 6,000 compared to 5,246 in 1984.

MANAGED DEER HUNTS

Regulations

During 1985 there were 15 managed deer hunts on state and federal refuges in Missouri. These were limited hunts with participants determined by random drawings. Four of these were for archers only, 9 for muzzleloaders and archers, and two for modern centerfire weapons only (Table 2).

Harvest

Results of managed deer hunts are listed in Table 2. These hunts have been extremely successful in terms of providing recreational opportunities and maintaining desired levels of harvest.

POPULATION TRENDS

Population trend indicators for 1985 including road-kill statistics, conservation agent evaluations, harvest analysis, hunter success rates, browse surveys, productivity data and crop damage reports have not been analyzed at this time. Indications are that the statewide population is increasing at a rate of 10-15 percent annually.

FIELD RESEARCH

Missouri has a unique system (naturally) of seasonal refuges on 12 WMA's in the agricultural northern portion of the state. These refuges, closed to trespass only during the 9-day firearms season, range in size from about 100-800 hectares (1/3 of total acreage). It has been assumed that these seasonal refuges protect local herds from overharvest.

A study was begun in July, 1983 to evaluate deer usage of a seasonal refuge on a heavily hunted WMA in extreme northeastern Missouri. This is basically a deer behavior study investigating deer movements in response to hunter activity. The two major components of the study are: intensive monitoring of radio-collared deer and thorough survey of public use of the WMA during a 27-day period centered around the 9-day firearms season.

A total of 79 deer were radio-collared during the two-year study. Field work ended in December 1985, and data analysis is now underway. A final report will be available in September.

THE FUTURE

A Comprehensive Species Management Plan for White-Tailed Deer in Missouri is now being prepared. This is a long-range planning document designed to outline the future direction of deer management in the state. Also, we are currently revising deer management zones based on a current LANDSAT forest cover map. New units will be in effect by the 1986 season.

FIGURE 1.

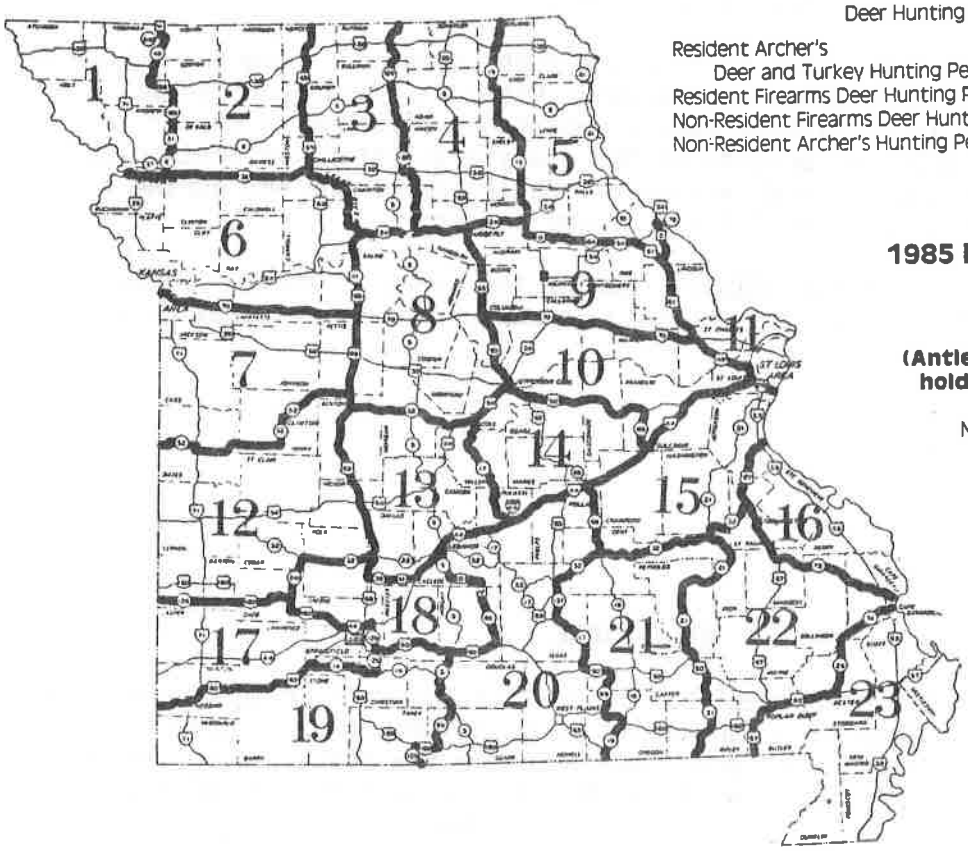
DEER PERMIT INFORMATION 1985

OPEN SEASON

ARCHERY Oct. 1 thru Nov. 15
Nov. 25 thru Dec. 31

FIREARMS Nov. 16 thru Nov. 24

DEER MANAGEMENT UNITS



Deer Hunting Permits

Resident Archer's Deer and Turkey Hunting Permit	$ 8.00
Resident Firearms Deer Hunting Permit	$ 8.00
Non-Resident Firearms Deer Hunting Permit	$75.00
Non-Resident Archer's Hunting Permit	$55.00

1985 Firearms Regulations

QUOTA UNITS

(Antlered bucks only except for holders of Any-Deer Permits)

Number Any-Deer Permits*

Unit 1 - 1,600
Unit 2 - 2,500
Unit 3 - 2,100
Unit 4 - 9,000
Unit 5 - 11,500
Unit 6 - 800
Unit 8 - 1,800
Unit 9 - 2,100
Unit 10 - 21,000
Unit 11 - 700
Unit 12 - 11,000
Unit 13 - 6,100
Unit 14 - 2,300
Unit 15 - 500
Unit 16 - 3,200
Unit 19 - 9,500
Unit 20 - 18,000
Unit 21 - 200
Unit 22 - 1,600

*Non-residents except those owning 75 acres or more in a continuous tract within a quota unit are ineligible for Any-Deer Permits in all quota units.

BUCKS ONLY UNITS
(Antlered bucks only for all hunters)

Units 7, 17, 18 and 23

Landowners are required to have a special Any-Deer Permit to take antlerless deer in 1985. See 1985 Deer Information leaflet for details.

ANY-DEER PERMITS

Nineteen Deer Management Units will have quotas on Any-Deer Permits in 1985. Antlered bucks (deer having at least one antler not less than three (3) inches long) will be legal game for all hunters; however, hunters having a special Any-Deer Permit may take deer of either sex any day of the season. If you wish to apply for an Any-Deer Permit, you must first purchase a 1985 firearms deer permit and obtain an official application card. Application cards may be obtained from most permit distributors or Missouri Department of Conservation offices. Only one application card will be accepted from each hunter and must be submitted between August 15 and September 15, 1985. **Non-residents except those owning 75 acres or more in a continuous tract within a quota unit are ineligible for Any-Deer Permits in all quota units. See 1985 Deer Hunting Information leaflet for application instructions.**

No Postcard Applications
Missouri Department of Conservation

TABLE 1. 1985 ANY-DEER PERMITS

Unit	Quota	Applications	Drawing Success Rate
1	1,600	2,497	64%
2	2,500	4,622	54%
3	2,100	3,063	69%
*4	9,000	9,775	100%
*5	11,500	11,683	100%
6	800	2,644	30%
8	1,800	4,088	44%
9	2,100	3,559	59%
**10	21,000	20,255	100%
11	700	1,186	59%
12	11,000	13,888	79%
13	6,100	8,386	73%
14	2,300	4,848	47%
15	500	3,388	15%
16	3,200	5,065	63%
19	9,500	12,034	79%
20	18,000	22,414	80%
21	200	1,510	13%
22	1,600	7,380	22%
TOTAL	105,500	142,282	74%

*Additional any-deer permits were issued; 775 more in Unit 4 and 183 in Unit 5.

**Insufficient number of applications received to fill any-deer quota in Unit 10.

TABLE 2. MANAGED DEER HUNTS - 1985

AREA	DATES	QUOTA	LEGAL QUARRY	NO. OF APPLICANTS	HUNTER SUCCESS RATE
ARCHERY ONLY: (Longbow or Compound Bow)					
August A. Busch Mem. Wildlife Area	November 16-17	375	Any-deer	884	12%
	November 18-20	375	Any-deer	671	13%
	November 21-24	375	Any-deer	976	5%
Drury Refuge	October 19-21	400	Any-deer	593	5%
HISTORIC WEAPONS: (Muzzleloading Firearms, Longbow, Compound Bow and Crossbow)					
Caney Mountain	October 26-28	550	Any-deer	1,464	14%
Fort Leonard Wood	December 20-22	750	Any-deer	1,366	19%
Howell Island	October 26-28	125	Any-deer	623	17%
Mincy Wildlife Area	November 9-11	200	Any-deer	228	9%
Mingo Nat. Wildlife Refuge	December 21-23	125	Any-deer	1,150	36%
Peck Ranch	October 26-28	700	Antlered bucks-only	1,165	9%
Peck Ranch	December 7-9	150	Any-deer	293	17%
Rebel's Cove	October 26-28	100	Any-deer	212	Not Available
Swan Lake Nat. Wildlife Refuge	October 19-21	175	Any-deer	1,671	21%
MODERN FIREARMS: (Centerfire cartridges only)					
Weldon Spring Wildlife Area	November 16-19	125	Unit 10 Reg's.	1,087	61%
	November 20-24	125	Unit 10 Reg's.	613	51%

DEER IN NEBRASKA - 1985

Bruce Trindle

Firearm Season:

Firearm season was held November 9 through November 17. Two late river hunts were held December 7 through December 15, and two were held January 11 through January 19. A late second season was held in the Keya Paha unit December 7 through December 15. A total of 49,271 permits was issued for all hunts, a 12 percent increase over 1984. Of this total 4,457 were half-priced limited landowner permits, an increase in 46 percent over those issued in 1984. Seventy four percent of the permits allowed the taking of either sex.

Only data from the regular firearm season is available at this time. Nebraska again set a record harvest in 1985. A total of 30,557 deer was harvested, a 2 percent increase compared to 1984. The 1985 harvest is 88 percent over the 1980 harvest of 16,239 deer. Harvest and success by unit is presented in Table 1. The composition of harvest and relative success by type of permit is presented in Table 2.

Species Control:

The late river format, where hunters are restricted to 1 mile of the river channel, was increased to 4 hunts in 1985. Unit and river locations are presented in Figure 1. The results from these seasons are not available at this time. The late river hunts are supposed to reduce the white-tailed deer population in the management unit, while leaving the mule deer population relatively unaffected. This is based on the habitat preference of white-tailed deer for riparian timber along river courses versus the mule deer preference of more open rangeland. The increase from 1 to 4 hunts in 1985 was based on the success of a similar season held in 1984.

TABLE 1. PERMITS, HARVEST, AND SUCCESS DURING THE 1985 FIREARM SEASON

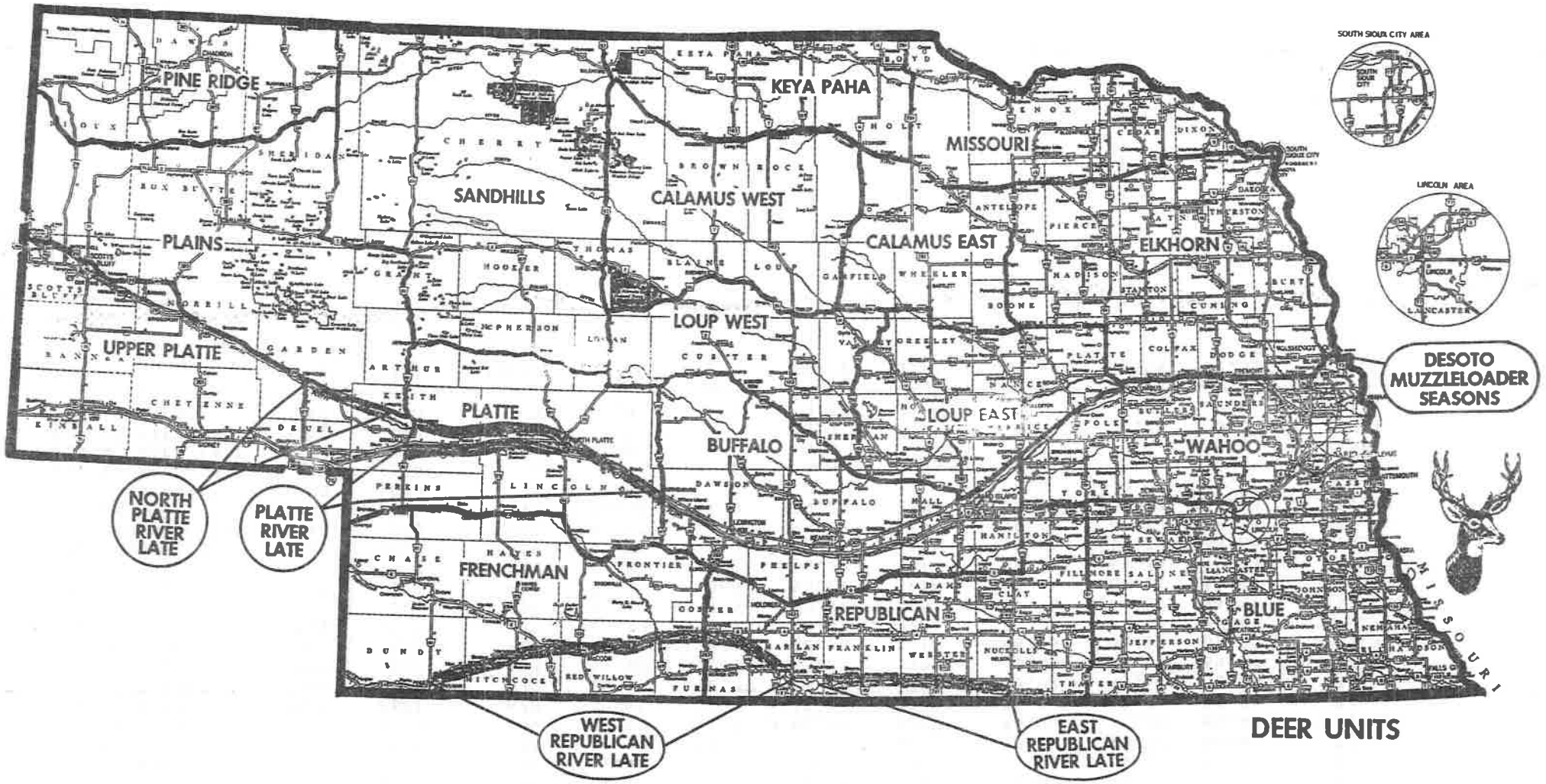
MANAGEMENT UNIT	TOTAL PERMITS ISSUED	** MULE DEER ** NUMBER	PERCENT AD MALE	* WHITETAIL DEER * NUMBER	PERCENT AD MALES	NUMBER UNKNOWN SPECIES	* * * * * TOTAL NUMBER	PERCENT AD MALE	* * * * * SUCCESS	PERCENT WHITETAILS	MULE DEER PER WHITETAILS
BLUE	5644	20	55.00	3530	65.00	2	3552	64.94	62.93	99.44	0.01
BUFFALO	2683	746	59.19	1263	65.87	7	2016	63.49	69.93	62.87	0.59
CALAMUS EAST	1960	115	50.00	1033	52.54	1	1149	52.33	58.62	89.98	0.11
CALAMUS WEST	2028	421	51.20	869	61.53	0	1290	58.16	63.61	67.36	0.48
ELKHORN	3368	16	81.25	1890	63.91	1	1907	64.05	56.62	99.16	0.01
FRENCHMAN	2654	1717	68.47	523	70.94	0	2240	69.05	84.40	23.35	3.28
KEYA PAHA	2121	336	61.31	1202	57.38	1	1539	58.22	72.56	78.15	0.28
LOUP EAST	2692	147	57.14	1379	62.70	4	1530	62.21	56.84	90.37	0.11
LOUP WEST	2280	659	51.75	925	63.96	9	1593	58.74	69.87	58.40	0.71
MISSOURI	3205	159	64.10	1857	65.28	0	2016	65.19	62.90	92.11	0.09
PINE RIDGE	3598	1341	53.09	918	56.54	2	2261	54.49	62.84	40.64	1.46
PLAINS	1350	723	58.64	277	72.20	4	1004	62.51	74.37	27.70	2.61
PLATTE	2314	892	65.13	681	77.39	3	1576	70.43	68.11	43.29	1.31
REPUBLICAN	2582	530	61.32	1384	67.75	2	1916	66.00	74.21	72.31	0.38
SANDHILLS	2975	1076	57.45	823	66.30	0	1899	61.28	63.83	43.34	1.31
UPPER PLATTE	1282	680	68.63	207	77.18	1	888	70.62	69.27	23.34	3.29
WAHOO	3385	13	61.54	2165	63.14	3	2181	63.15	64.43	99.40	0.01
TOTALS	49271	9591	60.29	20926	64.03	40	30557	62.86	62.02	68.57	0.46

NOTE.. ONLY KNOWN AGE *AND* SEX ANIMALS INCLUDED IN PERCENT ADULT MALE CALCULATIONS....

TABLE 2. COMPOSITION OF 1985 HARVEST AND RELATIVE SUCCESS BY TYPE OF PERMIT

MANAGEMENT UNIT	TOTAL PERMITS ISSUED	NUMBER E-SEX PERMITS	** ANTLERLESS ** NUMBER	** ANTLERLESS ** PERCENT	** TOTAL ** NUMBER	** TOTAL ** PERCENT	TOTAL HARVEST	** PERCENT SUCCESS ** E-SEX PERMITS	BUCK PERMITS	TOTAL	ANTLERLESS KILL/ 100 E-SEX PERMITS
1/ BLUE	5644	3386	1216	50.71	2398	67.51	3552	70.82	51.11	62.93	35.91
2/ BUFFALO	2883	2018	724	48.01	1508	74.80	2016	74.73	58.73	69.93	35.88
3/ CALAMUS EAST	1960	1176	530	67.17	789	68.67	1149	67.09	45.92	58.62	45.07
4/ CALAMUS WEST	2028	1216	521	61.37	849	65.81	1290	69.82	54.31	63.61	42.85
5/ ELKHORN	3368	2020	673	52.17	1290	67.65	1907	63.86	45.77	56.62	33.32
6/ FRENCHMAN	2654	2123	684	37.44	1827	81.56	2240	86.06	77.78	84.40	32.22
7/ KEYA PAHA	2121	2121	628	40.81	1539	100.00	1539	72.56	0.0	72.56	29.61
8/ LOUP EAST	2692	1615	570	54.29	1050	68.63	1530	65.02	44.57	56.84	35.29
9/ LOUP WEST	2280	1368	643	61.30	1049	65.85	1593	76.68	59.65	69.87	47.00
10/ MISSOURI	3205	1923	680	51.44	1322	65.58	2016	68.75	54.13	62.90	35.36
11/ PINE RIDGE	3598	2518	1025	60.19	1703	75.32	2261	67.63	51.67	62.84	40.71
12/ PLAINS	1350	945	374	50.88	735	73.21	1004	77.78	66.42	74.37	39.58
13/ PLATTE	2314	1157	461	53.05	869	55.14	1576	75.11	61.11	68.11	39.84
14/ REPUBLICAN	2562	1807	637	44.80	1422	74.22	1916	78.69	63.74	74.21	35.25
15/ SANDHILLS	2975	1785	700	56.13	1247	65.67	1899	69.86	54.79	63.83	39.22
16/ UPPER PLATTE	1282	641	256	53.67	477	53.72	888	74.41	64.12	69.27	39.94
17/ WAHOO	3385	2369	793	48.98	1619	74.23	2181	68.34	55.31	64.43	33.47
18/ KEYA PAHA	1000	1000	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
19/ E. REP. LATE	400	400	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
20/ W. REP. LATE	700	700	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
21/ PLATTE LATE	700	700	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
22/ N.P. LATE	150	150	0	0.0	0	0.0	0	0.0	0.0	0.0	0.0
TOTALS	49271	33138	11115	51.24	21693	70.99	30557	65.46	54.94	62.02	33.54

FIGURE 1. DEER MANAGEMENT UNITS



DEER IN NORTH DAKOTA - 1985

Roger Johnson

Firearms Season Structure - Regulations for the 1985 firearms deer season were established for all 36 hunting units (Figure 1). All deer hunting licenses are issued through a lottery drawing except for landowner permits. The unitized permits are issued for specific deer types (antlered or antlerless white-tailed, antlered or antlerless mule deer and antlered or antlerless deer). All white-tailed antlered and any antlered license holders with unfilled tags could harvest an antlerless white-tailed deer the last weekend of the season. A total of 70,625 deer gun licenses were issued; 60,703 licenses through the lottery drawing and 9,922 to landowners. A record number of licenses were sold in 1985.

A variety of season types were again offered to deer gun hunters in 1985. The 16½ day season started in 1983 has been well accepted by the public. This type of season was again expanded to the whole state except the badlands (4A, 4B, 4C, 4D, 4E, and 4F) (Figure 1). The deer gun season in these areas started at noon CST November 8th and continued for 16½ days. The deer gun season in the badlands also started at noon CST November 8th but continued for only 9½ days. A split season (early and late) was also offered in 1985 near the population center along the extreme eastern edge of the state and the Missouri River south of Bismarck (hunting units 2A, 2B, 2C, 2D, and 3C) (Figure 1). The early season started at noon CST November 8th and continued for 6½ days. The late season started at noon CST November 15 and continued for 9½ days. This type of split allowed for both early and late seasons to be held within the 16½ day season framework.

The day before the season started a proclamation was signed by the governor to extend the season one week throughout the state. The antlerless white-tailed option for the original season was changed to the last weekend of the extended season and the hunters in both early and late split season areas were allowed to hunt in the extended week of the season.

Firearms Season Harvest - The 1985 deer harvest from the questionnaire survey is not available at this time. From the increased deer herd of recent years, there is no reason to expect success to be less than 1984 when hunters harvested 46,880 deer for a 77.8% success. Based on this success rate the 70,625 hunters should have harvested approximately 55,000 deer statewide. This harvest would again be a record for North Dakota.

Archery Harvest - The archery harvest and license sales are both unknown at this time. A survey of archery hunters will be made when license stubs are turned in. Results are expected to be similar to 1984 when 9,977 deer bow hunters harvested 2,882 deer for a 29.9 percent hunting success.

Population Trend - White-tailed deer are distributed throughout North Dakota. Population densities vary by region and are influenced by land use, human population densities, habitat types and climatological regions. In 1958, the state was divided into ten management units and further divided into 41 subunits with permanent boundaries that most nearly coincide with the environmental influences thus permitting deer management on a unitized basis. Permanent deer population study areas have been established within each of the 41 subunits to provide comparative annual population trend information.

The main range of mule deer in North Dakota is the region of the state southwest of the Missouri River. The unitized system of management for white-tailed deer is also used as a basis for mule deer management. The badlands region is considered the primary mule deer range and permanent deer population study areas have been established.

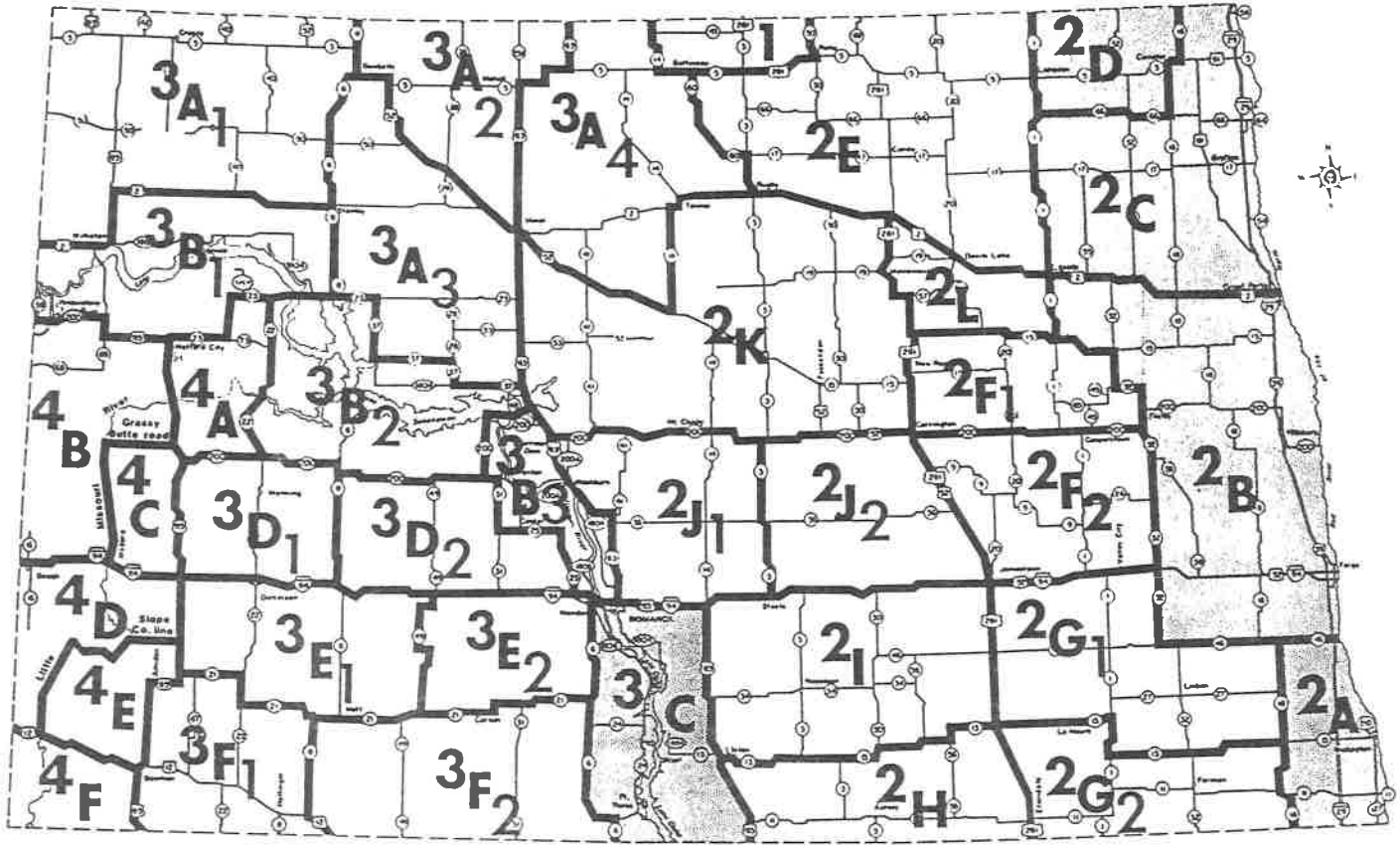
Population trend data in North Dakota for both white-tailed and mule deer is obtained by aerial survey of the permanent study areas. The 1985-86 winter whitetail deer survey is in progress. At present (January 20, 1986), a summary of the counts completed indicate a 15-30 percent increase over 1981-82 when snow was sufficient for counting deer. Incidental observations by our personnel and the public also indicate a higher white-tailed deer herd throughout the state.

Research - In North Dakota, we do not have a research division, therefore, we do a minimum amount of research. Currently the most emphasized deer research project is working with EHD (Epizootic Hemorrhagic Disease). A veterinarian working on a graduate program has been hired to study the problem. North Dakota has had several major die-offs of white-tailed deer and antelope in the southwestern portion of the state over the last twenty years. EHD has been implicated. The current three year study has been initiated to determine the mechanisms of maintenance and transmission of the disease for future prediction and possible prevention of epizootic outbreaks. This year blood samples were again collected from hunter killed deer and antelope but more emphasis was placed on collecting insects. A suspected transmission vector of EHD, C. variipennis was found present in southwestern North Dakota in 1984. This is the last field season for the present project and a summary of his findings will be reported when a completion report is submitted.

A study has been continued to determine the age structure of our deer harvest in an effort to obtain more information about our deer herd on an annual basis. The teeth were collected from hunter killed deer through a postage-paid mail envelope. The envelopes were sent to 2,500 hunters in two management units (12 hunting units). We anticipated having 500 returned. To date, no tally has been made on tooth returns or the age structure results.

Figure 1

1985 DEER GUN HUNTING UNITS



DEER IN OHIO - 1985

(Bob Stoll)

Harvest Results

Final harvest results for the 1984-85 season and preliminary results for the 1985-86 season are shown in Table 1.

Table 1. Final results of 1984-85 and preliminary results of 1985-86 Ohio deer hunting seasons.

Year and Zones	Antlerless Permits Issued[1]	Harvest					
		Shotgun	Long-Bow	Cross-Bow	Spec. Areas Prim. Hunt	Statewide Prim. Hunt	Season Totals
1984-85							
Zone 1	22,442	5,561	801	218	-	923	7,503
Zone 2	14,094	4,676	687	277	11	590	6,241
Zone 3	-	2,162	314	123	-	629	3,228
Zone 4	-	44,237	1,585	557	170	2,224	48,773
State	36,536	56,636	3,387	1,175	181	4,366	65,745
1985-86							
Zone 1	21,478	5,519	?	?	-	239	?
Zone 2	11,516	3,484	?	?	20	154	?
Zone 3	-	2,046	?	?	-	1,015	?
Zone 4	-	41,439	?	?	202	2,975	?
State	32,994	52,488	?	?	222	4,383	?

[1] Landowner and public antlerless permits combined.

For the 1985 shotgun season, 37 counties had a 6 day antlerless permit hunt, 26 counties had a 6 day either sex hunt, 10 counties had a 1 day either sex followed by 5 day buck only hunt, and 15 counties had a 6 day buck only hunt. County harvest objectives were based on "optimum deer density for farms" derived from a survey of rural landowners. The 1985 preliminary gun harvest of 52,488 fell about 4,000 deer shy of last year's record harvest of 56,636. Poor opening day weather conditions rather than lower deer populations contributed to the 7% decline in the 1985 gun harvest. This was the second year that a straight 6 day either sex season was held in Zone 4, our major deer zone, in an attempt to control increasing deer populations. Based on 1984 results, the 6 day either sex season appears moderately successful in that regard.

In addition to the shotgun season, Ohio also offered 1985-86 deer hunters a 96 day archery season (longbow or crossbow), 6 day primitive weapons hunt on 3 special areas, and a 3 day either sex statewide primitive (muzzleloader) hunt (Fig. 1). The statewide muzzleloader hunt was initiated in 1979 and has increased each year.

In 1984-85, 268,555 deer hunting permits were sold; the 1985-86 permit sales are expected to exceed the 1984-85 sales.

In-Season Deer Damage Control Program

A program designed to help farmers control deer crop damage was on the books again for the 1985 deer gun season. In this program the farmer is issued special damage permits for antlerless animals. These permits can then be issued to licensed hunters allowing them to take antlerless deer on the lands where damage is occurring and on adjoining lands of cooperating neighbors. The 1984 program was considerably smaller than in previous years because 24 of our top problem counties were switched from a permit to an either sex gun season. Table 2 summarizes results for 1979 through 1984. Results for 1985 are not in.

Table 2. In-season deer damage control program results.

Year	Farmers in program	Total acreage in program (range)	Mean antlerless kill per farmer (range)	Mean antlerless kill/mi² (range)	
				Damage Program	Respective Counties
1979	6	13,191 (398-6,610)	18 (0-40)	5.2 (0-9.0)	0.6 (0-1.3)
1980	7	10,955 (726-2,367)	11 (1-28)	4.4 (0.5-7.9)	1.0 (0.1-2.2)
1981	8	8,871 (261-2,138)	8 (1-29)	4.3 (0.6-8.7)	1.4 (0.3-2.5)
1982	9	13,694 (574-4,205)	9 (1-20)	3.8 (0.6-9.0)	1.4 (0.5-2.8)
1983	13	13,929 (160-4,161)	6 (0-25)	3.6 (0.0-11.6)	1.2 (0.0-2.7)
1984	5	4,162 (116-1,833)	7 (0-29)	5.7 (0.0-11.0)	0.5 (0.0-0.9)

Helicopter Censusing of Deer

Helicopter-ground truth counts of deer in western Ohio farmland habitat have been conducted over 3 winters. A combined total of 97 woodlots and surrounding farmland has been surveyed. In all cases, the ground truth counts have agreed with the helicopter counts. One more winter of suitable snow condition is needed to wrap this up.

Deer Counts by Rural Mail Carriers

Rural mail carriers in 26 east central and southeastern Ohio counties were asked to record the number of deer they saw while running their rural mail routes in October and November, 1984. A preliminary survey in Athens County the previous year indicated that such a survey had good potential as an inventory tool.

For the 26 primary survey counties, participation in the survey ranged from a low of 70% of the RMCs based in Belmont County to a high of 100% based in Athens, Carroll, Coshocton, Guernsey, Harrison, Licking, Meigs, Perry, and Pike counties. The total number of route miles surveyed per county ranged from 30,762 miles in Vinton to 76,867 in Washington County. The total number of deer seen ranged from 45 in Fairfield to 459 in Meigs County. The statistic of primary interest because of its potential usefullness as an indicator of population change from year-to-year, is deer seen per 100 miles. This statistic was highest in Meigs (1.062, SE = 0.063) and lowest in Fairfield (0.074, SE = 0.016) County. More than 60% of the deer observations were recorded in November.

In 1984, 85% or more of the RMCs in most counties participated. This level of participation will probably be difficult to sustain. The survey was continued in 1985, but results are not available.

Rural Landowner Deer Survey

A rural landowner survey to update attitudes toward deer and deer populations was conducted in 1985. A 2% sample of landowners owning 10 or more acres was randomly selected from property tax records in each county. No results yet. A similar survey, first conducted in 1979, provided useful information for management and administrative purposes.

County Trend Graphs

Color graphs showing deer population trends for each county were given to game protectors in each Ohio county and to wildlife District Offices. The graphs show buck gun kill/mi^2 and deer highway accidents in relation to total antlerless kill/mi^2 (Fig. 2). They are designed to serve as a one page, ready visual reference of county deer population status.

1985 DEER SEASONS

DEFINITIONS: Buck - deer having antlers at least 5 inches long.
Antlerless deer - deer without antlers or with antlers extending less than 5 inches.

BAG LIMIT: One deer per hunter per license year (Sept. 1 - Aug. 31), regardless of the method of taking.

Weapons	Legal Deer and Locations	Dates	Hours
Longbow	Buck or doe, statewide (except buck only during primitive weapons season on special areas and in Zones 1 and 2 during statewide primitive weapons season)	October 5, 1985, through January 31, 1986, except closed during gun season	½ hour before sunrise to ½ hour after sunset
Crossbow			
Primitive weapons: longbow, crossbow, single shot muzzleloading rifle .38 caliber or larger, or muzzleloading shotgun using one ball per barrel	Buck only, special areas only	October 28, 1985, through November 2, 1985	
Primitive weapons: same as above	Buck only in Zones 1 and 2. Buck or doe in Zones 3 and 4. (Kelleys Island closed to gun hunting)	January 9, 1986, through January 11, 1986	
Shotgun using one ball or one rifled slug per barrel, or single shot muzzleloading rifle .38 caliber or larger	Zone 1 - Buck only. Limited antlerless deer permits (Kelleys Island closed to gun hunting)	December 2, 1985, through December 7, 1985	7:00 a.m. to 5:30 p.m.
	Zone 2 - Buck only. Limited antlerless deer permits	December 2, 1985, through December 7, 1985	
	Zone 3 - Buck or doe	December 2, 1985	
	Zone 3 - Buck only	December 3, 1985, through December 7, 1985	
	Zone 4 - Buck or doe	December 2, 1985, through December 7, 1985	

Fig. 1. 1985-86 Ohio deer seasons.

Public Permits: The application for a free public antlerless deer permit is attached to your $10.75 deer permit. Type or print your full name, address, zip code, and county of choice on the antlerless deer permit application form. Carefully remove the application from the deer permit, affix a stamp, and mail. Disabled veterans who are exempted from the requirement to purchase a deer permit may request an antlerless deer permit application form from: Division of Wildlife, Survey and Inventory Section, 1500 Dublin Road, Columbus, Ohio 43215. The application deadline for public antlerless deer permits is OCTOBER 18, 1985.

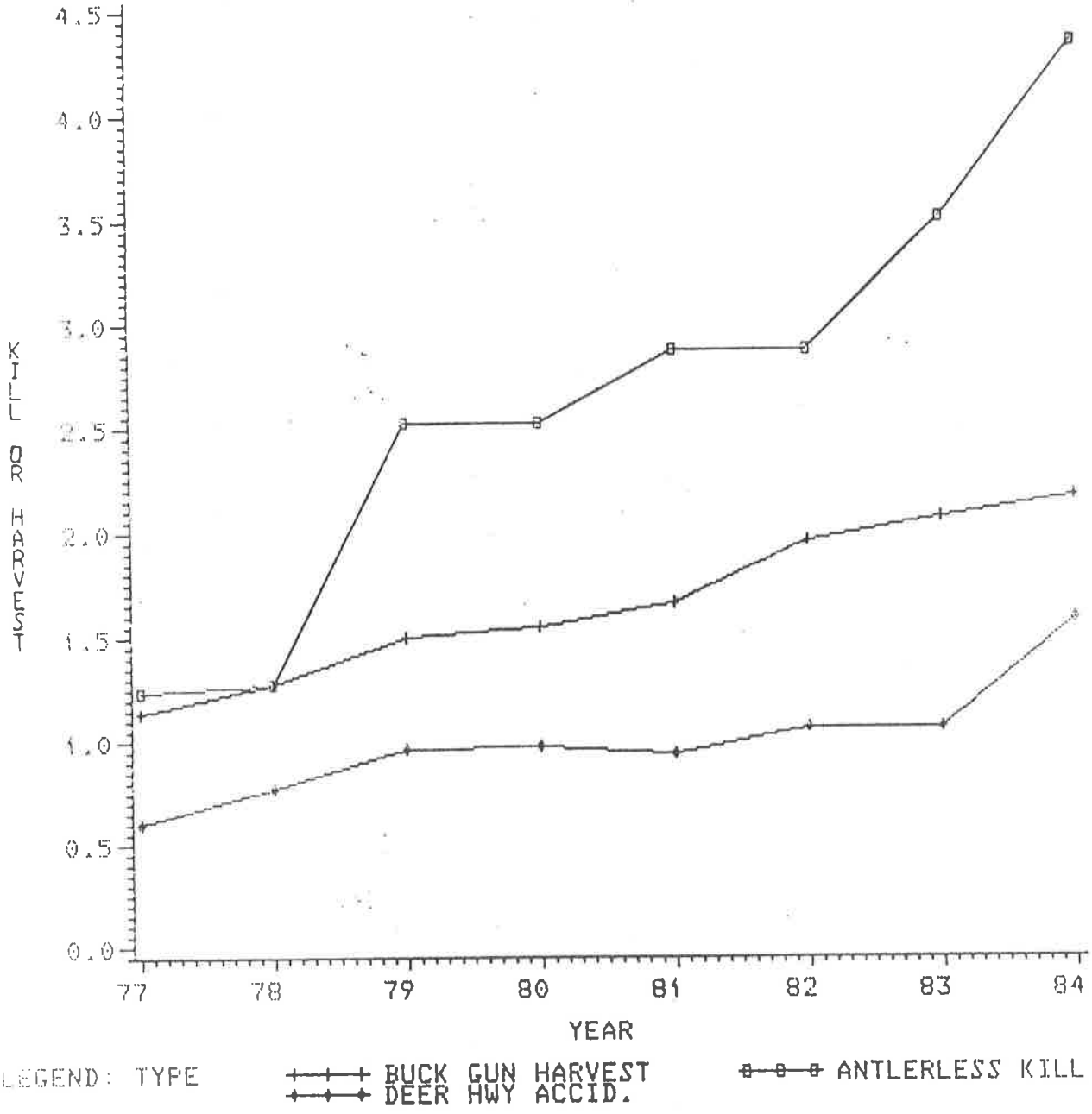
Landowner Permits: Any person who owns 10 or more acres in one continuous block in an antlerless deer hunting county in Deer Zone 1 or 2 may submit one application to obtain a free landowner antlerless deer permit. Only one permit will be issued per parcel of land, regardless of the number of owners. Only one permit will be issued to a landowner, regardless of the number of properties owned. Such permit will allow the landowner family (the landowner, the landowner's spouse, OR the landowner's child) to take one antlerless deer on land owned by the landowner in that county. It is unlawful to submit more than one application for a landowner antlerless deer permit. It is unlawful for a landowner who owns less than 10 continuous acres, or members of a landowner's family, or any person not owning land to apply for or receive such an antlerless deer permit. It is unlawful to make a false statement on an application for a landowner antlerless deer permit. Application forms will be available at official deer checking stations and county Soil and Water Conservation District offices in the antlerless deer counties in Deer Zones 1 and 2. The application deadline for landowner antlerless deer permits is OCTOBER 18, 1985.

Successful hunters must surrender their antlerless deer permits at an official checking station or to a State Game Protector at the time their deer is checked in.

Fig. 2

OHIO DEER POPULATION TRENDS

COUNTY=MEIGS



-BUCK GUN HARVEST IS PER SQ. MILE
-ANTLERLESS HARVEST IS PER SQ. MILE
-DEER HWY ACCIDENTS ARE DIV. BY 100

South Dakota
1985 Deer Status Report
by
Les Rice

For the past five years we have been anticipating weather factors that would cause deer numbers to be adversely affected. Each year those weather factors would fail to materialize. Thus, deer numbers exploded in the early 1980's and ability to control population levels through legal hunting were next to impossible. We could not field enough hunters to significantly decrease our deer herds.

However, the long awaited weather related stress has finally arrived. Our free ride is over and frankly, it is about time. Too many deer is worse than not enough. Farm/ranch related economics have dictated that high deer numbers are intolerable. Combinations of high hunter harvests and weather stress factors are going to substantially reduce deer numbers especially in the western portion of the state.

Winter of 1984-85 saw a return to more normal conditions. Weather was still mild but the balmy winters of previous years was not experienced. Then came summer!!! For at least two-thirds of the state, draught conditions not experienced since the 1930's occurred. By summer's end the western portion of the state had essentially no residual forage available for wildlife. Private and public lands were overgrazed by livestock to the point that we were ripe for disaster.

The remaining third of the state had record rainfall last summer. Sloughs filled that had been dry for years. Available deer habitat was correspondingly reduced as sloughs filled.

All that was needed was an early, severe winter, and we got it. Heavy snowfall and extreme cold started in early November and continued up to the end of December. January has seen milder weather, but by now it is too late.

We issued large numbers of hunting licenses for fall of 1985, and it is a good thing we did. The only abundant forage available for deer is standing corn east of the Missouri River. Our farmland deer, therefore, have enough to eat but landowners are unhappy to say the least. West River Prairie and Black Hills deer are in serious trouble. The only available forage is ranchers hay stacks. Natural feed is essentially non-existant. The severe winter weather prevented deer harvest from being as great as hoped so seasons were extended, and extended, and extended to try and get sufficient kill. Restrictions on numbers of licenses a hunter could buy were dropped. We hope that hunter harvest will decline no more than 20% from expected levels but results are unknown at this time.

Depredation or special seasons are currently being held with antlerless permits being issued. If a resident or non-resident hunter wanted to kill a deer in South Dakota this was the year to do so. In essence, hunters could purchase unlimited number of licenses as long as quotas were not exceeded for individual units.

Regular Fall Hunts

As for the past three years, deer licenses authorized in 1985 for both resident and non-resident hunters exceeded demand. Approximately 100,000 deer licenses were authorized for 1985 regular hunting season. Actual license sales totaled almost 95,000. Some of the licenses issued allowed the hunter to take more than one deer so actual tags issued was approximately 110,000; another record.

South Dakota firearm management units were again divided into three major areas (Figure 1). Each unit is in turn divided into sub-units, usually counties. Black Hills management unit has the entire area open to unlimited resident and non-resident "Buck Only" hunting and sub-units which allow limited resident and non-resident antlerless harvest (Figure 2). Until Fall of 1983, a hunter could obtain a license for either East or West River but not both. Additionally, non-landowners could hunt East River areas only once every other year. In 1983, all these restrictions were dropped. Eight percent of all West River licenses were reserved for non-resident. Non-resident hunting was allowed in East River units for the first time in history. All licenses unsold to resident hunters could be purchased by non-residents after September 1.

Archery permits were again valid statewide for either species and or sex for residents and non-residents. An additional "antlerless only" license could be purchased which was good for specific units within the state.

Limited permits were issued to both resident and non-resident hunters on two national wildlife refuges. Some of these permits were reserved for muzzle loaders only.

In order to further bring deer numbers down to more landowner tolerable levels, reduction seasons were held in selected units of West River prairie and East River. All licenses issued (≃2,000) were antlerless only and were available to only resident hunters.

Figure 3 presents license data and kill rates from 1977 through 1985. Compared to 1977, license sales in 1985 increased over 100 percent. Estimated kill rates increased 200 percent. While some of the increase was due to changes in management (type of licenses issued, etc.), the bulk of increase was due to either deer population growth or landowner tolerance to deer numbers.

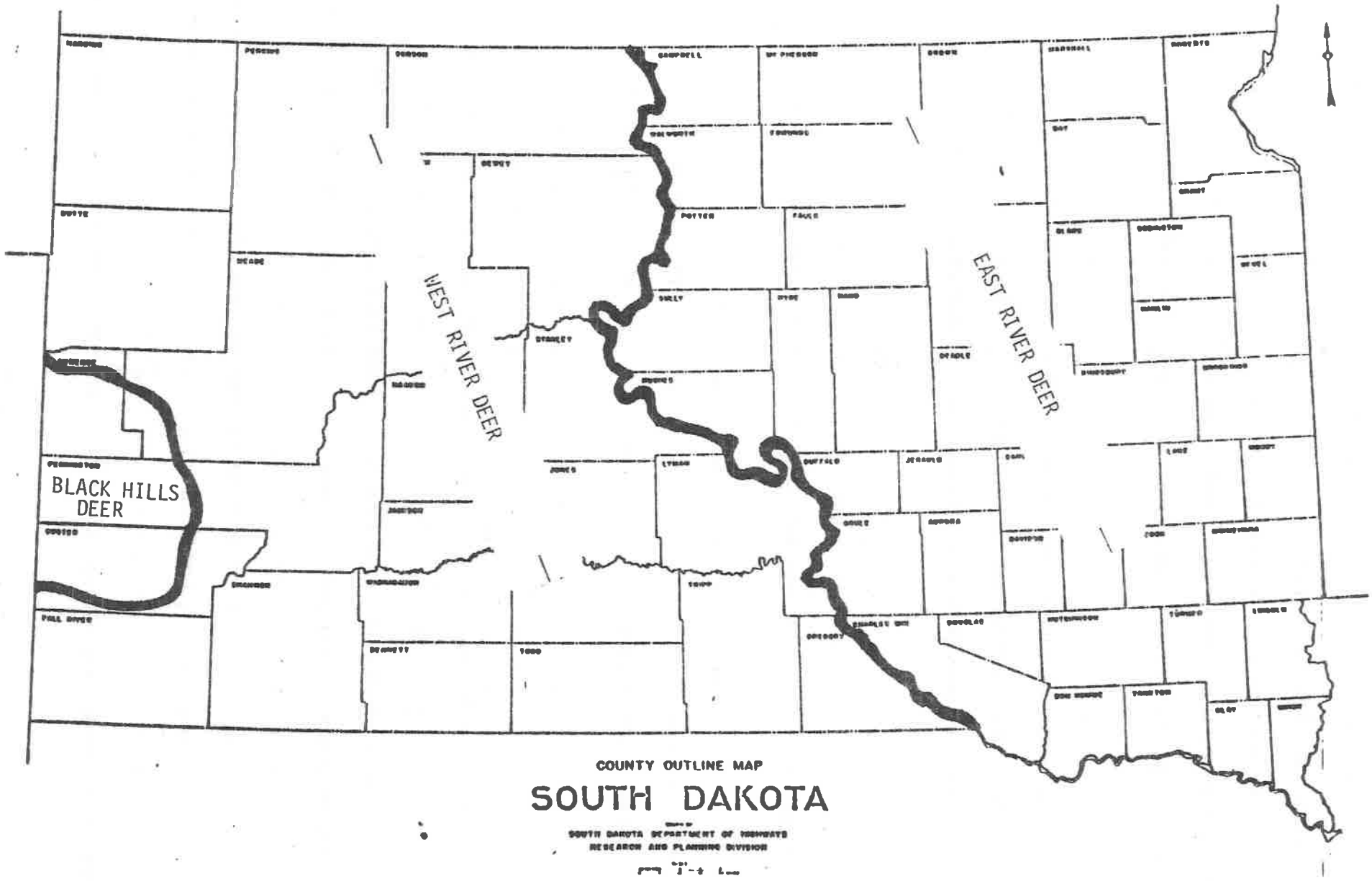


Figure 1. South Dakota Deer Management Units.

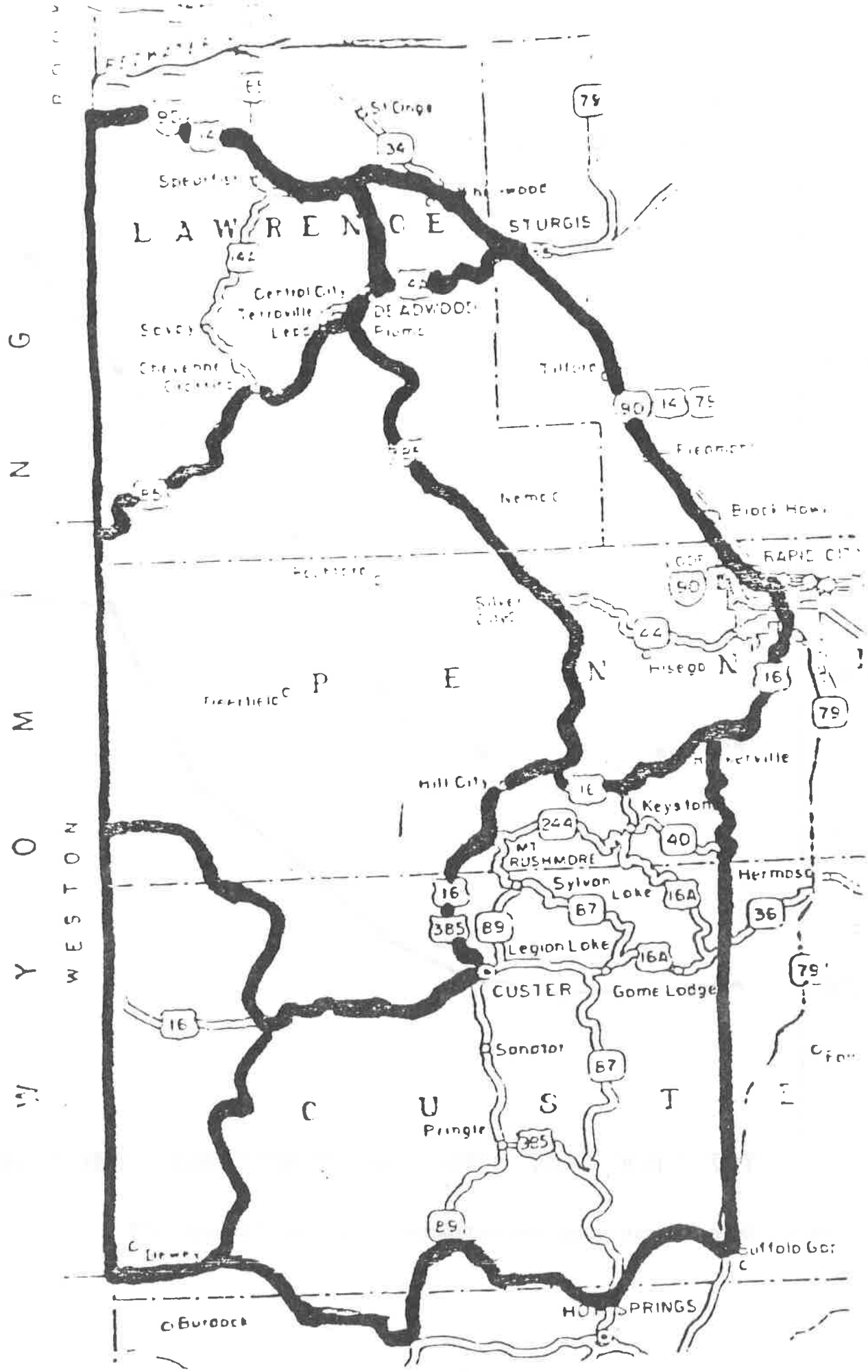


Figure 2. Black Hills Deer Management Units.

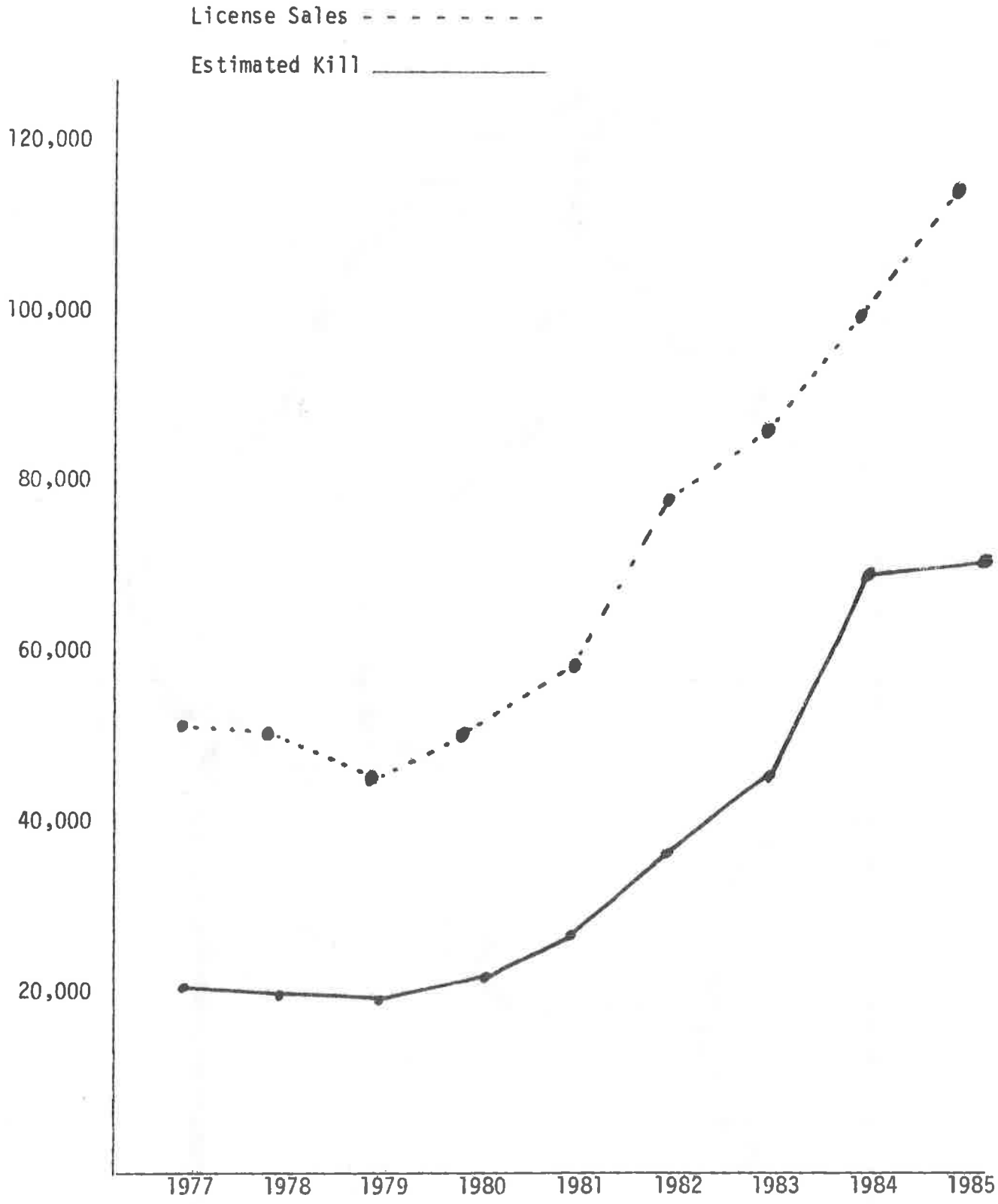


Figure 3. Deer license sales and estimated kill, 1977 through 1985.

Outlook for 1986 indicates herd numbers have been substantially reduced.

Table 1. Deer licenses issued and projected kill, Fall 1985.

Management Unit	Licenses Available	Licenses Sold	Licenses Resident/Nonresident		Projected Harvest
East River (Farmland)	41,600	40,456	40,017	439	28,000
West River Prairie	24,717 (31,330 tags)	24,637	23,672	965	20,000
Black Hills (Buck Only)	16,000 (Projected)	16,000	13,000	3,000	5,000
Black Hills (Special Units)	2,581	2,432	2,261	171	1,460
National Wildlife Refuges	773 (803 tags)	725	664	61	500
Archery	11,738	11,738	11,170	568	3,000
TOTALS	97,407	95,988	90,734	5,204	57,960

Hunting Season Analysis, 1985

East River Deer - Farmland, 1985

Total license sales, 1985, were 41,600. This represents a 4 percent increase in license numbers. Hunter success will approximately average 67 percent.

Reproductive potentails for 1985 farmland whitetails were close to the ten year average. A total of 111 road-killed does were collected. Adult does totaled 35 with reproductive potential of 1.94 fetus/doe. Two-year-old does totaled 29 with 1.69 fetus/doe while one-year-old does totaled 47 with 0.8 fetus/doe.

Fall doe/fawn counts indicated that summer fawn mortality approached 5 percent last year. This was not significantly different ($P<0.05$) than results determined from the last four years data.

West River Prairie, 1985

Tags issued totaled 31,330 (10 percent increase over 1984 sales). Hunter success is projected at 65 percent.

Black Hills - Buck Only, 1985

Hunter success is expected to be 30 percent in 1985. Estimated kill was 5,000 bucks.

Black Hills - Special Units, 1985

All permits authorized (2,581) were for either any whitetail or any deer. Eight percent of the licenses were issued to non-residents. Projected success is put at 60 percent. All data has not been compiled at this time.

National Wildlife Refuges, 1985

A total of 803 tags were issued (8% for non-residents). Success should be close to 60%.

Archery Deer, 1985

Total permits issued was 11,738. Hunter success is projected to be 25 percent. While some areas received a great deal more hunting pressure than others, no management changes are planned at this time.

Special Reduction Seasons

We attempted a new method for getting hunters for winter reduction seasons. Hunters applied for a permit without knowing where they would hunt if at all. Hunters applied in late fall. If a season was to be held, then hunters were called to see if they would like to hunt. If they still wanted a permit, one was issued. All unsuccessful applicants were to be mailed back their money in late February.

Reduction seasons were and are being held on select ranches or areas within regular hunting units. These licenses are valid for those ranches only. Some hunters were allowed an additional tag if they would give the deer to charity. I will try to explain this at the meeting.

More Info

It looks like we will be reintroducing Rocky Mt. Bighorn sheep into the Black Hills. We will trade turkeys for sheep with Colorado. More at the meeting.

TURKEY

STATUS

REPORTS

Forest Wildlife Headquarters
R.R. #2 Box 477
Mitchell, IN 47446
812-849-4586

Submitted by: Steve Backs
Deck Major
Carl Eisfelder
1/16/86

STATUS REPORT TO MIDWEST WILD TURKEY GROUP

Indiana Wild Turkeys 1985

RESTORATION

Winter 1985: A total of 99 wild turkeys were released in Indiana during January-March, 1985. Birds were again received from Missouri, Illinois, and in-state trapping operations. Southeastern Indiana received 74 of these birds which almost completes the total commitment there. All release sites do have biological potential for reproduction this year. Twenty-five birds went to Putnam County in west-central Indiana. Two of the 3 release sites were initiated. Putnam County (31% forest) lies adjacent to Parke County (55% forest) which is our most successful restoration effort so far producing 35-40 gobblers harvested per spring. The forest cover in both counties is continuous and generally associated with dendritic drainages.

HARVEST

The sixteenth wild turkey hunt was held in Indiana between 24 April and 5 May 1985. License sales increased slightly by 6.4% over 1984. Harvest data was collected through the traditional mail-in questionnaires and newly established mandatory check stations. Questionnaire response was relatively high with 78.3% response. An estimated 1,275 persons hunted out of the 1,404 regular turkey licenses and 478 lifetime licenses sold. The estimated kill was 253 to 255 birds for a success rate of approximatley 20%. this was a record kill and success rate compared to the previous record kill of 104 birds and the normal 10-12% success rate. Harvest reports form the questionnaire and check stations were in good agreement. Over 20% of the birds were killed opening day with approximately 70% taken the first five days of the season and over 30% taken on weekends. Juveniles made up 54.9% of the harvest while 2-year old gobblers composed the greatest percentage of adult birds (24.5%). Hunting success was highest in Parke, Brown, and Pike counties.

A collection of tables related to the 1985 wild turkey hunt are attached along with a summary table for the previous 15 seasons.

Figure 1

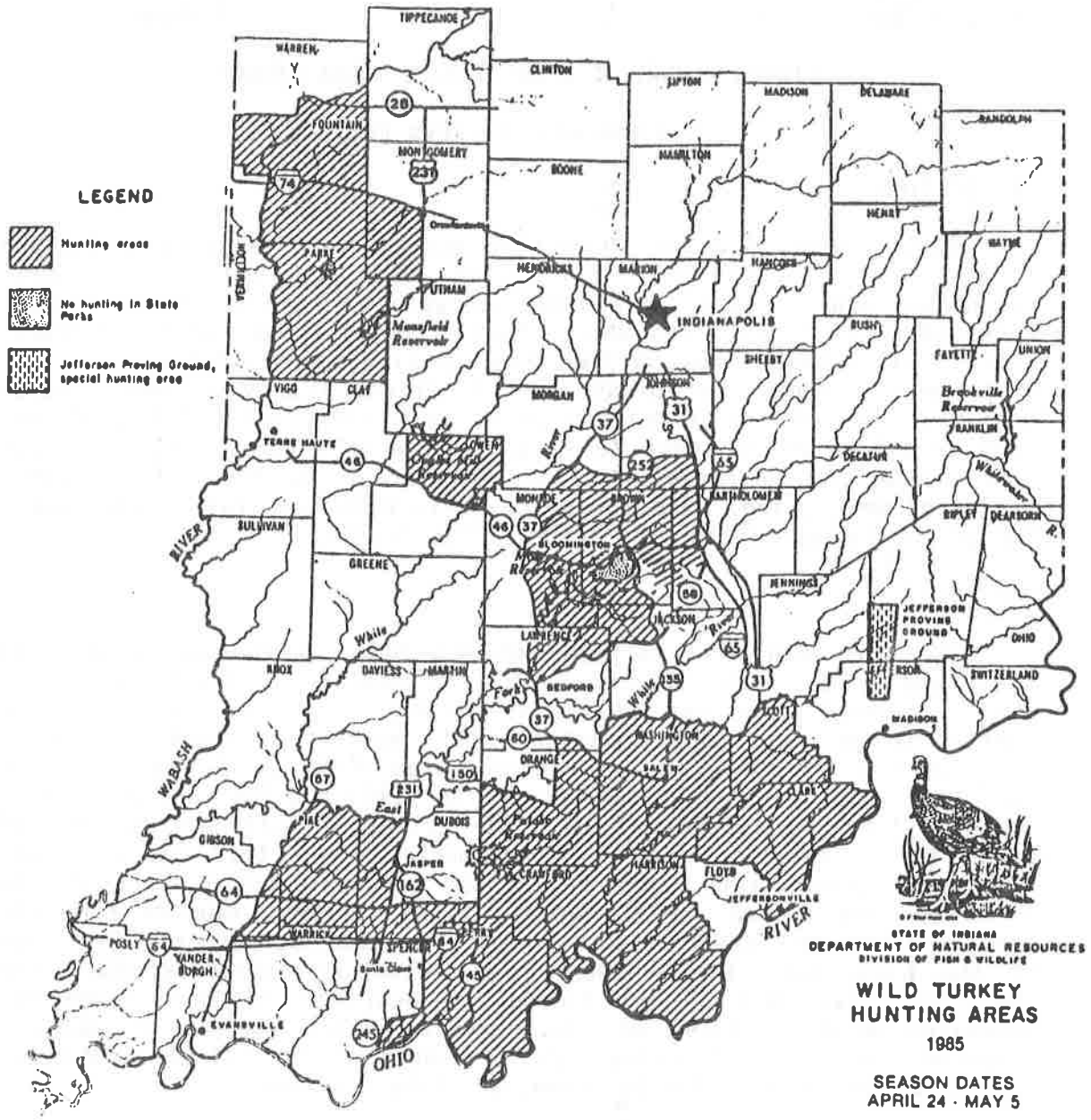

LEGEND
Hunting areas
No hunting in State Parks
Jefferson Proving Ground, special hunting area
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH & WILDLIFE
WILD TURKEY
HUNTING AREAS
1985
SEASON DATES
APRIL 24 - MAY 5

Table 1. Indiana spring turkey gobbler hunting statistics collected from mail-in questionnaire returns (1984 and 1985).

Category	1984		1985	
	No.	%	No.	%
Turkey licenses sold[1/]	1,320	+8.4	1,404	+6.4
Lifetime licenses[2/]	333	28.6	478	30.2
Questionnaire respondents	1,281	77.5	1,474	78.3
Hunters	1,029	80.3	1,119	75.9
Non-hunters	252	19.7	355	24.1
Reported success	10.4	10.1	249	0.22 ✓
Hunters hearing a turkey	831	80.8	960	85.8
Turkeys heard/hunter[1/]	3.1	-18.4	4.1	+32.3
Hunters seeing a turkey	563	54.7	708	63.3
Turkeys seen/hunter[1/]	1.5	+50.0	2.0	+33.3
Total hunter days	4,229		4,393	
Mean days hunted/hunter	4.1		3.9	
Hunter days on public land	2,817	66.6	2,967	67.5
Adjusted totals[3/]				
No. hunters[1/]	1,205	+12.4	1,275	+5.8
No. non-hunters	448	27.1	607	32.3
Estimated success	104	8.6	255	0.20 ✓

[1/] Percent change from previous year (+ = increase; - = decrease).

[2/] Gross estimate of the percent of lifetime license holders who hunted wild turkeys.

[3/] Reported totals corrected by comparing percentages computed from questionnaires received during second mailing and extrapolating to non-respondents assuming similar projected trends in percent changes.

Table 2. Spring 1985 wild turkey harvest based on mandatory check station results.

County	No. Killed	%
Bartholomew	0	0
Brown	24	9.5
Clark	4	1.6
Crawford	12	4.7
Dubois	3	1.2
Fountain	3	1.2
Gibson	0	0
Harrison	5	2.0
Jackson	9	3.6
Johnson	0	0
Lawrence	3	1.2
Monroe	13	5.1
Montgomery	4	1.6
Morgan	1	0.4
Orange	0	0
Owen	18	7.1
Parke	61	24.1
Perry	18	7.1
Pike	38	15.0
Ripley (JPG)	13	5.1
Scott	4	1.6
Spencer	0	0
Warren	2	0.8
Warrick	5	2.0
Washington	11	4.3
Unknown	2	0.8
Total	253	100

Table 3. Spring 1985 gobbler season comparisons by county based on mail-in questionnaires.

County	Total Hunter Days	Mean Hunters/Day[1]	Turkeys[2] Harvested	Percent[2] Successful	Hunter Days/ Turkey Harvested
Bartholomew	0	0	0	0	-
Brown	479	39.9	23	17.8	20.8
Clark	156	13.0	6	15.0	26.0
Crawford	151	12.6	11	28.2	13.7
Dubois	27	2.3	3	27.3	9.0
Fountain	9	0.8	1	50.0	9.0
Gibson	1	0.1	0	0	-
Harrison	116	9.7	5	17.9	23.2
Jackson	194	16.2	8	13.8	24.25
Johnson	0	0	0	0	-
Lawrence	56	4.7	2	16.7	28.0
Monroe	188	15.7	11	20.8	17.1
Montgomery	17	1.4	4	80.0	4.3
Morgan	77	6.4	1	4.8	77.0
Orange	21	1.8	0	0	-
Owen	477	39.8	20	16.3	23.9
Parke	611	50.9	62	40.5	9.9
Perry	366	30.5	19	21.1	19.3
Pike	776	64.7	37	20.0	21.0
Ripley (JPG)	119	14.9	12	40.0	9.9
Scott	78	6.5	4	23.5	19.5
Spencer	0	0	0	0	-
Warren	15	1.3	2	50.0	7.5
Warrick	127	10.6	4	12.5	31.8
Washington	209	17.4	8	17.4	26.1
Unknown	123	10.3	6	18.2	20.5
Overall Summary	4393	$\bar{x}$ = 14.1	249	$\bar{x}$ = 22.3	$\bar{x}$ = 17.6

[1] Based on 12 day season (24 April to 5 May) except for Ripley County (JPG) where the season incorporated a total of 8 days (i.e. weekends only 20 April to 12 May).

[2] Number harvested represents the reported kill which is not corrected for non-respondents. The percent successful is based on questionnaire respondents only.

Table 4. Wild turkey harvest by day of season, 24 April to 5 May 1985, based on hunter questionnaires.

Day	No. Killed	Relative Percent	Cumulative Percent
Wednesday	62	24.9	24.9
Thursday	36	14.4	39.3
Friday	28	11.2	50.2
Saturday	22	8.8	59.3
Sunday	24	9.6	68.9
Monday	6	2.4	71.3
Tuesday	10	4.0	75.3
Wednesday	7	2.8	78.1
Thursday	1	0.4	78.5
Friday	15	6.0	84.5
Saturday	15	6.0	90.5
Sunday	13	5.2	95.7
Unknown	10	4.0	99.7
Total	249		

Table 5. Indiana turkey harvest by day of season, 24 April to 5 May 1985, based on mandatory check station results[1/].

Wednesday	54	22	22
Thursday	41	17	39
Friday	28	12	51
Saturday	24	10	61
Sunday	21	9	70
Monday	6	2	72
Tuesday	12	5	77
Wednesday	5	2	79
Thursday	1	<1	<80
Friday	18	8	88
Saturday	17	7	95
Sunday	13	5	100
Total[1/]	240		

[1/] Based on mandatory check station returns; does not include 13 birds killed at Jefferson Proving Grounds.

Table 6. Age composition of Indiana wild turkey gobblers harvested during spring 1979 through 1985.

Year	Sample Size	Adj. Total Harvested	Estimated Age in Years[1] 1	2	3	4	5+
1979	28	48	13(46.6)[2]	8(28.6)	7(25.0)	-	-
1980	24	54	8(33.3)	9(37.5)	4(16.7)	-	3(12.5)
1981	77	90	22(28.6)	15(19.5)	23(29.9)	12(15.6)	5(6.5)
1982	57	73	15(26.3)	8(14.0)	14(24.6)	12(21.1)	8(14.0)
1983	86	93	35(40.7)	27(31.4)	11(12.8)	8(9.3)	5(5.8)
1984	100	104	41(41.0)	30(30.0)	14(14.0)	14(14.0)	1(1.0)
1985	233	255	128(54.9)	57(24.5)	31(13.3)	11(4.7)	6(2.6)

[1] According to Kelley (1975)

[2] Percent of sample

SUMMARY OF INDIANA WILD TURKEY HUNTING SEASONS

Year	Season Dates	Season Length (Days)	No. of Counties	No. of Licenses Sold	Kill	Hunter Success
1970	2 May 5 May	4	3	75	6	9.6
1971	1 May 5 May	5	9	298	11	4.9
1972	26 April 30 April	5	9	585	12	2.8
1973	25 April 29 April	5	11	625	27	5.4
1974	24 April 28 April	5	11	665	26	5.2
1975	29 April 5 May	7	11	722	15	3.0
1976	29 April 5 May	7	13	666	32	7.0
1977	28 April 5 May	8	16	668	46	10.0
1978	26 April 7 May	12	18	852	33	6.1
1979	25 April 6 May	12	19	932	48	7.0
1980	23 April 4 May	12	17	706	54	8.6
1981	22 April 3 May	12	18	922	90	10.7
1982	21 April 2 May	12	18	1,125	73	6.9
1983	20 April 1 May	12	18	1,218	93	9.5
1984	25 April 6 May	12	18	1,320	104	8.6
1985	24 April 5 May	12	25	1,404	255	20.0
1986	23 April 4 May	12	25	upcoming season		

MIDWEST TURKEY GROUP REPORT - IOWA
1985

Gregory A. Hanson

Iowa's 1985 turkey year was a good year in all respects. Early snow cover produced excellent trapping conditions in southern Iowa. Warm, dry spring weather produced the best spring hunting season to date, along with excellent nest success and brood survival. All these together produced the most successful fall season to date.

Restoration

Early and prolonged snow cover coupled with higher turkey densities improved trapping success over 1984. A total of 291 birds were stocked at 22 sites in Iowa and an additional 35 hens and 14 gobblers were shipped to Kentucky and Ontario as part of a river otter-turkey exchange. A total of 1,933 eastern wild turkeys have been released at 138 sites since 1966. One hundred two are currently listed as successful. No sites are currently considered unsuccessful. All of Iowa's major forest lands are now occupied by turkeys. Remaining stockings are in very marginal habitats (< 1,000 acres contiguous forest).

Harvest

An estimated 4,826 turkeys were harvested in Iowa in 1984, 3,127 in the spring season and 1,699 in the fall (Table 1). Spring harvest increased 41% and fall harvest was up 40% from 1984. These increases were due primarily to increased turkey densities and excellent weather during the spring hunting season. Overall success rates increased to 33% in the spring and 60% in the fall. Spring harvest densities averaged 1.8/sq mi of timber statewide with hunter densities of 5.5.

One other significant change occurred along with the 1985 spring season. For the 1st time we experienced a decline (5%) in the number of spring turkey

applications. A $5 license fee increase may have accounted for some of the decline however deer and fall turkey license sales continued to increase. Missouri also experienced a decline in license sales but with no license fee increase. Hopefully this means that demand has peaked out. We are running out of zones and seasons to put people into. A proposal is going to the 1986 Iowa legislature for a bill granting us the authority to sell non-resident permits.

Production

Poult production appeared to be excellent in 1985. Overall nest success on our telemetry project was 45%. This was 13% above the 8 year average of 32%. Statewide brood surveys also indicated an excellent hatch. Number of flocks seen was up 76% over 1984. Percent of hens observed with broods was up 6% to 76%. Young per adult was up 8% to 6.8%.

In summary turkey populations have bounced back from a low 3 years ago which was caused by 2 years of low productivity. Turkey populations in eastcentral and northeast Iowa seem to be catching up with the densities we've seen in southern Iowa for several years.

Mortality Rate Estimates from Telemetry Study

Tables 2 and 3 show composite annual mortality rates estimated with the program MICROMORT developed by Heisey and Fuller in Minnesota (JWM 49[3]:668-674). These data are very preliminary and are just presented here to provoke some thought on fall turkey seasons, how they may impact spring hunting, and whether or not they are compensatory. It also points out the need for long term studies in this area if we're going to have the information we need to manage our turkey flocks as demand increases and habitat decreases.

Data presented are right censored assuming maximum hunting mortality and minimum non-hunting mortality. In other words birds that disappeared from

the area during a hunting season were considered hunter kills. Birds that disappeared outside a hunting season were considered radio failures. This assumption is based on the fact that only 1 bird that has disappeared during a hunting season has ever been heard from again (other than as hunter kills occurring that date but turned in later). Many birds disappearing outside the hunting seasons have been recovered by recapture, visual observation, or later hunter kill.

Table 1. Harvest statistics for Iowa's wild turkey hunting seasons.

Year	Zones	Mi^2 Forest	Licenses	Harvest	Success Rate (%)[a]
Spring					
1974	3	449	450	113	29
1975	3	192	825	142	19
1976	4	127	975	190	23
1977	4	135	1,005	215	24
1978	6	265	1,815	336	23
1979	8	892	3,156	688	24
1980	9	1,114	4,110	988	27
1981	9	1,324	5,055	1,439	32
1982	8	1,391	7,065	1,685	27
1983	10	1,609	7,695	1,729	25
1984	12	1,724	11,126	2,221	23
1985	13	1,755	10,684	3,127	33
Fall - Shotgun					
1981	2	447	2,000	808	47
1982	2	478	2,000	747	42
1983	2	478	2,000	813	49
1984	3	1,019	2,899	1,174	47
1985	3	1,019	3,222	1,699	60
Fall - Archery					
1981	2	447	193	5	3.7
1982	6	1,391	353	10	3.5
1983	10	1,609	529	20	4.9
1984	12	1,724	552	36	7.6
1985	- - - - - - Not available at time of this report - - - - - -				

Table 2. Composite annual mortality rates for eastern wild turkeys at Stephens State Forest for 1977-80 (before fall hunting).

	Adult Hens		Juvenile Hens		Adult Males		Juvenile Males	
Parameter	Est.	Variance	Est.	Variance	Est.	Variance	Est.	Variance
Survival	0.68	1.76E-03	0.49	8.6E-03	0.52	8.87E-03	0.35	1.38E-02
Hunting	0.065	4.37E-04	0.11	3.8E-03	0.42	8.64E-03	0.13	2.44E-03
Predation	0.16	1.18E-03	0.39	1.11E-02	0.04	1.35E-03	0.38	2.35E-02
Other	0.09	7.65E-04	0.01	9.2E-05	0.02	5.03E-04	0.14	1.13E-02

Table 3. Composite annual mortality rates for eastern wild turkeys at Stephens State Forest for 1981-85 (after fall hunting).

	Adult Hens		Juvenile Hens		Adult Males		Juvenile Males	
Parameter	Est.	Variance	Est.	Variance	Est.	Variance	Est.	Variance
Survival	0.58	1.85E-03	0.27	3.79E-03	0.31	5.52E-03	0.14	1.94E-03
Hunting	0.22	1.52E-03	0.42	6.79E-03	0.50	7.32E-03	0.34	5.26E-03
Predation	0.19	1.17E-03	0.30	4.39E-03	0.12	3.24E-03	0.45	6.39E-03
Other	0.01	1.09E-04	0.01	1.16E-04	0.07	2.17E-03	0.07	1.40E-03

Kansas Status Report

Spring 1985 Harvest Results

Five thousand two hundred and ninety-one applications were received for the 1985 Spring Season (table 1). Four thousand five hundred and fifty three permits were issued at the February , 1985 drawing. Permit numbers above the authorized limit are due to buddy applications; under-subscribed areas are due to low application rates in that unit.

TABLE 1

PERMITS ISSUED BY UNIT

SEASON DATES APRIL 17 - May 5, 1985

Unit #	Permits Available	Permits Issued
1	300	300
2	225	225
3	200	200
4	200	200
5	Unlimited	3,428
6	200	200
TOTALS	1,025*	4,553

All spring permit holders received a hunter report card to return for harvest data. Card response after one follow-up mailing was 91.4% (4,164/4,553) for the spring season. This compares with 93.6% in 1984 and 91.7% in 1983. Only 3,548 (85.2%) of the 4,164 reporting permit holders actually went afield, compared to 3,407 (86.3%) of 3,949 in 1984. During the 1985 spring turkey season, sportsmen spent 13,282 mandays (3.7 mandays/hunter) hunting, while 1984 and 1983 recorded 12,606 mandays (3.7 mandays/hunter) and 5,035 mandays (2.7 mandays/hunter) respectively. A 43.5% hunter success was developed in 1985 when 3,548 active hunters harvested 1,544 turkeys. This compares with 1,430 (42.0%) harvested in 1984 and 945 (50.0%) in 1983.

Hunters spent 8.6 mandays per harvested turkey in 1985 compared to 8.8 in 1984, 5.3 in 1983, and 6.2 in 1982.

A total of 1,544 (1,507 toms, 19 bearded hens, and 18 unknown) turkeys were harvested during the 1985 spring season. Spur lengths were received on 80.3% of the toms harvested (1,210/1,507). This data showed that male sub-adults accounted for 13.5% (164/1,210) of the harvest. This compares with sub-adult male portions of 11.5% in 1984 and 20.4% in 1983.

Hunters reported 43,532 turkeys observed, or 12 birds per hunter. This compares to 54,386 and 16 birds per hunter in 1984 and 33,426 and 17 birds per hunter in 1983.

* Plus the unlimited in unit 5.

1985 Fall Turkey Harvest Report

Harvest data from 87.0% of the Fall 1985 Turkey Permit holders (1,213 of 1,393) shows a very good success rate. Firearms and archery hunters reported greater success than in the 1984 season. Archery hunters harvested a greater percentage of toms this year.

Fall archery turkey permits are still in low demand. This past fall, 335 active hunters harvested 64 turkey (26 toms and 38 hens) for a statewide harvest success of 19.1% compared to 30 turkey (19 toms and 11 hens) and 18.3% success in 1984.

A 53.0% hunter success was developed when 735 firearm hunters harvested 390 turkey (164 toms and 226 hens), which compares with a hunter success of 48.2% in 1984. Toms accounted for 42.0% of the harvest this year compared to 65.2% in 1984.

1984 Winter Survey Results

Winter Survey: Turkey observations by archery deer hunters during the 1984 season decreased by 2.0% (80,429/82,041) from the 1983 season; respondents actually seeing birds increased by 3.5% in 1984 (33.5/30.0). Birds seen per observer decreased from 33.5 birds in 1983 to 29.8 birds in 1984. Statewide index values for 1981, 1982, 1983, and 1984 were 26.22, 67.73, 75.36 and 67.17 respectively. Index values were also calculated for each county in 1981, 1982, 1983 and 1984 (Table 2).

1984-1985 Trap and Transplant Results

A total of 701 wild turkeys were trapped and relocated during the winter of 1984-85. Five hundred thirty Rio Grandes were trapped. One hundred fourteen Easterns and fifty-seven crosses were trapped in Kansas.

A total of five hundred thirty Rio Grandes were released in 22 counties. These sites were located in southcentral, northwest, northcentral, and southwest Kansas.

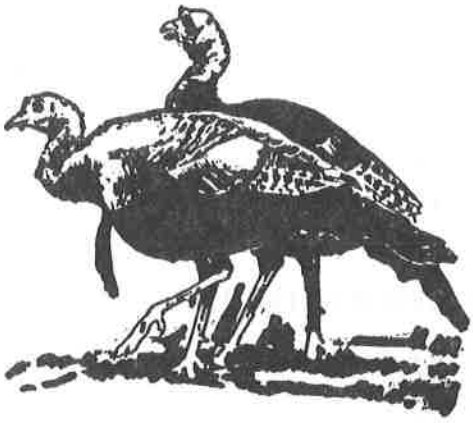
Sixteen additional sites were stocked with a total of one hundred fourteen Eastern turkey. These birds were stocked in eastern and northcentral Kansas. Fifty-seven Rio x Eastern crosses were caught and released in 5 northcentral Kansas counties.

Table 2 WINTER FLOCK INDEX VALUES

County	1981	1982	1983	1984
Allen	0.09	1.19	36.01	10.80
Anderson	5.62	0.33	0.00	8.43
Atchison	4.43	2.67	2.37	4.11
Barber	121.92	373.47	404.86	478.68
Barton	19.04	29.78	41.90	16.94
Bourbon	14.84	1.98	11.64	4.82
Brown	5.70	0.00	13.48	2.02
Butler	47.66	117.10	181.49	98.20
Chase	37.66	165.72	149.02	109.28
Chautauqua	94.37	221.96	357.51	220.16
Cherokee	0.10	2.04	3.46	9.43
Cheyenne	14.74	74.04	34.63	48.07
Clark	64.37	565.88	366.87	257.00
Clay	0.00	5.00	1.76	1.86
Cloud	0.00	2.16	4.55	19.42
Coffey	2.51	11.45	10.25	13.78
Comanche	182.67	680.72	655.21	379.10
Cowley	37.50	61.13	80.29	67.36
Crawford	1.63	1.08	6.15	16.08
Decatur	68.86	145.35	239.11	262.39
Dickinson	4.34	4.23	10.39	13.18
Doniphan	29.88	84.47	175.75	132.10
Douglas	0.91	2.99	2.35	2.60
Edwards	10.93	149.31	67.36	74.80
Elk	28.52	257.86	329.82	363.64
Ellis	19.41	78.98	84.94	52.65
Ellsworth	17.73	50.72	51.49	73.11
Finney	45.62	98.51	141.46	131.68
Ford	30.74	113.00	83.18	52.75
Franklin	4.34	9.58	24.94	18.81
Geary	0.00	0.37	0.28	160.60
Gove	2.52	14.79	10.38	4.63
Graham	73.27	113.89	94.37	168.88
Grant	133.59	368.55	854.97	275.57
Gray	120.73	196.05	160.06	110.00
Greeley	61.11	0.00	9.66	13.75
Greenwood	19.08	50.58	56.95	30.84
Hamilton	10.35	136.37	54.53	28.56
Harper	257.44	204.75	124.96	89.75
Harvey	2.92	24.46	35.82	42.15
Haskell	25.00	255.58	583.33	0.00
Hodgeman	25.44	48.34	17.19	11.89
Jackson	1.46	1.70	1.20	15.04
Jefferson	6.66	10.83	18.53	21.34
Jewell	2.20	4.63	55.64	26.45
Johnson	0.75	1.06	6.72	6.08
Kearney	32.55	31.88	36.09	104.17
Kingman	44.04	206.06	92.28	93.87
Kiowa	23.96	166.16	228.24	91.01
Labette	0.15	10.32	26.62	8.02
Lane	0.00	22.40	180.81	122.05
Leavenworth	2.02	1.01	4.28	7.23
Lincoln	2.46	4.07	8.08	42.22
Linn	12.57	21.06	64.10	69.79

Table 2 **WINTER FLOCK INDEX VALUES**
(continued)

County	1981	1982	1983	1984
Logan	28.77	10.17	134.88	46.32
Lyon	4.27	7.99	5.60	11.05
Marion	16.38	80.36	61.58	63.45
Marshall	0.20	5.66	6.34	7.35
McPherson	36.34	90.31	71.43	93.47
Meade	54.47	224.72	125.71	114.72
Miami	1.32	8.22	12.64	8.13
Mitchell	0.00	3.80	9.78	69.63
Montgomery	21.66	23.20	113.40	51.85
Morris	3.97	18.64	15.68	2.70
Morton	193.69	414.23	346.56	138.61
Nemaha	0.19	7.16	2.07	35.99
Neosho	10.91	17.14	33.78	17.87
Ness	35.36	29.99	15.90	95.50
Norton	97.53	121.88	84.05	232.05
Osage	5.98	7.44	18.32	19.30
Osborne	50.28	186.93	247.82	179.37
Ottawa	0.20	1.16	10.65	25.51
Pawnee	31.98	88.33	160.42	54.81
Phillips	112.23	147.73	93.73	84.71
Pottawatomie	0.97	2.31	1.84	2.46
Pratt	32.84	161.54	114.26	84.86
Rawlins	368.32	656.17	676.21	796.46
Reno	14.11	69.22	110.24	126.85
Republic	0.03	0.95	9.59	7.07
Rice	25.80	103.20	116.66	94.77
Riley	14.09	1.50	1.95	.97
Rooks	28.59	97.23	91.09	26.07
Rush	0.00	13.26	17.02	13.13
Russell	55.01	52.60	32.18	128.09
Saline	0.46	7.34	18.51	31.05
Scott	8.80	13.64	0.00	147.29
Sedgwick	12.49	54.58	69.06	54.67
Seward	84.21	387.28	877.94	230.03
Shawnee	5.00	7.24	5.90	5.71
Sheridan	29.56	45.10	133.67	94.57
Sherman	20.69	153.36	177.00	38.23
Smith	23.82	78.75	100.37	138.26
Stafford	39.55	229.19	121.12	120.86
Stanton	0.00	0.00	0.00	14.68
Stevens	881.75	194.22	315.77	289.23
Sumner	17.80	65.36	71.27	66.71
Thomas	79.45	94.27	123.25	64.35
Trego	54.73	161.33	140.35	64.71
Wabaunsee	6.55	18.23	23.23	30.55
Wallace	21.32	49.59	117.19	117.47
Washington	1.36	0.00	1.28	1.08
Wichita	0.00	1.52	11.47	2.05
Wilson	8.49	71.05	44.24	71.15
Woodson	9.64	8.79	24.13	23.34
Wyandotte	0.08	0.34	7.79	0.00
Unknown	16.87	72.35	38.14	56.41
Statewide	**26.22**	**67.73**	**75.36**	**67.17**



State of Michigan
Department of Natural Resources
Lansing, Michigan 48909

Wildlife Division
Report No. 3022
January 8, 1986

1985 Spring Turkey Season

by
John Urbain

Michigan's 1985 spring season produced a new record harvest of turkeys. A post season mail survey of hunters (30 percent of all hunters) indicated 2,016 turkeys were taken. The 90 percent response rate was the result of an original mailing plus four follow-up mailings. This harvest is a 38 percent increase from 1984. The 1984-85 winter count showed a stable population.

A comparison of hunting seasons for the years 1981-1985 is shown.

	Number of Hunters				
	1981	1982	1983	1984	1985
Southwest	266	300	401	373	381
Northwest	2,130	3,407	4,031	4,062	2,130
Northeast	8,756	10,907	10,707	10,022	8,987
Upper Peninsula	176	261	296	437	484
TOTAL	11,328	14,875	15,435	14,894	11,982
	Harvest				
Southwest	53	44	41	30	37
Northwest	220	335	377	360	341
Northeast	992	1,329	1,277	987	1,494
Upper Peninsula	31	40	51	81	144
TOTAL	1,296	1,748	1,746	1,458	2,016

	1981	1982	1983	1984	1985
Hunter Days	35,579	45,220	45,703	48,494	48,051
Hunter Success	11%	12%	11%	10%	17%
Square Mile in Hunt Area	6,370	7,799	8,699	9,027	9,170
Harvest/Square Mile	0.20	0.22	0.20	0.16	0.22
Days/Hunters	3.1	3.0	3.0	3.2	4.0

A total of 22,680 hunters applied for the 15,010 available licenses. A random drawing was held to determine successful licenses. Sixty-six percent of the applicants received licenses.

Several changes in the hunting areas and rules were instituted for 1985:

1. A new area M (103 square miles) in the U.P. was added.

2. Hunting areas K, S and R were combined into one unit.

3. Area W was expanded to include area X.

4. Area H was reduced in size.

5 Hunt periods were reduced from 82 to 33. Most areas had longer hunt periods.

6. The number of licenses issued for hunting was 15,010.

7. Left-over licenses were issued on a first-served basis by phone. This resulted in all available left-over licenses (235) being issued. Over 1,000 calls were received over the three-day period to receive a license.

Winter Weather

The weather in December (1984) was mild and largely snow free. January and most of February had cold temperatures and heavy snow cover. The Winter Severity Index was 84.34 compared to 83.38 in 1983-1984. This cold weather in January and February placed the birds under heavy stress. The third week in February gave the birds a needed break. Field biologists sent 29 wild turkeys to the Rose Lake Wildlife Research Station Laboratory for necropsy. Thirty-five percent were diagnosed as starving to death.

Late winter flock information from field biologists suggests that many birds were missed during the winter count. These results showed similar winter turkey populations. The record kill of 2,016 suggests a larger population. Summer weather in 1984 produced a bumper crop of wild fruits and nuts, permitting an unknown number of birds to over-winter without being counted. Telemetry data from the northern research project was useful in locating wintering flocks that would otherwise not have been counted.

Hunting

All but two days were classed as excellent hunting days (good weather) this year, compared to about one-half during a "normal" year. The 1985 mail survey results show a 20 percent increase in good and very good hunts, while over 70 percent of the hunters had a "satisfactory" hunting experience. Hunters success increased from 10 percent in 1984 to 17 percent this year. The sunny weather prompted more gobbling, which increased hunter satisfaction.

1985 SPRING TURKEY SEASON
MAIL SURVEY RESULTS

Area	Licenses Issued	Percent Licensees Hunting	Number of Hunters	Hunter Days	Days Hunted Per Hunter	Harvest	Percent Successful Hunters
A	1,100	80	877	3,387	3.9	147	17
B	1,200	80	958	3,692	3.8	235	25
C	1,760	80	1,411	5,539	3.9	200	14
D	2,900	77	2,236	9,219	4.1	381	17
F	1,140	78	885	3,783	4.3	188	21
G	1,000	84	840	3,477	4.1	91	11
H	400	83	333	1,366	4.1	37	11
V	600	88	528	2,337	4.4	114	22
W	1,200	76	919	3,687	4.0	101	11
Northeast Unit	11,300	80	8,987	36,487	4.0	1,494	16
J	60	78	47	213	4.5	14	30
K	2,550	82	2,083	8,236	4.0	327	16
Northwest Unit	2,610	82	2,130	8,449	4.0	341	16
Allegan Unit L	500	76	381	1,426	3.7	37	10
M	100	92	92	321	3.5	18	20
N	500	78	392	1,368	3.5	126	32
Upper Peninsula Unit	600	81	484	1,689	3.5	144	30
STATE TOTALS	15,010	80	11,982	48,051	4.0	2,016	17

1985
WILD TURKEY HUNTING AREAS

WINTER TURKEY SURVEY RESULTS - 1985

REGION I

District 2

	1984	1985
Dickinson	70	249
Menominee	682	907
TOTAL	752	1,156

REGION II

District 5

	1984	1985
Antrim	27	11
Alpena	724	711
Charlevoix	19	17
Cheboygan	21	0
Emmett	70	116
Montmorency	817	548
Otsego		
Presque Isle	70	61
TOTAL	1,748	1,464

District 6

	1984	1985
Benzie	13	0
Grand Traverse	96	0
Lake	596	531
Manistee	105	65
Mason	28	90
Leelanau	47	0
Newaygo	393	224
Oceana	75	25
Wexford	341	269
TOTAL	1,694	1,210

District 7

	1984	1985
Alcona	2,403	1,922
Crawford		55
Iosco	470	411
Kalkaska		
Missaukee	58	87
Ogemaw	846	1,059
Oscoda	1,848	1,719
Roscommon	219	136
TOTAL	5,844	5,387

District 8

	1984	1985
Arenac	143	100
Bay	0	0
Clare	411	682
Gladwin	280	241
Isabella	45	110
Mecosta	21	110
Osceola	224	309
Midland	159	360
TOTAL	1,283	1,912

REGION III

District 9

	1984	1985
Clinton	25	50
Ionia	33	25
Kent	14	32
Montcalm	86	111
Muskegon	50	50
Newaygo	25	25
TOTAL	229	293

District 11

	1984	1985
Genesee	1	0
Lapeer	24	37
Shiawassee	0	20
Tuscola	21	50
TOTAL	46	107

District 12

	1984	1985
Allegan	438	460
Barry	33	46
Cass	0	8
Kalamazoo	30	35
St. Joseph	24	30
Van Buren	0	5
TOTAL	525	584

District 13

	1984	1985
Branch	0	2
Hillsdale	4	0
Jackson	15	18
Washtenaw	15	38
TOTAL	34	58

District 14

	1984	1985
Oakland	22	35
TOTAL	22	35

	1984	1985
State Total	12,177	12,206

AREA	1984	1985
A	354	328
B	1,037	785
C		249
D		1,417
F		1,323
G		957
H		635
J	46	28
K	1,694	1,299

AREA	1984	1985
L	400	450
M		225
N		586
V		633
W		963
X		

4/18/85

MINNESOTA WILD TURKEY REPORT, 1986

Gary Nelson & Nick Gulden

Population Status:

The turkey population in Zones 1-3 (consisting of eastern birds) continues to show excellent increases in both range expansion and numbers, as evidenced by improved hunter success, and observations made by farmers, hunters, general public, and wildlife personnel. However, such is not the case with turkeys in Zones 4 and 5 where the birds have stagnated at a low level. Easterns, Merriams, and game-farm turkeys were released in these zones in the 1960's.

Recent studies of eastern turkeys transplanted into the Whitewater Wildlife Management Area, Zone 4, suggest their reproductive superiority although sample sizes are not large enough to demonstrate a statistical difference. In an effort to rebuild the population, all of Zone 4 and parts of Zones 2 and 5 will be closed to gobbler hunting this spring following restocking with additional eastern turkeys. If all goes as planned, we expect to reopen Zone 4 to spring hunting within a short time. Transmitters will be placed on some males and females for monitoring survival and reproduction.

The potential exists for heavy winter mortality due to the severe weather conditions experienced to date. While temperatures have been far below normal this fall and early winter, precipitation has been above normal. Snow cover has been continuous since November 8 & 9, 1985, when in excess of 8" fell on our best range. Depths have remained above 12" since early December, with a maximum of 19" being recorded at Caledonia in Houston County.

Based on previous experiences, major starvation/predation losses would already be occurring if it were not for the presence of large acreages of unharvested corn throughout most of our turkey range. Estimates of standing corn made by the Agricultural Extension Service range from 10% in Winona County to 20-25% in Fillmore and Houston counties. A number of farmers have already complained about damage to their corn from turkeys and deer.

It should be noted that the birds went into the winter in great shape due in large part to an excellent acorn crop.

Hunting:

Results of our record-breaking 1985 spring gobbler hunt were previously noted in the 1985 Midwest Deer and Turkey Study Group report.

Several significant changes have occurred relative to the 1986 hunt. First of all, as has been previously noted, all of Zone 4 (192 sq. mi.) and parts of Zone 5 (59 sq. mi.) and 2 (110 sq. mi.) have been closed to hunting while restocking efforts are underway. For many seasons Zone

4 received the greatest hunter interest because of high turkey numbers and large acreages of public land. Secondly, legislation passed in 1985 requires that a $3.00 application fee (non-refundable) accompany each turkey hunt application. The fee is designed to help defray costs associated with the computerized drawing. Thirdly, the number of permits has been reduced from 2,750 to 2,500.

A total of 5,326 applications has been received for the 1986 drawing. This is a decline of only 336 applications, which is surprising in light of the above mentioned changes.

The area open to hunting in 1986 has been expanded in Zones 1 and 3 by 24 and 116 sq. mi. respectively.

TABLE 1. SYNOPSIS OF MINNESOTA'S TURKEY HUNTING SEASONS, 1978-1984

YEAR	NO. OF ZONES	AREA OPEN (SQ. MI.)	DAYS SEASON	SEASON DATES	NUMBER OF APPLICATIONS	NUMBER LICENSES AVAILABLE	ISSUED	NO.* HUNTING	KILL	PERCENT** SUCCESS
1978	2	389	3-5 day	April 22 - May 7	10,740	420	411	398	94	23.6
1979	2	673	4-5 day	April 14 - May 6	11,116	840	827	794	116	14.6
1980	5	858	4-5 day	April 19 - May 11	9,613	1,200	1,191	1,072	98	9.1
1981	6	1,242	4-5 day	April 18 - May 10	8,398	1,500	1,556	1,292	113	8.7
1982	4	1,490	4-5 day	April 17 - May 9	7,223	2,000	1,992	1,625	106	6.5
1983	5	1,807	4-5 day	April 16 - May 8	8,153	2,100	2,079	1,663	116	7.0
1984	5	2,061	5-5 day	April 14 - May 13	7,123	3,000	2,837	2,270	178	7.8
1985	5	2,118	5-5 day	April 13 - May 12	5,662	2,750	2,449	1,960	323	16.5
1986	4	1,897	5-5 day	April 12 - May 11	5,326	2,500	----	----	---	----

* Number actually hunting based on post-season mail survey from 1978-1982. Since then, it is an estimate based on an assumed 20% non-participation rate.

** Percent success calculated by dividing registered kill by number actually hunting.

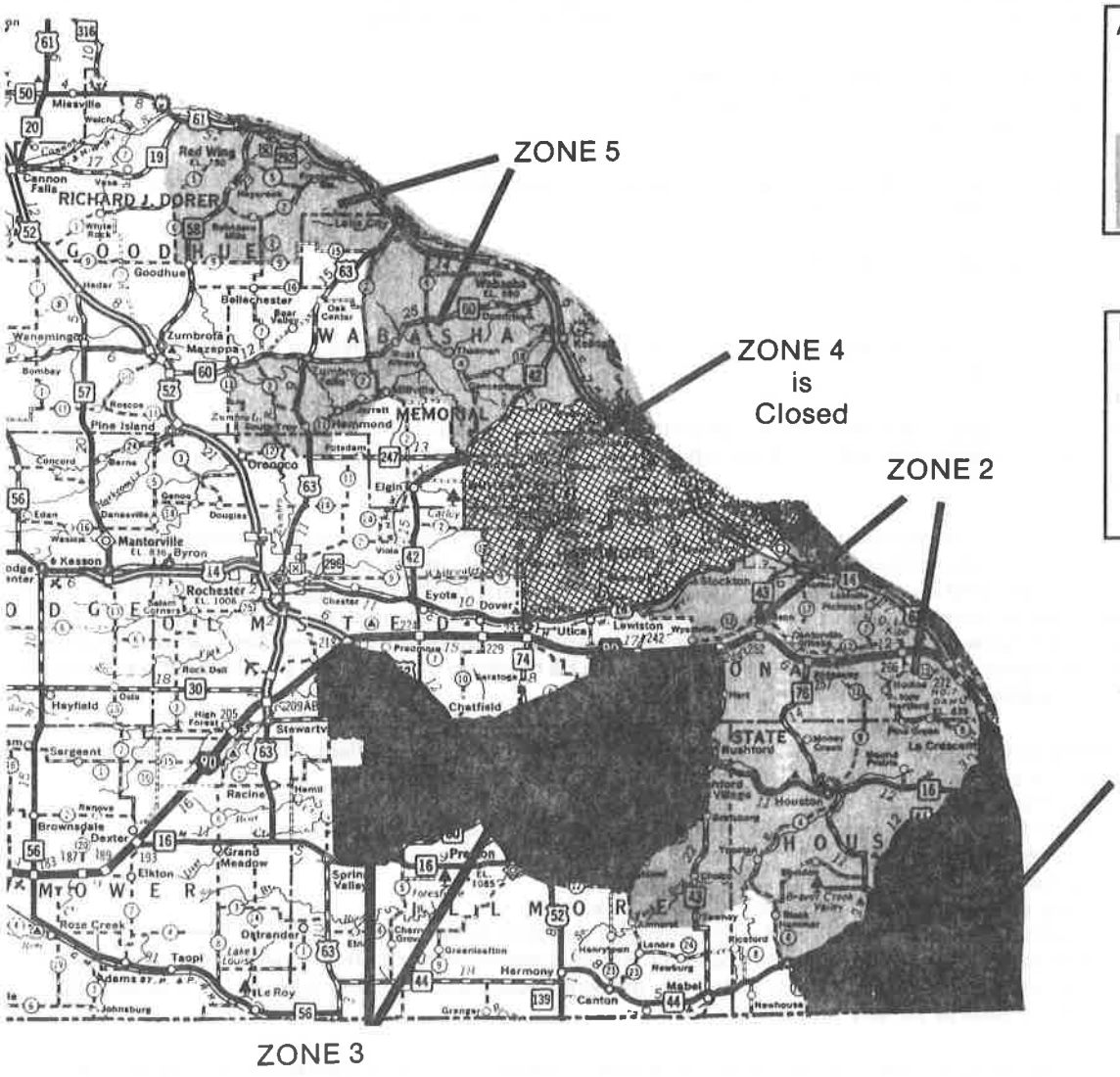
STATE OF MINNESOTA
DEPARTMENT OF NATURAL RESOURCES

1986 SPRING TURKEY HUNT INFORMATION

Time Periods, Dates, Zones, and Quotas

Time Period	Dates	Zone 1 Quotas	Zone 2 Quotas	Zone 3 Quotas	Zone 4	Zone 5 Quotas
A	April 12-16	150	175	75	Closed	100
B	April 18-22	150	175	75		100
C	April 24-28	150	175	75		100
D	April 30-May 4	150	175	75		100
E	May 7-11	150	175	75		100
		750	875	375		500

Grand Total 2500



April						1986
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May						1986
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

1986 SPRING TURKEY HUNT
COMPUTER DRAWING APPLICATION INSTRUCTIONS

APPLICATION COST

The 1985 Legislature authorized the Department of Natural Resources to collect $3.00 from every individual turkey hunt applicant. *Do not* send cash. Please remit Cashier's Check, Money Order or Personal Check in the amount of $3.00 payable to the Minnesota State Treasurer. Personal Checks that do not clear the bank will invalidate the application.

There are no application charge refunds.

GENERAL

Applications for the computer drawing will be accepted if postmarked no later than December 13, 1985 for the 1986 spring turkey hunting season. A total of 2500 applicants will be selected by computer.

DATES:	April 12-16 or April 18-22 or April 24-28 or April 30-May 4 or May 7-11, inclusive.
LIMIT:	One bearded turkey per person.
LICENSE:	$10.00 special turkey hunting license plus a 1986 resident small game hunting license.
WEAPONS:	Shotguns, including muzzle-loading shotguns, using Nos. 4, 5 or 6 fine shot, or legal bow and arrow.

WHO IS ELIGIBLE?

Anyone who is a legal resident of Minnesota for at least 60 days immediately prior to April 12, 1986 who is at least 16 years old prior to April 12, 1986 and who has not had his small game hunting privileges revoked within one year prior to February 14, 1986. The 1982 Minnesota Legislature lifted the two year ineligibility provision. Anyone, meeting the above requirements may apply, regardless of previous success in computer drawings or previous possession of a Minnesota Turkey Hunting license.

LANDOWNER-TENANT SPECIAL DRAWING

Up to 20 percent of the permits for each zone and time period will be issued by computer selection to applicants who *live* as landowners or tenants on 40 acres or more of agricultural or grazing land within the zone being applied for. Members of the immediate landowner or tenant family, 16 years of age prior to April 12, 1986 living on the qualifying property are also eligible for this drawing. The completed Landowner-Tenant Drawing Application form must include a description of the land owned or operated including township name, section number(s) and parts of section(s).

Qualified landowners or tenants who are successful in this special drawing must allow turkey hunting on their land during the turkey season. Information on the location of such land will be available to other turkey hunters.

ZONES AND TIME PERIODS

Portions of southeastern Minnesota. Application may be made for:

Only one of the 4 zones (See map on page one), and
Only one of the 5 time periods (See page one).

WHEN TO APPLY

Applications for the computer drawing will be accepted if postmarked no later than December 13, 1985 for the 1986 spring turkey hunting season. Mail or bring your application to:

Turkey Hunt
Department of Natural Resources—License Bureau
500 Lafayette Road
St. Paul, Minnesota 55146

Additional application forms for the drawing may be obtained from DNR field offices, most license agents, county auditors, and the License Bureau at the above address.

NOTIFICATION

Successful applicants in the drawing will receive further instructions and an application for obtaining their turkey license. A small game license need not be purchased before submitting an application for the drawing. Only applicants who are successful in the drawing will be notified.

GROUP APPLICATION

Any person may apply individually or in parties up to four (4) members in size. Party applications exceeding 4 members will be disqualified. The party option is to accommodate those who do not want to hunt unless they can hunt with one to three hunting partners. Those who wish to apply as a party should send their applications for the drawing together in one envelope. Either all members of the party will be drawn, or none will. The chances of an individual being drawn will be the same as for a party of hunters. Applicants should make sure that everyone in their party applies for the same zone and time period, otherwise, applications will be placed in the drawing individually. Party application can be made up of *all* general or *all* tenant but not both. Do not *mix* general or tenant applications in the same envelope.

CAUTION

In addition to meeting the eligibility requirements above, an applicant will be automatically disqualified if he/she

1. submits more than one application; or
2. fails to provide date of birth; or
3. fails to provide Drivers License, Public Safety I.D. (issued by the Department of Public Safety) or Firearms Safety number; or
4. fails to sign the application; or
5. is a member of a party application exceeding four (4) members; or
6. applies for the landowner-tenant drawing and fails to provide legal description of his/her property.

Further, improper application may violate Minnesota Statutes and related Commissioner's Orders, which would subject the applicant to prosecution for a misdemeanor. No application for the drawing, application for the license, or license shall be transferable to another person at any time or for any reason.

ORIENTATION

Applicants successful in the drawing will be required to attend a 1986 orientation session before hunting turkeys except those applicants who received a turkey hunting license *and* attended a 1978 through 1985 Department of Natural Resources approved turkey hunt orientation session.

MISSOURI'S WILD TURKEY STATUS REPORT - 1985

By
Larry D. Vangilder

HARVEST UPDATE

Spring came early to Missouri in 1985. Hens were nesting by the first of April and gobblers were very responsive to calls. As a result, hunters harvested 24,770 birds, a new state record. The harvest of subadult gobblers (35%) was higher than expected. Hunters reported that subadults were commonly heard gobbling which possibly made them more vulnerable.

Reproduction during 1985 was the second highest ever recorded in the 27-year history of Missouri's brood survey. The immature/adult hen ratio was 4.3:1. Production was good throughout the state. Hens nested early and the weather was good throughout the brood-rearing period.

The fall firearms harvest increased during 1985 and hunters easily found birds, especially in north Missouri. The total harvest was 12,152 birds. The percent of immatures in the harvest (70%) reflected 1985's excellent production.

A new wildlife research biologist was hired in August 1985 to handle turkey research and management in Missouri. John Lewis will be a hard act to follow.

Missouri's spring season for 1986 has already been set. Dates will be April 21-May 4 with a 1 bird per week bag limit. This season is the same as last season except for a change in dates to accommodate the Monday opening. A recommendation for a 2-week season and a 1 bird per week bag limit during the fall firearms season of 1986 has been approved by the regulations committee. The significant change in the 1986 fall firearms season is the increase in the bag limit from 1 to 2 birds. I expect that a 2 bird limit in the fall will

increase our harvest by about 20% to around 15,000 birds. Spring and fall harvest data and production data for 1978-1985 are shown in Table 1.

RESEARCH UPDATE

The nesting data collected on radioed hens during the spring of 1985 reflected the excellent production that was indicated by the statewide brood survey. Nesting success of 57 radio-marked hens sample was 55%, well above the average 30% success. An average of 10 poults were hatched per successful hen. Poult mortality was 50% during the first 2-week post-hatch.

Summer trapping met with limited success. Fifty-four turkeys were trapped and tagged from August-October 1985, including 47 poults. Despite a record fall firearms harvest in Adair County (600 birds) none of the marked birds were harvested.

Trapping during December 1985 was very successful because of prolonged ice and snow cover. Twenty-six hens were radio-marked between 16 December 1985 and 2 January 1986. We hope to radio-mark 80 hens before the end of winter.

A new method of estimating survival and cause-specific mortality rates from radio-telemetry data (the Kaplan-Meier product limit method) was used to analyze data from radioed hens during the period 14 March 1984 - 13 March 1985. The annual survival rate was 0.435 ± 0.073. Predation and poaching accounted for 53.1 and 40.6% of the losses, while legal fall harvest was responsible for only 3.1% of the deaths. Mortality rates for poaching and predation were 0.241 and 0.389, respectively.

The Kaplan-Meier product limit method allows censored observations (e.g. data from individuals whose radio fails) to be used in the calculations of survival rates, thereby allowing a more efficient use of data.

TABLE 1. Spring and Fall Harvests, 1978–1985

	SPRING			REPRODUCTION	FALL		
Year	Harvest	No. Counties Open	% Subadults	Immature Adult Ratio	Harvest	No. Counties Open	% Immature
1978	10,146	89	54	3.8:1	4,374	40	56
1979	13,741	90	38	3.8:1	9,387	65	61
1980	16,722	93	35	3.5:1	9,418	65	60
1981	22,319	99	25	3.6:1	9,293	73	66
1982	17,744	100	37	3.1:1	8,989	84	56
1983	19,063	101	28	2.4:1	12,407	86	54
1984	19,568	104	23	2.4:1	10,230	86	56
1985	24,772	114	35	4.3:1	12,152	86	70

NEBRASKA TURKEY REPORT

Karl Menzel

From 1981 through 1984 our spring shotgun harvest was practically static, varying only between 1671 and 1729. During this period permit issuance increased from 4200 to 5460 and success declined each year from 41 to 31 percent. Something happened in 1985, and harvest jumped to 2287, with 37 percent success by 6230 permit holders.

Fall harvest was about average, with 2,908 birds taken by 5,393 permittees for a score of 54 percent.

Archery hunters are permitted to hunt 2 to 3 weeks ahead of and through the shotgun season. Interest for spring archery normally is about twice that for the fall (about 800 compared to 400) and success is about half in the spring - 10 percent compared to 20 percent fall.

Nebraska allows an individual to purchase two turkey permits for each of the fall and spring seasons, which can include two shotgun, two archery, or one of each. Shotgun permits are limited so the double permit option is available in only a few areas. For the first time we came up with figures on individual permit buyers, for the 1984 season with shotgun and archery combined. With 6,192 spring and 5,713 fall permits sold, 9,910 individuals were involved. Forty-six percent hunted only in the spring, 40 percent only in the fall, and 14 percent hunted both. About five percent bought two permits for a single season. Results would probably be different if prices were reduced, but all permits are $15.00 each.

Nebraska turkey permits and harvest, 1976-85

	Spring Gun		Spring Bow		Fall Gun		Fall Bow	
Year	Permits	Kill	Permits	Kill	Permits	Kill	Permits	Kill
1976	1985	447	332	23	2113	863	305	61
1977*	1852	482	168	14	1799	988	164	35
1978	2096	626	200	19	2215	1224	201	47
1979	2468	947	319	48	2808	1556	348	85
1980	2963	1094	514	59	3209	2056	398	111
1981	4200	1729	755	84	4298	2199	616	130
1982	4907	1701	800	62	4700	2296	488	85
1983	5087	1693	823	102	5274	2805	461	91
1984	5460	1672	757	80	5324	2905	437	106
1985	6230	2287	828	99	5393	2908	495	106

* In 1977 permit price went from $5.00 to $15.00. The sale of archery permits, which are unlimited, gives an indication of effect of increase on sales.

NORTH DAKOTA TURKEY REPORT

Lowell A. Tripp

Trap/Transplant Program

As reported during the 1985 meeting, we trapped and transplanted 231 wild turkeys during the winter of 1984-85. We are currently in the process of this years effort.

For a source of birds we rely upon land-owner complaint areas, but we have not had too many of them yet this year. As the winter goes on more complaints will come in. We have several areas available yet that we would like to supplement existing populations.

Heavy snow cover over most of our State this winter has raised some concern regarding winter food supply for the turkeys. However, we have no confirmed cases of any starvation. We have picked up 6 birds from one area, but as yet we do not know the cause of death--whether starvation or other.

Spring Hunting Season

The results of our 1985 spring season indicate that 283 permits were issued, 257 of the permittees hunted and harvested 130 gobblers (50.6 percent hunter success). This was the most permits issued, the largest harvest and the highest spring gobbler hunter success which we have had in North Dakota. Indications are that the harvest was composed of 24% sub-adults and 76% adults. This was the first year that we have gathered age data of our spring harvest.

The 1986 spring season has not been set yet. But, the outlook is good. The season is scheduled to open on April 19. We also hope to open an additional area or two.

Fall Hunting Season

Fall 1985 resulted in 1,946 permits being issued. Again, this is a record number for North Dakota. Hunter success and harvest results from our hunter questionnaire survey will not be available for awhile yet but is expected to be comparable to the past few years.

As we did in 1983 and 1984, we collected feathers for sex and age identification. The previous two years data was reported at our last meeting and the 1985 data won't be ready until sometime in February. Presently, we plan on continuing this survey for the next several years.

Disease Monitoring

During the fall 1985 hunting season, we only obtained 8 blood samples to be sent to the Univ. of Wisconsin for Mycoplasmosis testing. This brings our total to 43 samples during the past 3 years. The first 35 samples were all negative for antibodies to Mycoplasma. Whether we continue collecting blood samples for this testing is at this time uncertain.

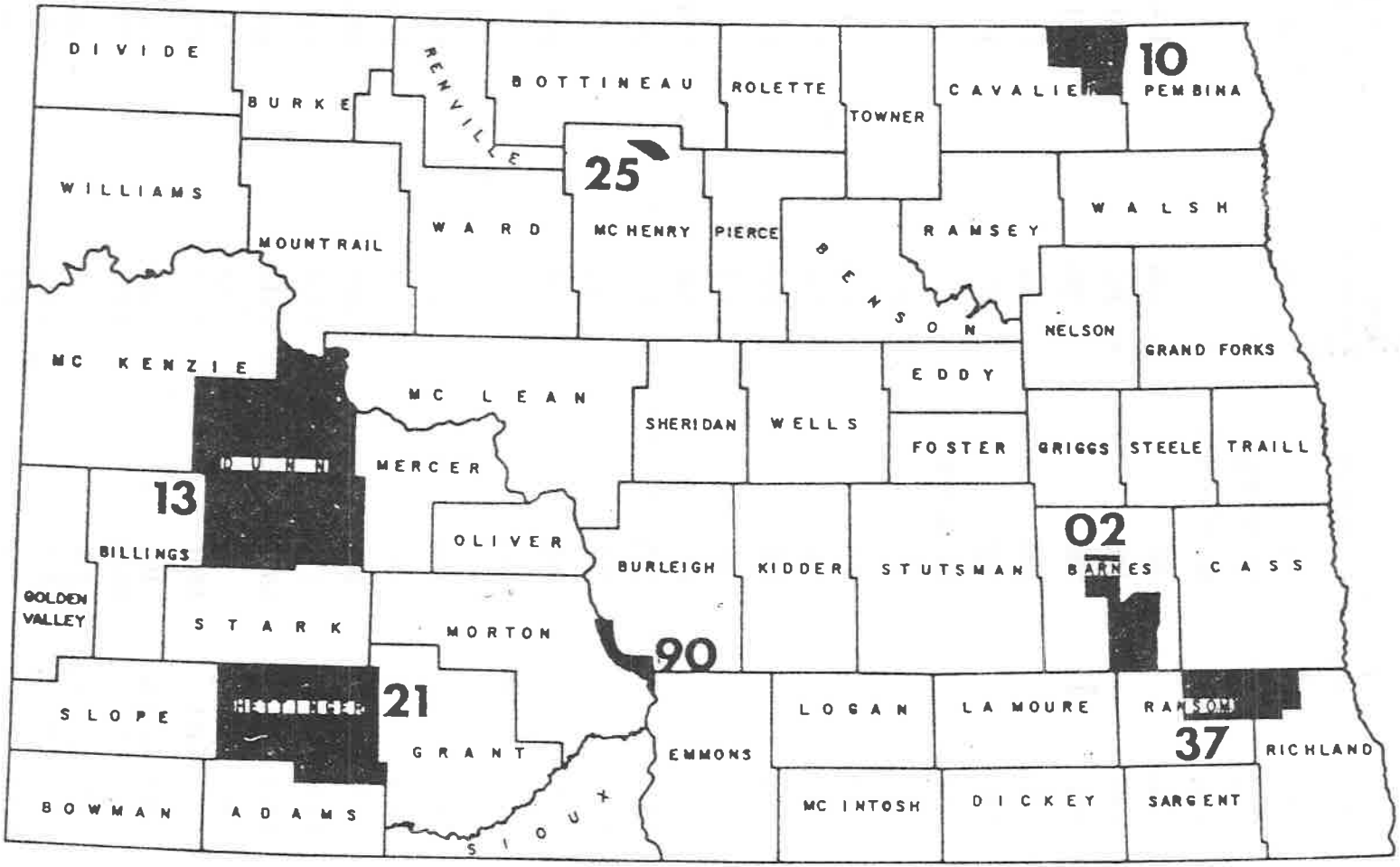
During the fall of 1985, a land-owner in western North Dakota reported two dead turkeys. A sick gobbler from this same flock was collected and the diagnosis was "blackhead". The status of that particular flock at present is unknown.

North Dakota wild turkey hunting seasons.

Year		Number of permits issued	Number of hunters	Number birds bagged	Percent Success
1958		376	376	88	23.4
1959		NO SEASON			
1960		NO SEASON			
1961		309	246	174	70.7
1962		426	392	241	61.5
1963		306	298	171	57.4
1964		404	386	198	51.3
1965		350	290	109	37.6
1966		NO SEASON			
1967		200	183	103	56.3
1968		200	178	97	54.5
1969		197	186	117	62.9
1970		197	180	131	72.8
1971		201	185	134	72.4
1972		227	205	129	62.9
1973		203	195	151	77.4
1974		307	285	213	74.7
1975		359	308	186	60.4
1976	spring	30	22	9	40.9
	fall	500	466	353	75.8
1977		650	513	411	80.1
1978		844	737	540	73.3
1979		961	881	583	66.2
1980		1135	1029	736	71.5
1981		1514	1310	976	74.5
1982	spring	70	57	18	31.6
	fall	1501	1361	975	71.6
1983	spring	160	146	61	41.8
	fall	1678	1488	1181	79.4
1984	spring	258	231	94	40.7
	fall	1707	1521	1197	78.7
1985	spring	283	257	130	50.6
	fall	1946			

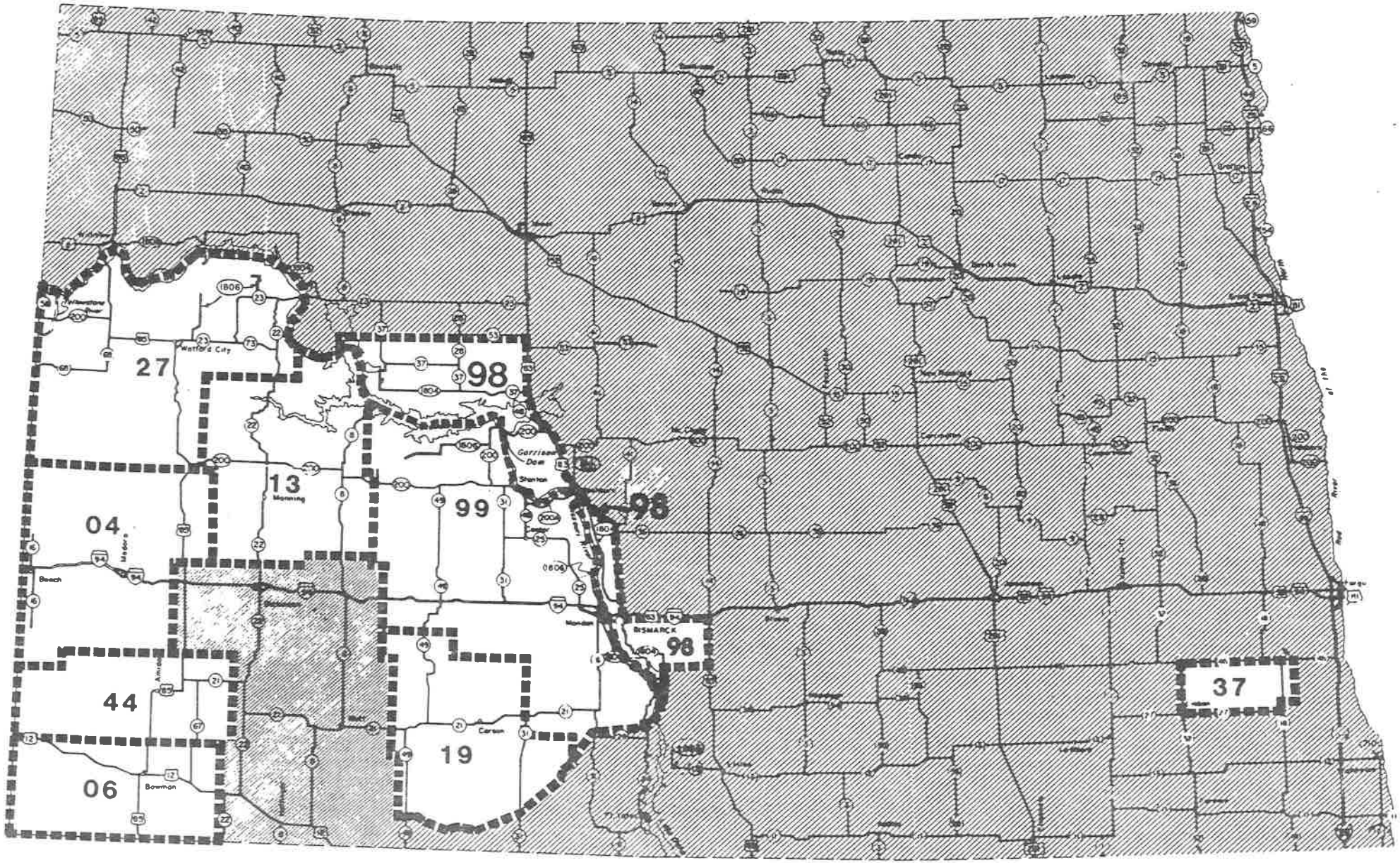
NORTH DAKOTA

1985 SPRING TURKEY HUNTING UNITS



NORTH DAKOTA

1985 FALL TURKEY HUNTING UNITS



Ohio Department of Natural Resources
Division of Wildlife

TURKEY HARVEST MANAGEMENT, 1985

Robert W. Donohoe

RESULTS

A total of 10,084 permits were issued in 1985 for Ohio's 20th modern turkey season (Table 1). A fee of $10.75 was charged for each turkey permit in addition to the $7.75 hunting license. For the first time, all applicants received a permit for the entire 3-week season (April 22 through May 11) and, as in the past, a brochure telling where and how to hunt turkeys in Ohio and a list of checking station locations. A self-addressed questionnaire postcard was sent only to a random selection of 2,012 permittees.

Hunters were allowed one bearded turkey, to be taken by shotgun, longbow, or crossbow between one-half hour before sunrise and 12:00 noon. For the first time, a temporary turkey tag was required to be attached to the dead turkey at the place where it fell. Every successful hunter was required to bring his or her turkey to an official checking station for permanent tagging. All randomly selected hunters were asked to answer the self-addressed questionnaire postcard.

Hunting statistics for 1985 and for all years combined (1966-1985) are shown in Table 1 and Figure 1. The 1,583 turkeys bagged in 1985, including two bearded hens, were a season record. The previous record was 1,233 in 1984. Statewide, 56% of the harvested birds were adults, 44% immatures.

In summary, the bulk of the harvest (81% in 1985) continues to come from the 14 forested counties in the southeast and southcentral portions of the state, suggesting that these areas still contain the best habitat for turkeys. Statewide age ratios, reflected in the harvest, show an adequate production for sustaining and increasing future turkey numbers if the land base remains stable. Spring hunting popularity will persist at a high level, and as long as there is no marked decline in the statwide turkey population, the Division of Wildlife will continue to recommend liberal spring hunting regulations.

Table 1. Ohio's turkey season dates and harvest success, 1966-1985.

Year	Season Dates	Number of Counties Open	Permit Fee	Number of Eligible Permittees	Estimated Number of Permittees Who Hunted[1]	Total Harvest	Percent Successful
1966	5/4-5/7	9	Free	500	321	12	3.7
1967	5/3-5/6	9	Free	898	706	18	2.5
1968	5/8-5/11	9	Free	914	765	20	2.6
1969	5/7-5/10	9	Free	945	815	37	4.5
1970	4/29-5/2	14	Free	909	774	30	3.9
	5/6-5/9			896	732	36	4.9
1971	4/28-5/1	14	Free	1,000	797	37	4.6
	5/5-5/8			1,000	790	17	2.2
1972	5/3-5/6	14	$5.35	917	824	32	3.9
	5/10-5/13			881	787	25	3.2
1973	5/2-5/5	14	$5.35	1,034	897	39	4.3
	5/9-5/12			1,034	884	32	3.6
1974	5/1-5/4	14	$10.50	999	900	61	6.8
	5/8-5/11			184	167	10	6.0
1975	4/28-5/3	14	$10.50	996	893	75	8.4
	5/5-5/10			267	242	19	7.9
1976	4/26-5/8	14	$10.50	1,471	1,296	139	10.7
1977	5/2-5/14	14	$10.50	1,751	1,504	137	9.1
1978	5/1-5/13	18	$10.50	2,000	1,711	147	8.6
1979	4/30-5/12	18	$10.50	2,000	1,714	265	15.5
1980	4/21-5/3	20	$10.75	2,097	1,882	387	20.6
1981	4/27-5/9	20	$10.75	3,458	2,954	577	19.5
1982	4/26-5/8	20	$10.75	4,262	3,636	651	17.9
1983	4/25-5/7	21	$10.75	5,141	4,402	764	17.4
1984	4/23-5/12	31	$10.75	6,935	5,824	1,233	19.9[2]
1985	4/22-5/11	31	$10.75	10,084	8,849	1,583	17.3[2]
			Total	52,573	45,066	6,383	13.9[2]

[1]Based on questionnaire returns.

[2]Success figured on number of permittees hunting minus 72 successful landowners hunting in 1984 and 51 in 1985.

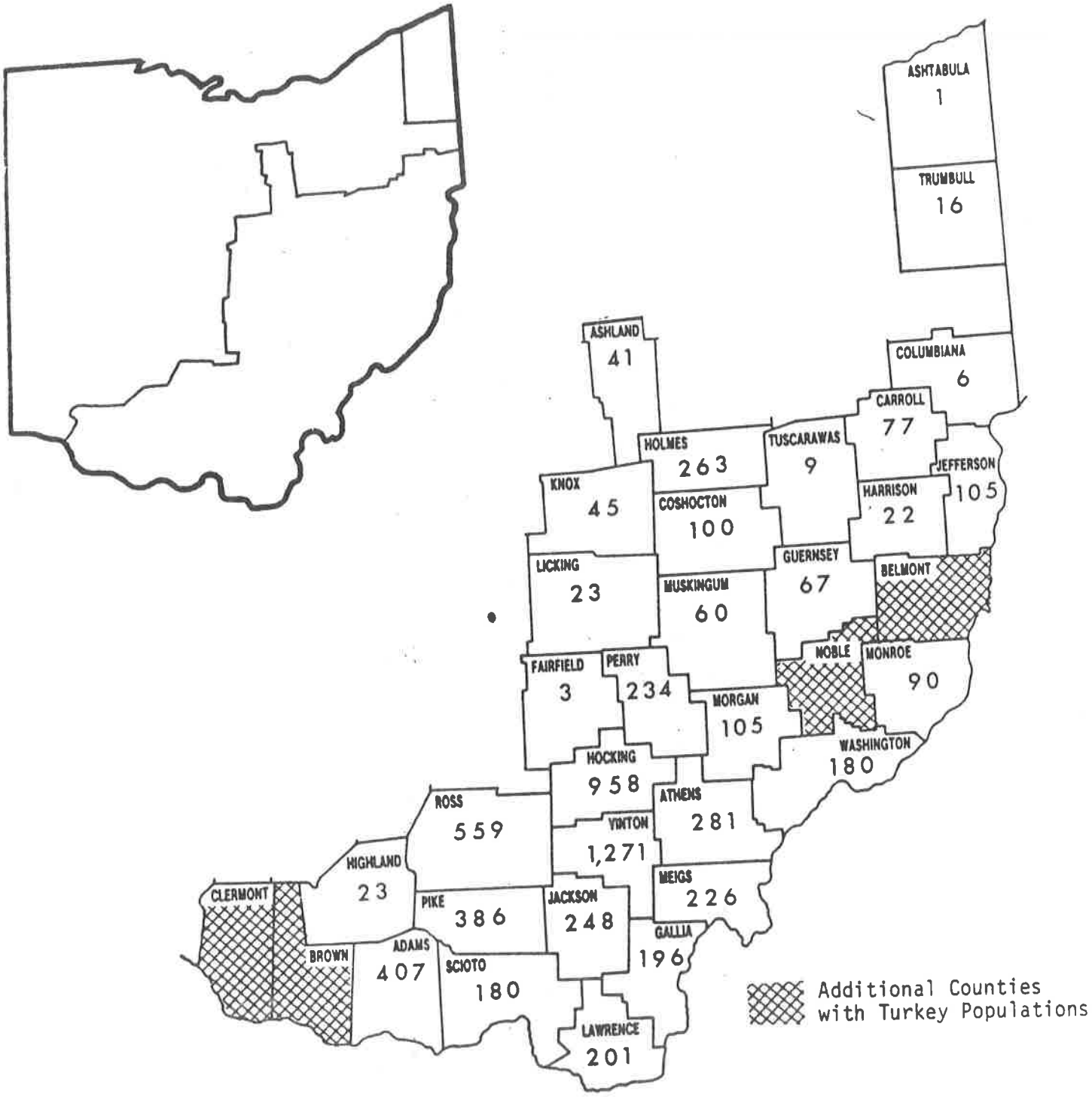


Fig. 1. Total turkey harvest (6,383) in 31 open Ohio counties for 20 spring hunts, 1966-1985.

TURKEYS IN SOUTH DAKOTA 1984-85

Hunting Season Results

The 1984 Spring gobbler season ran from April 7 through May 13 in the Black Hills area. An unlimited number of licenses were available with 2,922 residents and 670 non-residents purchasing a tag. This is an increase of approximately 500 licenses from 1983. Success was very similar to previous years with 1,080 gobblers killed or a projected success of 30%.

The Prairie Spring gobbler season ran from April 7 through May 13 with 3 counties having a split season. A total of 31 units were open with 1,710 licenses available. A total of 1,498 licenses were sold with a reported success of 65%. Success on the prairie was similar to previous years with 765 gobblers harvested for a 51% projected success.

The 1984 Fall season ran from October 6-21, in the Black Hills area. An unlimited number of licenses were available with 2,923 residents and 91 non-residents purchasing a tag. This was approximately 200 fewer tags than in 1983. Success was slightly higher this year with 1,074 birds harvested or a 36% projected success. Hunters reported harvesting 41% gobblers and 59% hens.

The Prairie Fall season also ran from October 6-21. About 200 fewer tags were available than in 1983. The 1,111 hunters harvested 697 birds or a projected success of 63%. They reported taking 55% gobblers and 45% hens.

License sales for Spring and Fall of 1985 have not been determined: License sales in the Black Hills have remained fairly constant the past several years. 1985 reported success was 59% compared to 44% in 1984. License sales on the prairie units were up 232 permits in 1985. Reported success was 82.5% compared to 65% in 1984.

Reproduction

This years brood survey information reflected poor reproduction. With 3.8 young/hen, reproductive success this year was the second lowest in 23 years of record keeping. Coupled with poor success in 1984, our turkey population is down.

Trapping

The rapid growth of many established flocks on the prairie has begun to cause concern by landowners and managers regarding depredation and disease problems. Where possible, problem flocks are trapped and relocated. During the winter of 1985, we relocated 159 birds (60 males and 99 females). Two transplants were made in the north central part of the state, two were made to the southeast corner of the state and one group went to the Lower Brule Indian Reservation.

Winter Flock Count

The first winter flock count was conducted by agency personnel during January and February of 1985. A total of 7,703 turkeys were observed in 144 different flocks. Average flock size was 53.5 birds. The sex ratio was 35 toms/100 hens.

Changes in 1985

1. Define wild turkey - any dark turkey which bears the characteristics of a Merriam (meleagris gallopano merriami), or Eastern (meleagris gallopano silvestris) wild turkey. Any such turkey released to the wild which is not marked in accordance with ARSD 41:09:02:04 and within any hunting unit established by ARSD 41:06:13 or 41:06:14 shall be deemed a wild turkey.

2. Turkey hunting season is open from one-half hour before sunrise to sunset each day.

3. One Spring turkey hunting fatality was reported in 1985. Individual was mistaken for a turkey and shot with a .243 caliber rifle.

Appendix Table 2. Summary of spring gobbler season hunter report card data, 1984.

ANALYSIS OF THE 1984 SPRING TURKEY HUNTER REPORT CARDS

Black Hills Reporters

Licenses available	Unlimited
Licenses sold	2922 Res (670 NR)
Reported successful hunters	577
Reported unsuccessful hunters	729
Reported success	44%
Projected kill	1080
Porjected success	30%

Prairie Units Reporters

Licenses available	1710
Licenses sold	1498
Report cards returned	840
Reported successful hunters	551
Reported unsuccessful hunters	289
Reported success	65%
Projected kill	765
Projected success	51%

Appendix Table 4. Summary of fall turkey season hunter report card data, 1984.

ANALYSIS OF THE 1984 FALL TURKEY HUNTER REPORT CARDS

Black Hills Reporters

Licenses sold	2923 Res (91 NR)
Reported unsuccessful hunters	720
Reported successful hunters	623
Reported success	54%
Projected kill	1074
Projected success	36%

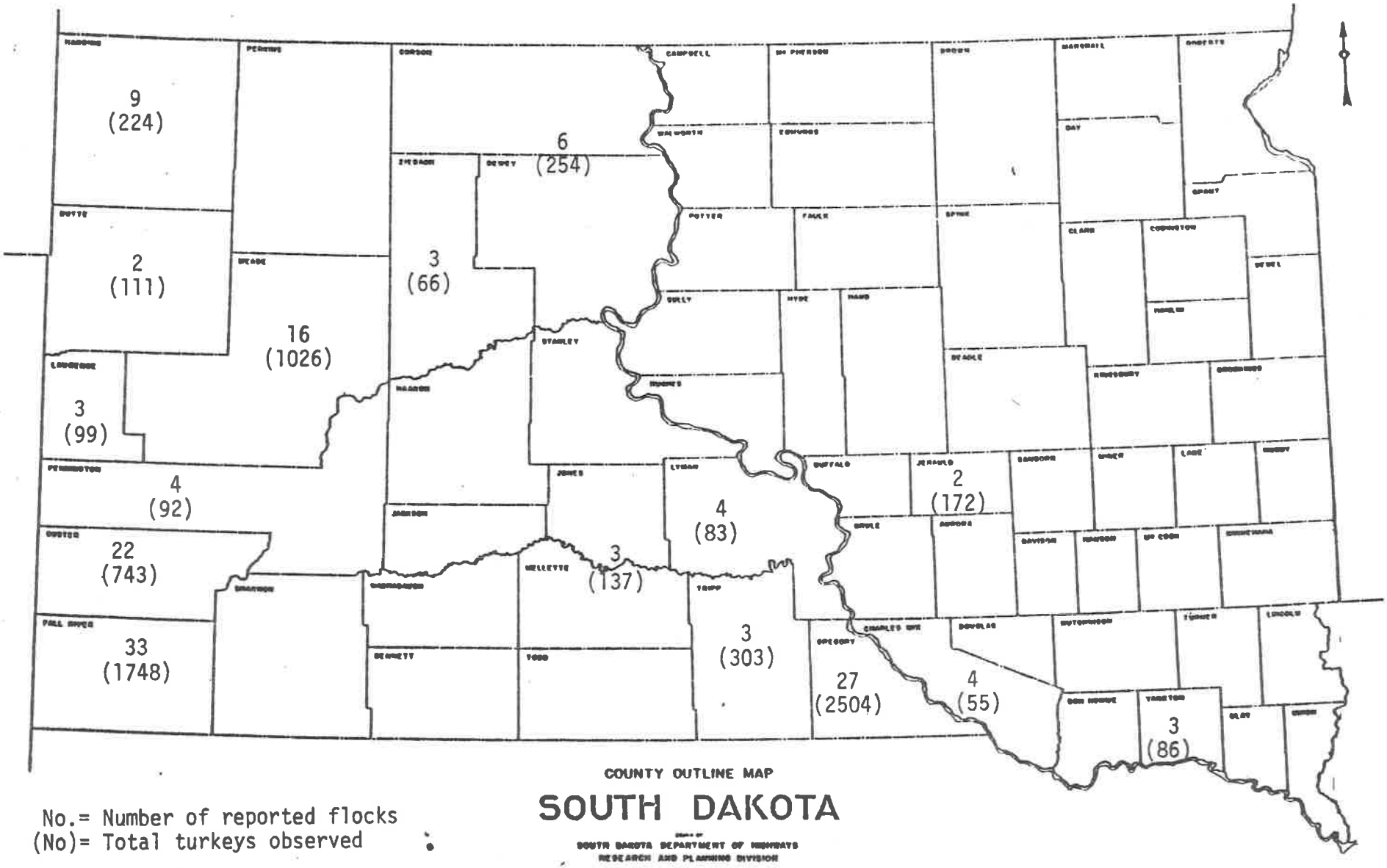
	Number	Percent
Gobblers killed	256	41%
Hens killed	366	59%

Prairie Unit Reporters

Licenses available	1150
Licenses sold	1111
Reported unsuccessful hunters	204
Reported successful hunters	573
Reported success	74%
Projected kill	697
Projected success	63%

	Number	Percent
Gobblers killed	317	55%
Hens killed	258	45%

Location and Number of 1985 Winter Turkey Flocks



COUNTY OUTLINE MAP

SOUTH DAKOTA

SOUTH DAKOTA DEPARTMENT OF HIGHWAYS
RESEARCH AND PLANNING DIVISION

No.= Number of reported flocks
(No)= Total turkeys observed

SUMMARY REPORT

Southwestern Wisconsin Turkey Management Program

John Nelson and Ronald Nicklaus

PROJECT: Southwestern Wisconsin Wild Turkey Restoration

PERIOD: July 1, 1984 through June 30, 1985

OBJECTIVES: Restoration of the Wild turkey as a stable component of the wildlife community in southwestern Wisconsin.

INTRODUCTION

Goals of the turkey restoration program are to fill release sites in unoccupied range as quickly as possible, and provide an assessment of population status over occupied range.

Appreciation is expressed to Neal Paisley, Dean Peterson, Cheryl Rezabek, Steve Sisbach, and Mark Spoden for their field assistance last winter.

METHODS

To assess wild turkey population status, an evaluation of turkey health, reproduction and survival was conducted. An evaluation of habitat was used to help explain population fluctuations. An index to wild turkey reproduction and survival was obtained from resident sightings, gobbling transects, winter flock inventory, and age ratios obtained from turkey trapping. Dr. Terry Amundson and his staff are closely monitoring wild turkey health by testing all birds handled for a number of diseases and parasites. An evaluation of habitat is obtained by judging availability of food during severe winter months. Acorn collectors give an index to mast production. Farm crop residue and amount of standing corn was also assessed, along with National Weather Service data, to provide information and judge availability of food.

Wild turkey range is expanded by trapping birds in areas of high density and moving them to areas of unoccupied range. Turkeys are baited with corn and captured with a rocket net to obtain breeding stock for new release sites. All birds handled are tested for diseases and tagged with a patagial wing tag for later identification.

RESULTS AND DISCUSSION

Population Assessment

Production in 1984 was excellent. Broods reported in Vernon County had 6.17 poults per hen. Although only 6 broods were reported because brood observations were not actively pursued. A hen poult ratio of 1 to 4.09 was observed during winter trapping in Crawford County. The number of juvenile hens was doubled to arrive at poult numbers, because jakes were usually not trapped. 4.09 poults per hen is the highest ratio ever noted during winter trapping activities.

Winter flock inventory consisted of locating winter flocks in conjuction with trapping activities in Crawford County. Seventeen winter flocks, averaging 30 turkeys, were located by the trapping crew with the help of Crawford County residents. Two flocks had over 60 turkeys, again on indication of the good production experienced last spring.

Survival was excellent with no starvation noted and weights remaining high throughout the winter.

Habitat Assessment

Table 1 shows acorn production for the last three years. There is a significant (P:05) reduction in total acorns per collector for 1984. However, all collectors are near the top of hills and it is possible that the sample was not truly representative of all microclimates. Casual observation indicated many oaks near the bottom of hills had good production in 1984. All slope aspects are represented in our sampling scheme but variations in production due to large elevation differences are not.

Farmers in Vernon and Crawford counties had good weather for harvesting in 1984. Consequently most corn was harvested and little was left standing to be used as emergency food by turkeys. Many farmers in southern Crawford County fall plowed also, making waste grain unavailable to turkeys.

Snowfall for Wisconsin was slightly above normal, according to Wisconsin Department of Agriculture Crop Weather Report, however because of warm fluctuating temperatures during the first half of winter, accumulations were below normal. It wasn't until cold temperatures arrived in January that snow accumulated to normal by late February. Mild temperatures returned in March reducing snow depths to zero by the end of the month (Figure 1).

Due to a relatively poor acorn production year and a dry fall for corn harvesting, wild turkeys could have been under a high degree of winter stress. However, snow depths didn't restrict turkey movement early in winter so finding food wasn't difficult, and in late February early March when snow began to accumulate, a thaw arrived reducing snow depths and winter stress on turkeys. Consequently no starvation was noted and turkeys remained in good health.

POPULATION EXPANSION

Table 2 shows composition of turkeys at release sites. Missouri shipped 11 turkeys for release in Wisconsin, and Wisconsin wild trapped 113 in Crawford County, 11 in Grant County and 21 in Iowa County to stock unoccupied range. Seven release sites were filled with gobblers and hens and a few birds were stocked at La Farge. La Crosse County Bangor and Vernon County Coon Valley release sites only had 2 adult gobblers at each site because winter break-up made trapping additional birds difficult. All other release sites had at least 4 adult toms. Turkeys released at La Farge, 10 jakes and 1 hen, were stocked to increase gene diversity. The original release in this area contained only 2 adult toms. Turkeys released at trapping sites were either jakes that were not needed, or hens put back in the same area to maintain good public relations.

Figure 2 shows location of 1985 release sites. All turkeys were stocked in the driftless area in southwest Wisconsin except those moved to Kettle Moraine State Forest Northern Unit, which is a band of hills in eastern Wisconsin.

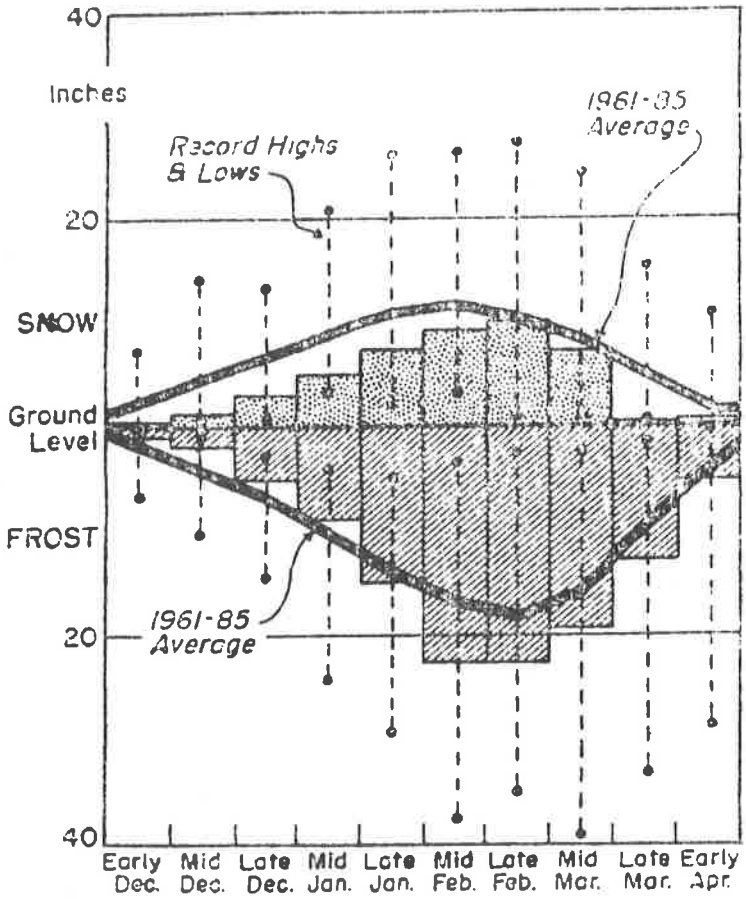
All turkeys handled were in excellent health and tested negative for Mycoplasma gallisepticum, Mycoplasma meleagris, Mycoplasma synoviae, New Castle Disease, Salmonella pullorum, and Salmonella typhimurium.

Table 1. Average Acorns All Collectors by Year

	Sound Acorns/Collector Number (wt. in gms.)	Damaged Acorns/Collector Number (wt. in gms.)	Immature Acorns/Collector Number (wt. in gms.)	Total Acorns/Collector Number (wt. in gms.)
1982	10.4 (31.8)	9.5 (12.9)	9.0 (5.6)	29.0 (50.3)
1983	1.7 (2.1)	27.7 (13.8)	25.0 (8.2)	54.4 (24.1)
1984	.8 (1.2)	3.0 (2.8)	4.4 (1.6)	8.2 (5.6)

Figure 1

1984-85 SNOW & FROST DEPTHS COMPARED TO AVERAGE & PREVICUS HISTORICAL RECORDS



	Early Dec.	Mid Dec.	Late Dec.	Mid Jan.	Late Jan.	Mid Feb.	Late Feb.	Mid Mar.	Late Mar.	Early Apr.
HISTORICAL SNOW (1961-85)										
Maximum	7.3	14.2	13.1	21.8	26.2	26.1	27.7	24.2	15.5	10.7
Year	1977	1983	1970	1969	1979	1979	1979	1962	1962	1965
Minimum	T	0.8	0.6	3.8	1.7	3.7	1.3	0.5	0	T
Year	S	1979	1979	1963	1981	1968	1984	1981	1981	S
HISTORICAL FROST (1961-85)										
Maximum	6.8	10.1	14.8	24.3	29.8	37.8	35.1	39.8	33.4	28.8
Year	1976	1964	1981	1981	1977	1961	1968	1958	1968	1965
Minimum	0.3	1.1	3.3	4.0	5.2	3.3	2.8	2.8	1.2	0
Year	1962	1970	1965	1984	1969	1984	1984	1983	1979	S

T = Trace; S = Several years

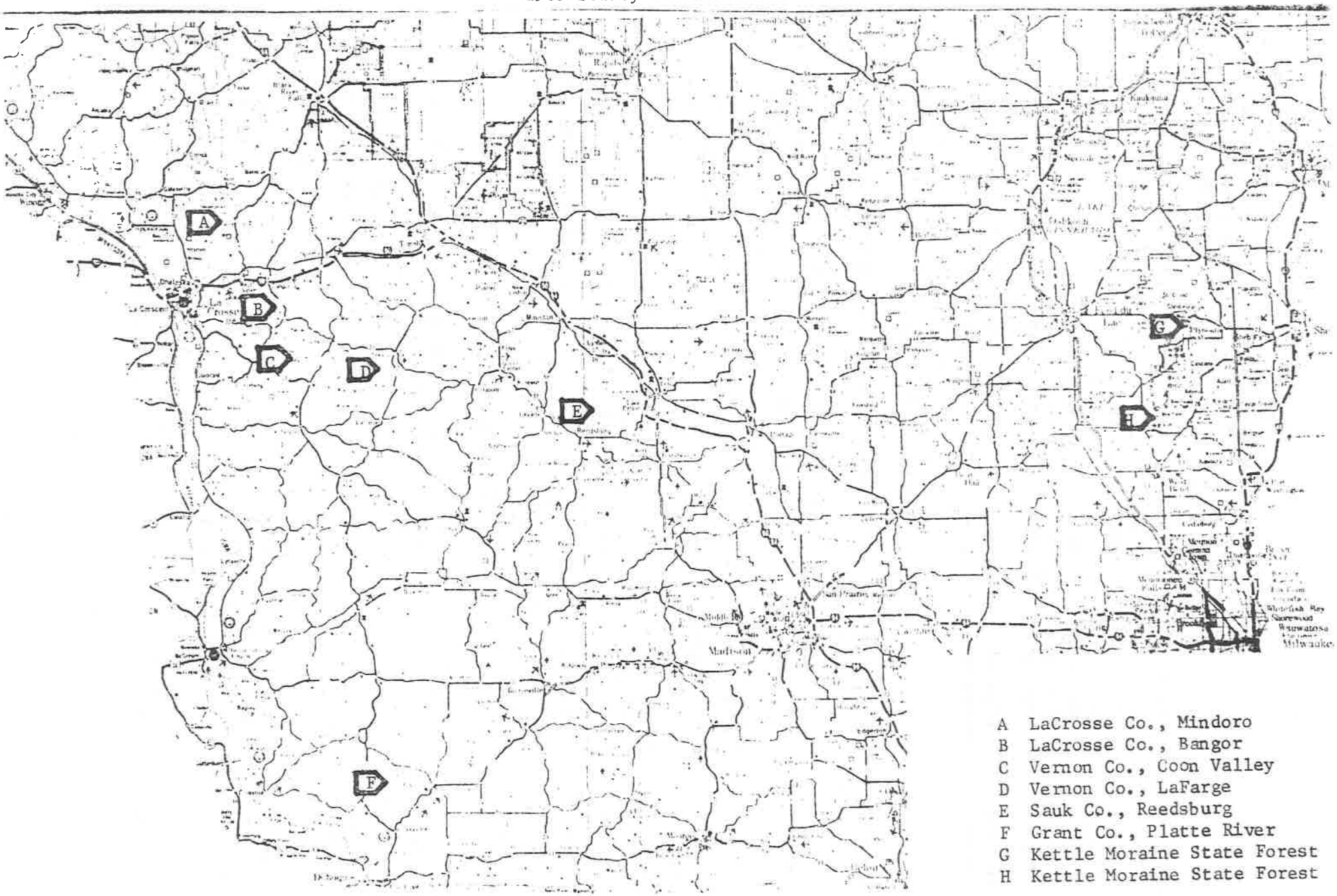
Wisconsin
AGRICULTURE REPORTING SERVICE
Post Office Box 8160 Madison, Wisconsin 53715

Table 2. Composition of Turkeys at Release Sites

Release Site	No.	Sex	Age	Trapping Location
Sauk County	6	F	J	Trausch Craw. Co.
Reedsburg	1	F	A	" " "
4 Gobblers	2	F	J	Waters Twn, Grant Co.
14 Hens	5	F	A	" " " "
	4	M	A	Lynxville Craw. Co.
Kettle Moraine State	4	M	A	Sugar Creek Craw. Co.
Forest (2 Sites)	2	M	J	Roberts Craw. Co.
12 Gobblers	4	F	A	" " "
36 Hens	14	F	J	" " "
	4	F	A	Trausch Craw. Co.
	6	F	J	" " "
	2	M	J	" " "
	4	M	A	Stluka Craw. Co.
	8	F	A	Whelp Iowa Co.
Grant Co. Platte River	1	F	A	Waters Twp Grant Co.
7 Gobblers	3	M	J	" " "
18 Hens	2	F	A	Sime Craw. Co.
	1	F	J	" " "
	7	F	A	Mont Co. Missouri
	4	F	J	" "
	2	M	J	Burke Craw. Co.
	2	M	A	" "
	3	M	A	Kickapoo Craw. Co.
LaCrosse Co. Mindoro	4	F	J	Sampson Craw. Co.
7 Gobblers	1	F	A	" "
15 Hens	2	M	J	" "
	4	F	A	Sime Craw. Co.
	2	F	J	" "
	1	M	J	" "
	2	M	A	Krugan Craw. Co.
	3	F	A	Iowa Co.
	1	F	J	" "
	2	M	A	Spring Green Iowa Co.
LaCrosse Co. Bangor	6	F	J	Sime Craw. Co.
2 Gobblers	3	F	A	" "
9 Hens	2	M	A	Spring Green Iowa Co.
Vernon Co. Coon Valley	8	F	J	Krugan Craw. Co.
2 Gobblers	2	F	A	" "
10 Hens	2	M	A	Spring Green Iowa Co.
La Farge	10	M	J	Trausch Craw. Co.
	1	F	A	
Trapping Site	6	M	J	Trausch Craw. Co.
	3	F	J	Whelp, Iowa Co.

Figure 2

1985 Turkey Release Sites



A LaCrosse Co., Mindoro
B LaCrosse Co., Bangor
C Vernon Co., Coon Valley
D Vernon Co., LaFarge
E Sauk Co., Reedsburg
F Grant Co., Platte River
G Kettle Moraine State Forest
H Kettle Moraine State Forest

1983 Turkey Harvest

Zone	Time Period 1	2	3	Total	Number of Permits	Hunter Success%
1	21	16	17	54	(100) 300	0.1800
2	17	9	12	38	(100) 300	0.1266
9	14	12	6	32	(100) 300	0.1066
10	19	17	20	56	(100) 300	0.1866
Total	71	54	55	180	1200	0.1500
Hunter Success by time period (400)	0.1775	0.1350	0.1375			
*Adjusted for 20% nonparticipation rate					960*	0.1875

1984 Turkey Harvest

Zone	Time Period 1	2	3	Total	Number of Permits	Hunter Success%
1	27	22	19	68	(150) 450	0.1511
2	27	26	26	79	(150) 450	0.1755
4	15	13	9	37	(100) 300	0.1233
9	23	8	10	41	(100) 300	0.1366
10	31	27	25	83	(150) 450	0.1844
Total	123	96	89	308	1950	0.1579
Hunter Success by time period (650)	0.1892	0.1476	0.1369			
*Adjusted for 20% nonparticipation rate					1560*	0.1974*

1985 Turkey Harvest

Zone	Time Period 1	2	3	Total	Number of Permits	Hunter Success%
1	35	41	44	120	(150) 450	0.2666
2	46	38	63	147	(175) 525	0.2800
4	25	24	31	80	(150) 450	0.1777
9	19	7	8	34	(100) 300	0.1133
10	42	39	35	116	(150) 450	0.2577
Total	167	149	181	497	2175	0.2285
Hunter Success by time period (725)	0.2303	0.2055	0.2496			
*Adjusted for 20% nonparticipation rate					1740*	0.2856*