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DEER IN IOWA

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Deer in Iowa - 1985

Annual Progress Report
Wildlife Research and Surveys Project
Federal Aid Project No. W-115-R

Study No. 13

Job No. 1: Deer Harvest Survey

Study No. 15

Job No. 1: Winter Population Estimate

Job No. 2: Miscellaneous Mortality Survey

Job No. 3: Winter Aerial Survey

Job No. 4: Sex and Age Ratio Survey

Study No. 22

Job No. 2: Spotlight Survey

by

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HUNTING SEASON REGULATIONS

Shotgun

The 1985 shotgun deer season consisted of 2 separate seasons with the first held from 7-11 December and the second from 14-20 December. The first shotgun season was extended in length from 4 to 5 days to provide greater recreational opportunity. Hunters could select only 1 of the 2 shotgun seasons with an option to apply for an any-sex license in 1 of 10 different hunting zones (Fig. 1), or select a statewide buck-only license. A quota on any-sex licenses was set for each hunting zone and if hunters were unsuccessful in a randomized computer drawing for those licenses, they received a statewide buck-only license. The any-sex license quota was twice as high for the second season in 8 of 10 hunting zones to entice hunters to choose the later season. In the remaining 2 zones, the entire any-sex license quota was available for the second season to help equalize hunter numbers, harvest and success rates between seasons. Preference for any-sex licenses was given to valid applications containing certificates issued to buck-only license recipients the previous year. About 42% of the hunters receiving certificates in 1984 returned them in their 1985 applications. If the any-sex quota for any zone and season combination could not be filled from applications with certificates, a random drawing was made from noncertificate holders. Certificates were issued to all 1985 buck-only license recipients for use during the 1986 application period.

First season landowner-tenant applicants were issued free shotgun licenses at the same buck-only to any-sex ratio as paid shotgun hunters in each zone combination. All second season landowner-tenant applicants were issued a free any-sex license.

Bow and Arrow

The 56-day archery season was held from 12 October to 6 December. Licenses were available from county recorders and from the Iowa Department of Natural Resources license section. All other bow and arrow regulations remained the same as in previous years.

Muzzleloader

A special muzzleloader-only season was conducted from 21-27 December. A quota of 1500 any-sex licenses was distributed by random drawing with remaining hunters being issued a buck-only license. All muzzleloader licenses were valid statewide.

Special Season

A special late shotgun season was held in a 361 square mile portion of hunting zone 6 to further reduce deer numbers because of landowner complaints about crop damage around the Iowa Army Ammunition Plant (IAAP). The season was conducted from 21 December 1985 to 5 January 1986. Free any-sex licenses were issued to shotgun hunters by telephone on a first-come, first-served basis. Hunters that harvested a deer during the regular shotgun season were allowed to tag a second deer with this special license.

HUNTING SEASON RESULTS

Hunter Report Card Survey

Hunter report cards were sent to 25% of the licensed shotgun hunters following the season to obtain information on harvest, success rate, sex ratio, hunting effort, crippling rate and area hunted. A special question was designed for the report card to obtain information on party hunting. A reminder questionnaire was sent to hunters that did not respond to the first mailing within 1 month. About 72% of the shotgun hunters responded to the survey. Harvest results of nonrespondents were estimated by assigning them the same success rate as those returning the second mailing. Success rates were calculated on the basis of active hunters only. Post season report cards were also sent to 1,916 archers, 1,522 muzzleloaders and 4,000 special season hunters. Return rates were 72%, 78% and 68% respectively for the above hunter categories.

License Issue

Paid shotgun license issue in 1985 decreased 2% from the previous year to 78,144 (Table 1). This decrease was caused by an increase in the deer license fee to \$20 and a switch of some paid shotgun hunters to free landowner licenses due to the issuance of a free any-sex landowner license to all second season hunters. Correspondingly, landowner-tenant license issue jumped to 20,674, a 23% increase from 1984. A total of 98,818 shotgun licenses were issued representing a 2% increase from 1984 and a new record high shotgun license issue. In addition to regular season licenses, there were 4,074 free any-sex licenses issued to previously licensed shotgun hunters for the late season in southeastern Iowa. Deer license issue continues to increase because of more interest in the sport and favorable publicity about increasing deer populations.

About 59% of all shotgun licenses were issued for the first hunting season. This is slightly higher than the 1984 distribution of first season licenses. The buck-only first season in zones 1 and 10 helped keep this distribution from going even higher.

The highest buck-only to any-sex license ratio occurred in hunting zones 7 (19/1), 8 (8/1) and 5 (7/1) (Table 2). This was caused by a combination of high application rates for first season and small any-sex license quotas. The lowest ratios occurred during the second season when many zones recorded a 1/1 ratio because of low hunter application rates and high any-sex quotas (Table 2).

There were 22,830 archery licenses issued in 1985, an increase of 5% from the previous year (Table 3). This is a new record high archery license issue in spite of a fee increase from \$15 to \$20.

In addition to archery and shotgun licenses, there were 1,522 muzzleloader-only licenses issued. Of these, 1,492 were for any-sex deer while 30 were for buck-only (as requested by the applicant). This gives a grand total deer license issue of 127,244.

Harvest

A new record high harvest rate was established in 1985 with a total estimated harvest of 44,219 deer. This is an increase of 12% from the previous year when 39,355 deer were harvested. Higher hunter numbers, an excellent fall deer population and higher any-sex license quotas were responsible for the increase. Poor weather across northern Iowa during the second hunting season and late corn harvest prevented an even higher harvest. An estimated 36,898 (± 1065) deer were harvested by regular season shotgun hunters with 21,017 (± 971) taken the first season and 15,881 (± 438) taken the second. Harvest allocation between seasons was good with 59% of the hunters hunting first season and taking 57% of the total harvest. Higher any-sex quotas in the second season helped overcome the lower success rates for that season. Shotgun harvest and success rates varied by hunting zone and season (Table 4).

In addition to the regular shotgun season there was a special any-sex late season held in a portion of hunting zone 6. Another 1,059 (± 41) deer were harvested during this season and active hunters reported a success rate of 25%.

Archers harvested 5,805 (± 560) deer which is a new record harvest for this group of hunters. Increased hunter numbers and an excellent fall deer herd were responsible for this new record. Success rates for active hunters was 26%, slightly lower than the previous year (Table 3).

Muzzleloader hunters harvested 457 (± 21) deer during their special late season. This is an increase of 49% from the previous year with fewer hunters participating. It appears that during the second year of this special season, hunters were more willing to harvest does than in the previous year.

The day of the season deer were harvested was estimated from tooth envelopes returned by successful any-sex hunters. About 72% of the first season harvest occurred on the weekend while 60% occurred during the opening weekend of the second season (Table 5). Good weather during both shotgun seasons (except in northern Iowa) produced high hunter participation and good deer harvest on weekdays.

Hunter Success

Shotgun hunter success rates were higher in most hunter categories than in any previous year (Table 6). These record high success rates were the result of excellent first season weather, suitable weather during the second season (except in northern Iowa) and excellent deer numbers available to the hunter. It should be noted that success rates are calculated for active hunters, and bad weather may often affect hunter numbers in the field during any particular season but not necessarily the success rate for those that participate.

Shotgun hunters had a higher success rate during the first season than in the second (Table 6). Overall, paid shotgun any-sex hunters averaged 68% success compared to 48% for landowner-tenants (Table 1). Buck-only paid shotgun hunters averaged 33% success compared to 34% for landowner-tenants. All active shotgun hunters combined reported a 44% success rate during the

regular season. The highest buck-only shotgun success rates were reported in hunting zones 6 and 2 during the first season while zones 9 and 7 first season any-sex hunters were high for the state (Table 4).

Archery success rates were down slightly for the second straight year. Archers reported a 26% success rate compared to 27% in 1984 and 28% in 1983. Muzzleloader hunters reported a 34% success rate for active hunters compared to 22% the previous year.

Another measure of hunter success is the number of hours of hunting required to harvest a deer. Paid buck-only shotgun hunters averaged 60 hours of hunting to bag a deer compared to 73 in 1984 and 64 in 1983. The 1985 buck-only effort is a new record low which reflects the high success rates obtained this year. Paid any-sex shotgun hunters averaged 31 hours of hunting compared to 35 hours in 1984 and 30 hours in 1983 (the record low).

Archers required an average of 208 hours of hunting to bag a deer which is a new record low for that hunter group. Early winter weather reduced the overall average time spent in the field, but archers were effective in harvesting deer while they were hunting.

Muzzleloader hunters required an average of 62 hours of hunting to harvest a deer. This is much better than the 117 hours of hunting reported in 1984. Hunters were more effective because of better weather during the season or more hunters choosing to take does during the season.

Sex Ratio of the Harvest

An estimated 11,865 does were harvested by shotgun hunters during the regular season. This is a 29% increase from the 9,219 does harvested in 1984 and is primarily the result of increased any-sex license quotas. An additional 620 does were harvested during the special shotgun season, 1,852 by archers and 257 by muzzleloaders for a total of 14,594 (Table 7). Does accounted for 33% of the shotgun, 32% of the archery and 56% of the muzzleloader harvest.

Hunter Effort

The percentage of shotgun hunters that did not hunt in 1985 was higher than the previous year (Table 8). This higher did not hunt rate was particularly high during the second hunting season due to weather factors. Free landowner-tenant did not hunt rates were higher than the previous 4 seasons possibly due to late crop harvest and bad weather.

Active hunters hunted less than they did in 1984 in all hunter categories (Table 9). Hours and days in the field were higher for second season than first, indicating that hunters were taking advantage of the 2 extra hunting days. The deer season provided over 602,000 days of hunting recreation with shotgun hunters in the field for 252,800 days, archers 336,200, muzzleloaders 4,900 days and special season hunters for 8,500 days. Hunters obtained nearly 3 million hours of recreation from the deer season.

Crippling Rate

About 10% of all shotgun hunters reported crippling a deer during the season. Crippling rates were a little lower for first season shotgun hunters compared to second season. Paid shotgun hunters reported a higher crippling rate (11%) than landowner-tenants (7%). About 17% of the archers and 8% of the muzzleloaders reported they crippled a deer during the season. Crippled deer may recover from their wounds or are harvested by other hunters and therefore, only a portion of them can be considered a loss to the deer population.

Archery Hunting Techniques

Archery hunters were asked to report the hunting techniques they used during the 1985 season. About 76% reported they used a tree stand during the season while 7% used ground blinds, and 10% stalked or still hunted. The remaining 7% used all or a combination of these 3 techniques.

Shotgun Hunting Techniques

Shotgun hunters were asked to report if they hunted with a party of other hunters or by themselves. About 16% of the paid buck-only hunters hunted alone compared to 56% of the landowner-tenant buck-only hunters. About 15% of the paid any-sex hunters hunted by themselves compared to 52% of the free landowner-tenant any-sex hunters. Party hunting is obviously very much a part of the paid shotgun hunting technique (85%) while the majority of landowner-tenants prefer to hunt alone. Only about 3% of all hunters reported they hunted both with a party and alone.

SEX AND AGE COMPOSITION

Age Composition

Deer incisors returned by hunters are aged by wear patterns (fawn and 1 1/2) or sent to matson's for commercial processing using the tooth sectioning technique (Low and Cowan 1963). About 28,000 tooth envelopes were distributed to any-sex hunters prior to the season. A total of 3,062 were returned for processing. The reported harvest of those returning deer incisors consisted of 39% fawns.

Mean expectation of life (MEL) was calculated for females only. MEL was lower for female fawns and yearlings than last year but slightly higher for the older age classes (Table 10). MEL varies by hunting zone due to different mortality rates. MEL for does was highest in hunting zones 9, 4, 3 and 2 and lowest in 5, 8, 7 and 10 (Table 11).

About 10% of the does sampled were 5 1/2 years of age or older. Of the males returned by any-sex hunters, the yearlings per adult buck ratio was 143/100.

Sex Ratio

Does comprised 55% of the fawn harvest and 64% of the total harvest reported by any-sex hunters returning tooth envelopes. This sample of hunters also reported that 18% of their harvest was adult bucks while 43% was adult does. Sex ratio of the any-sex harvest may be biased because of hunter selectivity or differential vulnerability, but changes in annual sex ratio trends may be indicated by this survey.

MISCELLANEOUS MORTALITY

Traffic mortality on a statewide and regional basis is usually a good population trend indicator when related to traffic volume. In 1985, 6,400 deer were reported lost to various mortality factors other than legal harvest. The major mortality factor was traffic accidents with 5,925 lost compared to 6,177 in 1984. Other mortality included 199 known illegal losses, 16 to dog predation, 238 to various accidents such as mowing, entanglement in fences, trains, etc. and 22 unknowns.

An estimated 11.9 billion vehicle miles were recorded on Iowa's rural roads and highways in 1985 (Iowa Department of Transportation). When traffic kill is related to vehicle mileage, 495 deer were killed per billion vehicle miles. This is a 1% decline from 1984 (Table 12) and is lower than expected compared to population surveys. A new reporting and pick-up system by DNR enforcement personnel may have been responsible for changing the comparability of 1985 data to past years. The duty of picking up deer from highways has been shifted to the Iowa Department of Transportation and local law enforcement agencies. A report of deer killed and data on salvage tags issued is still the responsibility of conservation officers. The new system will hopefully be comparable in future years and with some adjustments may be comparable to past years.

Sex ratio trends in the traffic kill may be an indicator of sex ratio trends in the population if vulnerability and behavior are considered constant between years. In 1985, 56% of the traffic kill was does compared to 58% in 1984 (Table 12).

Regional population trends can be calculated from the deer killed per billion miles traveled for survey units which correspond closely to hunting zones (Gladfelter 1977). Trends have fluctuated but are generally upward in most survey units during 1977-85 (Table 13). The only increases in 1985 were in southcentral (unit 5), northcentral (unit 10), and northeastern (unit 9) Iowa (Table 13). Decreases of 2 to 15% were recorded in the remaining survey units.

Traffic mortality varies by month because of different deer activity patterns. The major peak in traffic kill occurred from October through December (Table 14). This high mortality period corresponds to the increased movement patterns of deer because of rutting activity. Bucks exceeded does in traffic kill only during October and November. The lowest kill occurred in July and August when does were caring for their young and bucks were relatively inactive.

WINTER POPULATION ESTIMATE

Each year, conservation officers estimate the number of wintering deer in their assigned territories. The 1985-86 winter population estimate was 83,000 deer, a 28% increase from the previous year (Table 15). Weather during the winter affects the herding behavior of deer and therefore sightability for this survey. Winter arrived early in 1985 with November and December snow storms that concentrated deer in wintering areas for the entire winter period.

Winter estimates increased in 91 counties, decreased in only 5 and remained the same in 3. The largest increases were reported in northcentral (units 2 and 10) and eastcentral (unit 7) Iowa (Table 15). Increases were recorded in all survey units for 1985.

AERIAL SURVEY

Aerial surveys (Gladfelter 1983) were completed in 70 counties during 1986 compared to 72 counties in 1985. Lack of adequate snowfall in the western one-third of the state hindered aerial flights. A total of 7,371 deer were counted in 1986 compared to 5,982 the previous year. When comparisons are made between study areas surveyed during both years, a 33% increase was recorded from 1985 to 1986 (Table 16).

Regional deer trend information can be determined by comparing county aerial survey areas counted during 2 consecutive years. Counties are then combined into survey units which closely resemble the 10 hunting zones. There were 58 counties that had comparable aerial survey routes in 1985 and 1986 (Table 16). Survey units with the largest increases in aerial counts were 10 (+61%), 5 (+57%) and 2 (+57%) (Table 16). The only survey unit recording a decrease was 6 (-6%) which was the target of increased deer harvest in 1985 due to crop damage complaints.

SPOTLIGHT SURVEY

Spring spotlight counts are conducted by DNR personnel along 25-mile standardized routes on rural gravel roads close to good timber habitat. Spotlight surveys were first initiated for deer in 1978 when 57 routes were conducted. In 1979, the number of spotlight routes was expanded to 85 to increase accuracy of the survey technique. The spotlight survey is conducted between 10-30 April or immediately preceding "leaf-out" of woody vegetation. Counts start 1 hour after sunset with 2 observers using spotlights to count deer on their respective side of the road. A pair of binoculars are used to positively identify eyeshine of animals spotted. Counts are conducted only on evenings when relative humidity is 60% or higher and visibility is good. Observations of deer are made as far as the spotlight beam will adequately reflect eyeshine or as far as terrain and cover will allow.

Spotlight counts may be a good post-season and post-winter trend indicator for the deer herd. The mean number of deer seen per survey route has been steadily increasing from 1979 to 1986 (Table 17). The 1986 spring spotlight survey recorded a record high mean number of deer seen per survey route of 19 compared to 16 the previous year. This represents a 22% increase from the 1985 statewide count. The largest regional increases were reported for western (unit 3), southcentral (unit 4), and eastern (unit 8) Iowa (Table 17). Decreases were reported in southeastern (unit 6) and northeastern (unit 9) Iowa.

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TABLES AND FIGURES

Table 1. Comparison of statewide results of shotgun deer seasons in Iowa, 1953-85.

Year	Season length in days	Licenses issued		Deer harvested		Total shotgun harvest	% success			
		Paid	Landowner ¹	Paid	Landowner		Paid		Landowner ¹	
							AS	BO	AS	BO
1953	5	3,772	-----	2,401	1,606	4,007	61	---	---	---
1954	3	3,778	-----	1,827	586	2,413	64	---	---	---
1955	3	5,586	-----	2,438	568	3,006	44	---	---	---
1956	2	5,440	-----	2,000	561	2,561	39	---	---	---
1957	2	5,997	-----	2,187	480	2,667	37	---	---	---
1958	2	6,000	-----	2,141	588	2,729	38	---	---	---
1959	2	5,999	-----	1,935	541	2,476	33	---	---	---
1960	3	7,000	-----	3,188	804	3,992	46	---	---	---
1961	3	8,000	-----	4,033	964	4,997	52	---	---	---
1962	3	10,001	-----	4,281	1,018	5,229	44	---	---	---
1963	2,3	12,001	-----	5,595	1,018	6,613	48	---	---	---
1964	2,4	15,993	-----	7,274	1,750	9,024	47	---	---	---
1965	2,4	17,491	-----	6,588	1,322	7,910	39	---	---	---
1966	2,4	20,811	-----	9,070	1,672	10,742	45	---	---	---
1967	2,3	20,812	21,121	7,628	2,764	10,392	39	---	19	---
1968	2,3	20,485	24,796	9,052	3,890	12,941	48	---	21	---
1969	2,3	18,000	23,476	6,952	2,779	10,731	41	---	21	---
1970	2,3	18,000	21,697	8,398	4,345	12,743	49	---	26	---
1971	2	18,000	10,522	7,779	2,680	10,459	45	---	31	---
1972	2,4	19,000	11,205	7,741	2,738	10,485	44 ²	30	34 ²	20
1973	5	27,530	9,686	10,017	2,191	12,208	58	31	40	25
1974	5	33,772	16,329	11,720	4,097	15,817	64	29	48	27
1975	4,7	56,003	17,821	15,300	3,650	18,950	60	23	43	22
1976	4,7	60,197	17,818	11,725	2,525	14,250	48	17	37	17
1977	4,7	58,715	16,289	10,737	2,051	12,788	47	16	34	16
1978	4,7	51,934	15,699	12,815	2,353	15,168	55	21	39	20
1979	4,7	55,718	10,504	14,178	1,971	16,149	56	21	45	24
1980	4,7	64,462	12,858	16,511	2,346	18,857	56	21	42	22
1981	4,7	69,529	14,068	19,224	2,354	21,578	55	24	40	21
1982	4,7	74,331	15,431	19,269	2,472	21,741	59	20	41	21
1983	4,7	75,918	15,067	27,078	3,297	30,375	66	31	50	29
1984	4,7	79,697	16,777	29,912	3,537	33,449	65	31	47	25
1985	5,7	78,144	20,674	32,613	5,344	37,957 ³	68	33	48	34

¹ These data have been collected since 1967 when landowner-tenants were first required to obtain a permit.

² Percent success was calculated, for comparison purposes, for any-sex hunting zones 1, 2, and 4 only.

³ Includes 1,059 deer harvested by 4,074 special late season hunters.

Table 2. License issue by type of hunter, zone, season and ratio of bucks-only to any-sex licenses sold in 1985.

Season 1					
Hunting zone	Paid shotgun			Landowner-tenant	
	Buck-only	Any-sex	B.O./A.S. ratio	Buck-only	Any-sex
1	2405	none	-	523	none
2	1463	275	5/1	312	59
3	2505	425	6/1	427	73
4	5717	1200	5/1	1255	263
5	5578	850	7/1	1335	204
6	2325	2600	1/1	489	547
7	7522	400	19/1	1383	74
8	3182	400	8/1	602	76
9	6092	1000	6/1	1184	194
10	1805	none	-	365	none
No zone	2771	-	-	-	-
IAAP	-	326	-	-	-
Total	41,365	7,476		7,875	1,490

Season 2					
Hunting zone	Paid shotgun			Landowner-tenant	
	Buck-only	Any-sex	B.O./A.S. ratio		Any-sex
1	1667	1000	2/1		937
2	1202	550	2/1		542
3	662	850	1/1		411
4	1496	2400	1/1		624
5	1828	1700	1/1		1683
6	68	2808	-		1024
7	3561	800	4/1		2223
8	1130	800	1/1		817
9	1154	2000	1/1		1266
10	1293	750	2/1		782
No zone	1121	-	-		-
IAAP	-	463	-		-
Total	15,182	14,121			11,309

Table 3. Comparison of statewide results of archery deer seasons in Iowa, 1953-85.

Year	Season length in days	Licenses issued	No. of deer harvested	% success
1953	5	10	1	10
1954	12	92	10	11
1955	21	414	58	14
1956	31	1,284	117	10
1957	31	1,227	138	11
1958	30	1,380	162	12
1959	31	1,627	255	16
1960	44	1,772	277	16
1961	48	2,190	367	17
1962	51	2,404	404	17
1963	51	2,858	538	19
1964	51	3,687	670	19
1965	51	4,342	710	17
1966	51	4,576	579	13
1967	62	4,413	791	19
1968	62	5,136	830	17
1969	62	5,465	851	16
1970	62	5,930	1,037	18
1971	51	6,789	1,232	19
1972	51	6,916	1,328	20
1973	53	10,506	1,822	18
1974	51	12,040	2,173	19 ¹
1975	52	12,296	2,219	19 ¹
1976	56	12,522	2,350	20
1977	56	12,994	2,400	20
1978	56	12,809	2,957	25
1979	56	13,378	3,305	26 ²
1980	56	15,398	3,803	26
1981	56	17,258	4,368	26
1982	56	18,824	4,720	26
1983	56	19,945	5,244	28
1984	56	21,648	5,599	27
1985	56	22,830	5,805	26

¹ Average % success from 1970-73 was used to estimate success in 1974 and 1975.

² % success from 1979 was used for 1980 success rate.

Table 4. Harvest and success rates for active shotgun hunters by hunting zone, season and license type, 1985.

Hunting zone	Season 1		Season 2		Total shotgun harvest
	Buck-only harvest (% success)	Any-sex harvest (% success)	Buck-only harvest (% success)	Any-sex harvest (% success)	
1	1580(34)	none	449(22)	1010(67)	3039
2	977(43)	212(69)	339(28)	532(61)	2060
3	898(29)	304(65)	273(28)	584(56)	2059
4	2341(39)	1005(73)	544(36)	2256(65)	6146
5	1978(34)	692(70)	579(32)	1499(57)	4748
6	1357(46)	1992(70)	91(32)	1891(58)	5331
7	2294(30)	333(74)	666(21)	1017(49)	4310
8	803(25)	281(63)	204(21)	620(48)	1908
9	1905(33)	834(75)	248(21)	1421(58)	4408
10	688(32)	none	219(18)	684(57)	1591
IAAP	-	543	-	755	1298
Special Season-	-	-	-	-	1059
Total	14,821(36)	6,196(74)	3,612(27)	12,269(60)	37,957

Table 5. Percentage distribution of the 1985 shotgun deer harvest by day of season.

Day	Season 1 harvest	Cumulative %	Season 2 harvest	Cumulative %
Saturday	42	42	31	31
Sunday	30	72	29	60
Monday	12	84	11	71
Tuesday	9	93	9	80
Wednesday	7	100	6	86
Thursday			6	92
Friday			8	100

Table 6. Success rates for active shotgun hunters, 1981-85.

Type of hunter	Buck-only					Any-sex				
	1981	1982	1983	1984	1985	1981	1982	1983	1984	1985
<u>Season 1</u>										
Paid shotgun	26	20	34	33	36	63	59	72	70	72
Landowner-tenant	23	22	31	28	34	49	46	56	56	59
<u>Season 2</u>										
Paid shotgun	19	21	25	27	27	51	58	64	63	65
Landowner-tenant	18	18	26	18	-	37	39	48	43	45

Table 7. Comparison of antlered, antlerless, and doe harvest for 1953-85.

Year	Total harvest	Antlered harvest	Antlerless harvest ¹	Doe harvest
1953	4,008	1,580	2,428	1,858
1954	2,423	781	1,642	1,009
1955	3,064	1,046	2,018	1,460
1956	2,678	964	1,714	1,234
1957	2,805	884	1,921	1,316
1958	2,891	828	2,063	1,360
1959	2,731	959	1,772	1,176
1960	4,269	1,348	2,921	1,881
1961	5,364	1,599	3,765	2,512
1962	5,703	1,709	3,994	2,814
1963	7,151	2,117	5,034	3,366
1964	9,694	2,486	7,208	4,846
1965	8,620	2,668	5,952	3,886
1966	11,321	3,101	8,220	5,392
1967	11,183	3,110	8,073	5,361
1968	13,771	3,583	10,188	6,808
1969	11,582	3,034	8,548	5,456
1970	13,780	3,612	10,168	6,951
1971	11,691	3,091	8,600	5,735
1972	11,813	3,697	8,116	5,294
1973	14,030	6,796	7,234	4,875
1974	17,990	9,071	8,919	6,607
1975	21,169	13,141	8,028	6,037
1976	16,600	10,255	6,345	4,779
1977	15,188	10,157	5,031	3,553
1978	18,125	11,567	6,558	4,565
1979	19,454	12,378	7,026	4,986
1980	22,660	14,657	8,003	5,723
1981	25,946	16,927	9,019	6,544
1982	26,461	15,943	10,518	7,849
1983	35,619	22,753	12,866	9,719
1984	39,355	24,487	14,868	11,121
1985	44,219	24,955	19,264	14,594

¹ Antlerless harvest includes male fawns.

Table 8. Percent of shotgun hunters that did not hunt, 1981-85.

Type of hunter	Buck-only					Any-sex				
	1981	1982	1983	1984	1985	1981	1982	1983	1984	1985
<u>Season 1</u>										
Paid shotgun	8	10	10	6	9	3	4	4	3	5
Landowner-tenant	36	42	39	34	46	15	18	18	14	18
<u>Season 2</u>										
Paid shotgun	10	10	14	8	11	5	5	5	4	6
Landowner-tenant	44	48	48	47	-	28	30	31	26	38

Table 9. Shotgun hunter effort, 1981-85.

Type of hunter	Hours/hunter					Days/hunter				
	1981	1982	1983	1984	1985	1981	1982	1983	1984	1985
<u>Season 1</u>										
Paid shotgun	20	19	19	21	19	2.9	2.9	2.8	3.0	2.9
Landowner-tenant	12	11	11	12	11	2.4	2.3	2.3	2.4	2.4
<u>Season 2</u>										
Paid shotgun	24	24	22	25	22	3.7	3.8	3.5	3.9	3.5
Landowner-tenant	13	12	11	13	11	2.8	2.8	2.6	2.7	2.4

Table 10. Statewide mean expectation of life for does (in years), 1979-85.

Age class	Year						
	1979	1980	1981	1982	1983	1984	1985
Fawn	2.11	2.12	2.12	2.15	2.11	2.13	1.99
1 1/2	1.85	1.83	1.89	1.85	1.87	1.78	1.74
2 1/2	1.75	1.72	1.80	1.67	1.81	1.78	1.94
3 1/2	1.54	1.52	1.52	1.56	1.53	1.52	1.64
4 1/2	1.18	1.13	1.15	1.12	1.17	1.13	1.16
5 1/2+	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Table 11. Mean expectation of life for does (in years), by hunting zone in 1985.

Hunting zone	Sample size	MEL					
		Fawn	1 1/2	2 1/2	3 1/2	4 1/2	5 1/2
1	187	1.90	1.84	2.00	1.50	1.23	0.50
2	104	2.06	1.55	1.81	1.74	1.36	0.50
3	103	2.09	1.69	1.97	1.54	1.30	0.50
4	333	2.06	1.82	2.00	1.77	1.21	0.50
5	258	1.74	1.63	1.77	1.52	1.00	0.50
6	225	1.83	1.64	1.85	1.74	1.32	0.50
7	222	2.09	1.75	1.89	1.50	1.04	0.50
8	145	1.96	1.74	1.84	1.53	1.05	0.50
9	259	2.28	1.92	2.20	1.71	1.13	0.50
10	127	1.89	1.57	1.78	1.82	1.21	0.50

Table 12. Deer killed per billion vehicle miles traveled and percent does in the traffic kill, 1972-85.

Year	Deer killed per billion miles driven	% change from previous year	% does in traffic kill
1972	233	--	48
1973	248	+ 6.7	50
1974	250	+ 0.5	50
1975	227	- 9.1	54
1976	225	- 0.8	54
1977	252	+11.9	56
1978	241	- 4.1	47
1979	259	+ 7.5	50
1980	335	+29.2	53
1981	365	+ 9.1	54
1982	412	+12.9	52
1983	448	+ 8.7	57
1984	500	+11.6	58
1985	495	- 1.0	56

Table 13. Number of deer killed per billion vehicle miles traveled, 1977-85.

Deer survey unit	Deer killed/billion miles traveled									% change 1984 to 1985
	1977	1978	1979	1980	1981	1982	1983	1984	1985	
1	223	258	214	414	504	456	496	567	534	- 6
2	172	178	184	250	308	330	356	436	416	- 5
3	236	220	224	236	225	357	341	330	281	-15
4	209	172	201	218	316	403	343	442	434	- 2
5	294	248	293	363	398	381	370	414	555	+34
6	606	607	600	736	658	722	827	939	874	- 7
7	211	182	242	279	304	333	380	484	432	-11
8	263	259	283	378	370	435	506	523	507	- 3
9	520	682	556	737	623	1005	1305	985	1078	+ 9
10	252	243	249	409	435	404	501	494	583	+18

Table 14. The 1985 traffic mortality by month with percent does in the kill.

Month	Traffic kill	% does
January	360	63
February	249	65
March	414	71
April	364	65
May	487	63
June	354	65
July	242	66
August	221	70
September	382	51
October	988	47
November	1277	40
December	580	63

Table 15. Results of the winter population estimates by deer survey unit, 1979-80 to 1985-86.

Deer survey unit	Winter population estimate							% change 1984-85 to 1985-86
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	
1	2409	2820	3378	4049	5286	5775	7475	+29
2	1317	1783	2277	3204	4553	4181	6365	+52
3	3646	3917	4413	4857	6397	5923	6822	+15
4	4292	4615	7180	7372	9570	10,085	13,105	+30
5	4873	4980	5365	6165	7514	8856	10,389	+17
6	3583	3622	3583	3741	4157	5316	5943	+12
7	3111	3296	3874	4278	5161	5896	8371	+44
8	2341	2595	2990	3453	4119	6085	6493	+7
9	3555	3455	3780	4750	6185	7150	9675	+35
10	1471	2057	3417	3888	4554	5395	8348	+55
Total	30,598	33,140	40,257	45,757	57,496	64,662	82,986	
% Annual change	+8	+8	+21	+14	+26	+12	+28	

Table 16. Number of deer counted on comparable aerial survey routes during 1985 and 1986.

Survey unit	Number of counties with comparable routes	Deer counted		% change 1985 to 1986
		1985	1986	
1	0	-	-	-
2	4	187	294	+57
3	3	233	334	+43
4	8	980	1142	+17
5	8	370	580	+57
6	4	617	577	- 6
7	10	633	891	+41
8	6	366	405	+11
9	4	364	497	+37
10	11	886	1430	+61
Total	58	4636	6150	+33

Table 17. Mean number of deer seen per spotlight route by survey unit, 1978-86.

Survey unit	Mean no. of deer/route								% change 1985 to 1986
	1979	1980	1981	1982	1983	1984	1985	1986	
1	22.7	23.1	15.4	30.3	26.7	57.6	44.9	49.9	+11
2	10.3	9.6	4.9	16.0	16.7	17.0	11.9	14.6	+23
3	8.0	9.4	2.3	5.3	16.8	10.0	9.8	19.2	+96
4	3.7	2.8	5.2	7.8	8.0	15.9	10.3	16.9	+64
5	1.9	4.1	4.1	4.5	7.6	7.2	6.1	8.2	+34
6	14.4	12.9	8.6	29.1	22.0	30.0	23.6	17.6	-25
7	4.1	3.8	3.8	10.1	7.4	5.5	14.2	15.8	+11
8	3.8	3.7	2.0	8.0	8.5	12.0	10.3	14.2	+38
9	2.2	1.8	4.8	4.0	14.4	14.2	12.2	10.0	-18
10	6.6	9.9	11.4	15.3	15.4	16.4	23.3	29.3	+26
Total	6.8	7.6	5.9	12.0	13.4	17.0	15.5	18.9	+22

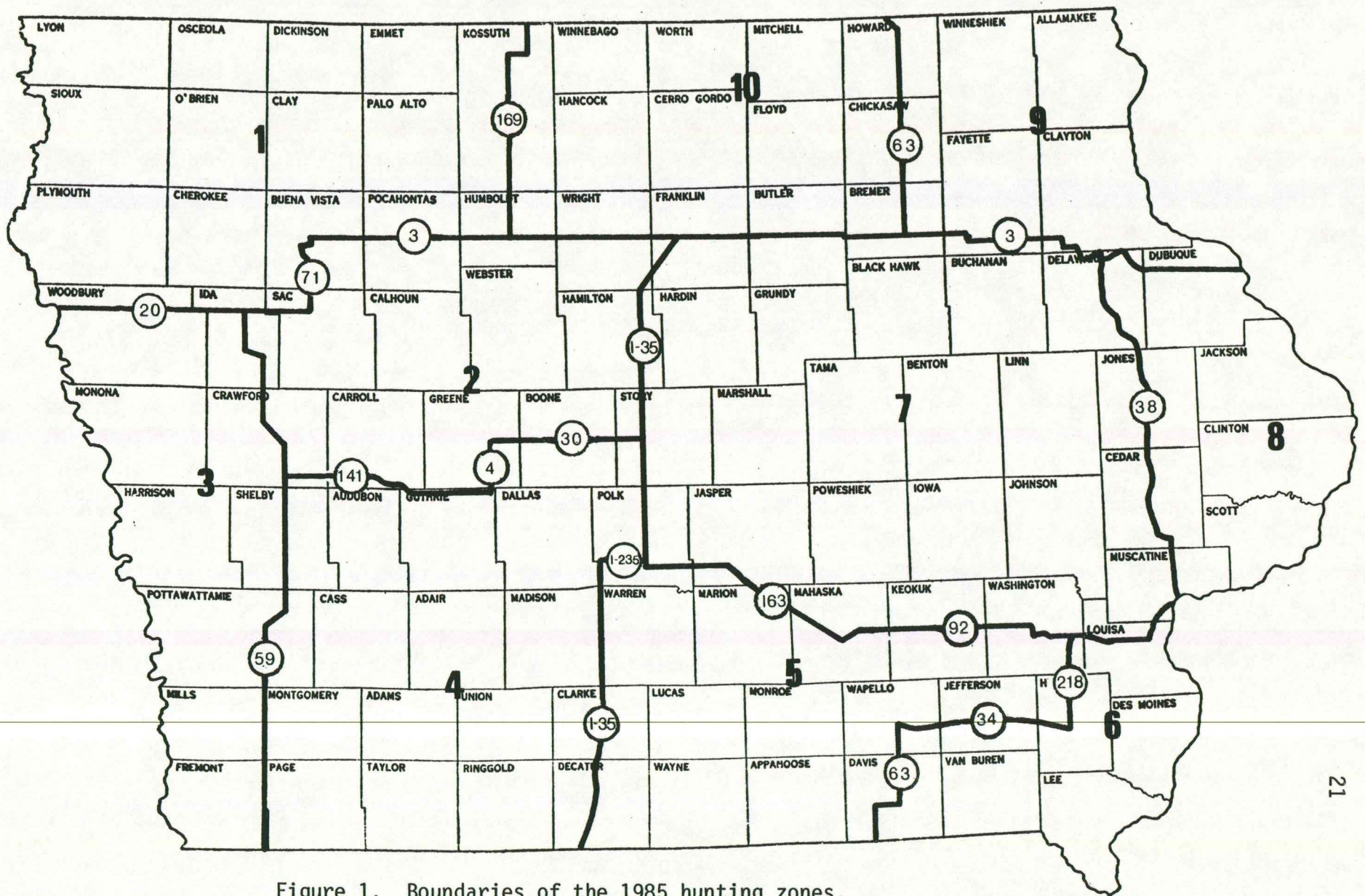


Figure 1. Boundaries of the 1985 hunting zones.

APPENDIX

County	1985-86	1985 Traffic mortality	County	1985-86	1985 Traffic mortality
	Winter population estimate			Winter population estimate	
Adair	360	49	Jasper	313	65
Adams	805	11	Jefferson	864	43
Allamakee	3600	130	Johnson	650	175
Appanoose	530	46	Jones	925	46
Audubon	530	22	Keokuk	245	67
Benton	255	64	Kossuth	638	39
Black Hawk	587	134	Lee	1485	140
Boone	265	65	Linn	900	163
Bremer	460	61	Louisa	515	46
Buchanan	270	46	Lucas	1155	45
Buena Vista	550	75	Lyon	785	32
Butler	774	82	Madison	1200	23
Calhoun	178	33	Mahaska	540	6
Carroll	263	5	Marion	675	40
Cass	230	38	Marshall	1075	62
Cedar	250	69	Mills	845	23
Cerro Gordo	385	77	Mitchell	850	26
Cherokee	887	81	Monona	850	41
Chickasaw	245	22	Monroe	410	19
Clarke	2000	78	Montgomery	750	62
Clay	560	87	Muscatine	348	107
Clayton	4130	110	O'Brien	450	38
Clinton	490	103	Osceola	645	9
Crawford	500	36	Page	680	51
Dallas	950	53	Palo Alto	510	27
Davis	790	33	Plymouth	486	41
Decatur	2300	93	Pocahontas	514	17
Delaware	500	62	Polk	935	122
Des Moines	1960	125	Pottawattamie	2282	68
Dickinson	971	70	Poweshiek	420	18
Dubuque	960	76	Ringgold	2610	79
Emmet	383	36	Sac	1172	59
Fayette	630	64	Scott	1020	108
Floyd	800	41	Shelby	400	17
Franklin	505	82	Sioux	610	33
Fremont	610	45	Story	210	70
Greene	330	24	Tama	350	38
Grundy	52	26	Taylor	1095	22
Guthrie	1350	69	Union	1610	109
Hamilton	465	36	Van Buren	1265	41
Hancock	869	28	Wapello	525	52
Hardin	899	69	Warren	645	86
Harrison	925	47	Washington	670	106
Henry	718	61	Wayne	495	18
Howard	480	31	Webster	660	79
Humboldt	542	31	Winnebago	1800	51
Ida	586	23	Winneshiek	1315	153
Iowa	435	121	Woodbury	410	64
Jackson	2500	62	Worth	1180	78
			Wright	1390	69

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