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DEER IN IOWA 1980



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Deer in Iowa - 1980

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

Phase D. Study No. 13
Job No. 1: Deer Harvest Survey

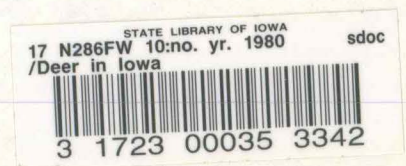
Phase D. Study No. 15
Job No. 1: Winter Population Estimate
Job No. 2: Miscellaneous Mortality Survey
Job No. 3: Sex and Age Ratio Survey

by

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ABSTRACT

A new record high harvest of 22,660 deer was achieved during the 1980 hunting season. An estimated 18,857(\pm 614) deer were harvested by shotgun hunters with 9902(\pm 503) taken during the 1st season and 8955(\pm 352) in the 2nd. An additional 3,803 deer were harvested by bow hunters. This high harvest was due to a good fall deer population and a large increase in the number of hunting licenses sold. About 25% of the total harvest was composed of does. There were 64,462 paid shotgun, 12,858 landowner-tenant shotgun, and 15,398 bow and arrow licenses issued. Shotgun hunters with bucks-only licenses reported a 23% success rate for the 1st season and 18% for the 2nd. Any-sex ~~shotgun hunters did much better with a 57% success rate~~ for the 1st season compared to a 52% for the 2nd. Archers averaged about 26% success. Shotgun hunters spent about 218,600 days in the field and archers about 236,750. The season provided a total of 2½ million hours of hunting recreation. Crippling rates were about the same as in previous years with a 14% rate for shotgun hunters and 15% for archers. Ages of deer harvested by any-sex hunters indicated a fairly stable mean expectation of life. The aging sample from the any-sex harvest contained 39% fawns, 46% adult does, and 15% adult bucks. The oldest deer taken was a 16½-year-old buck. There were 3,743 deer reported killed in deer-vehicle accidents during the year or 336 per billion vehicle miles. This represents a 30% increase from 1979. Also, 252 deer were reported lost to known illegal hunting activity, 12 to dog predation, and 172 to various types of accidents. The peak in traffic mortality occurred in October, November, and December because of rutting activity and October and November were the only months that the majority of the kill was bucks. The winter deer population estimate increased in 65 counties and was 8% higher than 1979.

ACKNOWLEDGEMENTS

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Introduction

The size of the Iowa deer herd is regulated to prevent excessive crop damage and loss of revenue for landowners and at the same time provide the maximum amount of quality hunting recreation possible without endangering the resource. Hunting is the major mortality factor for deer in Iowa and a harvest strategy is followed that maintains a stable to slightly increasing deer herd in each of 10 geographical areas. One important requirement for making sound hunting season recommendations is a knowledge of annual deer population trends on a regional basis. Population trends are determined from changes in the number of deer reported killed in traffic accidents and conservation officer estimates of winter deer populations. To help determine the effectiveness of hunting seasons, harvest results are tabulated from information provided by hunters on post-season report cards. Hunter report cards provide estimates of number of deer harvested, hunter success rates, hunter effort, sex ratio, and crippling rate. Also, age composition of the harvest is calculated from a sample of deer teeth returned by successful any-sex hunters. This age data is utilized to determine average life expectancy of deer and to monitor annual changes in age ratios. This bulletin reports the results of the 1980 hunting season and annual population trend surveys.

HUNTING SEASON REGULATIONS

The 1980 shotgun hunting season was conducted on 6-9 December and 13-19 December. Ten hunting zones were open (Fig. 1) and hunters were allowed to apply for the limited number of any-sex licenses in only 1 hunting season and zone combination. Twice as many any-sex licenses were issued for the 2nd season in zones with any-sex quotas for both seasons. This higher 2nd season any-sex license quota was set to equalize hunter numbers, harvest, and hunter success rates between seasons. A bucks-only 1st season was maintained in hunting zone 7 to eliminate high bucks-only to any-sex license ratios from large hunter application rates for a small number of any-sex licenses. Any-sex licenses were issued after a randomized computer drawing from applications for each zone and season combination that contained valid certificates issued to buck-only hunters in 1979. These certificates were developed to give hunters receiving a bucks-only license a preference in the any-sex drawing the following year. Only 43% of those receiving certificates in 1979 submitted them for the preference drawing in 1980. If the any-sex quota for any zone and

season combination could not be filled from applications with certificates, the remaining licenses were randomly drawn from all other applications for that zone and season. All unsuccessful applicants in the any-sex license drawing received a bucks-only license valid for the zone and season indicated on their application. These bucks-only hunters were also issued a certificate that will give them preference in the 1981 random drawing for any-sex licenses if proper application procedures are followed. Landowner-tenants were issued free shotgun licenses at the same bucks-only to any-sex ratio as determined for paid shotgun hunters in each zone and season combination. Other regulations remained the same as in previous years.

A 56-day bow and arrow season was held from 11 October to 5 December. Hunters could purchase their any-sex bow licenses from county recorder offices around the state. All other bow and arrow regulations remained the same as in previous years.

HUNTING SEASON RESULTS

Hunter Report Card Survey

Information on hunter harvest, success rate, sex of deer harvested, hunting effort, crippling rate, and hunting zone is obtained from a post-season hunter report card mailed to 29% of the licensed hunters (22% of paid shotgun hunters and 62% of landowner-tenants). A reminder mailing is sent to hunters not responding to the 1st mailing within 1 month. Of 22,433 shotgun hunters surveyed, 52% returned the 1st mailing and 43% returned the reminder mailing for a total return rate of 73%. Harvest results of nonrespondents were estimated by assigning them the same success rates as those responding to the reminder mailing. Success rates were calculated on the basis of active hunters only. Bow and arrow hunters were not included in the 1980 survey and all harvest, success and crippling rates are calculated from 1979 averages.

License Issue

There were 64,462 paid shotgun licenses issued in 1980 compared to 55,718 in 1979 (Table 1), an increase of 16%. This is the highest license issue in history and is probably due to favorable publicity about high fall deer populations and the continuation of an upward trend in license sales

since the license fee increase in 1978. Also, 12,858 free landowner-tenant shotgun licenses were issued compared to 10,504 in 1979 (Table 1), an increase of about 22%. Landowner licenses tend to fluctuate greatly from one year to the next depending on changes in regulations, season dates, field work schedules, etc. About 52% of the shotgun licenses issued were for the 1st season compared to 50% in the previous year. This slight increase was created by dropping the first season bucks-only restriction in hunting zones 1 and 9 causing more hunters to apply for the limited number of any-sex licenses. The highest bucks-only to any-sex license ratio (15/1) occurred in zone 10, 1st season, while the lowest (1/1) occurred in zones 3 and 6, 2nd season (Table 2). Bucks-only to any-sex ratios were much lower in all zones during the second season because of the higher any-sex license quota.

In addition to shotgun licenses, there were 15,398 bow and arrow licenses issued, an increase of 20% from 1979. This is the highest bow license issue in history and is a continuation of an upward trend in license issue for this sport.

Harvest and Hunting Success

An estimated 22,660 deer were harvested during the 1980 hunting season. This is a new record high harvest exceeding the 21,169 harvested in 1975. Fair weather during the season, higher any-sex quotas, and a large increase in number of hunters were responsible for the increased harvest. An estimated 18,857(± 614) deer were harvested by shotgun hunters with 9902(± 503) taken in the 1st season and 8955(± 352) in the 2nd. Paid shotgun hunters harvested 16,511 deer while landowner-tenants accounted for 2,346 (Table 1). Bow hunters harvested an additional 3,803 deer (Table 3). The 1980 harvest represents a 16% increase from the previous year. The highest regional harvest was recorded in hunting zone 6 with 2,972 with zones 5 and 4 close behind with 2,898 and 2,598 respectively (Table 4).

Shotgun hunter success rates were generally lower than in 1979 (Table 5). An explanation for this may be hunter interference caused by high hunter numbers, more inexperienced hunters, or mild weather. Paid shotgun any-sex hunters averaged 56% success compared to 42% for landowner-tenants any-sex hunters (Table 1). Bucks only hunters averaged about 21% success statewide. The highest shotgun success rates were

reported in northern Iowa (hunting zones 1, 2, and 10) probably because of the high vulnerability of deer due to limited habitat. Hunter success rates in all categories were higher during the 1st season than in the 2nd (Table 5). The 1979 bow hunter success rate of 26% was used to calculate the 1980 bow harvest. This may be conservative since the bow hunter success rates have been raising steadily in the past few years because of increased use of compound bows (Table 3).

Distribution of the harvest by day of the season was estimated from a question on deer tooth envelopes returned by successful hunters. Most of the harvest for each season occurred on opening weekends with 61% taken during the 1st weekend and 52% during the 2nd (Table 6). The remainder of the harvest was evenly distributed among weekdays in both seasons.

Sex Ratio of the Harvest

Shotgun hunters reported harvesting 4,316 does compared to 3,764 in 1979. This increased doe harvest was primarily due to increased any-sex license quotas since any-sex hunter success rates were actually lower than the previous year. About 63% of the paid shotgun any-sex harvest was does while landowner-tenants reported 60%. If 37% of the bow harvest was does (1979 average) then another 1407 does were harvested by archers for a total of 5,723 (Table 7). Does composed about 25% of the total harvest.

Hunter Effort

Mild weather during the season accounted for the highest percentage of hunters in the field since 1975. The high number of hunters in the field was maintained during both hunting seasons (Table 8). Landowner-tenants were aided by mild weather during the fall which allowed early completion of farming activities.

Hunting effort for paid shotgun hunters was comparable with the 1979 season (Table 9). However, landowner-tenant hunting effort increased in 1980 probably due to the early field season. Hunters did take advantage of the longer 2nd season as shown by the higher number of hours and days spent in the field during this season (Table 9). The 1980 deer season provided about 1/2 million days of hunting recreation with shotgun hunters spending 218,600 days in the field and archers about 236,750 days. Over 2½ million hours were spent hunting deer.

An average of 101 hours of hunting were required for bucks-only hunters to harvest a deer which is the same as in 1979. Any-sex shotgun hunters required 40 hours of hunting to bag a deer compared to 38 in 1979. Bow hunters in 1980 probably required about the same amount of time to harvest a deer as in 1979, an average of 225 hours.

Crippling Rate

Crippling rate for shotgun hunters was 14%, about the same as in previous years. Crippling rates were higher during the 2nd season (17%) than the 1st (13%) probably because longer shots were taken at more wary animals. Paid shotgun hunters reported a higher crippling rate (15%) than landowners (10%). Archery crippling rates were probably about the same as in 1979 when the reported rate was 15%. Crippled deer may recover or be harvested by other hunters and therefore, only a portion of them can be considered a loss in addition to legal harvest.

SEX AND AGE COMPOSITION

Age Composition

About 14,000 any-sex shotgun hunters were asked to collect incisors from deer they harvested and to provide information about sex of deer and date of kill. Hunters returned 2080 deer tooth samples for aging by the tooth sectioning technique (Low and Cowan 1963). Fawns accounted for 39% of the total sample returned by any-sex shotgun hunters while 46% were adult does and 15% were adult bucks. Mean expectation of life (M.E.L.) was calculated for bucks and does of each age group for comparison with previous years (Table 10). M.E.L. for does was comparable to 1979 while bucks experienced a slight increase in older age categories. Since 1976, trends in M.E.L. for all deer have been relatively stable. M.E.L. for bucks is much lower than does, indicating heavier mortality rates.

M.E.L. for does varied by hunting zone presumably because of different mortality rates (Table 11). M.E.L. for does was highest in hunting zones 1, 6, 7 and 9 and lowest in 2, 4 and 5. M.E.L. for bucks on a regional basis was excluded because of small sample size.

The oldest deer in the tooth sample was a 16½-year-old buck. The oldest doe taken was 13½ years old. Only about 2% of the bucks in the tooth sample were 5½ years old or over while 10% of the does fell into this age category.

Sex Ratio

Information from tooth envelopes returned by any-sex hunters was used to determine sex ratio of the any-sex harvest. About 52% of the fawns in the sample were does. About 66% of the hunters returning tooth envelopes indicated they harvested does which was slightly higher than the 63% reported by paid shotgun hunters on their post-season questionnaires. Sex ratio of the any-sex harvest does not indicate sex ratio of the wild population because of bias caused by any-sex hunters selectively tagging does. However, changes in the sex ratio of the herd may be indicated by changes in annual trends established by any-sex hunters.

MISCELLANEOUS MORTALITY

Conservation officers reported that 4179 deer were lost to various mortality factors in addition to legal harvest. Traffic accidents were the primary cause of mortality with 3,743 reported killed compared to 3,005 in 1979. Also, 252 deer were lost to known illegal hunting activity, 12 to dog predation, and 172 to various accidents such as hay mowing, trains, and fences.

The number of deer killed in traffic accidents can be a good indicator of annual deer population trends when related to number of vehicle miles driven on highways. During 1980, an estimated 11.1 billion miles were driven on rural interstate, primary, and secondary road systems (Iowa Department of Transportation-personal communications). An estimated 336 deer were killed per billion vehicle miles driven. This is a new record high number of deer killed and represents a 30% increase from 1979 (Table 12).

Sex ratio trends in the traffic kill may be an indicator of sex ratio trends in the population if bias such as unequal vulnerability and differences in behavior are considered equal from one year to the next. In 1980, 53% of the traffic kill was does compared to 50% in 1979 (Table 12).

Deer killed per billion vehicle miles can be broken down into deer survey units which correspond closely to hunting zones (Gladfelter 1977), to provide an indication of population trends on a regional basis. Trends have fluctuated greatly in most survey units during the past 6 years (Table 13). Increases in deer killed per billion vehicle miles were reported in all deer survey units and ranged from 7% in unit 3 to 90% in unit 1. The large increase in reported traffic kill in unit 1 is partially due to a very low reporting rate for 1979 because of numerous changes in conservation officer assignments. New annual record high traffic deer kills were reported for all survey units except 3, 4 and 9 (Table 13). An increase of 60% was reported in survey unit 10 which in combination with unit 1 indicates good deer populations in northern Iowa during 1980. Moderate increases of 19-40% were reported across the central part of Iowa (survey units 2, 7 and 8). Traditional deer range in southern and northeastern Iowa (survey units 4, 5, 6 and 9) reported fair increases of 9-31% while western Iowa (survey unit 3) reported a slight increase of 7%.

The major peak in traffic mortality occurred in October, November, and December which corresponds to the peak in rutting activity (Fig. 2). October and November are the only months during which number of bucks killed by vehicles exceeded number of does. This indicates a higher vulnerability for bucks due to increased movement at this time. The lowest deer kill occurred in July and August when does were caring for young and bucks were relatively inactive.

WINTER POPULATION ESTIMATE

Conservation officers annually estimate the number of wintering deer in their assigned territories. Compared to the previous year, 1980-81 estimates increased in 65 counties, decreased in 21, and remained unchanged in 13. The total wintering population was estimated at around 33,100 deer, an increase of 8% from 1979-80. This increase was reported for a winter which was characterized by low snowfall and relatively mild weather. Winter population estimates increased from the previous year in 9 of 10 deer survey units (Table 14). The highest increases were reported in northern Iowa (survey units 1, 2, and 10) ranging from 17-40% while smaller gains of 1-11% were reported in the remainder of the state. A small decrease of 3% was reported in northeastern Iowa (survey unit 9). Estimated size of the wintering population has been gradually increasing in most regions of the state during the past 3-4 years.

SUMMARY

The highest deer harvest in history was recorded in 1980 due to good fall deer populations, high hunter numbers, heavy hunting pressure, and mild weather. Population surveys indicate an increased deer population in 1980 indicating another good harvest can be forecast for 1981.

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TABLES AND FIGURES

Table 1. Comparison of statewide results from 28 years of shotgun deer seasons in Iowa.

Year	Season length in days	Licenses issued		No. deer harvested		Total gun harvest	Percent success			
		Shotgun	Landowner ¹	Shotgun	Landowner		Paid shotgun		Landowner ¹	
							Any-sex	Bucks-only	Any-sex	Bucks-only
1953	5	3,772	-----	2,401	1,606	4,007	61	---	---	---
1954	3	3,788	-----	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	5,299	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

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

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

Table 2. License issue by type of hunter, zone, season and ratio of bucks-only to any-sex licenses sold in 1980.

Season 1					
Hunting zone	Paid shotgun			Landowner-tenant	
	Bucks-only	Any-sex	B.O./A.S. ratio	Bucks-only	Any-sex
1	2052	175	12/1	366	31
2	1549	150	10/1	224	22
3	1964	500	4/1	249	63
4	4382	450	10/1	780	80
5	5114	650	8/1	1118	142
6	3851	825	5/1	700	150
7	3280	0	-	772	0
8	2739	225	12/1	456	38
9	3880	400	10/1	737	76
10	1830	125	15/1	326	22
Total	30,641	3500		5,728	624

Season 2					
Hunting zone	Paid shotgun			Landowner-tenant	
	Bucks-only	Any-sex	B.O./A.S. ratio	Bucks-only	Any-sex
1	1797	350	5/1	291	57
2	939	300	3/1	180	57
3	762	1000	1/1	125	164
4	2208	900	2/1	558	228
5	2476	1300	2/1	757	397
6	1666	1650	1/1	435	431
7	6219	975	6/1	1062	166
8	1829	450	4/1	422	104
9	3288	800	4/1	636	155
10	1162	250	5/1	231	50
Total	22,346	7,975		4,697	1,809

Table 3. Comparison of statewide results from 28 years of archery deer seasons in Iowa.

Year	Season length in days	Licenses issued	Number of deer harvested	Percent 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
1980	56	15,398	3,803	26 ²

¹ Average % success from 1970-1973 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, 1980.

Hunting zone	Season 1		Season 2		Total harvest
	Bucks-only harvest (% success)	Any-sex harvest (% success)	Bucks-only harvest (% success)	Any-sex harvest (% success)	
1	756(33)	152(75)	327(18)	283(74)	1518
2	420(26)	124(72)	183(19)	186(56)	913
3	472(23)	252(49)	185(23)	555(54)	1464
4	1199(25)	340(68)	507(21)	552(52)	2598
5	1221(22)	353(49)	620(22)	704(46)	2898
6	1096(27)	485(53)	448(24)	943(49)	2972
7	708(20)	none	912(14)	578(52)	2198
8	540(19)	121(49)	266(13)	211(41)	1138
9	795(19)	276(60)	615(17)	535(59)	2221
10	489(24)	103(73)	176(14)	169(61)	937
Total	7696(23)	2206(57)	4239(18)	4716(52)	18,857

Table 5. Success rates for active shotgun hunters 1976-1980.

Type of hunter	Bucks-only					Any-sex				
	1976	1977	1978	1979	1980	1976	1977	1978	1979	1980
<u>Season 1</u>										
Paid shotgun	18	17	22	22	23	51	52	54	64	59
Landowner-tenant	19	18	22	26	24	42	39	39	49	46
<u>Season 2</u>										
Paid shotgun	16	16	19	19	18	47	44	55	53	54
Landowner-tenant	16	15	17	23	18	34	32	39	44	41

Table 6. Percentage distribution of the 1980 deer harvest by day of season.

Day	Season 1 harvest	Cumulative %	Season 2 harvest	Cumulative %
Saturday	36	36	28	28
Sunday	24	60	24	52
Monday	19	79	15	67
Tuesday	21	100	8	75
Wednesday			8	83
Thursday			9	92
Friday			8	100

Table 7. Comparison of antlered, antlerless, and doe harvest for 1953-80.

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

¹ Antlerless harvest includes male fawns.

Table 8. Percent of shotgun hunters that did not hunt, 1976-1980.

Type of hunter	Bucks-only					Any-sex				
	1976	1977	1978	1979	1980	1976	1977	1978	1979	1980
<u>Season 1</u>										
Paid shotgun	9	11	10	5	5	6	7	7	5	4
Landowner-tenant	29	32	36	32	28	24	23	32	24	19
<u>Season 2</u>										
Paid shotgun	10	16	10	8	7	8	10	7	6	4
Landowner-tenant	32	38	41	37	35	26	35	33	32	25

Table 9. Shotgun hunter effort, 1976-1980.

Type of hunter	Hours per hunter					Days per hunter				
	1976	1977	1978	1979	1980	1976	1977	1978	1979	1980
<u>Season 1</u>										
Paid shotgun	18	17	17	19	19	3.5	3.2	2.7	2.8	2.8
Landowner-tenant	12	11	11	10	11	3.2	2.8	2.3	2.2	2.3
<u>Season 2</u>										
Paid shotgun	22	21	21	23	23	4.2	3.8	3.4	3.6	3.6
Landowner-tenant	13	12	12	12	13	3.5	3.1	2.6	2.6	2.7

Table 10. Statewide mean expectation of life for deer (in years), 1976-1980.

Age class	Doe					Buck				
	1976	1977	1978	1979	1980	1976	1977	1978	1979	1980
Fawn	2.14	1.97	2.02	2.11	2.12	1.27	1.12	1.14	1.25	1.24
1½	1.79	1.68	1.81	1.85	1.83	1.17	1.03	0.99	1.25	1.15
2½	1.80	1.68	1.72	1.75	1.72	1.34	1.18	0.90	1.27	1.25
3½	1.62	1.53	1.43	1.54	1.52	1.13	1.36	1.14	0.97	1.23
4½	1.17	1.11	1.10	1.18	1.13	0.97	0.96	1.00	0.83	1.11
5½+	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50

Table 11. Mean expectation of life for does (in years), 1980.

Hunting zone	Sample size	Age class					
		Fawn	1½	2½	3½	4½	5½+
1	115	2.40	1.93	1.65	1.53	1.25	0.50
2	97	1.93	1.54	1.32	1.10	0.83	0.50
3	132	1.84	1.56	1.83	1.76	1.21	0.50
4	176	2.01	1.73	1.75	1.52	1.08	0.50
5	139	1.62	1.37	1.30	0.95	0.75	0.50
6	229	2.27	2.13	1.91	1.60	1.07	0.50
7	142	2.30	1.85	1.76	1.60	1.22	0.50
8	78	2.00	1.79	1.70	1.50	1.30	0.50
9	205	2.38	2.06	1.87	1.62	1.17	0.50
10	67	2.14	1.84	1.53	1.50	1.28	0.50

Table 12. Deer killed per billion vehicle miles traveled and percent does in the traffic kill, 1972-1980.

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	336	+29.7	53

Table 13. Number of deer killed per billion vehicle miles traveled, 1974-1980.

Deer survey unit	Deer killed per billion miles traveled							% change 1979 to 1980
	1974	1975	1976	1977	1978	1979	1980	
1	224	192	247	223	258	214	407	+90
2	196	160	156	172	178	184	246	+34
3	289	222	224	236	220	224	239	+ 7
4	187	206	161	209	172	201	220	+ 9
5	275	227	264	294	248	293	346	+18
6	599	470	581	606	607	600	725	+21
7	174	162	160	211	182	242	288	+19
8	226	246	219	263	259	283	395	+40
9	531	586	518	520	682	556	730	+31
10	272	256 ¹	220	252	243	249	399	+60

¹ Does not include Cerro Gordo County

Table 14. Results of winter population estimates by deer survey unit, 1974-75 to 1980-81.

Deer survey unit	Winter population estimate							% change 1979-80 to 1980-81
	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81	1980-81
1	1851	1811	1954	1958	2229	2409	2820	+17
2	1234	1144	1117	1449	1276	1317	1783	+35
3	3618	3296	3201	3722	3831	3646	3917	+ 7
4	4427	4052	3927	4018	3958	4292	4615	+ 8
5	5357	5510	4520	4539	4070	4873	4980	+ 2
6	3365	3695	3225	3168	3275	3583	3622	+ 1
7	2638	2266	2393	2621	2884	3111	3296	+ 6
8	1660	1593	1653	1820	2301	2341	2595	+11
9	2725	2185	1840	2195	2883	3555	3455	- 3
10	1688	1307	1324	1399	1542	1471	2057	+40
Total	28,563	26,859	25,154	26,889	28,249	30,598	33,140	+ 8
% Annual change ---		-6	-6	+7	+5	+8	+8	

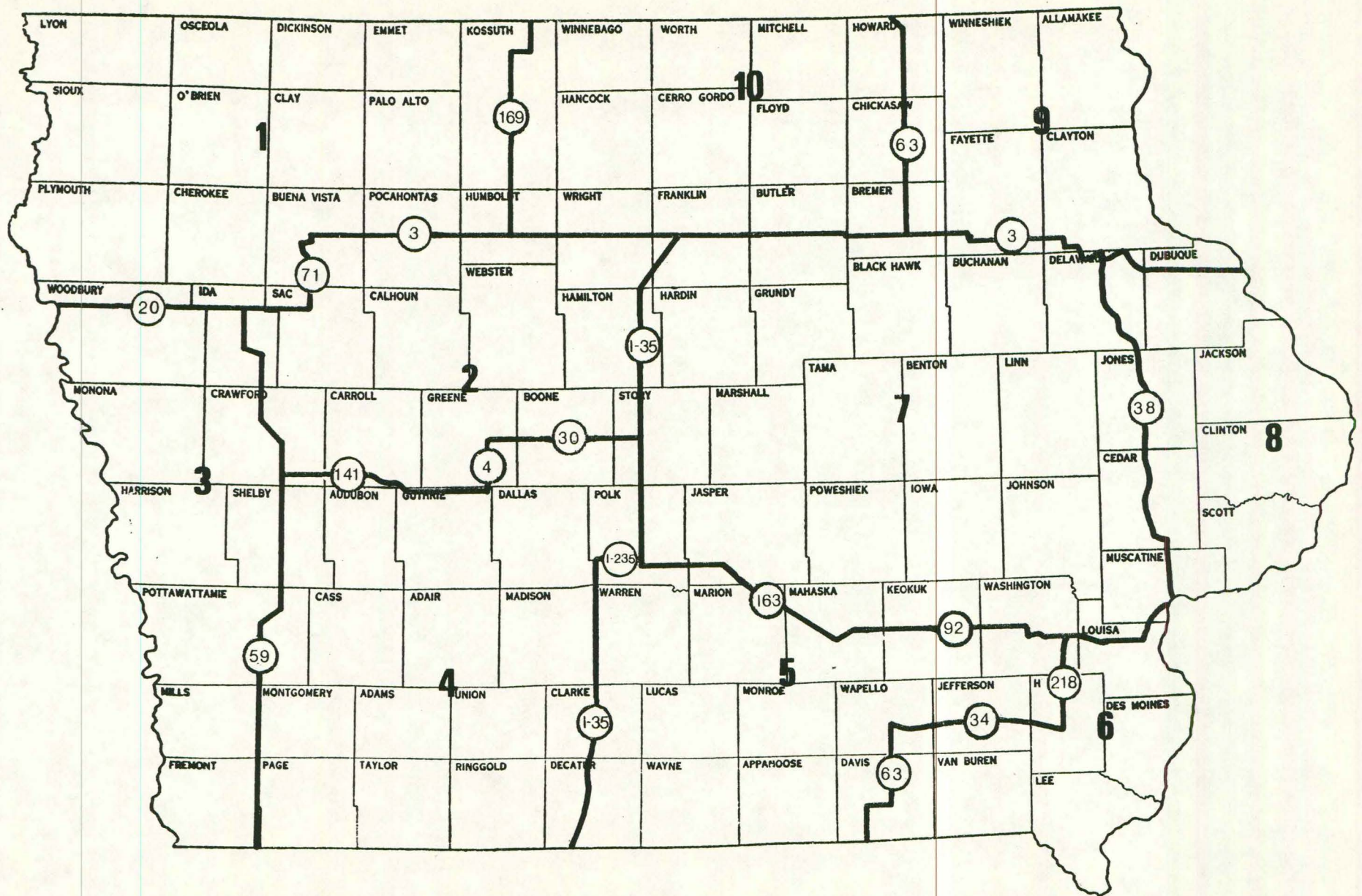


Figure 1. Boundaries of the 1980 hunting zones.

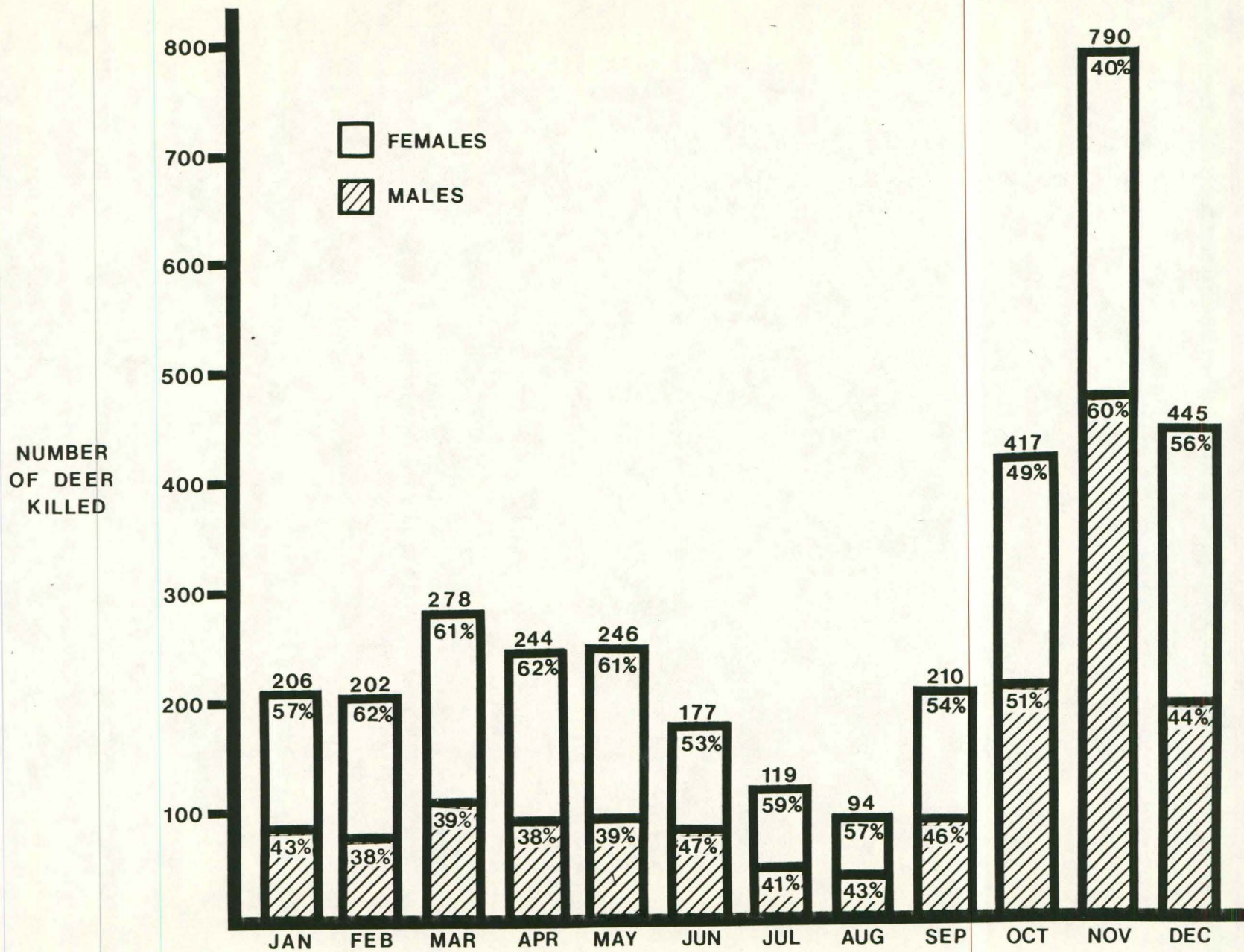


Figure 2. The 1980 traffic mortality by month and sex ratio.

APPENDIX

WILDLIFE RESEARCH BULLETINS
Published by
The Iowa Conservation Commission

- No. 1. Deer in Iowa - 1971. By Lee Gladfelter. (April, 1972)
- No. 2. The bobwhite in Iowa - 1971. By Charles C. Schwartz.
(October, 1972)
- No. 3. Deer in Iowa - 1972. By Lee Gladfelter. (April, 1973)
- No. 4. A one-year study of public use on state management areas
in Iowa. By Eugene D. Klonglan and Vernon Wright.
(July, 1973)
- No. 5. The bobwhite in Iowa - 1972. By Charles C. Schwartz.
(September, 1973)
-
- No. 6. The cottontail and the white-tailed jackrabbit in Iowa -
1963-1972. By Charles C. Schwartz. (September, 1973)
- No. 7. The ring-necked pheasant in Iowa - 1972.
By Allen L. Farris. (October, 1973)
- No. 8. Deer in Iowa - 1973. By Lee Gladfelter. (April, 1974)
- No. 9. Pheasant nesting studies on public lands.
By Allen L. Farris. (June, 1974)
- No. 10. Analysis of bobwhite population surveys.
By Charles C. Schwartz. (June, 1974)
- No. 11. Upland wildlife populations in Iowa - 1973.
By Allen L. Farris and Charles C. Schwartz.
(August, 1974)
- No. 12. 1973-74 upland game harvest surveys. By Vernon Wright.
(September, 1974)
- No. 13. 1973 waterfowl harvest survey. By Vernon Wright.
(September, 1974)
- No. 14. Analysis of cottontail and white-tailed jackrabbit
surveys. By Charles C. Schwartz. (March, 1975)
- No. 15. Wildlife investigations in Iowa forests - 1960-74.
By Bob Sheets. (September, 1975)
- No. 16. Deer in Iowa - 1974. By Lee Gladfelter. (April, 1975)

County	1980-81		County	1980-81	
	Winter population estimate	1980 Traffic mortality		Winter population estimate	1980 Traffic mortality
Adair	450	3	Jasper	380	36
Adams	265	14	Jefferson	540	31
Allamakee	945	53	Johnson	395	154
Appanoose	455	21	Jones	740	52
Audubon	275	4	Keokuk	158	16
Benton	69	33	Kossuth	293	38
Black Hawk	142	46	Lee	825	124
Boone	131	32	Linn	355	77
Bremer	156	32	Louisa	400	30
Buchanan	85	36	Lucas	750	23
Buena Vista	150	37	Lyon	265	39
Butler	279	43	Madison	600	28
Calhoun	61	11	Mahaska	196	10
Carroll	117	6	Marion	215	19
Cass	285	14	Marshall	380	60
Cedar	185	21	Mills	275	34
Cerro Gordo	38	43	Mitchell	182	29
Cherokee	267	59	Monona	720	30
Chickasaw	148	31	Monroe	435	11
Clarke	485	21	Montgomery	190	41
Clay	250	40	Muscatine	188	56
Clayton	1330	95	O'Brien	225	27
Clinton	352	70	Osceola	190	33
Crawford	310	19	Page	325	40
Dallas	350	53	Palo Alto	275	20
Davis	470	39	Plymouth	223	32
Decatur	745	38	Pocahontas	110	9
Delaware	130	24	Polk	385	72
Des Moines	1090	74	Pottawattamie	1217	48
Dickinson	240	42	Poweshiek	78	13
Dubuque	275	37	Ringgold	215	6
Emmet	162	25	Sac	183	13
Fayette	300	38	Scott	350	77
Floyd	157	22	Shelby	170	16
Franklin	235	68	Sioux	280	25
Fremont	315	51	Story	85	42
Greene	174	24	Tama	87	32
Grundy	16	4	Taylor	295	20
Guthrie	865	26	Union	115	13
Hamilton	220	47	Van Buren	955	36
Hancock	205	12	Wapello	340	44
Hardin	310	46	Warren	245	57
Harrison	700	46	Washington	285	45
Henry	352	48	Wayne	300	14
Howard	200	28	Webster	235	58
Humboldt	160	18	Winnebago	231	35
Ida	101	9	Winneshiek	880	72
Iowa	145	106	Woodbury	210	24
Jackson	505	97	Worth	226	49
			Wright	291	27

- No. 17. Upland wildlife populations in Iowa - 1974.
By Charles C. Schwartz. (May, 1975)
- No. 18. Deer in Iowa - 1975. By Lee Gladfelter. (August, 1976)
- No. 19. Upland wildlife populations in Iowa - 1975.
By Ronnie R. George and Dale D. Humburg. (August, 1976)
- No. 20. Deer in Iowa - 1976. By Lee Gladfelter. (July, 1977)
- No. 21. Native prairie grass pastures as nesting habitat for
bobwhite quail and ring-necked pheasants.
By Ronnie R. George, Allen L. Farris, Charles C. Schwartz,
Dale D. Humburg, and Jack Coffey. (January, 1978)
- No. 22. Deer in Iowa - 1977. By Lee Gladfelter. (July, 1978)
- No. 23. Movement and home range of deer as determined by
radio telemetry. By Lee Gladfelter. (August, 1978)
- No. 24. Analysis of ring-necked pheasant population surveys.
By James B. Wooley, Jr., Dale D. Humburg, Allen L. Farris,
Ronnie R. George, and James M. Kienzler. (July, 1978)
- No. 25. Effects of controlled burning on selected upland habitats
in southern Iowa. By Ronnie R. George, Allen L. Farris,
Charles C. Schwartz, Dale D. Humburg, and James M. Kienzler.
(October, 1978)
- No. 26. Harvest statistics from Iowa's five modern wild turkey
hunting seasons. By Terry W. Little. (October, 1978)
- No. 27. Deer in Iowa - 1978. By Lee Gladfelter. (August, 1979)
- No. 28. History and current status of the wild turkey in Iowa.
By Terry W. Little. (October, 1979)
- No. 29. Giant Canada goose restoration in Iowa. By Richard A. Bishop,
Kenneth M. Reynolds, and Ronald D. Andrews. (November, 1979)
- No. 30. Deer in Iowa - 1979. By Lee Gladfelter. (October, 1980)