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Results of Iowa's First Deer Season in Recent Years

By GLEN C. SANDERSON¹ AND E. B. SPEAKER²

INTRODUCTION

The white-tailed deer, *Odocoileus virginianus*, was undoubtedly abundant along the streams of Iowa when white man first settled here. The greater portion of the state, however, was covered with a lush growth of prairie plants and grasses more conducive to the production of prairie chicken than of deer. Leopold (Crane, 1933) reported the original stock of deer was mostly gone by 1865, although a few herds remained until about 1915. Madson (1953) elaborated upon the blizzards of 1848-1849 and the heavy kill by early settlers during the terrible winter of 1856. This may well have marked the beginning of the decline in population from which the herds never recovered. Before 1900 the deer had almost vanished from the state; however, in 1894 a farmer named William Cuppy, of Avoca, had penned up 35 animals. Later these deer escaped and established a herd in that vicinity and by 1914 it was estimated that there were in the neighborhood of 200 deer in Pottawattamie County.

A herd was established near Keota in Washington County by the Singmaster family who purchased a small number of deer from Nebraska. In the early 1920's about 60 of these animals escaped and became established in the Skunk River Valley. There were reportedly as many as 300 deer in the valley in 1924. Another herd was established in Ledges State Park in 1928 with the purchase of two deer from Minnesota. Deer were live-trapped from the Avoca herd, and by 1933 a total of 14 of these animals had been added to the Ledges herd. The following year 20 more were released at the Ledges. In addition to these three herds, the deer in Allamakee and Clayton Counties were re-establishing themselves by natural means.

Although no accurate records are available, it was estimated that there were between 500 and 700 deer in the state (Speaker, 1953) in 1936. Speaker also reported that by 1940 deer were well established in the woodlands along many of the principal water-

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ways of the state. The deer continued to increase in Iowa and in 1947 Faber (1948) inaugurated the first statewide deer survey based on estimates from conservation officers. Table 1 shows the population estimates from 1947 through 1953. These estimates were all made during the last week in February and the first week in March. In 1948 there were deer present in all but four of Iowa's 99 counties, and in 1953 deer were known from every county in the state (Figure 1).

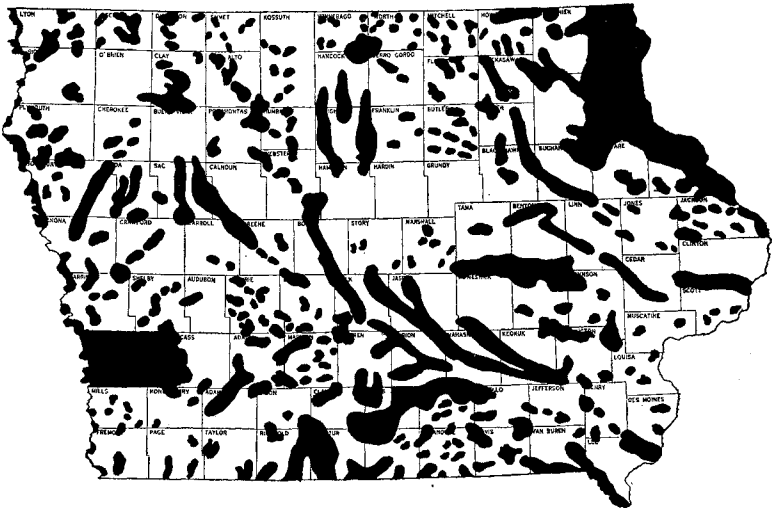


Figure 1. Distribution of Iowa deer herds as reported by Conservation Officers and Commission Biologists.

Table 1

Estimated deer population, 1947-1953

Year	1947 ¹	1948 ¹	1950 ²	1951	1952	1953
No. Deer reported	1,650	2,024	4,530	6,897	10,721	12,632

¹Faber (1948). ²Sanderson (1950). No estimates were made in 1949.

Along with this rapid increase in deer numbers, it was inevitable that the deer damage complaints would increase. Deer damage complaints were not new in Iowa. In 1910 the *Council Bluffs Non-pariel* reported that Cuppy's escaped herd was attacking farm crops. These complaints gradually subsided, but in recent years with deer numbers increasing many fold, the damage complaints have kept pace. Leopold, *et. al.* (1947) in their survey of overpopulated deer ranges in the United States list four trouble areas in Iowa—The Skunk River Herd, The Nishnabotna River Herd,

The Des Moines River Herd, and The Black Hawk County Herd. Harlan (1953) and Leaverton (1953) point out many of the aspects of deer damage and control in an agricultural state such as Iowa.

Although the solution to overpopulation of deer is well known, the Iowa Conservation Commission could not open the deer season in the state until the necessary legislative action was taken. The entire issue of the January 1953 *Iowa Conservationist* was devoted to the Iowa deer problem and its solution, bringing the story to the public. Prior to this time the majority of Iowa citizens did not know that there were any appreciable number of deer present in the state. Of course, there were local exceptions where deer were concentrated in relatively open areas. Herds of 50 to 150 or more deer grazing peacefully in an open field near enough to a road to be observed from the car are hard to overlook.

The Commission asked the 55th General Assembly to place the deer on the game list so that it would be possible to reduce deer numbers in some sections of the state through an open season. The stated objective of the proposed open season was herd reduction; it was not necessarily the idea to provide an annual big game season in Iowa. The 55th General Assembly placed the deer on the game list, set the special deer permit fee at \$15.00 for Iowa residents only, with farmers or tenants living on the land allowed to hunt without a permit, and set the daily bag limit and possession limit at one deer.

The Conservation Commission then opened the season December 10-14, 1953, both dates inclusive, with 45 counties open to hunting (Fig. 1). Shooting hours were 9:00 a. m. to 4:00 p. m. with 10, 12, 16, and 20 gauge shotguns with rifled slugs, and bows of more than 40 pounds pull with broad head arrows as the only legal weapons. Deer of any age or sex were legal game. Use of dogs, domestic animals, automobiles, aircraft, or any mechanical conveyance, salt or bait was prohibited. A metal locking seal bearing license number of licensee and year issuance had to be affixed to the carcass of each deer between the tendon and bone of the hind leg before the carcass could be transported. Owners or tenants of land and their children living on the land were permitted to hunt without a license provided that they not remove a deer, whole or in part, from the land unless tagged by the conservation officer. Licensed hunters killing a deer after their first one had to contact a conservation officer and get the deer tagged **before they could legally move it on a public road.** This could not

be done; however, until the first deer was disposed of. A hunt report postal card provided with each license had to be mailed within three days after the close of the season, stating whether a deer was killed or not. Licensees failing to return this card may be refused a license for subsequent seasons.

Through an error in the wording of the law, hunters were allowed to kill one deer per day so long as they possessed only one. Since Iowa law apparently permits a hunter to give legally taken game to anyone regardless of whether or not the second party has a license, a small percentage of hunters were able to legally kill as many as five deer during the open season.

METHODS

In order to gain biological information from some of the deer killed, as well as to check on hunter habits, success, and other factors, eight voluntary checking stations were established by the Biology Section of the Conservation Commission. These stations (Table 6) were located with two things in mind; to examine the greatest number of deer possible and at the same time to check a representative sample of the deer killed in the various sections of the state. These stations were operated by all the members of the biology section with assistance from members of the federal aid, game, fisheries, and officer sections. Although there was nothing compulsory about these stations, they were given widespread publicity and hunters were urged to have their deer weighed and aged at one of the stations. Nearly 4,000 deer were harvested and 524 (13.1 per cent) came through the eight checking stations. Thus, it was felt that the checking stations were quite successful.

In addition to the information collected at the checking stations, the compulsory postcard return asked the hunter to report the county or counties where he hunted; number of hours hunted; number, sex, and age (fawn or adult) of deer killed; date killed; time of day killed; county where killed; number of deer seen while hunting; and his name, address, and occupation.

There were 3,782 licenses sold and 3,186 of these hunters returned their cards voluntarily, although not all were returned within the prescribed three-day limit. A return of 84.2 per cent was considered good for "compulsory" returns, but as this was the first Iowa deer season in many decades, we wanted to get a report from every license holder, if possible. When few returns were coming in, all the cards were sorted and each of the approximately 600 hunters who had not reported was sent a mimeographed letter

asking him to send in his report. A mimeographed tear sheet duplicating the information asked for on the postcards was included at the bottom of the letter in case the hunter had lost or misplaced his card. This reminder brought in 389 additional returns, or another 10.3 per cent, leaving only 207 or 5.5 per cent of the hunters not reporting. Robb (1951) reported that seldom have more than approximately 50 per cent of the Missouri deer license holders shown enough interest in their sport to fill out and return cards; however, he does not indicate if the Missouri report cards are "compulsory." Laughlin (1953) got replies from slightly more than 40 per cent of a random sample of 910 hunters contacted in California following a special deer season.

The postcard returns gave a check on the kill by licensed hunters, and each officer reported the deer he tagged, giving a record of the deer killed by owners and tenants of land that were moved off the land. Prior to the season each conservation officer was asked to make a special effort to keep a record of any known non-tagged deer killed in his territory. After the season each officer was asked to report the known number of non-tagged deer, and the estimated total number of non-tagged deer killed in his territory. Because hunters reported their multiple kills on the postcards, and as these multiple deer had to be tagged before they could legally be transported, this had to be taken into account when computing the statewide kill.

All this information should give an accurate picture of the statewide deer kill. The only deer missed were any non-tagged deer killed by farmers and landowners that the conservation officers did not know about and the officers were asked to estimate the number of these.

RESULTS

Harvest Information—Figure 2 indicates an estimated statewide kill of 3,996 deer. These include those reported on the postcard returns, 928 tagged by conservation officers, 223 animals known to the conservation officers but not tagged, plus 702 more non-tagged deer that the officers estimated were killed. Probably the figure for the statewide kill is a minimum one since it was impossible to get an accurate check of all the non-tagged deer. Because a large percentage of the licensed hunters were farmers, it is reasonable to assume that non-licensed farmers did a substantial amount of hunting on their own land.

Licensed hunters reported they killed 2,401 deer (Table 2). According to their reports, 61.1 per cent of the licensed hunters

as legal game, but with a herd estimated at only 20,000 animals to hunt. Robb (*op. cit.*) reported that average hunter success was slightly less than seven per cent in Missouri from 1944 through 1950; however, all of these seasons were for bucks only. By 1952 (Robb, 1953) when 23 counties were open for any deer and 19 counties for bucks only, 20 per cent of the Missouri hunters were successful. In a season similar to the 1953 Iowa season, Allen (1951) reported that 13 per cent of 12,200 license holders were successful in a three day hunt in 17 Indiana counties.

Of the 3,186 licensed hunters who returned their postcards voluntarily, 2,028 or 63.7 per cent bagged one or more deer. Of the 389 hunters who sent in a return after being reminded by a mimeographed letter, 115 or 29.6 per cent bagged one or more deer. Five of the 115 successful hunters in this latter group bagged two deer each and one bagged three deer; the other successful individuals in this group bagged only one animal. There was a much higher percentage of licensees who did not hunt in the group that had to be reminded to send in their report than there was in the group reporting voluntarily.

Table 3 indicates that nearly one-third of the deer were taken the first day of the season. It must be remembered that a hunter could go back after another deer each day of the season so long as he had only one deer in his possession and apparently many of the hunters did this. Had the season's limit been one deer, the daily kill would probably have shown a sharper decline. Allen (*op. cit.*) reported 52.0 per cent of the kills made the first day, 25.9 per cent on the second, and 22.1 per cent on the final day of Indiana's 1951 season.

Age and Sex Ratios—Hunter replies on the postcards indicated only 14.3 per cent fawns in the bag (Table 4), a figure consider-

Table 3
Percentage of deer bagged each day of the open season.

Day	Number of deer reported as to day of kill	Percentage of total
Thursday ¹	741	31.7
Friday	506	21.6
Saturday	454	19.5
Sunday	356	15.2
Monday	282	12.1
TOTALS	2,339	100.1

¹Dec. 10, 1953.

ably lower than the 27.4 per cent fawns found in nearly 500 deer aged at the checking stations (Table 5). Hunters reported only slightly less than 43 per cent females in the fawns reported (Table 4) whereas the checking station data indicated slightly more than 48 per cent females in the 133 fawns sexed and aged. Thus, it is possible that the hunters believed some of the female fawns were small adults while they did not make this same mistake as often with male fawns because of the "buttons." In Minnesota, Gunvalson *et. al.* (1952) reported that it was known that sex and age identifications were not always correct, but they felt a large enough sample should cancel these yearly errors.

Table 4

Age and sex ratios—as reported by hunters.

	MALES	FEMALES	Number Sexed	Per cent Females	Number Aged	Per cent Fawns
Fawns	191	141	332	42.5	332	—
Adults	1,054	934	1,988	47.0	1,989*	—
Age Unk	22	28	50	—	—	—
TOTALS	1,267	1,103	2,370	46.1	14.3	

*Includes one adult, sex unknown.

Table 5 indicates that fawns comprised slightly more than one-quarter of the deer brought into the eight biology checking stations. This figure may be somewhat lower than the percentage of fawns present in the deer population, because at Spirit Lake where nearly all hunters shot at the first deer they saw in range, fawns comprised 42.4 per cent of the deer killed, while at Cedar Falls, only 66 per cent of the hunters shot at the first deer they saw in range, and fawns comprised only 12.5 per cent of the total bag. Allen (*op cit.*) reported that fawns totaled 31. 2 per cent of all deer examined in Indiana during their 1951 season. Swan and McLaughlin (*op cit.*) report that fawns comprised approximately 38 per cent of the bag in Massachusetts, but this population was hunted each year. Robb (1952) reported that 39 per cent of the deer bagged during Missouri's 1951 season were fawns. Gunvalson, *et. al.* (*op. cit.*) reported that the Minnesota bag was 18 to 24 per cent fawns from 1942 through 1948, averaging 23 per cent. Allen's figures are the only ones here that are comparable to the Iowa figures since these other states have had hunting seasons for a period of years.

Table 5

Age of 493 deer aged at the deer checking stations.

FAWNS	Age in Years								
	1½	2½	3½	4½	5½	6½	7½	8½	
Number of deer	153	109	120	66	43	11	4	4	1
Per cent of total	27.4	22.1	24.3	13.4	8.7	2.2	0.8	0.8	0.2

Table 5 further indicates a regular decrease in the percentage each age group contributed to the harvest with the exception of the 1½-year age group which is slightly lower than should be expected. Probably some deer in the 1½-year age group were mistakenly placed in an older age group when the worn milk premolars were mistaken for permanent teeth.

Females comprised 46.1 per cent of all deer reported by hunters (Table 4). This is in close agreement with the deer checked at the checking stations where 45.3 per cent of all deer 1½ years of age and older were females (Table 6), and approximately 48 per cent of the fawns checked were females. This is near the sex ratio reported by Shaw and McLaughlin (*op cit.*) who found 54 males to 46 females in nearly 65,000 deer bagged from 1910 through 1950. By way of contrast, Robb (1953) reported that the harvest from Missouri's "any deer" counties was 55 per cent does in 1952. This was their second any deer season following several years of a buck season. Allen (*op. cit.*) found approximately 43 per cent females in the adult deer bagged in Indiana.

Average Body Weights—As shown in Table 7, average body weights of 424 deer weighed at the checking stations ranged from 71.7 pounds for female fawns to 148.2 pounds for bucks 1½ years of age and older. The average weight of 424 deer weighed was 130.4 pounds. Eighty-seven per cent of the deer were field or "hog" dressed before they were brought into the checking stations.

Condition Factors—There was only a rough correlation between number of points per antler, diameter of antler beam, and body weights. As Table 8 shows, deer checked at Avoca had the smallest average number of points per antler, the lowest average body weight, and next to the lowest average beam diameter. Deer at the Spirit Lake station had the greatest average number of points per antler, next to the highest average beam diameter, but their average body weight was only slightly higher than the average for the entire state. No doubt some of the apparent varia-

tions were caused by combining all the age groups for these averages.

Table 6

Selectivity of successful hunters and its effects on the age and sex ratios of the deer killed, as reported at the checking stations.

	% hunters who shot at first deer in range	% of deer shot that was fawns	Sex ratio of deer 1½ years & older		Number deer 1½ years & older for sex ratio
			% Females	% Males	
Osceola	66.7	25.0	18.2	81.8	11
Garner	82.4	29.4	50.0	50.0	12
Boone	75.0	33.3	42.9	57.1	14
Sioux City	83.3	20.4	16.7	83.3	18
Spirit Lake	96.7	42.4	53.7	46.3	54
Cedar Falls	66.0	12.5	47.6	52.4	84
Lansing	86.3	31.3	53.7	46.3	67
Avoca	88.9	25.8	40.1	59.9	91
TOTALS	85.0	27.4	45.3	54.7	351

Table 7

Average and range in body weights¹ of the deer weighed at checking stations

	FEMALES			MALES			All Deer
	1½ years Fawns and older	All FF	All	1½ years Fawns and older	All Males	All	
Number deer	53	138	191	62	171	233	424
Av. Wt. (lbs.)	71.7	122.9	108.7	84.7	171.2	148.2	130.4
Range (lbs.)	48-111	61-232	48-232	45-127	80-309	45-309	45-309

¹"Live weight" computed by multiplying "hog dressed" weight by 1.272.

Percentage Harvested—The February 1953 population estimate in the 45 counties that were subsequently opened to hunting was approximately 10,500 deer. The estimated rate of increase in Iowa from the spring of 1952 to the spring of 1953 was 21 per cent. Prior to this, the estimated annual rate of increase for the Iowa deer population was approximately 50 per cent. Thus, if the 1953 rate of increase was somewhere between these two figures and if the population estimates were correct, there were between 12,600 and 15,800 deer in the 45 counties when the season opened. With 3,996 deer harvested, there was a computed kill of between 25 and 32 per cent. This would be a good harvest in an area where the deer population was to be maintained, but probably

Table 8

Antler data from deer examined at the checking stations.

STATION	Average number points per antler	Average beam diam. (mm)	Av. body wt. of males 1½ years and older
	*	*	*
Osceola	18-4.6	14-101.6	4-169.7
Garner	14-4.0	14- 86.8	8-153.8
Boone	18-4.5	16-107.7	11-162.9
Sioux City	27-4.3	23-116.0	20-180.4
Spirit Lake	47-5.1	42-111.3	38-160.7
Cedar Falls	65-4.2	59-105.7	44-156.6
Lansing	42-4.2	29- 99.4	41-145.3
Avoca	100-3.8	94- 92.4	67-123.3
TOTALS	331-4.2	291-101.4	233-148.2

*Number of antlers or number of deer (3.8 per cent of males 1½ years and older had shed their antlers).

is not large enough for effective herd reduction. County computations would be necessary to get a true picture of the situation as a general statement does not take into account the different rates of harvest for the various counties as influenced by terrain, deer and hunter concentrations, and other factors.

Post Season Population—Estimates made and surveys taken during the last week in February and the first week in March of 1954 (principally by conservation officers) indicate that the statewide deer population was approximately 12,000 (11,893) animals and that there were 8,150 deer in the 45 counties which were open to hunting in 1953. This is an indicated decline of 8.4 per cent in the statewide deer population. Thus, it is easy to see that the deer herds in Iowa were not jeopardized by the hunting season, and in most cases the objective of effective herd reduction was not realized. It is misleading to make general statements, but in many cases not enough information is available to make definite statements area by area or county by county. In general, it is believed that in the timbered areas, such as in Allamakee and Clayton Counties in northeastern Iowa, the deer population was barely touched by the open season. On the other hand, in some of the counties with less timber and more restricted deer populations (although not necessarily fewer deer), such as Clay, Emmet, and Palo Alto and certain areas in Pottawattamie and Shelby Counties, this one season may have accomplished effective herd reduction—for the moment.

Hunter Success—It was noted in Table 2 that 61.1 per cent of the deer license holders who hunted bagged one or more deer. Data from checking stations indicate that successful hunters who reported to these stations required only 5.7 man hours to bag a deer. Allen (*op.cit.*) reported that successful hunters required 6.8 hours in Indiana to bag one deer. These same Iowa hunters saw 3.0 deer per hour while hunting and shot at 1.5 deer for each deer bagged. Naturally, these figures do not represent the average for all deer hunters.

Table 9 shows that both successful and non-successful hunters required an average of 21.5 hours for each deer killed. These same hunters saw an average of 1.4 deer per hour. Of course, the more than 70,000 deer they saw do not represent that many different animals since the same individuals were seen by many hunters and in some cases the same hunter probably counted the same deer more than once.

Table 9

Average success as reported by deer hunters on the postcard returns.

Number hunters reporting	Number deer bagged	Number hours hunted	No. hours per deer bagged	Number deer seen	Number deer seen per hour	Average number deer seen per hunter
3,479 ¹	2,390	51,400	21.5	70,472	1.4	20.3
10 ²	1	182	182	212	1.2	21.2

¹Gun Hunters. ²Bow and arrow hunters.

Crippling Loss—Although hunters were asked at the checking stations how many deer they wounded but did not bag, it was felt that their answers were not reliable for figuring crippling loss. Although little definite information is available, it is not believed that crippling losses were serious. Many of the animals crippled early in the season were later bagged by other hunters. Approximately one-third of the deer brought into the Avoca checking station the second day of the season were cripples. Checks by conservation officers after the deer season ended did not discover many cripples.

Hunter Residence—According to hunter reports and checking station information, more than half the hunters were residents of the county in which they hunted, and more than three-quarters of the hunters hunted deer in their home county or an adjacent county.

Hunter Occupation—Nearly 40 per cent of the license holders who reported their occupation were farmers, and farmers com-

prised the largest group of out-of-county hunters. Most of the legal kill by tenants and landowners was by farmers so we may safely assume that more than 40 per cent of the deer hunters were farmers. Business men accounted for 17.7 per cent, and professional men for 5.2 per cent of the license holders. All others, including dozens of different occupations, made up the remaining 38.0 per cent. Thus, the majority of the deer were killed by local residents and farmers comprised by far the largest occupational group of hunters.

Weapons used—Of 466 hunters who reported on the gauge of shotgun used at the checking stations 84.8 per cent used a 12 gauge, 8.6 per cent a 16 gauge, and 6.6 per cent a 20 gauge. According to the hunter returns, only 10 hunters hunted with bow and arrow and only one of these was successful.

Management—It should be noted that according to estimates made in recent years, Iowa's deer population has had an annual rate of increase from 20 to 50 per cent. Table 5 reveals that nearly three-quarters of the deer bagged during the recent season were 2½ years of age or younger. Under these circumstances, the deer population can continue to build up rapidly in counties where the harvest was low and can recover rapidly even in the counties where the herds may have been reduced somewhat.

If effective herd reduction is to be obtained in all sections of Iowa without virtual elimination of deer in some areas, doubtless there will have to be changes in the regulations to allow for cover and terrain conditions in some counties that make hunting more difficult.

Siegler (1951) reports that both bucks and does have been hunted by the white man in New Hampshire for over 300 years with no apparent harmful effects on this population. In fact, the harvest has increased from 1,402 deer reported in 1923 to more than 10,000 deer each during the 1947 and 1950 seasons, an increase of more than 600 per cent. As reported previously, Shaw and McLaughlin (*op. cit.*) reported that in late years an estimated 65,000 hunters invade a herd of approximately 20,000 deer each year and remove about one-fifth of them in Massachusetts. They further report that in spite of the fact that the hunters outnumber the deer and can shoot at the first deer that comes along, the trend in the deer population has moved slowly upwards. They think it doubtful that future Massachusetts deer seasons will again show a kill below 3,000 and think a kill of 4,000 animals is more likely. Bartlett (1949) reports that game men from the various states

and provinces estimated the 1947 harvestable surplus of deer at 18 per cent of the total herd.

From the above information it appears that Iowa should now be able to harvest between 2,000 and 5,000 deer annually even if herd reduction is obtained in some of the deer damage areas. This is not to suggest what the management policy should be, but rather is merely to point out the possibilities based on the success of the past season in Iowa and on the experiences other states have had with deer.

With a statewide population conservatively estimated at 12,000 animals in the spring of 1954 and allowing for a "normal" rate of increase, a moderate 20 per cent harvest in the fall would be more than 2,500 animals. Of course, not all Iowa counties have harvestable surpluses of deer at this time, but it appears almost inevitable that there will be substantial increases in deer numbers in southern and southeastern Iowa in the next few years. Many of the areas in this part of the state appear to be more suitable for deer than some of the areas that have had deer concentrations in recent years. There is now a "seedstock" of deer present in all counties in the state and time appears to be the only factor lacking to build up limited harvestable surpluses of deer in most sections of Iowa.

Shaw and McLaughlin (*op. cit.*) calculated that the herd of roughly 20,000 deer in Massachusetts was worth \$17,000,000 (1949 prices), but that the sportsmen of the state would not sell the deer for that amount. They state "It would not seem unreasonable then, for the state to spend money to get some reliable information on which to base a wise management policy for this great deer resource. The only way to insure wise management of anything is to obtain facts through detailed investigation." It is unfortunate that with the potential value the deer herd has to the people of Iowa, that we do not have at least one full time investigator working on a deer project.

SUMMARY

1. Information on Iowa's first deer season in many decades was collected by hunters bringing their deer to eight voluntary biology checking stations, through "compulsory" postcard reports submitted by 94.5 per cent of the licensed hunters, and from conservation officer estimates of the kill by landowners and tenants.

2. The estimated kill in the 45 counties open to hunting was 3,996 deer.

3. Slightly more than 60 per cent of the licensed hunters bagged one or more deer.
4. Fawns comprised 27.4 per cent of the nearly 500 deer aged at the checking stations, and nearly three-quarters of the deer checked were 2½ years of age or younger.
5. Females comprised 46.1 per cent of all deer reported by hunters.
6. Average "live" weights of 424 deer weighed at the checking stations ranged from 71.7 pounds for female fawns to 148.2 pounds for bucks 1½ years of age and older. The average weight of all deer weighed was 130.4 pounds.
7. It is estimated that 25 to 32 per cent of the fall population was harvested in the counties open to hunting.
8. Post season population estimates indicate that the statewide deer population was approximately 12,000 animals, an 8.4 per cent decline over the estimate for the previous year. These same estimates indicate that there were 8,150 deer in the 45 counties that were open to hunting in 1953.
9. All hunters required an average of 21.5 hours for each deer killed but saw an average of 1.4 deer per hour.
10. Crippling losses were not believed to be serious.
11. More than half the hunters were residents of the county in which they hunted and farmers comprised the largest single occupational group of licensed hunters.
12. It is suggested, that even with herd reduction in the limited areas receiving extensive deer damage, Iowa should be able to harvest between 2,000 and 5,000 deer annually.

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STATE CONSERVATION COMMISSION
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