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### ABSTRACT

This paper represents a progress report on studies of deer reproduction in Mississippi. One year's work on the three-year study has been completed.

During February, March, and April, 1960, sixty (60) female deer were collected from five of the state's ten physiographic regions. Fifty-four (54) of these does were pregnant adults and six were non-gravid fawns.

Over 66 percent of the deer had bred during the month of December; thirty-seven (37) percent bred during the two-week period, December 18 to December 31. There was a difference of almost a month between the peak of successful breeding in north Mississippi and the peak in the southern portion of the state.

Birth dates would have ranged over a period of eighty-one (81) days (June 25-September 14), but 42.6 percent of the sample would have given birth during the 14-day period between July 6 and July 19.

Eighty-one (81) fetuses were collected from fifty-four (54) gravid tracts, an average of 1.5 fetuses per pregnant doe.

Sixty-four (64) fetuses were developed enough to determine sex. There were twenty-seven (27) males and thirty-seven (37) females, a sex ratio of 73:100.

An average of 1.60 corpora lutea per gravid tract and 1.46 fetuses in the same tracts (48 observations) indicated that the reproductive rate of these females was operating at 90.9 percent of its potential capacity.

No evidence of prenatal mortality was observed.

Twin fawns were more common in the 2.5 and 3.5 year-old animals than in those 4.5 years of age.

Apparently few, if any, Mississippi does breed during their first rutting season.

No evidence was found to support the popular opinion that "old does" do not breed.

Some evidence is presented that seems to indicate that the adult sex ratio influences the sex ratio of fetuses in uteri. No evidence has been found to indicate that does on seriously over-browsed ranges produce more females in uteri than males. However, where the adult sex ratio was distorted in favor of does, the sex ratio in uteri was preponderantly in favor of females.

## SOIL BANK EVALUATION IN KENTUCKY <sup>1</sup>

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### INTRODUCTION

Shortly after the initiation of the Federal Soil Bank Conservation Reserve program, field observations on contracted lands began to reveal questionable elements relative to wildlife benefits. Few farmers had adopted wildlife (G) practices, and instead most contracted for ordinary vegetative cover (A-2)

<sup>1</sup> A contribution of Kentucky Federal Aid Project W-38-R.

practices, which mainly consisted of grasses and legumes. In many cases, it was assumed that the Soil Bank program just naturally benefited wildlife and this belief was well publicized and was often used as an aid in justifying the continuation of the program. In view of the aspects mentioned, it was decided to evaluate the Soil Bank program in Kentucky. The major objectives of this preliminary study were: (1) to determine the wildlife benefits, (2) to obtain data on plant succession and the changes taking place on these lands, (3) to measure, if possible, game utilization and, (4) to formulate recommendations that would provide maximum wildlife benefits on Soil Bank lands.

There were 104 counties participating in the Soil Bank program in Kentucky. A large majority of the contracted farms were located in the western one-third of the State. During the first three years of the program (1956-1958) only 924 contracts were made, whereas, in 1959 alone, 3,752 new contracts were signed. This was an increase of 306 percent. A total of 4,442 contracts were signed during the first four years the program was in effect. Preliminary figures, obtained from the U. S. Department of Agriculture, revealed that 1,204 new contracts were obligated for 1960. During the first three years of the program only 28,291 acres of land were placed in the Soil Bank. However, with the large increases of 1959 and 1960, Kentucky currently has 373,593 acres under contract. Practically all lands placed in this program were contracted under practice A-2. There were no G practices contracted in 1960.

Table I shows the acreage in the Soil Bank program for twelve Southeastern States, including a breakdown into specific practices. The majority of land established in this program in Arkansas, Kentucky, Maryland, Mississippi, Tennessee, and Virginia was in practice A-2. Other Southeastern States had most of their contracted land in practice A-7 and A-8 (forestry practices). It was readily seen, that if any substantial benefits were to be obtained from the Soil Bank program, they must be obtained from these three practices.

The State of Kentucky had only 441 acres contracted over a five-year period specifically devoted to the creation of conditions beneficial to wildlife (G practices). Obviously, there were very few farmers adopting wildlife practices. This was true in spite of the larger cost share payments for wildlife practices. Maryland had more Soil Bank land in wildlife practices than any other Southeastern state with a total of 6,050 acres. Virginia had only 340 acres. Other southeast states ranged between these two extremes. These totals were small, and probably insignificant, in terms of all lands placed in the program. In comparison, North Dakota contracted 73,919 acres in wildlife practices. It was felt that the present lack of wildlife practices on Soil Bank lands in Kentucky was due, in part, to the negative attitude on the part of the County Agricultural Stabilization Conservation personnel. A G practice is usually a modified A practice, and many farmers may have been interested in a wildlife practice especially if they had known that the County A. S. C. was allowed to pay up to eighty percent of the establishment cost. If the County A. S. C. personnel had encouraged or suggested wildlife practices, a much greater participation might have resulted. In one known instance a landowner was actually refused the lawful 80% cost-share allowed for G practices.

## METHODS AND PROCEDURES

A total of seventy Soil Bank farms were evaluated by wildlife biologists. The majority of the data presented in this study were concerned with practice A-2, since this was the most common practice. A standard form work sheet was prepared to assist in obtaining consistent information. The evaluations were made during the fall of 1959, before frost, and in the spring of 1960, after most plants had begun to grow. Longevity of practices ranged from one to four years.

## RESULTS

In some instances, large tracts of Soil Bank land were in solid blocks of grasses and legumes, thus eliminating edge effects that were present when these fields were in former stages of crop rotation. Very few quail were observed in these green deserts. Most Soil Bank lands were previously devoted to corn, soybeans, and tame hay production.

1956-1960 CONSERVATION RESERVE PROGRAM: ACRES FOR 1956-1960 BY TYPE OF CONTRACT FOR THE SOUTHEASTERN STATES  
AS REPORTED THROUGH MARCH 15, 1960

State	Total Acres	To Be Maintained	To Be Established	A-2 Grass	A-7, A-8 Trees	B-7, C-14 G-3, Water	G-1 Wildlife	G-2 Marsh	Misc. Cover
Alabama	401,100	18,857	382,243	161,903	215,744	295	1,550	25	2,726
Arkansas	604,630	203,743	400,887	298,983	97,004	1,862	912	1,674	452
Florida	231,295	11,296	219,369	53,060	165,431	15	682	0	181
Georgia	1,050,686	53,547	997,139	305,431	688,834	259	1,991	110	514
Kentucky	373,593	142,042	231,551	224,423	4,052	729	441	0	1,906
Louisiana	214,516	65,487	149,029	56,972	88,082	1,369	281	662	1,663
Maryland	85,115	48,374	36,741	27,214	3,261	27	6,047	3	189
Mississippi	335,991	73,717	262,274	193,979	65,170	294	1,044	111	1,676
North Carolina	268,307	49,128	219,179	77,017	107,193	515	1,248	14	33,192
South Carolina	635,782	98,077	537,705	145,892	362,100	89	773	2,174	26,677
Tennessee	489,058	123,112	365,946	312,737	47,107	1,219	529	565	3,789
Virginia	116,287	72,565	43,722	25,138	14,316	56	334	6	3,872
S. E. Total	4,806,360	959,945	3,845,785	1,882,749	1,858,294	6,729	15,832	5,344	76,837
U. S. Total	28,432,186	6,643,345	21,788,841	18,937,994	2,159,500	14,878	294,220	12,980	369,269

TABLE II  
MOWING DATA

Practice	Mowing Distribution				Total Mowed	Total Not Mowed	Total Mowed	Total Unmowed	Total Farmed
	Spring	June	July	August and June					
A-2 Permanent Cover									
No. Units	5	4	9	4	3	29	9	9	66
Percent of Total	7.5	6.0	9.0	6.0	4.5	43.9	13.6	13.6	99.6
A-7 Tree Planting									
No. Units	-	-	-	-	-	-	3	3	3
Percent of Total	-	-	-	-	-	-	100.0	100.0	100.0
B-7 Dams									
No. Units	-	-	-	-	-	1	0	0	1
Percent of Total	-	-	-	-	-	100.0	-	100.0	100.0

\* Mowed indicates that these lands were mowed at least once a year, but the period mowing took place was not indicated.

Eighty-six percent of sixty-six Soil Bank farms checked were found to have been mowed at least once a year (Table II). Mowing, especially during the summer months, further minimized any possible benefits to wildlife. The peak period for quail nesting in Kentucky is during June and July. This study showed that many farmers mowed Soil Bank land, during this period, at least once and in some cases twice. Mowing operations took place during all periods when plants were growing. Mowing not only destroyed nesting cover but eliminated food plants and winter cover. Major reasons for mowing were (1) to keep a neat appearance, and (2) noxious weed control. Many farmers were under the impression that mowing was required. Actually, it was not necessary to mow, unless a noxious weeds problem existed. Mowing was expensive and was done at the farmer's expense. Some agronomists contend that mowing is not greatly effective in controlling noxious weeds, due to the various dates of seed maturity and the nature of plant growth. Also, most weeds are of such common occurrence that local control, in many cases, would have little bearing on where or in what quantities they appeared in farm land.

Of sixty-one farmers interviewed, thirty-six percent were very much interested in wildlife, thirty percent were mildly interested, and thirty-four percent had no interest.

Of seventy Soil Bank farms evaluated thirty-three (46.1%) were found to be of little or no benefit to wildlife. Twelve (17.1%) had some value and twenty-five (35.1%) were determined to directly benefit game. It appeared that some of the plant species recommended for some of the practices were even detrimental to wildlife. A large portion of lands in practice A-2 consisted of fescue grass. Observations revealed that, in many cases, this grass became the dominant species in a planting mixture. This grass often becomes so dense and matted that it is too thick for rabbits and provides poor nesting sites for quail. Crop analyses and controlled feeding studies showed that fescue grass ranked very low in food preference for both wild and pen-reared quail. Of the sixty-six farms with A-2 practices, fifty-three had fescue grass in the seeding mixture. Fescue does a good job of controlling erosion, but may be of limited value to wildlife.

The covertype adjacent to Soil Bank fields also had an effect on game populations. If, for instance, a corn field was put into the Soil Bank and all of the adjacent cover was in permanent grass, it probably would have been of more value to wildlife to leave this in crop rotation or in other permanent crops.

The most numerous native plant species that voluntarily invaded Soil Bank fields were recorded. Continued records of plant succession on specific areas will give additional data as to any benefits derived. The most common plants that occurred on Soil Bank lands were listed in the following order: common ragweed, broomsedge, aster, crab grass, foxtail, sassafras, blackberry, Johnson grass, plantain, coralberry, walnut, goldenrod, persimmon, Poor Joe, trumpet creeper, thistle and pokeberry. Many of these plants were considered beneficial to game populations, while others were not. Mowing operations altered natural plant successional stages making potential food and cover unavailable, in some cases.

It was impossible under this study to adequately measure game utilization on Soil Bank lands. The farmer interview method was used. The following information was obtained from sixty-four farmer interviews: thirty-four (53.1%) reported good game utilization, twenty (31.1%) had none, and ten (15.6%) had limited utilization. Greatest utilization was by rabbits and, to a lesser degree, by quail. Two instances of deer usage, and one of geese utilization, were reported. Mowing practices appeared to be more detrimental to quail than to rabbits.

## DISCUSSION AND CONCLUSIONS

Despite increased Federal subsidies for wildlife practices on Soil Bank lands, there were very few requests for them. Wildlife practices were not used more extensively, mainly because prospective members of the program were not informed of their advantages. This was due to poor publicity of this phase of the program and to the negative attitude of many County A. S. C. personnel toward it. Then, too, some farmers had no particular interest in wildlife and were reluctant to accept game management practices. From the results obtained in this study, it appeared that the program was of little value to game popu-

lations in Kentucky and possibly other Southeastern States. Some practices may benefit wildlife to some degree, but not any more than if the original conditions prevailed. The mowing operation was a major factor in eliminating benefits to wildlife. It was the desire of many farmers to have a stock-farm appearance on their farm and no consideration was given to wildlife. Some farmers' ultimate reason for placing their land in the Soil Bank was to convert from crop-farming to stock-farming. Usually, optimum small game populations are not found where stock-farming is the major agricultural pursuit. On two known occasions, farmers cleared good wildlife habitat and put the land into crops, making it eligible for the Soil Bank. Subsequently, this land was established in grass. In these two cases, it would have been better for wildlife to have left these fields in their original state.

Congress did not continue the Soil Bank program during its recently completed session. However, there is a good possibility that some kind of a land retirement program will be enacted during the next session. This, then, is an excellent time to take stock of the old program and push for beneficial inclusions in the new program, if one is forthcoming.

In order to insure maximum benefits to wildlife on Soil Bank fields in Kentucky, and possibly other Southeastern States, the following recommendations are hereby submitted:

1. Eliminate or regulate mowing during periods that are most detrimental to nesting wildlife.
2. Where mowing is necessary, mow at least twelve inches high, or use flushing bars.
3. Mow fields in strips, blocks or during alternate years. Discourage solid or extensive mowing.
4. Encourage State Agricultural Stabilization and Conservation administrators to instruct personnel in County A. S. C. offices to specifically instruct farmers that mowing is not mandatory and is only required for noxious weed control.
5. Encourage changes in seeding mixtures that will control erosion and also benefit wildlife. Reduce the amount of fescue grass used and stimulate the use of Korean lespedeza and other plants of more value to wildlife.
6. Encourage variations in the planting pattern. Planting in blocks or strips will create edge effect, and offer a variety of food and cover.
7. Impress upon A. S. C. officials that wildlife is a potential cash crop.
8. Encourage County A. S. C. offices to suggest and explain wildlife practices to prospective participating farmers.
9. Wildlife Biologists should be consulted by U. S. Department of Agriculture personnel relative to planning specific wildlife practices.
10. Game and Information and Education sections should maintain close contact with County A. S. C. offices. If the wildlife benefits of the program can be impressed upon County personnel, they, in turn, may encourage farmers to accept them.
11. Initiate an effective educational program. Information via radio, television, printed material should be made available to landowners relative to the service available and the benefits derived by favoring wildlife practices.
12. Obtain permission to add wildlife benefiting plants to the A-2 practice. Sportsmen's clubs or other groups could be encouraged to contribute annual or perennial seeds for supplementing vegetative cover practices.