

vegetation and resulting growth is usually thin enough for quail to walk through. Disking is effective when sedge becomes too thick. In the woodland portions, the tree canopy should be maintained so that the amount of light which filters through is just enough to allow a weakened growth of ground cover.

The Importance of Bare Soil Next to Unburned Grass: This combination is important as it produces the type of "edge" along which quail prefer to nest. Cultivated fields can produce the desired edge. In large areas of broomsedge, edges may be made by disking strips 30-40 feet wide on the contour. This practice is most effective. Frequency of strips may vary according to topography but should range from 1-3 newly disked strips through each 40 acres of broomsedge. Strips should be continuous throughout the area and a 4-5 year strip-disking-rotation system should be used. A new strip is disked each year next to the old one. Thus, various stages of plant succession will be present each season which contributes substantially to maintaining good food and cover for quail. The rotation should be renewed when a strip has reverted to a thick stand of broomsedge. In the early spring, alternate areas between disked strips should be burned. The remaining unburned grassy edge adjoining bare soil is the desired pattern for nesting.

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THE BIRTH DATES OF ALABAMA DEER

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INTRODUCTION

Both in technical textbooks and in popular books on wildlife, there appears to be a misconception as to the time the white-tailed deer is born in the deep South. Trippensee (1948) on page 184 states, "May and June are the usual months of birth, but fawns conceived late in the mating period are born during the summer months and sometimes as late as October." On page 183 he states, "Mating or rutting begins in the autumn, usually in October in the North and somewhat earlier southward." Zim and Hoffmeister (1955) state on page 132, "The fawns, born in late spring (earlier in the South), remain spotted with white for four to five months." The data collected in Alabama shows that the fawning season extends over a considerable period of time and apparently has a peak in the late summer.

Studies on the mating and fawning seasons of deer have been made during the past two years under Federal Aid in Wildlife Restoration Project W-35-R. Some additional data were collected under a previous project. Acknowledgments are due the District Biologists and Refuge Managers of Alabama for their cooperation in collecting the data. Dr. A. O. Haugen of the Alabama Wildlife Research Unit has also assisted in collecting data and in verifying some of the ages of the specimens examined. C. W. Severinghaus and John E. Tanck of the New York State Conservation Department assisted in aging specimens early in the study.

METHODS

In order to obtain knowledge of the age class composition of the deer killed during the legal hunting season in Alabama, the District Biologists and other cooperating personnel examine as many deer as possible and age them to classes according to the tooth development and wear as described by Severinghaus (1949). Whenever possible, the jaws of those animals in the one and one-half year class are collected and examined in the laboratory. Here an attempt is made to age the animals to the nearest month. This is done by comparing with Alabama deer jaws, originally aged by Jack Tanck.

The date of kill is known and by estimating the approximate age, the approximate birth date is computed. To date, the birth dates of one hundred and twenty-one deer of the one and one-half year age class have been computed.

The method is by no means perfect. The jaws from animals that would normally be considered to be in the one and one-half year age class actually fell into three sub-classes. There were a few that fell into the sub-class eleven to thirteen months, a high percentage fell into the sub-class thirteen to seventeen months and a few fell into the sub-class seventeen to twenty months. The computed birth dates of individual specimens may be thirty, or possibly more, days from the actual birth date. However, with a number of deer being examined, and plotting the number of birth dates that fall into each one-half month through the fawning season, there is an indication of the length and peak of said fawning season.

To support the data collected on the specimens of the one and one-half year class, the birth dates of captive deer in the state were collected and the birth dates were computed for newly captured fawns and accidentally and illegally killed fawns. These computations were made by jaw examinations of age classes that are more definitely defined than in the older deer.

FINDINGS

The number of animals in the one and one-half year class that were born in each half-month of the fawning season has been plotted in Figure 1. According to this method of computation, the earliest births were those of two eighteen month old deer killed on the Choccolocco Wildlife Management Area on November 29, 1954. Their computed birth dates were May 30, 1953. The latest birth, according to this method of computation, was an eleven and one-half month old deer killed on the Choccolocco Wildlife Management Area on December 14, 1954. The computed birth date would be November 30, 1953. The average date of fawning computed by this method is August 24.

Supporting data as plotted in Figure 2 consists of the computed birth dates of two embryos, the computed birth dates for four young deer taken into captivity, the observed birth dates of fawns from eight captive or semi-tame does and the computed birth dates of fifteen fawns that were accidentally or illegally killed. In addition one doe that died of a ruptured uterus was examined. The earliest of the supporting data was a fawn born to a semi-tame deer in the Choccolocco Management Area in mid-May, 1954. The latest computed birth date was that of the fawn found within the doe that died of the ruptured uterus.

On December 22, 1954 the project leader was asked if he would like to examine a dead doe found by some hunters in Jefferson County (outside Birmingham, Alabama). He was taken to the deer and found it to be quite limp—although the hunters reported that it was stiff that morning. It was six and one-half years old and weighed sixty-eight pounds. There were no signs of maggots although the eyes were quite sunken. The odors were not excessive until the animal was cut into. The hair was beginning to "slip" slightly on the belly portions only. Because of weather conditions the animal was judged as being dead about a week. It probably had not been dead less than four nor more than fourteen days. The udder did not appear to be extended and the teats were barely visible. Upon opening, no fat was found. In fact the specimen was very poor. As the stomach was full of gas it was not inspected to see if there was any food. A foetus was noticed in the birth canal. It was examined and found to have one hoof through the uterine wall and into the

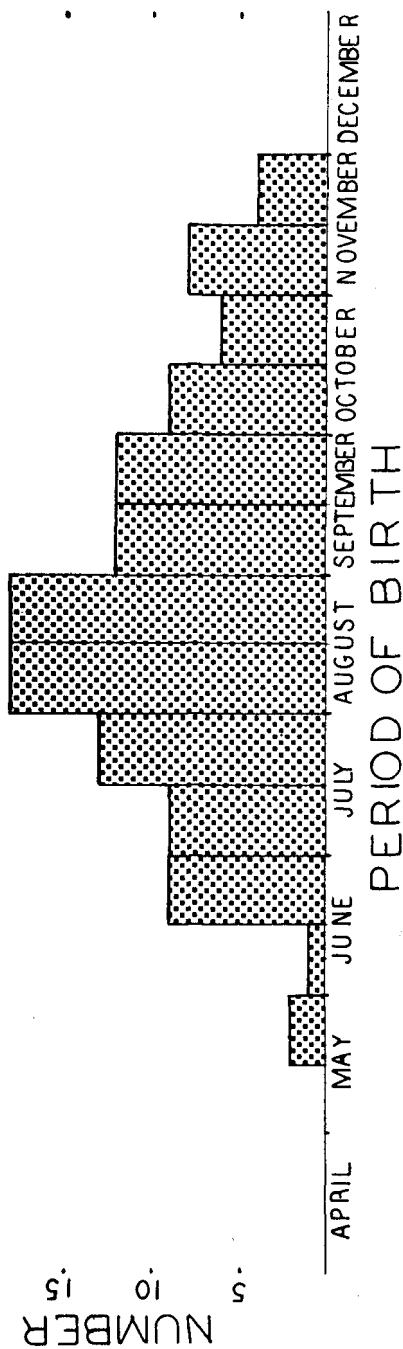


FIGURE 1. BIRTH DATES OF ALABAMA DEER AS COMPUTED BY AGEING KILLS
OF THE 1 1/2 YEAR CLASS

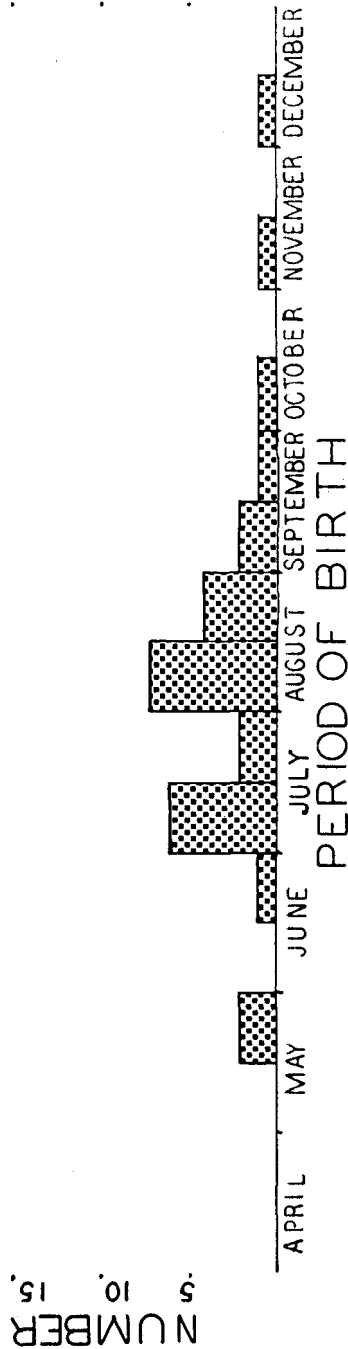


FIGURE 2. BIRTH DATES OF ALABAMA DEER AS COMPUTED FROM ASSOCIATED DATA

intestine. This doe had died in fawning. Whether the birth was delayed much past the usual gestation period is unknown, but it is believed that the animal would have been born in mid-December. For purposes of computation, the birth date was listed as December 14.

The average fawning date as computed by the supporting data is August 10. This supporting data, however, extends the computed fawning period over a greater period of time. Wardens have reported seeing a few young fawns in late April and early May which would extend the season a little longer.

DISCUSSION

The aging of legally killed animals of the one and one-half year class can be used to determine the approximate fawning season. In Alabama this fawning season occurs over a relatively long period and has a peak during August.

If there is ever to be a doe season or an any-deer season this long breeding season must be taken into consideration. Some does in Alabama give birth to their fawns in November and an appreciable number are heavily lactating through December.

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RECOGNIZING JUVENILE FROM ADULT BOBWHITE QUAIL

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Information on the percentage of young among quail (*Colinus virginianus virginianus*) harvested by hunters is useful in quail management. Reasons for high or low populations of quail may be better understood with such information at hand. In some years the data may provide justification for continued open seasons, despite poor hunting success early in the season.

The separation of juvenile and adult bobwhite quail has been based primarily on wing feather characteristics. Dwight (1900) apparently was the first to make an intensive study of plumage changes in quail. He reports that the two distal primaries in all quail and grouse are retained in the postjuvinal molt, but he makes no mention of how these feathers differ from those on older birds. Stoddard (1931) calls attention to the shape of the outer two primaries as a criterion for separating young (pointed) from older birds (blunted). Van Rossem (1937) reports that the juvenal primary coverts in native quail are retained until the first annual molt the second fall (about August). Leopold (1939) reports that the buffy fringe on the tip of greater upper primary coverts 1 through 7 (counting from inside—outward) provides the best means for identifying young of the year.

Studies by the author on quail in Alabama have shown that the degree of marking on these coverts and the pointedness of the outer two primaries, vary sufficiently to introduce a small error in separating young from old. This

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