

Comments from panel members and discussion from the floor indicated the tremendous interest of all present in meeting the needs of fish and wildlife in development of our river basins and management of our waters. Representatives of such agencies as the Corps of Engineers and Soil Conservation Service made definite contributions to the discussion through suggestions and possible solutions to some of our problems. It was very much in evidence that cooperation of local, state and federal agencies had reached a high level of coordination. The further possibility of fish and wildlife conservation becoming a major purpose of land and water development in the lower Mississippi Valley seems relatively bright. It is the job of fish and game conservationists to provide leadership in this endeavor. The Mississippi River and Tributaries Project Review provides a medium for this program in the lower Mississippi Valley. I am reasonably sure that similar opportunities exist elsewhere in the southeastern United States.

## GENERAL GAME SESSION

### IS A SPRING GOBBLING SEASON BIOLOGICALLY SOUND?

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We are all familiar with the history of the wild turkey in the Southeast, of its early abundance followed by a steady decline until the 1930's and its gradual build-up in many areas since that time.

The turkey hunting seasons in the Southeastern States are by no means uniform. Maryland, North Carolina, and Virginia have a fall and winter season; Arkansas, Louisiana, Mississippi, and Tennessee have a spring season; while Alabama, Florida, Georgia, and South Carolina have both a fall and winter as well as a spring season. Kentucky is the only Southeastern State which does not have a huntable turkey population.

Turkeys of either sex are legal game in Florida, Georgia, Maryland, and Virginia during the fall and winter season; while all spring seasons are confined to the taking of gobblers only. Dogs are allowed in the hunting of turkeys in Georgia, Maryland, North Carolina, South Carolina, and Virginia during the fall and winter season.

Game and Fish Commissions are faced with a number of problems in selecting a turkey season. Some of these problems are: Should both sexes or only gobblers be made legal game? Should dogs be allowed in the hunting of this game bird? What would be a reasonable daily and seasonal bag limit? How many hunting days should be allowed and at what season of the year—fall and winter, or spring? And finally, is a spring gobbling season biologically sound?

It is the object of this paper to discuss the last of these questions—"Is a Spring Gobbling Season Biologically Sound?"—and from the information at hand, decide if such a season can be justified on a biological basis.

In order to prove whether a spring gobbling season is biologically sound, three facts must be determined. These are: Will such a season retard the turkey population? To what extent will such a season interfere with breeding and nesting turkeys? Does a harvestable surplus or males occur and would a spring season provide an opportunity to harvest most efficiently the desired segment of the population?

I. To determine whether hunting of gobblers in the spring retards the turkey population in the different states, let us examine the population figures as furnished by the different states.

Three states, namely Arkansas, Mississippi, and Alabama, have had a spring gobbling season for a period of 25 years or more. In Arkansas the 1940 turkey

population was estimated at 7,000 birds and 7,000 were still present in 1955. Mississippi's 1940 population was given at 5,000 birds and their 1955 population had jumped to 15,000. In Alabama the population jumped from 13,500 birds in 1940 to 46,600 in 1956.

Four of the Southeastern States do not have spring seasons. In North Carolina, the only one of these states in which figures were available, a population of 15,000 birds was present in 1950 and 15,000 again in 1955.

Texas, a neighbor state to the Southeast, with a fall and winter turkey season, had a population of 100,000 birds in 1940 and only 70,000 birds in 1955.

Although we are aware that a number of factors influence a given turkey population, I am sure we can conclude from these figures that the hunting of gobblers in the spring has had little, if any, retarding effect on the turkey populations even though it has been practiced for a number of years.

II. To determine the effect of a spring gobbling season on laying and nesting turkeys, let me briefly review the general habits of the hens during the laying and nesting season and the results of an Alabama survey. Robert J. Wheeler (1948), in his book, "The Wild Turkey in Alabama," reports that the hens, during the height of the breeding season, proceed directly to the males and remain with them until about 9 o'clock a. m., at which time the laying hens slip off to their nests. Such nests are so established as to be extremely difficult to locate and are seldom seen by hunters who, in most cases, have left the woods prior to the time hens desert the gobblers to lay. Field studies in Alabama and Missouri indicate that incubation is rare prior to late April when most spring hunting seasons are closed.

A survey of 102 experienced turkey hunters in Alabama was conducted in September, 1956, to determine the effect of spring hunting on nesting birds. These hunters, with an average of 21.9 years of turkey hunting experience, reported only 10 known occasions in which hens were flushed from their nests during spring hunts. This is an average of one flush for each 223.8 years of hunting.

Certainly we may conclude from our knowledge of the habits of laying and nesting hens and from the result of Alabama's recent survey that the spring gobbling season does not effect laying and nesting turkeys to the extent that it would be classed as detrimental.

III. To determine whether a spring gobbling season makes it easier to remove a desired segment of the population, let me review certain habits of the wild turkey, and the results of field observations made in Alabama.

Inasmuch as the turkey gobbler is polygamous, and the dominant males accumulate a harem of 5 or more hens during the breeding season, a large number of excess gobblers are of necessity present in a flock.

Gainey (1954), in his report on "The Composition of Turkey Populations in Florida," indicated that the adult male population in that State was almost double that of the adult female. Wheeler (1948) found the sex ratio to be approximately 50-50 on Alabama's Salt Springs Sanctuary.

Mature gobblers (1½ years of age or older) are more easily taken during the spring season when they may be lured by an imitation of the mating call of the hen. Field observation in Alabama indicates that more than 90 per cent of all turkeys taken during the spring gobbling season are males which have reached maturity and exceed 1½ years of age. On the other hand, field observation during our fall and winter season indicates approximately 90 per cent of the birds killed to be immature birds of the year.

I am sure that we all agree that it is biologically sound to utilize any surplus which is not needed for reproduction, whether cows from a pasture or turkeys from our woodlands. And I am sure that we further agree that the most practical time to remove any surplus is when it is ready for harvest and may be harvested the most efficiently.

In summary, I want to emphasize the following facts which have been presented in this paper to determine if a spring gobbling season is biologically sound:

1. Figures available indicate that a spring turkey season does not retard the turkey population.

2. Hunters disturb a very minimum of hens nesting during a spring season.
3. There is a surplus of mature males that should be harvested and such birds are most easily taken during the spring season.

Now that the facts have been considered, all evidence leads one to conclude that a spring gobbling season is biologically sound.

## THE COTURNIX QUAIL PROJECT IN MISSOURI \*

In the Spring of 1955, we bought 70 pairs of Coturnix from an importer in California. Then we leased the Lowrance Quail Hatchery near Joplin, the only hatchery in Missouri capable of conducting the production demanded for our large-scale project. The Missouri Conservation Commission does not own or maintain a game farm.

During the Summer of 1955 we raised 4 generations of young from the original 70 pairs; last spring (1956), 1,350 pairs of birds were available for study and as breeding stock. During 1955, we learned a great deal about the behavior and mass production methods of Coturnix. Problems remain, such as improving fertility and hatchability which have run rather low; these problems are being worked on. Under good hatchery conditions we were able to have five generations of Coturnix on hand the same year. The birds matured in 36 to 56 days; and we had fertile eggs from young Coturnix practically before they were in mature plumage.

Being prolific in the hatchery holds promise that in the wild they may produce more than one brood per year, and that early birds may begin nesting soon enough to produce a brood the same year.

Escaped birds found in the wild have averaged 10 eggs per clutch, with 100% fertility in the last 10 nests checked. Sixteen days of incubation by the hen is the rule; the chicks hatch much as do bobwhite, and leave the nest soon after hatching. To date, we have observed only the hens caring for nest and young.

We have tried cross-mating between bobwhite and Coturnix for the last two years, with no success in developing a cross. Will the birds cross? Studies to date show no indication of it and the chances are that it will rarely if ever occur.

During the Spring of 1956, we distributed Coturnix breeders to several states that were interested—Tennessee, Oklahoma, Alabama, Ohio, Nevada, Virginia, Georgia, Illinois, Kentucky, and Indiana are now producing Coturnix. Should they become established we will have added a fine little bird to our upland game list.

To date we have found that:

1. Coturnix can be mass produced in a hatchery.
2. The birds can nest and produce young here.
3. By maturing rapidly and laying early, the production potential is high.
4. The birds lay a strong scent discernible by dogs, and hold well.
5. The flight, different from bobwhite, is surprising and long; the birds will provide a sporting target.
6. Hunting Coturnix is similar to single shooting of bobwhite, as the birds do not covey but work as singles or pairs.
7. While smaller than bobwhite, Coturnix is good eating, its meat slightly darker than bobwhite.

The game potential of Coturnix is rather high. But:

1. Will the birds acclimate themselves to Midwest range and climate?
2. Will they migrate? If so, will they return to nest?
3. If the answers are "yes," will they become *permanently* established in a new geographic range?

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\* This paper is a condensation of Missouri Conservation Commission In-Service Bulletin No. 19, prepared by Mr. I. T. Bode, Director—Missouri Conservation Commission. In-Service Bulletin No. 19 was condensed and presented at the Southeastern Association of Game and Fish Commissioners Meeting at Little Rock, Arkansas on October 9, 1956, by Kenneth C. Sadler.