INTRODUCTION OF EXOTIC GAME BIRDS IN SOUTH CAROLINA

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ABSTRACT

Trial releases of three species of exotic game birds were made on nine areas in South Carolina by the South Carolina Wildlife Resources Department. The black francolin was released on four areas from 1960 to 1962. The Western Iranian black-neck pheasant was released on five areas from 1961 to 1968. The red junglefowl was released on three areas from 1965 to 1968.

A study was made of seven of the release sites to determine population levels of the released birds and to survey the vegetation. The black francolin exhibited generally negative census results two years after the last release. The Western Iranian pheasant has continued to survive only on areas where annual releases were made. Although the red junglefowl has shown promise, it is too early to determine its chances of survival.

The results of the study indicate that the introduction of exotic game birds in South Carolina thus far has not been very successful. In cases where the introduced birds have survived, the survival of the introduced birds may be due to regular and periodic releases than to reproductive success of the exotic game birds.

Since the successful introduction of the ring-necked pheasant (*Phasianus colchicus*) into Oregon in 1881, various state game departments and private individuals have tried to establish other exotic game birds in the United States. The majority of these attempts were unsuccessful. The implications of the ecological problems in releasing fauna into the United States led to the establishment of a Foreign Game Introduction Program sponsored by the International Association of Game Fish, and Conservation Commissioners, the Wildlife Management Institute, and the United States Fish and Wildlife Service after reviewing the history of exotic introduction attempts in 1950.

United States Fish and Wildlife Service biologists made an evaluation of foreign game birds that occupied habitats and niches which were similar to certain areas of the United States. State wildlife biologists made an ecological survey of game-deficient areas to determine potential release sites. Thirty-two of the 45 cooperating states have actively participated in this Introduction Program. Over 150 species or subspecies of foreign game birds have been evaluated and 26 of these have been recommended for trial releases (Bump, 1968).

The South Carolina Wildlife Resources Department initiated trial releases of three different exotic game birds. The Northern Indian black francolin (*Francolinus francolinus asiae*) was released on four areas from 1960 to 1962. The Western Iranian black-neck pheasant (*Phasianus colchicus talischensis*) was released on five areas from 1961 to 1968. Most of the later releases were pure Western Iranian pheasants, but the hens in some of the earlier releases were from crosses with Chinese ring-necked pheasants. The Indian red junglefowl (*Gallus gallus murghii*) was released on three areas from 1965 to 1968. Some of the first junglefowl released were from crosses with game bantams.

The findings reported in this paper are result of studies made of the South Carolina Wildlife Resources Department exotic game bird trial releases. This study was done to fulfill a partial requirement for a Master of Science degree from Clemson University, under a graduate assistantship supplied by the South Carolina Wildlife Resources Department.

Trial Releases in United States

The black francolin was introduced unsuccessfully in Illinois in 1891 (Gottschalk, 1966). Beginning in 1960 more than 5,000 black francolins were liberated in 12 states, chiefly in the Southeast. The Indian black francolin has been reported to be doing remarkably well in two areas of Louisiana and at least surviving in Florida. Some failures have been recorded from areas of the country with colder climates (Bump, 1964). Bump (1968) reports that the Western Iranian pheasant has shown great promise in Virginia and some promise in several other southeastern and midwestern states.

Description of the Species

Black francolins are described by Bump (1964) as partridge-like birds, twice the size of a bobwhite, with both sexes having a peculiar scaled type of coloration. The male has an extraordinary cicada-like call and has black underparts, prominent white cheeks, and chestnut neck collar. The native range of this bird extends from northeastern Iran and adjacent Afghanistan east through Pakistan and India. Temperatures in the Northern Indian black francolin's native range are somewhat higher especially in the spring and fall than those in the southeastern states. Annual rainfall varies from 20 to 150 inches. The black francolin thrives in dense-to-open grassy areas and also on cultivated lands, particularly sugarcane (Bump, 1968). Other cropfields include those of wheat, barley, rice, mustard, legumes, millet, sorghum, maize, and cotton with nearby grassy, weedy, or shrubby cover. "Well-watered habitats or those where the water level in the soil is high are attractive." The black francolin is an omnivorous feeder that consumes a wide variety of animal and plant materials. Plants comprise the bulk of the food. Waste grain, weed seeds, greens, insects, grit, and trash are utilized (Bump, 1964).

The Western Iranian pheasant is about the size of the Chinese ringnecked pheasant. It is a native of Northern Iran, southwest of the Caspian Sea. In Iran, this pheasant was reported to be abundant in areas where the temperature varied from a little above freezing to 95° F. and which had an annual precipitation of 30 to 60 inches. The Western Iranian pheasant lives in flat or rolling country where open-to-thick brush or woodlands are interspersed with grain fields, particularly rice (Bump, 1968). Released Western pheasants in Kentucky were observed during the winter in idle fields, thickets along ditches, pastures, corn fields, fencerows, and woods. Food analyses of two Western Iranian pheasants released in Kentucky reveals that this pheasant is omnivorous, consuming waste grain (including wheat and corn) and various weed seeds, grasshoppers, and grit (Nelson, 1967).

The native range of the Indian red junglefowl, ancestor of the domestic chicken, extends for 1,400 miles from the Indus River across northern India into Burma and south through central and esastern India to the Bay of Bengal. Annual precipitation ranges from 40 to 129 inches and temperatures vary from 20° to 100° F. Crosses with the domestic chicken are not easily differentiated, but the halfbreeds usually lack the white ear lobes and white tuft at the base of the tail of the junglefowl and the domestic chicken carries its tail in an erect position whereas the pure red junglefowl's tail is carried in a horizontal position. Junglefowl prefer various types of forested areas containing large, dense thickets that are open underneath. Cultivated fields and old, overgrown fields adjoining forests or scrub growth are utilized, especially near the edges. Junglefowl are great scratchers and omnivorous feeders, but plant materials comprise most of their food. Grain, grasses, seeds of trees and shrubs, berries, leaves, shoots, and roots are eaten (Bump, 1961).

Methods

Seven of the trial release sites were studied in order to determine the population levels of the exotic game birds and to survey the vegetative conditions and land use practices prevalent on each release site.

The only trial release sites studied, except for Shaw Island in the Hartwell Reservoir, were those where exotic game birds had been released prior to the initiation of the study in the summer of 1966.

Census methods consisted of spring call counts, roadside observation counts, flushing counts, and observations by area residents. Personnel of the South Carolina Wildlife Resources Department assisted in some of the census counts, especially the spring call counts. Two call counts a year were made during the spring on each of the francolin and pheasant study sites beginning in 1965. Call counts were conducted on Belmont Game Management Area and Shaw Island beginning in 1966 and 1967, respectively, The roadside observation counts and flushing counts were made on each study area from November 1967 to February 1968. The ground cover, understory, and overstory vegetation were surveyed during the summer of 1967 on forty "1-square-yard" plots randomly located in 4 square miles of each trial release study area. A list was compiled for each study area giving all plant species of the ground cover, the total number of stems of each species, and the number of plots in which each species occurred.

A more extensive presentation of the location of the study sites, the vegetative conditions, and census results is found in the South Carolina Wildlife Resources Department job completion report entitled "A Study of the Exotic Game Bird Introduction Program in South Carolina, 1960-1968."

The Black Francolin Study

The black francolin was released on the Santee-Cooper Game Management Area, York County Prison Farm, and Hester Farm. The total number of francolins released on the four areas from 1961 through 1962 was 421. All of the francolins that were released were wild-trapped in India, although an undetermined number of hatchery stock escaped to the two areas (Belmont Game Management Area and York County Prison Farm) on which exotic game bird hatcheries were located.

Reproductive success on all the francolin release areas was observed for about a 2-year period following the last release on each area, after which no more francolins were observed, except at York County Prison Farm.

No francolin calls were heard except at York County Prison Farm, and these francolins may have escaped from the York hatchery just prior to the time the census was made. The flushing counts and roadside observation counts produced negative results on all francolin release sites. From these census results, it is believed that no francolin remained on any of the release sites except for York County Prison Farm.

The vegetation surveys on the four francolin study areas indicated that desirable vegetation conditions were not present on the Santee-Cooper Game Management Area, and Hester Farm, since only a small part of these study areas was cultivated and grassland was absent except at Work County Prison Farm.

Due to the lack of survival success, the South Carolina Wildlife Resources Department has discontinued the black francolin trial release program.

The Western Iranian Pheasant Study

Only the three Western Iranian pheasant trial release sites where releases had been made prior to the initiation of this study were extensively studied and surveyed. These were the Santee-Cooper Game Management Area, Weeks Farm, and Garrett Farm. A total of 1,079 Western Iranian pheasants was released on the three areas from 1961 through 1968. The direct method of release was used except for a few releases made at Garrett Farm.

Four releases of Western Iranian pheasants were made on the Santee-Cooper Game Management Area from April 1961 to March 1963.

Seven to eight pheasant broods were observed in the summer of 1961 following the initial release. Several broods were observed in the summer of 1963 following the last release. The last pheasants were observed in spring of 1965. During six call counts made in the Santee-Cooper Game Management Area in the spring of 1963, five pheasants were heard and four were observed. All other census calls thereafter were negative. From the census data obtained, it is evident that no pheasants still survive in the Santee-Cooper Game Management Area.

One release of Western Iranian pheasants was made each year for the 4-year period of 1963 to 1966 on Weeks Farm. A total of 332 pheasants with an approximately even sex ration was released. Calling cocks were heard during the call counts in 1965, 1966 and 1967. One cock was observed during a roadside observation count and one cock was flushed during a flushing count on the same day, November 26, 1967. In 1968, no pheasants were heard or seen during either call counts. The results indicate that the pheasant population on Weeks Farm has steadily decreased since the last release and few, if any, pheasant have survived.

Five separate releases of Western Iranian pheasants were made on Garrett Farm from October 1964 to September 1968. Pheasant broods have been observed in grain fields during harvesting operations by the Garrett Brothers each year since the first release. A large flock of about 25 pheasants, mostly young of the year, was observed during early April 1968 in a plantation of small pines. Eight cocks were heard during call counts in 1967 and one cock was heard and one hen observed during call counts in 1968. One cock and one hen were flushed during a flushing count in December 1967. No cocks were heard in spring of 1969 (Webb 1969). The census results on Garrett Farm indicated that substantial numbers of pheasants were present during each year of the study, but these results may have been influenced by the periodic and continual releases.

As indicated by the vegetation surveys, good pheasant habitat conditions were present on Weeks Farm and Garrett Farm since they were utilized primarily for farming operations, whereas the Santee-Cooper Game Management Area was not farmed extensively.

Red Junglefowl Study

The red junglefowl has been released on three areas in South Carolina. Two of these trial release sites that were extensively studied are the Belmont Game Management Area and Shaw Island.

A total of 172 red junglefowl has been released on Belmont Game Management Area. In 1965, 24 hybrid junglefowl game bantam crosses were released directly on the Belmont Game Management Area. An effort was made to remove all of the hybrid roosters and to replace them with pure red junglefowl roosters in May 1966, but this was not very successful. A release totaling 148 pure red junglefowl was made during the period June to October 1968. Four or five separate flocks have been observed within a 5-mile radius of the Belmont Game Management Area. On November 11, 1967, the flock around the Belmont Game Management Area farm buildings consisted of 21 junglefowl comprised of 4 roosters, 15 hens, and 2 chicks. Six roosters were heard during the two call counts in 1967. During the two call counts in 1968, four roosters were heard. It is evident that the junglefowl population on the Belmont Game Management Area has been increasing. Dense thickets of understory vegetation on this area provide good cover required for the junglefowl.

Fifty-one red junglefowl have been released on Shaw Island in Hartwell Reservoir in two separate releases. Twenty-six junglefowl, including six cocks, were released on October 7, 1966. Twenty-five junglefowl were released in October 1968. One week after the initial release, 20 junglefowl were observed near the release site scratching in the leaf litter in a small valley with open, mature hardwoods. They escaped

into a small short-leafed pine thicket. In December 1966, a large percentage of the released junglefowl was located on the extreme southern part of the island which was covered by a dense growth of small short-leafed pines. Although several attempts were made, no junglefowl were observed off the island. The junglefowl were wary, making observation difficult. Reproduction could have occurred, but was not observed. Call counts were made from a boat with two stops of one hour duration each. No birds were heard in 1967 but three roosters were heard in 1968. Two roosters were heard in 1969 (Webb, 1969). Three junglefowl hens were observed during an 11-man census drive in February 1968, which covered more than 200 acres of Shaw Island.

CONCLUSIONS

From the studies on the population levels of the exotic game birds, it is apparent that the introduction of exotic game birds in South Carolina thus far has not been successful. In cases where the introduced birds have survived, the releases have been more or less continuance on an annual basis. This indicates that the survival of the introduced birds may be due to the regular and periodic release of the exotic game birds, rather than to reproductive success. The red junglefowl has shown promise, but it is too early to determine its chances of survival. It is suggested that census counts be continued on all release sites for five years after the last release on each area, in order to be able to ascertain a latent population increase.

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