

when 165 junglefowl were released. All other releases have involved 50 or less birds. Other states plan to release some junglefowl later this year. Eglin AFB has just made two releases of approximately 65 birds in each release. Georgia has made one release of approximately 60 birds. The maximum spread reported from the point of release was a distance of 10 miles.

Very little information is known about survival, movement, and reproduction of released Red Junglefowl, since they have not been released long enough or in large enough numbers to make any kind of prediction as to their ultimate success or failure. Oklahoma reports no evidence of reproduction in the wild, while Alabama reports one probable brood.

Red Junglefowl habitat appears to be best the farther south one goes. Due to climatic conditions and habitat type, it appears that Alabama, Florida, and South Carolina probably contain the largest areas of good junglefowl habitat of the states concerned with work on this species. Although the propagation and release of Red Junglefowl has been slower than some of the other exotics, it is apparent that administrators of the states involved think enough of the possibilities of this bird to continue and increase this phase of the exotic bird program.

VARIOUS TECHNIQUES OF EVALUATING EXOTIC GAME BIRD RELEASES

BY

JOE W. HARDY

States cooperating in the Foreign Game Bird Introduction Program have all made attempts to determine success of experimental releases of the exotic species involved. These efforts have included interviewing farmers, loggers, hunters, and residents, direct field observations, and flush, road, nest, and call counts. At the Foreign Game Committee meeting in July, 1963, standard techniques which would allow comparison between states evaluating releases were discussed and recommended for Southeastern states participating in the program.

Call or crowing counts are of major importance with subspecies of true pheasants and possibly in the case of some other species. Kimball, 1949, reports that call counts were the most effective method of sampling a breeding population of Ringneck Pheasant (*Phasianus colchicus*) males, especially when numbers were low and birds dispersed. The crowing count technique is a means of establishing a breeding index only and is not a complete census. This technique when used in conjunction with other population sampling procedures, will provide supporting information as to population size, dispersion, and stability.

The procedures recommended for conducting crowing count surveys on experimental release areas in the Southeast are basically similar to the counting techniques employed in the pheasant states of the Great Plains. The survey must be made during the period of maximum seasonal crowing activity. This time may vary in different parts of the country and with different subspecies of pheasant, therefore, it would be advisable for each state to determine the proper time for each type of bird. Kimball found that the maximum seasonal crowing period for Ringnecks in South Dakota lasted for the entire month of May. In a Washington study, Nelson and others (1962) determined that peak crowing occurred on April 5, 1958 and on April 17, 1959. Virginia and Kentucky workers have found that crowing intensity of the Ringneck-Talisch (*P. c. talischensis*) and Ringneck-Persian (*P. c. persicus*) crosses is at a peak in the third week of April. A study on a Ringneck-Persian release area in Tennessee showed the maximum crowing period to be the last half of April through the first half of May. Hardy (1962). From observing Veriscolor Pheasants (*P. versicolor*) under

captive breeding conditions, I am of the opinion that this species might be one to three weeks later than others previously mentioned.

Once the seasonal crowing period has been established then meaningful data can be recorded for comparison of breeding populations from year to year and between release areas. A map recording the survey route should be made to allow the same listening stations to be used year after year. The survey should begin on this predetermined route at 30 minutes before local sunrise. Counts would not be run on days when the wind velocity is in excess of eight miles per hour or when rain is falling. At the first listening station, turn off the engine and walk approximately 20 feet from the car. Avoid slamming the door or making other sudden noises which might stimulate crowing or drown out calls. Stand perfectly still, face at right angles to the wind and for exactly two minutes count *all* crowing calls heard, even if more than one call appears to be from the same cock. Record only the typical two-syllable crowing call. Do not count calls that are so faint or distant that only one syllable is heard. After counting at the first station, drive one mile to the next station as rapidly as is feasible, and repeat the procedure. In some cases, it may be necessary to go slightly more or less than a mile to get away from local interferences such as a noisy stream or power line. Such an adjustment should be entered both on the survey route map and in the "Remarks" column of the crowing count recording form.

Birds seen along the route are recorded in the appropriate section of the form. Since the recording of such observations is secondary to the call counts, a minimum of time should be allowed for these efforts. In no case should the observer stop and attempt to flush birds since it is important that the time be utilized at the listening stations and traveling en route between stations.

The survey should be conducted at least three times along each route. The survey with the highest overall count would be used to measure the maximum crowing activity. The number of calls per station is recorded on a standard form in the appropriate column. For comparative purposes, the results should be presented as follows: an average of calls per station for stations 1 through 5; an average of calls per station for stations 6 through 10; an average of calls per station for stations 11 through 15; and an average of calls per station for all 15 stations.

To be utilized in conjunction with the crowing count survey, the committee decided on a standard flush count method. This technique would allow a determination of the sex ratio and a general index of the overall winter population density. Either flushing or pointing dogs may be used for the count. The dogs should have had some degree of familiarization with the species involved before counting for record. The following formula states the basis for this man-dog-flush count index:

$$X = \frac{Y}{(a+b)c}$$

X=Man-dog-hour flush index (birds flushed per man-dog-hour)

a=Number of observers

b=Number of dogs

c=Number of hours hunted

Y=Total number of birds observed

The flush count should be made in late fall and winter when cover is at a minimum. An effort should be made to flush all birds from likely coverts of the area being hunted. The record of each count should include: date, time started and time stopped, total time hunted, weather conditions, area hunted, general statement as to coverts hunted, number of observers, number and breed of dogs used, number of cocks observed, number of hens observed, number of birds observed of undetermined sex, and total number of birds observed. This technique leaves many of the variable factors of the above formula to the discretion of the individuals conducting the count. For example, the time of day, ratio of observers to dogs, and types of dogs used, will all be determined at each project level. At the present, collected data in the Southeast

PHEASANT CROWING COUNT RECORD

Date _____ Observer _____
 County _____ Area _____

Local Official Sunrise _____ A. M. Amount of water on cover (a) light
 (b) medium (c) heavy (circle one).

At Start of Route: Temp. _____ ° F. Percent Sky Clouded _____ Wind _____ Dir. _____

At End of Route: Temp. _____ ° F. Percent Sky Clouded _____ Wind _____ Dir. _____

Station Number	Number Crowing Calls	Remarks		Total Calls (Station 1 thru 5)
		No. Observed Cocks	Hens	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Total Calls (Stations 1 thru 15) _____ Average Calls per Station (1 thru 15) _____

Total Observed: Cocks _____; Hens _____; Sex Undetermined _____

Additional Remarks:

is not sufficient to recommend standards for these factors. It should be noted that the committee recommends the recording of these factors for each count. Therefore, through compilation of these data within the next few years, the committee would be in a position to suggest a standard flush count technique.

Evaluation of experimental releases of Black Francolin and Bamboo Partridge in the Southeast is in the preliminary stages. Incidental observation reports of persons working or residing on the release area are recorded. Bird dogs will effectively work each of these species. Due to the distinctive call of both the Bamboo Partridge and Black Francolin, a call count survey should be effective. Because of the small amount of knowledge on the behavior of these species on new release areas, refinements of census techniques are mandatory before reliable estimates as to the population status can be obtained.

Such census procedures as the call count survey and man-dog-hour flush index are adaptable to use on relatively small areas having low and dispersed populations.

Although several other types of census techniques are employed in "pheasant" states, the committee agreed that the above mentioned procedures be recommended to the Southeast as standard basic techniques for evaluating experimental releases, especially while establishment of populations is in the experimental stage. It is hoped that these recommended procedures would stimulate continued experimental work on census techniques at the individual project level.

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INTRODUCTIONS OF THE BLACKNECK PHEASANT GROUP AND CROSSES INTO THE SOUTHEASTERN STATES

Presented at the Seventeenth Annual Meeting of the Southeastern Association of Game and Fish Commissioners September 30, October 1, 2, 1963 — Hot Springs, Arkansas¹

BY

LEE K. NELSON

Kentucky Department of Fish and Wildlife Resources
Frankfort, Kentucky

"He only is exempt from failures who makes no efforts"—Whately.

Introductions of foreign game birds into the Southeast have been and will be fraught with "failures." At least we are making a good effort, and who knows what our success will be. Some of the most encouraging prospects lie with our blackneck pheasant group and crosses involving this group. This group may be better known to some as the Iranian pheasants. Of the four subspecies that it contains, we are primarily concerned with the Eastern (*Phasianus colchicus persicus*) and the Western (*Phasianus colchicus talischensis*). Releases have involved pure strain individuals and crosses with the northern ringneck (*Phasianus colchicus torquatus*).

It would be presumptuous to draw any final conclusions here and now. Not enough time has elapsed since initial stockings nor have all

¹ Prepared for the program session allocated to the Foreign Game Committee of the Southeastern Section of the Wildlife Society.