

LITERATURE CITED

- Gore, J. F., and C. J. Barstow. 1969. Status of A Free Flying Resident Flock of Canada Geese (*Branta canadensis*) in Tennessee. Proc. Southeast Assoc. Game and Fish Comm. Conf. 23:101-104.
- Lewis, J. C. 1962. Preliminary X-ray Studies of Deer Productivity near Crossville, Tennessee, Proc. Southeast Assoc. Game and Fish Comm. Conf. 16:24-28.
- Lewis, J. C. and E. Legler, Jr. 1968. Lead Shot Ingestion by Mourning Doves and Incidence in Soil. J. Wildl. Mgmt. 32(3):476-482.
- Whitehead, C. J., Jr. 1966. Catoosa Wildlife Management Research. Ann. Prog. Rept. of Investigation Proj. W-35-R-6, Tenn. Game and Fish Comm., Nashville. 55 pp.

A COMPARISON OF NESTING IN CANADA GEESE USED FOR ESTABLISHING HOME-GROWN FLOCKS

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A plan was initiated in 1960 for establishing a local nesting colony of Canada geese (*Branta canadensis*) on Rockefeller Wildlife Refuge in Louisiana; however, little information was available on Canada goose nesting along the gulf coast. Previous reports on establishing local nesting populations dealt mostly with attempts in north central and northeastern states (U.S. Department of the Interior, 1958; Clark and Nightingale, 1960). Therefore, much of the earlier work on this project was experimental in nature. The purpose of this study was to compare the breeding behavior of Canada geese of different source and age groups and to evaluate the value of each group toward the establishment of a home-grown flock.

The comparison of Canada geese from different sources was made by determining the percentage of adult birds in each group which nested. The groups compared were: hand-reared giant Canada geese (*B. c. maxima*), wild-trapped Canada geese (*B. c. interior*), and locally-hatched geese, which were mostly *B. c. interior*.

Two age groups were compared among the wild-trapped birds. One group consisting of 500 young, was brought to the refuge in 1968 when only two weeks old. The young were transported to Rockefeller Refuge soon after hatching and reared on the area. The geese were banded and permitted to fly to determine if they would remain in the area.

The other age group of wild-trapped Canada geese were captured as adults and taken with cannon net on Swan Lake National Wildlife Refuge in Missouri. This group consisted of 1,500 geese and were trucked to Rockefeller Refuge in November 1963, wing-clipped to prevent flight, banded, and released in a 200-acre enclosure. The adults were held on the refuge for 2 years by subsequent wing-clippings during the summers of 1964 and 1965. They were not wing-clipped during 1966 and were permitted to fly to determine if they would remain on the area after being held there for 2 years.

In 1965, 140 hand-reared giant Canadas were purchased from game breeders in Minnesota and transported to Rockefeller Refuge when about 6 months of age. This group was also leg-banded for future identification.

Locally hatched Canada geese were used somewhat as a check against which other groups were compared. Comparisons were also made among age classes of 887 locally hatched geese using 9 age classes of birds hatched between 1961 and 1970.

Individual geese were identified by the leg bands, and 212 geese from different sources were marked with plexi-glass collars of different colors. The geese nested within a 150-acre area on the refuge, and an attempt was made to locate each nest and identify the nesters. During the 1971 and 1972 nesting season 87 banded geese were captured nesting and 149 collared geese were observed nesting.

The evaluation of nesting rates among Canada geese of different sources showed considerable variation among groups and somewhat confirmed earlier recommendations by others regarding the selection of transplant stock. The U.S. Department of Interior (1958) recommended the exclusive use of birds-of-the-year for Canada goose transplants and stressed that the source of transplant stock be taken as near as possible to the release site. Best results were obtained during our study using immature geese, but the source of birds did not appear to affect their nesting rate. Canada goose goslings brought to Louisiana from Saskatchewan nested at rates equal to or exceeding those of the same subspecies which were hatched locally (Tables 1 and 2).

Clark and Nightingale (1960) used birds-of-the-year for establishing captive flocks, and trapped wild birds on the wintering grounds. They wing-clipped the geese each summer to prevent flight and dispersal from the release site. During our study, excellent results were obtained by collecting eggs from Canada goose nests, incubating them artificially, and transferring the young to the release site soon after hatching. Goslings were transported over 1,000 miles to the release site with very little mortality. Brooder facilities were used to rear the young at the release site, and they were permitted to fly the same year and remained at the release site.

The giant Canada goose is a spectacular bird and is well adapted for use in establishing home grown flocks (Dill and Lee, 1970). However, these birds are very costly when purchased from game breeders, and in recent years have been in short supply. During this evaluation *B. c. interior* nested at rates equal to that of the giant Canada under similar situations. Setting standards of acceptability for potential breeders based on body measurements is not always desirable. Very often numbers of birds may be more important than sizes of individual birds.

Canada geese which were wild-trapped as adults did not nest during 2 years in captivity and when permitted to fly, migrated northward the following spring.

Juvenile Canada geese were trapped during the fall on a Swan Lake National Wildlife Refuge, the primaries pulled, and the birds released on Lacassine National Wildlife Refuge near the study area. The primaries grew out in about 6 weeks and the geese were again able to fly. Most remained through the winter, but by the following summer all had migrated northward (Hankla, 1968).

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Table 1. A nesting comparison for Canada geese of different source and age groups based on the capture of banded birds.

Source of geese	Year obtained or hatched	Flight status	No. present originally	No. captured nesting		Percent of original flock captured	
				1971	1972	1971	1972
Hatched locally	1961	Flightless	3	2	1	66.7	33.3
"	1962	Flightless	25	Ukn.	Ukn.	Ukn.	Ukn.
"	1963	Flyer	19	3	3	15.8	15.8
"	1964	Flyer	23	4	6	17.4	26.1
"	1965	Flyer	22	4	3	18.2	13.6
"	1966	Flightless	47	6	7	31.6	14.9
"	1967	Flyer	41	2	2	4.9	4.9
"	1968	Flyer	156	10	13	6.4	8.3
"	1969	Flyer	207	6	10	2.3	4.8
"	1970	Flyer	304	0	5	0	1.6
"	1965	Flightless	140	22	11	15.7	7.8
Hand-reared (Imm)a							
Wild-trapped (Adults)b	1963	Flyer	1500	0	0	0	0
Wild-trapped (Imm.)c	1968	Flyer	500	39	48	7.8	9.6

aGiant Canadas purchased in Minnesota and transported to Louisiana while immature.

bCaptured as adults in Missouri, transported to Louisiana and held flightless for 3 years.

cCaptured in Saskatchewan, transported to Louisiana when 2 weeks old, and permitted to fly when able.

Table 2. A nesting comparison for Canada geese of different sources based on the observation of neck collars.

	No. collared	No. collared geese nesting		Percent collared geese nesting	
		1971	1972	1971	1972
Hatched locally (Flyers) ^a	63	21	16	33.3	25.3
Wild-trapped (Flyers) ^b	74	29	25	39.2	33.8
Hand-reared (Flightless) ^c	75	35	23	46.7	30.7

^aHatched on Rockefeller Refuge prior to 1969

^bCaptured in Saskatchewan 1968, transported to Louisiana when 2 weeks old and permitted to fly when able.

^cGiant Canadas purchased in Minnesota and transported to Louisiana when 6 months old.

LITERATURE CITED

- Clark, E. R. and G. T. Nightingale. 1960. Canada goose management on national wildlife refuges in the Northeast. Trans. N.E. Wildlife Conference. 7 p.
- Dill, H. H. and F. B. Lee. 1970. Home grown honkers. U. S. Dept. of Interior, Wash. D.C. 154 p.
- Hankla, D. J. 1968. Summary of Canada goose transplant program on nine national wildlife refuges in the southeast, 1953-1965. In Ruth L. Hine and Clay Schoenfeld (Editors). Canada goose management - current continental problems and programs. Dembar Educational Research Services, Inc. Madison. Wisc. p. 105-111.
- U. S. Department of Interior. Bureau of Sport Fisheries and Wildlife, Branch of Wildlife Refuges. 1958. The restoration of breeding Canada goose populations on national wildlife refuges. Wildlife Management Series Leaflet No. 15. 21 p. (mimeogr.)

REFINEMENT OF A METHOD FOR CALCULATING WOOD DUCK SURVIVAL

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ABSTRACT

Web-tagging and banding returns from Wood Ducks (*Aix sponsa*) returning to their natal area after their first migration indicated that four times as many females returned as males. The proportion of returning ducks that had been banded as well as web-tagged was, however, the same for males and females.

Most researchers who investigate pre-flight survival of Wood Ducks, utilize the technique of marking nestlings and recovering them after they reach flight stage. The procedures outlined by Grice and Rogers (1965) are most often followed. In this method, a portion of the ducks that had been web-tagged as nestlings are trapped as they reach flight stage, banded and released. This produces, in the wild population, two types of marked birds: those which are web-tagged only (single marked); and those which are web-tagged and banded (double marked).