

SUCCESS OF SINGLE-PARENT MOURNING DOVE NESTS

GEORGE H. HAAS, U.S. Fish and Wildlife Service, Southeast Mourning Dove Station, School of Forest Resources, Athens, GA 30602

Abstract: Success of 1-parent mourning dove (*Zenaida macroura*) nests was the same as success of normal 2-parent nests, when the nests were disrupted following the eighth day after hatching. The time from hatching to fledging of 1-parent nests was the same as the period of parental care for normal 2-parent nests, when the nests were disrupted following the tenth day after hatching. Nests disrupted before the eleventh day after hatching, required a longer period of parental care. The age of 2 squabs, which could be successfully reared by 1 adult, coincides with the onset of crop gland regression in the adult.

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Recently, nationwide attention has been focused on the effect of September hunting on mourning dove populations by 2 multi-agency, nationwide studies, whose objectives were (1) to determine the proportion of annual mourning dove nesting activity and success that occurs in September and October, and (2) to determine if the daily survival rate of mourning dove nests, and of individuals (egg/nestling) is lower in areas where early September dove hunting is permitted compared with areas where it is not permitted. One facet of this problem not directly addressed by these 2 nationwide studies is the effect of the loss of 1 parent on squab survival.

Laub (1956) found that nestlings deprived of 1 parent must be 6 to 8 days old, before they can both be expected to survive and successfully fledge. Laub's study covered the entire nesting cycle; he found that single parent nests were unsuccessful if disrupted during incubation. His conclusions were based upon relatively low sample sizes.

The present study focused upon the brood-rearing period of the nesting cycle with the objective of determining the point in the brood-rearing period that a single parent could successfully rear its young.

METHODS

This study was conducted in the north-central South Carolina counties of Chesterfield, Darlington, Kershaw, and Marlboro from April through July in 1978 and 1979.

Success of a single mourning dove parent in rearing a brood to the age of 16 days was examined by comparisons with success of normal 2-parent (control) nests. Only nests first encountered during the incubation stage and containing 2 eggs were used for this study. The first 16 days after hatching were divided into 2-day intervals (8 sampling period sets of data). For each experimental nest, the day of removal of one parent was randomly allocated. Doves were removed with mist nets, nest traps (Swank 1952), or by shooting. Further comparisons between single-parent nests and normal 2-parent nests were made by recording the length of time parental care was readily observed for successful nests and by recording the crop gland development phase (Mirarchi et al. 1978) in all doves collected.

RESULTS AND DISCUSSION

In 1978, 122 experimental nests (15-16 experimental nests within each of the 2-day sampling periods during the first 16 days after hatching) and 32 control nests were studied. In 1979, 136 experimental nests (17 within each of 8 sampling periods) and 64 control nests were used.

When 1978 nesting success data for each of 8 experimental groups and the control group were compared with the corresponding sets of 1979 data via Chi-square 2 X 2 contingency tables (Snedecor and Cochran 1967), no difference ($P < 0.05$) was found between the 2 years. Nor were yearly differences ($P < 0.05$) found when the same data sets were examined for length of brood-rearing period via t-test comparisons (Snedecor and Cochran 1967).

Using the same statistical tests, the combined 1978-79 data (8 groups of experimental nests) were examined for sex (parent) differences in nesting success and length of the brood-rearing period. No differences ($P < 0.05$) could be found in either of the 8 comparisons for nest success and for length of the brood-rearing period. Because there were no year or sex differences observed, the 1978-79 data were combined for further analysis (Table 1).

Table 1. Mourning dove nesting success on 258 nests from which 1-parent was removed (experimental nests) at various times within the brood-rearing period, and outcome of 96 normal 2-parent nests (control nests), 1978-79.

Days following hatching	N nests	Percent success	Hatching to fledging (X days + S.E.)
Experimental nests:			
1 - 2	33	0	
3 - 4	32	0	
5 - 6	32	12	26.2 + 2.3
7 - 8	33	30	21.3 + 1.1
9 - 10	32	44	20.1 + 0.8
11 - 12	32	47	17.4 + 0.6
13 - 14	32	50	17.1 + 0.5
15 - 16	32	53	17.5 + 0.7
Control nests:	96	46	17.5 + 0.3

Success of Single-parent Nests

Single adult mourning doves were not able to rear young successfully if a mate was lost before the fifth day after hatching (Table 1). There was a difference ($P < 0.05$) between success of nests losing 1 parent during the fifth and sixth days after hatching (12%) and normal 2-parent nests (49%) observed from 5 days post-hatching to nest completion, and there was a difference between success of nests losing 1 parent during the seventh and eighth days after hatching (30%) and normal 2-parent nests (55%) observed from 7 days post-hatching to nest completion. However, success was not different ($P < 0.05$) between nests losing 1 parent during the ninth and tenth days after hatching (44%) and normal 2-parent nests (59%) observed from 9 days post-hatching to nest completion. These findings are similar to those of Laub (1956).

Fledging Period for Single-parent Nests

Normal nesting pairs were observed to care for their young an average of 17.5 days (Table 1); this was similar to the length of parental care observed in earlier studies (Mirarchi 1978, Taylor 1941, Webb 1950). However, a radio-location telemetry study of immature mourning doves in Alabama (Ralph Mirarchi, Personal Communication) has shown the length of parental care for young to be about 27 days. Hence, the present study deals only with the length of time that young are cared for by adults at the nest site.

The time from hatching to fledging for normal 2-parent nests was different ($P < 0.001$) from that of nests losing 1 parent during the fifth and sixth day after hatching, during the

seventh and eighth day after hatching, and during the ninth and tenth day after hatching. After the tenth day from hatching, there were no differences ($P < 0.05$).

Crop Gland Activity and Single-parent Nesting Success

The incidence of active crop glands began to decrease the seventh day after hatching (Table 2). Adult male crop glands persisted longer and regressed at a slower rate than adult female crop glands. Mirarchi and Scanlon (1980) also observed this phenomena. No active crop glands were found following the tenth day after hatching, corresponding with the time that 1-parent nest success became the same as 2-parent nest success. The finding of this study supports Laub's (1956) hypothesis, that the age from which 2 squabs can be reared successfully by 1 adult coincides with the point at which the adult's crop ceases to produce milk (sixth to eighth day of brooding).

Therefore, it is possible for mourning dove nests to be disrupted by the removal of 1 parent and still be successful, if these nests have passed the mid-point of the brood-rearing period. At this point the crop gland becomes less important to the survival of the squabs. Even then, these nests will require a longer period of parental care, unless the nest is disrupted after the tenth day following hatching.

Table 2. Crop gland status of nesting adult male and female mourning doves collected during the first 16 days following hatching.

Days following hatching	Male crop gland (percent)				Female crop gland status (percent)			
	N	Active	Regressing	Inactive	N	Active	Regressing	Inactive
1 - 2	17	100			16	100		
3 - 4	16	100			16	100		
5 - 6	16	100			16	100		
7 - 8	17	100			16	63	37	
9 - 10	16	12	88		16		100	
11 - 12	16		100		16		19	81
13 - 14	16		81	19	16			100
15 - 16	16		12	88	16			100

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