WILDLIFE SESSION

PRIMARY FEATHER MOLT OF ADULT MOURNING DOVES IN CENTRAL TEXAS[1]

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Abstract: Adult mourning doves *(Zenaida macroura)* were live trapped on the Texas A&M University Campus during August through December in 1978 and 1979. Known adult doves were examined to determine the sequence of primary replacement. A linear regression of primary molt on time indicated that less than 1 percent of adults completed molt by 1 September. All adult doves had completed molt by 1 December. Classing all doves which have completed molt in September as hatch-year birds would cause no significant aging bias in Texas.

Proc. Ann. Conf. S.E. Assoc. Fish & Wildl. Agencies 34:410-414

The mourning dove is a widely distributed, highly desirable migratory game bird of great economic and recreational importance (Keeler 1977). Data on population structure and relative success of production have been gathered from collections of wings from hunters during the fall hunting season. Immature mourning doves can be separated from adults by the presence of buffy tipped primary coverts (Swank 1955) or outer primary wear (Wight et al. 1967). After the juvenile molt is complete, separation of juveniles from adults which have completed their molt is impossible. Sadler et al. (1970) reported that in Missouri no more than 2.5 percent of adults had completed their molt by the end of September. Thus, no significant bias would be introduced by classing all birds with completed primary molt as juveniles. However, Haas and Amend (1979) reported that 7.5 percent of the adult doves in North and South Carolina had completed their molt by the first week of September and nearly 50 percent by the first week of October.

This paper describes the sequence of primary molt of known adult doves during the fall hunting season in central Texas. The objective of this study was to determine if doves in Texas follow a molt pattern similar to that found by Sadler et al. (1967) in Missouri or follow the sequence presented by Haas and Amend (1979) for doves in the Carolinas.

The authors would like to thank The Wildlife Management Institute, The American Petroleum Institute, the Tom B. Slick Fellowship Fund, the Texas A&M University Association of Former Students, and the Texas Agricultural Experiment Station, Texas A&M University for their support of this project.

METHODS

The main campus at Texas A&M University, College Station, Texas, is approximately 325 ha of park-like fields surrounded by trees, predominately live oak *(Quercus virginiana)* (Swank 1952), and has more than 120 buildings. Many large buildings in the center of the campus have flat, gravel-covered roofs which are frequented by doves throughout the year (Bivings 1980).

[1]Texas Agricultural Experiment Station, Technical Article 16489.

Mourning doves were live-trapped on the roofs of campus buildings (Bivings and Silvy 1979) using modified funnel traps baited with a combination of milo and cracked corn (Reeves et al. 1968) from February 1978 through December 1979. Doves were aged (Swank 1955 or Wight et al. 1967), sexed (Petrides 1950), and banded using a combination of size 3A Federal bands and colored plastic leg bands (Reeves et al. 1968). Primary molt information was recorded for adult doves (Haas and Amend 1979).

Data were collected on primary molt of all known adult doves encounted during the months from August through December. Multiple recaptures within the same interval were treated as a single observation. Primaries were designated P1 (proximal) through P10 (distal). Linear regression analysis (Steel and Torrie 1960) was performed to determine if the rate of primary molt could be accurately predicted. Values for the dependent variable (primary molt) were lumped into groups and assigned a numerical value from 0 to 11 based on the last primary molted. Doves which had completed their molt were assigned a value of 11. Values for the independent variable (time) were obtained by pooling the observations into 13 groups of approximately 10 days each. Intervals were about 10 days because some months could not be equally divided into thirds. Since all doves observed in December had completed their primary molt, only the first interval in December was included in the regression analysis.

RESULTS

From 1 August through 31 December in 1978 and 1979, 230 encounters with adult doves yielded 116 usable recaptures of known adult doves (Table 1). Of the 21 observations of known adults in August, only 1 had molted P8 and none had molted P9 or P10. In September, observations were made on 17 known adults and 35 nesting doves collected for another study. Of these, none had molted P10 and only 2 had just molted P9. The rest had molted P6, P7, or P8. Thus, only 1 known adult was observed which could have been expected to molt P10 anytime during September.

A linear regression of primary molt on time was performed on the data from 93 observations of known adult doves collected between 1 August through 10 December 1978 and 1 August through 10 December 1979. The resulting regression line had a correlation coefficient ($r=0.95$, $P< 0.05$) which indicated a significant relationship between primary molt and time. The regression equation $y = 4.79 + 0.51x$ (Fig. 1) predicted that the average dove would molt P8 near 1 October, and that primaries were molted every 19.9 days.

DISCUSSION

Because it is not possible to separate age classes of mourning doves after primary molt is completed, it is important to determine the primary molt stage of the adult doves if age ratios of the total population are to be accurately estimated. Since substantial numbers of juvenile doves have completed primary molt by September, a problem exists if a large proportion of the adult dove population has also completed primary molt by this time.

Only 1 dove, which represents less than 1 percent of the adults sampled, would have been predicted to complete molt in September. Since the regression equation predicted primaries being molted every 19.9 days, which was 4.9 days longer than reported by Haas and Amend (1979), it appeared that classing all doves which had completed molt in September as hatch-year birds would have caused no substantial bias in Texas. Similar results were observed by Sadler et al. (1970) and Wight et al. (1967), but the results of Haas and Amend (1979) were different. However, since the regression equation predicted that the average dove would have molted P8 by 1 October, large numbers of adults could have completed primary molt by mid-October. By this time, roughly half of the fall season in the south dove hunting zone and nearly all of the fall season in the north dove hunting

Table 1. Primary feather molt from 116 recaptures of known adult mourning doves by 10-day intervals from August - 31 December, 1978 and 1979 on the Texas A&M University campus. Numbers represent total individuals within each catagory.

Primary	Time period														
molt	August			September			October			November			December		
stage	1[1]	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Complete										6	1	19	8	22	1
P10										11		4			
P9						1		2		1					
P8		1			2	3	2								
P7				3	1	6	1								
P6	9	2	2		1										
P5	2	2													
P4	2														
P3	1														
P2															
P1															

[1]consecutive 10-day intervals

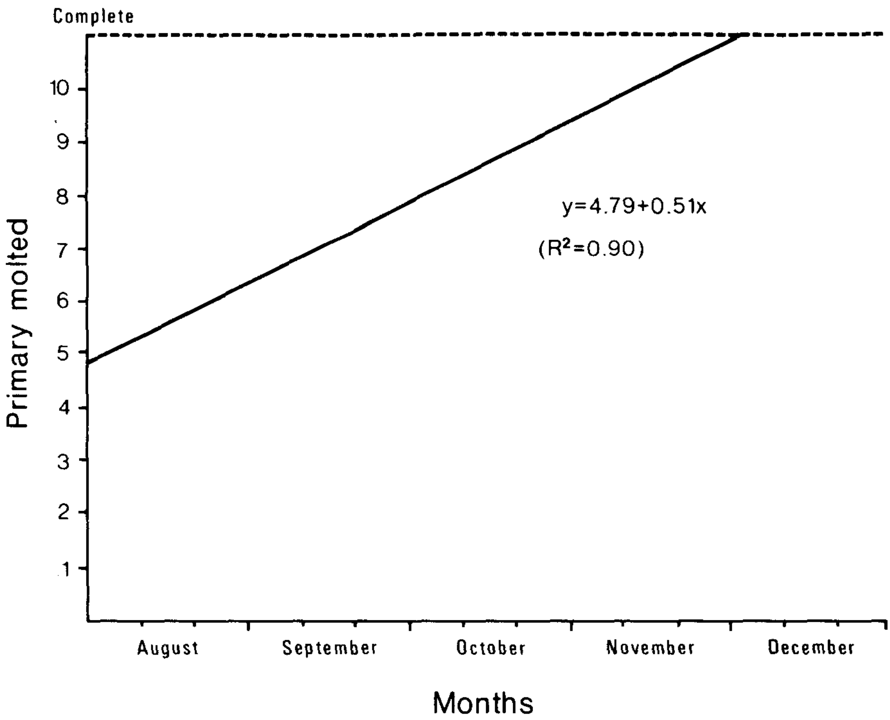

Figure 1. Primary feather molt (1 August - 10 December) for 93 observations of known adult mourning doves on the Texas A&M University Campus, 1978-1979.

zone of Texas would be complete. Thus, it is probably reasonable to class all doves with completed primary molt as juveniles during the fall season in the north hunting zone of Texas. However, since the south hunting zone does not open until late September, only those wings from doves shot in September and early October should be classed as juveniles and the rest classed as unknown.

Haas and Amend (1979) hypothesized that their data differed from Sadler et al. (1970) because of a north-south climate gradient. The findings of this study do not support such a hypothesis. Our study site is sufficiently south of Missouri, and if a significant north-south gradient existed, such a gradient should be apparent when data from our study are compared to data by Sadler et al. (1970). No such gradient was found. It is possible that an east-west gradient exists based upon differences between subspecies. No east-west gradient can be determined from our data since our dove population apparently consists of both eastern and western subspecies (Bivings 1980) and probably many crosses between these 2 subspecies.

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