Movement and Survival of Mourning Doves Banded Pre-season in Texas[1]

Albert E. Bivings, IV,[2] *Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843*

Michael E. Morrow, *Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843*

Nova J. Silvy, *Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77843*

Abstract: Mourning doves (*Zenaida macroura*) were banded pre-season (May–August) on the Texas A&M University campus as nestlings, free-flying juveniles, or adults. Analysis of direct hunter recoveries revealed no differences ($P > 0.05$) between the 3 banding classes and recovery distance. Calculation of survival rates from capture-recapture data indicated that adult survival (46.2%) was higher ($P < 0.0001$) than first year survival of immatures (free-flying juveniles 18.0%, nestlings 19.5%).

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 38:153-157

The mourning dove is a highly desirable game bird that offers quality sport hunting opportunities in most of the United States and Mexico (Keeler 1977). Many investigators across the United States have studied movement, survivorship, and other aspects of mourning dove ecology (Southeast. Assoc. Game and Fish Comm. 1957, Tomlinson et al. 1960, Dunks 1977, Atkinson et al. 1982, Dunks et al. 1982). Most of the studies compare adult and immature age classes. Only 1 (Southeast. Assoc. Game and Fish Comm. 1957) presents data on doves banded as nestlings. In this paper, movement and survival are compared of (1) adult, (2) free-flying juvenile, and (3) nestling doves banded in central Texas.

The authors acknowledge The Wildlife Management Institute, The American Petroleum Institute, the Tom B. Slick Fellowship Fund, the Caesar Kleberg

[1] Texas Agricultural Experiment Station, Technical Article TA-20139.

[2] Present address: U.S. Fish and Wildlife Service, Wildlife Assistance Office, P.O. Box 570, Stuttgart, AR 72160.

Wildlife Research Foundation, the Texas A&M University Association of Former Students, and the Texas Agricultural Experiment Station, Texas A&M University, for support of this project.

Methods

The main campus at Texas A&M University, College Station, Texas (Brazos County), consists of approximately 325 ha of park-like area interspersed with trees, predominately live oak (*Quercus virginiana*). Several of the large buildings in the center of campus have flat, gravel-covered roofs which are frequented by doves throughout the year (Bivings 1980). Mourning doves were live-trapped from 1978 to 1982 on the roofs of campus buildings using modified funnel traps baited with a combination of milo and cracked corn (Bivings and Silvy 1979). Doves were aged (Swank 1955, Wight et al. 1967) and banded with size 3A Federal bands and colored plastic leg bands. Nestlings were banded during 1981 and 1982. Nestlings were flushed from nests located on campus when the youngest was approximately 9 days old, banded with a size 3A Federal band, and returned to the nest using a device designed for this purpose (Morrow 1983). Only those birds banded during the pre-season period of May through August (Atkinson et al. 1982) were used in this analysis.

Direct recoveries of juveniles reported by the Bird Banding Laboratory (BBL), Laurel, Maryland, as shot by hunters were analyzed to estimate movement from the banding site. Recapture data and band recoveries classified with other recovery "how obtained" codes were not used due to possible bias, except for 2 Mexican recoveries. These 2 observations were included because of the possibility that they were hunting mortalities coded incorrectly due to the language barriers (1 of these was classified by the BBL as "found dead," but through correspondence with the finder it was later discovered to be a hunter kill). Mean estimated movements for the 3 classes were compared using a modified student's *t*-test (Steel and Torrie 1960). A chi-square test of independence was used to test for association between banding class and distance of recovery. For this analysis, recoveries were classified as >20 km or <20 km from the banding site. A Spearman rank correlation (Steel and Torrie 1960) was also conducted to determine if recovery distance was correlated with the time interval from banding to recovery for the nestling and free-flying juvenile samples.

Survival of the 3 age classes was estimated from capture-recapture data using the technique of Brownie et al. (1978). The model used in these calculations assumes year-specific survival, and recovery rates which are age-dependent during the first year of life. Survival estimates were not based on hunter returns because of the low number of such returns. Contrasts utilizing Z as the test statistic (Brownie et al. 1978) were used to compare survival rates between banding classes.

Results

A total of 33 doves banded as nestlings, 23 as free-flying juveniles, and 10 as adults were direct recoveries (Table 1) from 1,338, 1,123, and 1,170 individuals banded, respectively. The 33 nestlings were recovered an average of 66 km from the banding site, although 25 (76%) were less than 20 km away. One (3%) nestling was recovered in the Mexican state of Jalisco. Excluding this Mexican recovery, the mean recovery distance for nestlings was 21 km. Free-flying juveniles were shot an average of 178 km from the banding site, with 14 (61%) being recovered less than 20 km away. Two (9%) of these birds were also recovered in Jalisco, Mexico. Excluding these 2 recoveries results in a mean recovery distance of 50 km. Mean recovery distance for adults was 13 km, with 9 (90%) being recovered within 20 km of the banding site. No significant difference ($P > 0.05$) was found between mean recovery distances in any of the 3 classes by the student's t-test, nor was any association detected by the chi-square between banding class and recovery distance ($P > 0.05$). The correlation between the recovery time interval and distance for the 2 juvenile age classes was not significant ($P > 0.73$), indicating no relationship between recovery distance and the amount of time since banding.

Survival estimates for the 3 banding classes are presented in Table 2. In general, adults had a higher ($P < 0.0001$) survival rate than immature banding classes. No difference ($P > 0.40$) was detected between first year nestling and first year free-flying juvenile survival.

Discussion

Previous studies have indicated that immature doves disperse from their natal areas soon after fledging (Tomlinson et al. 1960, Hanson and Kossack 1963, Watts 1969, Orr 1973, Dunks et al. 1982). Although statistical differences in movements were not detected due to large standard deviations, data in this study are consistent with these studies in that the mean recovery distance for immature doves was higher than that for adults. This suggests that immature

Table 1. Direct recoveries of mourning doves banded pre-season (May–Aug) on the Texas A&M University campus, 1978–82.

Banding class	N	Mean movement km	Mean movement SD	% of recoveries <20 km from banding site	% of recoveries In Texas >20 km from banding site	% of recoveries In Mexico
Nestlings	33	66	163	76	21	3
Free-flying juveniles	23	178	266	61	30	9
All immatures	56	112	212	70	25	5
Adults	10	13	24	90	10	0

Table 2. Survival estimates of mourning doves from recapture data on the Texas A&M University Campus. Data are from 1978–82 for adults and free-flying juveniles and from 1981–82 for those banded as nestlings.

Banding class	Number of doves		Mean survival		
	Banded	Recaptures	%	SE	95% confidence interval
Adults[a]	1,170	318	46.2	3.9	(38.5, 53.9)
Free-flying juveniles	1,123	91	18.0	3.2	(11.7, 24.3)
Nestlings	1,338	53	19.5	5.5	(8.8, 30.2)

[a] Estimated from age-dependent calculation with free-flying juveniles.

birds tended to be more migratory. If juvenile doves begin to move away from their hatching areas soon after fledging, then samples of free-flying juveniles may not represent doves hatched in the trapping area but may be migrants which have already dispersed from their natal area. This is an important consideration, because most banding studies assume that birds trapped as free-flying juveniles represent local birds (e.g., Dunks et al. 1982). While free-flying juveniles may not be local birds, there is sufficient similarity in recovery distances and survival rates, at least in central Texas, to treat them the same as locally hatched birds in most analyses.

Literature Cited

Atkinson, R. D., T. S. Baskett, and K. C. Sadler. 1982. Population dynamics of mourning doves banded in Missouri. U. S. Dep. Int., Fish and Wildl. Serv. Spec. Sci. Rep. Wildl. No. 250. 20pp.

Bivings, A. E., IV. 1980. Breeding ecology of the mourning dove on the Texas A&M University Campus. Ph.D. Thesis, Texas A&M Univ., College Station. 55pp.

——— and N. J. Silvy. 1979. Roof-top trapping of urban mourning doves. Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies. 33:154–158.

Brownie, C. D., R. Anderson, K. P. Burnham, and D. S. Robson. 1978. Statistical inference from band recovery data—a handbook. U.S. Dep. Int., Fish and Wildl. Serv. Res. Publ. No. 131.. Washington, D.C. 212pp.

Dunks, J. H. 1977. Texas mourning dove band recovery analysis. Texas Parks and Wildl. Dep., Fed. Aid Rep. Ser. 14. 94pp.

———, R. E. Tomlinson, H. M. Reeves, D. D. Dolton, C. E. Braun, and T. P. Zapatka. 1982. Migration, harvest, and population dynamics of mourning doves banded in the Central Management Unit, 1967–77. U. S. Dep. Int. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. No. 249. 128pp.

Hanson, H. C. and C. W. Kossack. 1963. The mourning dove in Illinois. Ill. Dep. Conserv. Tech. Bul. 2. 133pp.

Keeler, J. E. 1977. Mourning dove (*Zenaida macroura*). Pages 275–298 *in* G. C. Sanderson, ed. Management of migratory shore and upland game birds in North America. Internat. Assoc. Fish and Wildl. Agencies, Washington, D.C.

Morrow, M. E. 1983. Primary feather molt of juvenile mourning doves in Texas. M.S. Thesis, Texas A&M Univ., College Station. 45pp.

Orr, D. H. 1973. Population characteristics and dynamics of the mourning dove in Tennessee. M.S. Thesis, La. State Univ., Baton Rouge. 124pp.

Southeastern Association of Game and Fish Commissioners. 1957. Mourning dove investigations, 1948–1956. Tech. Bul. No. 1, Southeast. Assoc. Game and Fish Comm. 166pp.

Steel, R. G. D. and J. H. Torrie. 1960. Principles and procedures of statistics. McGraw-Hill, New York. 481pp.

Swank, W. G. 1955. Feather molt as an ageing technique for mourning doves. J. Wildl. Manage. 19:412–414.

Tomlinson, R. E., H. M. Wight, and T. S. Baskett. 1960. Migrational homing, local movement, and mortality of mourning doves in Missouri. Trans. N. Am. Wildl. Nat. Resour. Conf. 25:253–267.

Watts, K. N. 1969. Population dynamics of the mourning dove in Louisiana. M.A. Thesis, La. State Univ., Baton Rouge. 262pp.

Wight, H. M., L. H. Blankenship, and R. E. Tomlinson. 1967. Aging mourning doves by outer primary wear. J. Wildl. Manage. 31:832–835.