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# The Collapse of a Local Population of Spotted Doves (*Streptopelia chinensis*) in Southern California

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## INTRODUCTION

A decline in the number of Spotted Doves was observed during banding in the Camarillo area of Ventura County, California. To explain this decline, I have reviewed my observations from 1977 to 1990 with the following questions in mind: Was the decline in Spotted Doves an artifact of banding? Was it over an area wider than the Camarillo residential district? Was there any indication of a similar decline in other dove species, especially Mourning Dove (*Zenaida macroura*)?

During my study near Bakersfield, Kern County, California, from 1945-1949 (unpublished), Spotted Doves were present in the city while Mourning Doves were abundant in parks and farmlands outside of the city and residential environments. At the time, I considered that Spotted Doves were better competitors in the city and Mourning Doves in the parks and farmlands.

## METHODS

The data presented here were taken from three studies:

(1) Banding in a long-established residential area of single family homes surrounded by exotic shade trees, shrubs and gardens. The banding station included two Irl Rogers eight-cell and two single-cell Potter traps (McClure 1984) placed at permanent locations in the lawns for the entire period, January 1977 through December 1990. I kept the traps open and continuously supplied with commercial wild bird seed and sunflower seeds, then set them one day each week from dawn until sunset (625 days). I banded each bird captured with U.S. Fish and Wildlife Service bands. About four ha (10 acres) of lemon groves adjacent to the banding station were replaced by single family houses during the study period.

(2) At the 10 ha (25 acre) Camarillo Oak Grove County Park, 8 km (5 mi) east of town, semi-weekly censuses were conducted for two hours after sunrise from January of 1977 through January of 1983, then at weekly intervals through June, 1987, totaling 740 censuses. The study area included the park of valley oaks (*Quercus agrifolia*) and about 4 ha (10 acres) of coastal chaparral, grazed intermittently. The census area was covered intensively each time in an attempt to locate most birds of all species. A fire destroyed the chaparral habitat in October, 1980 (McClure 1981).

(3) In February 1984, I started another study in order to follow any evident changes in the dove populations. On several mornings a week at sunrise I walked a 1.6 km (1 mi) route through a long-established residential district starting at the Camarillo banding station and counted all birds. Both morning censuses and banding studies were continued through December, 1990, a total of 1450 censuses.

## RESULTS

In 14 years, 3242 Spotted Doves were handled, 1432 were new and 1810 were recaptures (Table 1). During 1977, the doves were becoming acquainted with the feeding station and traps and very few were captured. From then into 1983, the numbers steadily increased. The highest numbers were captured in 1983 and 1984, and then the captures declined each year; one bird was trapped in 1989 and none in 1990. Except for 1977 and 1987, variation in the number of trapping days each year was no more than 10%. During the same period, only 47 Mourning Doves were captured, including five recaptures.

In the study at Oak Grove Park, 3029 Spotted Doves and 2784 Mourning Doves were counted (Table 2). The two species showed different population trends with Spotted Doves peaking in 1980-83 and then decreasing to zero in post-census years as determined by recent spot checks. In contrast, Mourning Doves decreased initially, then increased rapidly to population levels equal to Spotted Doves in 1981-82. This rise might be due to a post-fire food increase. At this time, they shared habitats and even nest trees with Spotted Doves. In 1983, the population dropped abruptly and then slowly recovered.

At the residential census route in Camarillo, 16,208 Spotted Doves and 1,140 Mourning Doves were counted with similar trends as seen in the county park. The Spotted Dove population decreased by a factor of 15.7 from 1984 to 1990, while Mourning Doves increased by a factor of 11. The ratio of Spotted to Mourning Doves changed from 107 to 0.61 over these years. The columns in Table 2 showing average number of birds on each census by year clearly illustrate these trends.

Table 3 shows differences in the use of the two localities by the two doves. The resident Spotted Dove bred in Oak Grove habitats but showed no increase in individuals during the long breeding season, March to October. The monthly averages fell within a range of about +20% of the yearly average. In contrast, Mourning Doves increased during the March to September breeding season to a density more than eight times that of March to October. Dispersal and migration in August and September reduced population levels to their yearly lows in January and February.

## DISCUSSION

No explanation is apparent for the collapse of the Spotted Dove population from these data. I do not know if the breeding population at the park was considerably smaller than the total population there or if the lack of buildup during the breeding season was due to rapid juvenile dispersal or heavy predation on young birds. At both study sites, the decrease in Spotted Doves was accompanied by an increase in Mourning Doves. This does not necessarily prove competition between these two species; either pressure from an increasing Mourning Dove population causing the Spotted Dove decline or that the reductions in Spotted Doves allowing Mourning Doves to increase. There was no die-off of doves in Camarillo as I noted in Tucson in 1982 when dead doves of four species [White-winged (*Zenaida asiatica*), Common Ground

(*Columbina passerina*), Inca (*Columbina inca*), and Mourning] could be seen in open areas. During Mourning Dove hunting season in Ventura County, only a few banded Spotted Doves were reported away from the city by hunters, indicating there had been no massive exodus from town.

Weather in Ventura County during the 14 years varied from the wet winter of 1978-79 to the last five years of drought. This weather pattern undoubtedly affected the numbers and movements of many species of birds. Any attempt to correlate weather with the decline would be clouded by the fact that the studies were made where flora are maintained by artificial watering.

## LITERATURE CITED

- McClure, H.E. 1981. Some responses of resident animals to the effects of fire in a coastal chaparral in southern California. *Cal-Neva Wildlife Transactions* 1981 : 86-99.
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**Table 1.** Records of the Spotted Dove at a Camarillo, CA. banding station.

Year	No. of Days Trapped	No. of Birds Caught			Birds per Day	
		Total	New	Repeat	Total	New
1977	35	3	2	1	.08	.06
1978	49	18	14	4	.36	.28
1979	45	53	36	17	1.18	.80
1980	49	186	134	52	3.70	2.73
1981	47	171	111	60	3.64	2.36
1982	45	416	193	223	9.24	4.29
1983	43	859	286	573	19.97	6.65
1984	46	931	319	612	20.24	6.93
1985	46	344	172	172	7.48	3.74
1986	45	121	70	51	2.68	1.56
1987	38	88	54	34	2.32	1.42
1988	44	51	40	11	1.16	.91
1989	44	1	1	0	.02	.02
1990	49	0			0.00	0.00
<b>Total</b>	<b>625</b>	<b>3242</b>	<b>1432</b>	<b>1810</b>	<b>5.19</b>	<b>2.90</b>

Table 2. Spotted and Mourning Dove numbers in Camarillo Oak Grove County Park and a Camarillo residential area.										
	Number Counts in Park					Number Counts in Town				
		Number Birds		Average			Number Birds		Average	
Year		SPDO	MODO	SPDO	MODO		SPDO	MODO	SPDO	MODO
1977	85	343	238	4.0	3.3					
1978	96	121	413	1.3	4.3					
1979	89	268	174	3.0	1.9					
1980	97	678	123	7.0	1.3					
1981	91	609	621	6.7	6.8					
1982	92	565	661	6.1	7.2					
1983	38	236	49	6.2	1.3					
1984	37	84	52	2.3	1.4	156	4809	45	30.8	.3
1985	46	55	111	1.2	2.4	198	3971	48	20.1	.2
1986	46	51	167	1.1	3.6	208	2299	88	11.1	.4
1987	23	18	105	.8	4.6	183	1319	67	7.2	.4
1988						253	2422	189	9.6	.7
1989						238	1082	250	4.5	1.1
1990						214	306	498	1.4	2.3
Total	740	3029	2754	4.1	3.7	1450	16208	1140	11.1	.8

Table 3.	Monthly Spotted and Mourning Dove numbers at Camarillo Oak Grove Park and a Camarillo residential area.									
	Number Counts in Park					Number Counts in Town				
		Number Birds		Average			Number Birds		Average	
Month		SPDO	MODO	SPDO	MODO		SPDO	MODO	SPDO	MODO
Jan.	73	233	28	3.2	.4	105	458	22	4.4	.2
Feb.	67	251	24	3.7	.4	106	820	30	7.7	.3
Mar.	68	333	74	4.9	1.1	128	1151	73	9.0	.6
Apr.	59	287	164	4.9	2.8	119	1317	100	11.1	.8
May	52	196	321	3.8	6.2	104	1389	125	13.4	1.2
Jun.	60	218	520	3.6	8.7	149	2305	218	15.5	1.5
Jul.	64	275	652	4.3	10.2	119	2348	220	19.7	1.8
Aug.	60	237	547	4.0	9.1	124	2172	136	17.5	1.1
Sep.	64	311	259	4.9	4.0	147	2500	63	17.0	.4
Oct.	57	270	73	4.7	1.3	94	874	40	9.3	.4
Nov.	56	213	49	3.8	.9	112	421	55	3.8	.5
Dec.	60	205	39	3.4	.7	143	453	108	3.2	.8
Total	740	3029	2750	4.1	3.7	1450	16298	1140	11.2	.8