
Twelve Years of Banding at Tanque Verde Ranch, Tucson, Arizona

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Introduction

Tanque Verde Ranch is at the base of the Rincon Mountains—east of Tucson, Arizona (Lat-Long 321-1104), at an elevation of 2,850 feet (863 m) and immediately above the flood plain of the Tanque Verde Wash. Rainfall over a four-year period (1979–1982) ranged from 16.6 inches (422 mm) to 12.3 inches (312 mm) and averaged 14.4 inches (366 mm).

The area consists of two distinct habitats. The first of these is typical lower Sonoran desert scrub dominated by Saguaro (*Carnegiea gigantea*), Palo Verde (*Cercidium microphyllum*) and Mesquite (*Prosopis juliflora*). Ground cover thickets of Four-wing Saltbush (*Atriplex canescens*), Catclaw (*Acacia greggi*), Tomatillo (*Lyceum* sp.), and Greythorn (*Condalia lycioides*) provide substantial cover for birds. The second habitat is riparian. There is a pond which during the first ten years of banding had a stand of Cattail (*Typha* sp.). Near the pond is a stand of Salt Cedar (*Tamarix pantandro*) interspersed with Seep Willow (*Baccharis glutinosa*). Immediately beyond the pond is a mature grove of tall Cottonwoods (*Populus fremontii*) with an understory of Mesquite.

Charles “Chuck” Corchran initiated the banding program at Tanque Verde Ranch in the winter of 1969–70, working alone and using only two or three mist nets. Don Lamm joined him in the fall of 1970 as an assistant and recorder. The program gradually expanded in both number of nets and personnel but was confined to the winter months. Phil Walters joined the group in 1976 and since August 1978 has conducted summer work. Since that time the banding program has been conducted once a week throughout the year.

The mist nets were spread over a total area of approximately 42 acres (21.8 hectares). Located within the banding area were 47 feeders and 14 bird baths which were kept filled.

The primary objectives of this program have been to investigate over an extended period variations in population density, migratory and local movements, arrival and departure dates of migrants, and ageing and sexing criteria.

Here we present an overview of our banding work, but not an analysis of population trends, to illustrate what may be expected from a continuous weekly banding program for many years at one location. Results of specific programs will be published separately. Included here are observations on selected year-round and summer residents, rarities, significant recoveries and population fluctuations.

Methods

Mist nets of 70-denier, two-ply nylon were utilized with mesh size (stretched) of 1.5 inches (3.81 cm), 39 feet (12 m) in length and 6.6 feet (2 m) in depth with four shelves and tethered at the top only. These were stretched between two metal poles approximately 10 feet (3 m) in length. The poles were constructed by cutting in half 10-foot lengths of half-inch EMT electrical conduit. The two halves then were joined by a 10-inch (25 cm) length of three-quarter-inch ID conduit pinched in the middle to prevent the smaller conduit from sliding through. The poles were mounted on approximately 18-inch (46 cm) lengths of half-inch diameter rebar driven about 9 inches (23 cm) into the ground.

Discussion and Conclusions

Annual summary 1970-82

Table I summarizes the number of birds banded, encounters, number of recaptures as a percentage of the total number of encounters (excluding same-day repeats) and number of species banded for each of the 12 years from 1970 to 1982. In addition, the total number of net-hours per year and the number of birds captured per 100 net-hours are tabulated. With the introduction of year-round banding in August 1978, the data for the summer period are shown separately.

Greater numbers of birds were banded and recaptured in winter than in summer. This resulted primarily from the substantial population of White-crowned Sparrows (*Zonotrichia leucophrys*) wintering at the ranch and the high number of recaptures of this species relative to others handled. Conversely, a greater variety of species was banded in summer as a result of an influx of migrants from Mexico, and from Central and South America to breed locally in Arizona and farther north.

In Table II, annual totals are presented for each of the 142 species and 5 subspecies banded at Tanque Verde Ranch.

Year-round residents, 1979-82

Mourning Doves (*Zenaida macroura*) were banded in every month of the 4-year period from 1979 through 1982, primarily between April and October. Inca Doves (*Columbina inca*) also were banded or recaptured in every month.

Gila Woodpeckers (*Melanerpes uropygialis*) declined in numbers handled over this period as seen in Table III. There appears to have been an invasion of the species in February and March of 1979 when 53 were banded and there were 40 recaptures.

The Northern Flicker (*Colaptes auratus*), for reasons not understood, is uncommon at the ranch which appears to provide a suitable habitat. Over the 4-year period only five (three Gilded and two Red-shafted) have been banded and there were no recaptures.

Curve-billed Thrashers (*Toxostoma curvirostre*) were handled in 47 of the 48 months, with peak numbers taken from November through January. Both the number of individuals banded and the total number handled of this species have declined in each of the last four years (Table IV) for reasons not understood.

Northern Cardinals (*Cardinalis cardinalis*) were handled in every month. Pyrrhuloxias (*Cardinalis sinuatis*) were handled primarily from September through March with none handled in May and June. They presumably left the ranch to nest elsewhere during April through August. Three to four Cardinals were handled for each Pyrrhuloxia.

The number of Brown Towhees (*Pipilo fuscus*) handled did not change appreciably through the year. Abert's Towhees (*Pipilo aberti*) were present throughout the year, peaking in numbers handled in July after the young fledged. The number handled declined each year from 1979 through 1981, but stabilized in 1982.

TABLE I. Annual Summary, 1970-1982

Year	Number of Birds Banded		Number of Encounters		Recaptures (Percent of all Encounters)		Number of Species Banded		Total Number of Net Hours		Number of Captures/100 Net Hours	
1970	509		615		17		31					
1971	1006		1161		13		36					
1972	736		1073		31		48					
1973	1678		2587		35		53					
1974	1688		2754		39		50					
1975	2057		3136		34		69					
1976	2464		3712		34		57		1841		202	
1977	1554		2598		40		59		2349		111	
	Summer *	Winter **	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
1978	330	1251	365	2312	9	46	43	53	452	2330	81	99
1979	817	2022	1045	3244	22	38	69	47	1519	2046	69	159
1980	1092	2510	1378	3901	21	36	58	50	1568	2079	88	188
1981	1088	1602	1313	2691	17	40	67	54	1777	1988	74	136
1982	982	1447	1232	2309	20	37	54	40	1599	1782	77	130
TOTAL	4309	20524	5333	32093	19	36	142		6915	14415	77	144

*April-October (except 1978, August-October)

**October-April

Table II (1)
Birds banded at Tanque Verde Ranch, 1970-1982

SPECIES	1970	1971	1972	1973	1974	1975	1976	1977	1978 ^a	1979	1980	1981	1982	TOTAL
Pied-billed Grebe												1		1
Eared Grebe					1									1
Green-backed Heron					2									2
Hooded Merganser ^b				1										1
Sharp-shinned Hawk				1			3		1	2	1	1	1	10
Cooper's Hawk									1	2		2		5
American Kestrel					2	1	1		1			1		6
Gambel's Quail ^c	10	31	10	28	29	83	51							242
Common Moorhen						1								1
American Coot						5						1		6
Killdeer				1		1						1		3
Common Snipe						1	1		5	1		1		9
White-winged Dove	1		1			8	2	6	3	37	78	50	54	240
Mourning Dove	6	2	7	27	26	36	24	46	55	74	168	251	250	972
Inca Dove	1	11	29	37	22	34	35	50	38	62	64	38	85	506
Common Ground-Dove			1			4	1	4	1	2			1	14
Greater Roadrunner										1		1		2
Western Screech-Owl						2					5	6	4	17
Elf Owl						1				7	9	1	11	29
Common Poorwill											1	2	2	5
Belted Kingfisher				1			1		1			2		5
Gila Woodpecker	11	81	36	96	39	75	40	35	61	80	45	33	26	658
Yellow-bel. Sapsucker			1	4	1	4		1	2	2	1			16
Red-brstd Sapsucker											1	1		2
Ladder-bkd Woodpecker				1	3	3			3		3			13
Northern (Red-sh) Flicker	1	1		1	1	1					1		1	6
Northern (Gild) Flicker		3	10	6	6	5	2	6		2		1		41
N. Beardless-Tyrannulet					1					2		1		4
Greater Pewee ^b			1											1
Western Wood-Pewee												2		2
Trall's (Willow?) Flyc.											3	3		6
Least Flycatcher					1									1
Hammond's Flycatcher				1					1	1		1	2	6
Dusky Flycatcher				3					2	2		1		8
Gray Flycatcher						2		1		1	3		1	8
Western Flycatcher				1		2	1	1	9	4	9	8	4	39

House Finches (*Carpodacus mexicanus*) were handled in all months but were more common from December through March than at other times of the year. House Finches were the second most frequently banded species at the ranch, after White-crowned Sparrows.

Summer residents, 1979-1982

This section deals with observation of selected species.

Twenty-eight Elf Owls (*Micrathene whitneyi*) were banded from March through October, 1979-1982. The data obtained have been published previously (Walters, 1981a, 1983).

Only 14 Ash-throated Flycatchers (*Myiarchus cinerascens*) were banded with no recaptures from April through October, 1979-82. In contrast, 71 Brown-crested (Wied's) Flycatchers (*Myiarchus tyrannulus*) were banded with 32 recaptures, largely in May, June

and July. This suggests the Brown-crested is the dominant breeding *Myiarchus* in this area.

Bell's Vireos (*Vireo bellii*) started arriving in March and some stragglers were still present in September. About 40 were handled each year, most of them from April through July.

The number of Lucy's Warblers (*Vermivora luciae*) was in the 50's each year as seen in Table V. With few exceptions Lucy's Warblers arrived in late March and departed by the end of July.

Yellow Warblers (*Dendroica petechia*) appeared to arrive about a month later than Lucy's and were handled as late as September. The number handled similarly showed little change from year to year.

Rarities and Fluctuations

Our greatest thrill, as for many banders, came from netting a species which is rare in this area. Chuck Corchran banded the most interesting one of all at the beginning of the project on April 4, 1970—a Black-capped Vireo (*Vireo atricapillus*), which is still the only record of this bird in Arizona (Corchran, 1971). A high percentage of our unusual birds have been stray warblers or vireos, including: the Ovenbird (*Seiurus aurocapillus*), Louisiana Waterthrush (*Seiurus motacilla*), and Northern Waterthrush (*Seiurus noveboracensis*), (Walters, 1981b, 1982); Hooded Warbler (*Wilsonia citrina*), (Walters and Lamm, 1980); Black-throated Blue Warbler (*Dendroica caerulescens*), and Philadelphia Vireo (*Vireo philadelphicus*).

Other unusual birds included a Greater Pewee (*Contopus pertinax*) taken in mid-winter, a Purple Finch (*Carpodacus purpureus*), a Rose-breasted Grosbeak (*Pheucticus ludovicianus*), a Varied Thrush (*Ixoreus naevius*), a Tropical Kingbird (*Tyrannus melancholicus*), Brown Thrashers (*Toxostoma tufam*), Sage Thrashers (*Toxostoma montanus*), a Harris' Sparrow (*Zonotrichia querula*), and a Hooded Merganser (*Lophodytes cucullatus*), (Corchran, 1974). The Rufous-backed Robin (*Turdus rufopalliatu*s), a rather uncommon winter visitor from Mexico, has been taken in three different years.

Some species have proved to be more common than we had figured from observation. We have had at least two White-throated Sparrows (*Zonotrichia albicollis*) each year and a total of nine in one year. One or two Golden-crowned Sparrows (*Zonotrichia atricapilla*) have been banded during most recent winters.

Table II (2)

SPECIES	1970	1971	1972	1973	1974	1975	1976	1977	1978 ^a	1979	1980	1981	1982	TOTAL
Black Phoebe	1		2	4		1			2	6	10	5	1	32
Say's Phoebe								1			1			2
Dusky-capped Flycatcher				1										1
Ash-thrted Flycatcher						1				7	2	2	3	15
Brown-crstd Flycatcher										19	20	20	18	77
Tropical Kingbird										1				1
Cassin's Kingbird											2	2		4
Western Kingbird							1			4		1	1	7
Violet-green Swallow						11				4				15
N. Rough-wgd Swallow											2			2
Cliff Swallow						2								2
Scrub Jay	7	8	4	15							1			35
Bridled Titmouse											1	1		2
Verdin	1	4	13	18	14	9	8	4	7	6	11	10	12	117
White-brstd Nuthatch			1				1				1	1		4
Brown Creeper					1									1
Cactus Wren	8	14	21	41	11	24	13	12	18	34	22	20	19	257
Rock Wren		2		1	1	3	1	1	1	1	2	1		14
Bewick's Wren	1		2	5	5	3	5	1	5	4	9	5	11	56
House Wren			2											2
Marsh Wren						1								1
Ruby-crowned Kinglet	3	3	22	25	8	27	13	20	23	12	11	18	24	209
Blk-tailed Gnatcatcher				3										3
Swainson's Thrush								1		3	3		4	11
Hermit Thrush	3	2	5	16	1		1	18	15	5	3	3		72
Rufous-backed Robin				1			1							2
American Robin			1	4		1				2				8
Varied Thrush											1			1
Northern Mockingbird	2	3	2	2	2	6	2	1	1	11	2	4	2	40
Sage Thrasher		3		1				1						5
Brown Thrasher							1	1						2
Bendire's Thrasher			1	2		1								4
Curve-billed Thrasher	26	68	46	124	61	79	56	61	52	132	99	64	52	920
Crissal Thrasher			1	1	3	2	1	1	3	2		1		15
Phainopepla		2	2	1	1			5		3	1	3	2	20
Loggerhead Shrike										2	1	1		4
European Starling	1	2	1			6	3	2	1			1	4	21
Bell's Vireo	1		3	1	6	5	6	4	10	16	28	20	24	124
Black-capped Vireo ^d	1													1

Table II (3)

SPECIES	1970	1971	1972	1973	1974	1975	1976	1977	1978 ^a	1979	1980	1981	1982	TOTAL
Solitary Vireo							1	1	1	1	3		1	8
Hutton's Vireo						1						2	1	4
Warbling Vireo								1	2	4	4	6	8	25
Philadelphia Vireo													1	1
Orange-crowned Warbler		1	1					2	4	8	5	2	2	25
Nashville Warbler									1	1	1	1		3
Virginia's Warbler				2	4	4	7	3	3	1	2		1	4
Lucy's Warbler		1			1	5		1	2	40	49	48	48	209
Yellow Warbler								1	2	14	26	22	24	95
Blk-thrtd Blue Warbler												1		1
Yellow-rmp (Myr) Warbler									1	1				2
Yellow-rmp (Aud) Warbler				6	1	4	3	8	5	17	12	3	1	60
Blk-thrtd Gray Warbler			2					2	2	1				7
Townsend's Warbler									1				1	2
Ovenbird													1	1
Northern Waterthrush												1		1
Louisiana Waterthrush					1	1		2	4	7	3	8	11	37
MacGillivray's Warbler														
Common Yellowthroat						5		1	3	2	6	6		23
Hooded Warbler									1	1				1
Wilson's Warbler					1	2	1		11	32	12	25	18	102
Yellow-breasted Chat						2			7	9	9	6		33
Summer Tanager										1	1	3	2	7
Western Tanager									3	6	15	19	19	62
Northern Cardinal	26	23	26	74	49	44	37	30	52	86	58	68	47	620
Pyrrhuloxia	4	13	22	29	11	20	14	7	21	24	11	19	12	207
Rose-brstd Grosbeak												1		1
Blk-headed Grosbeak						8			3	7	8	9	5	40
Blue Grosbeak										4	2	3	2	11
Lazuli Bunting			1			1			6	4	2	2	4	20
Green-tailed Towhee	4	2	3	15	13	10	32	13	22	27	13	8	21	183
Rufous-sided Towhee	2	1	9	14		1	2							29
Brown Towhee	10	16	13	32	20	35	19	13	19	27	15	21	19	259
Abert's Towhee	4		4	13	9	13	12	16	15	61	49	34	39	269
Cassins's Sparrow			1										1	2
Rufous-winged Sparrow			2	10	2	7	2	2		3				28
Rufous-crwnd Sparrow					2									2
Chipping Sparrow		1	3	2		5	1	4	6				1	23
Brewer's Sparrow	7	9	10		3	10	10	1	3	3	2	5	17	80

Table II (4)

SPECIES	1970	1971	1972	1973	1974	1975	1976	1977	1978 ^a	1979	1980	1981	1982	TOTAL
Black-chinned Sparrow					1									1
Vesper Sparrow						1	2	1	9					13
Lark Sparrow							1		3	1	2	1		8
Black-thrtd Sparrow	11	14	15	49	62	30	18	21	33	37	4	9	6	309
Lark Bunting		4				4	24	1	2					35
Fox Sparrow				1			2	6			4		1	14
Song Sparrow	2	2	3	2	1	2	1	6	2	2	6	3	1	33
Lincoln's Sparrow	10	6	19	24	50	90	102	105	71	44	49	29	41	640
Swamp Sparrow						1	1							2
White-thrtd Sparrow		1	2		1	4	6	9	2	4	2	2	4	37
Golden-crwned Sparrow						1		1	1	1	2			6
Wht-cr (Gambel) Sparrow	282	578	314	723	915	1008	1661	871	798	1368	2037	1180	874	12609
W.C. (dk-lored) Sparrow	7	19	5	3	84	64	82	35	24	28	47	19	35	452
Harris' Sparrow				1										1
Dark-eyed (Sl.-c) Junco									1	1				2

Table II (4) (continued)

SPECIES	1970	1971	1972	1973	1974	1975	1976	1977	1978a	1979	1980	1981	1982	TOTAL
D.E. (Oregon) Junco			3	16	1	3	3		17	49	2	2	1	97
D.E. (Gray-hd) Junco									4	4	1	1	1	11
Red-winged Blackbird			1		10	25	2	4	3	5	44	16	1	111
Brewer's Blackbird					2		4	2	9	5	10	3		35
Great-tailed Grackle											1	1	3	5
Bronzed Cowbird					1			1		5	15	17	15	54
Brown-headed Cowbird						9	5		6	29	27	34	47	157
Hooded Oriole			1		1	4	8	4	2	17	8	5	4	54
N. (Bullock's) Oriole								1		6	4	5	4	20
Scott's Oriole					1	1								2
Purple Finch												1		1
Cassin's Finch		3		25										28
House Finch	53	54	51	158	193	181	123	88	75	265	160	192	160	1753
Pine Siskin		3												3
Lesser Goldfinch	2	13		5			3	5	1	28	19	40	35	151
Lawrence's Goldfinch		2												2
Evening Grosbeak												1		1
House Sparrow f								2			216	213	270	701
TOTAL BANDED	509	1006	736	1678	1688	2057	2464	1554	1581	2839	3602	2690	2429	24833

a—Year-round banding from 24 August 1978. b—First banding in Arizona. c—Banding discontinued after 1976. d—Only record for Arizona. e—First banding in WBBA area. f—Started regular banding 21 February 1980.

Over the years we have observed marked changes in the frequency of capture of several species. Some of these, such as Cassin's Finch (*Carpodacus cassinii*) and Lawrence's Goldfinch (*Carduelis lawrencei*) represent erratic invasions. The Rufous-winged Sparrow (*Aimophila carpalis*) appears to be showing a long-range decline after peaking in number in southeastern Arizona several years ago. We caught a few each year during the 1970's, but none since 1979. Early in our program we took numerous resident Black-throated Sparrows (*Amphispiza bilineata*) annually, reaching a high of 62 in 1974; but since 1979 we have taken less than ten each year in spite of banding throughout the summer. The cause of these fluctuations remains a mystery to us.

Recoveries of white-winged and mourning doves banded at Tucson

Figure 2 shows recoveries of 12 White-winged Doves (*Zenaida asiatica*) and 4 Mourning Doves (*Zenaida macroura*) banded at Tucson. Nine of the White-winged Doves were banded at a station operated since 1978 by one of the authors (PMW). This station is in a suburban residential area 20 miles (33 km) west of Tanque Verde Ranch and is at the same latitude and a similar altitude. All four of the Mourning Dove recoveries were banded at the ranch station where only half as many (966) Mourning Doves were banded as at the residential station (1820). The White-winged Dove recoveries were roughly in proportion to the numbers banded at each of the two locations, viz. 238 at the ranch and 669 at the residential station.

The recovery representing the greatest distance was of a White-winged Dove from 1200 miles (2000 km) south-east of Tucson in the Mexican state of Puebla, near Mexico City. All noteworthy White-winged Dove recoveries were in Mexico (Fig. 1) from the state of Sinaloa to the states of Jalisco, Colima, and Michoacan, and south-eastward to the state of Puebla. All White-winged Dove recoveries were south of Tucson as would be expected of this Mexico-wintering species. The four Mourning Dove recoveries were widely scattered. One was 1100 miles (1833 km) north near Yakima, Washington; one was 400 miles (667 km) west near San Diego, California; and two were south in Mexico, one of them nearly 1000 miles (1667 km) away below Guadalajara, Jalisco.

In addition to the recoveries plotted, (Figure 2) four White-winged Doves were recovered in Tucson, all of which were banded at the residential station. Twelve Mourning Doves were recovered in or near Tucson, and all but one of these were banded at the residential station.

Longevity

We have had surprisingly few recaptures of older birds. Two of these were Northern Cardinals: One (55-133464) had a minimum age (assuming a hatching date of 1 June from Clapp, et al, 1982) of 8 years and 6 months the last time it was taken, and the other (791-86195) had a minimum age of 9 years. A Mourning Dove (1233-99555) was at least 8 years and 8 months old, and a White-crowned Sparrow (1201-23393) was at least 6 years and 8 months old.

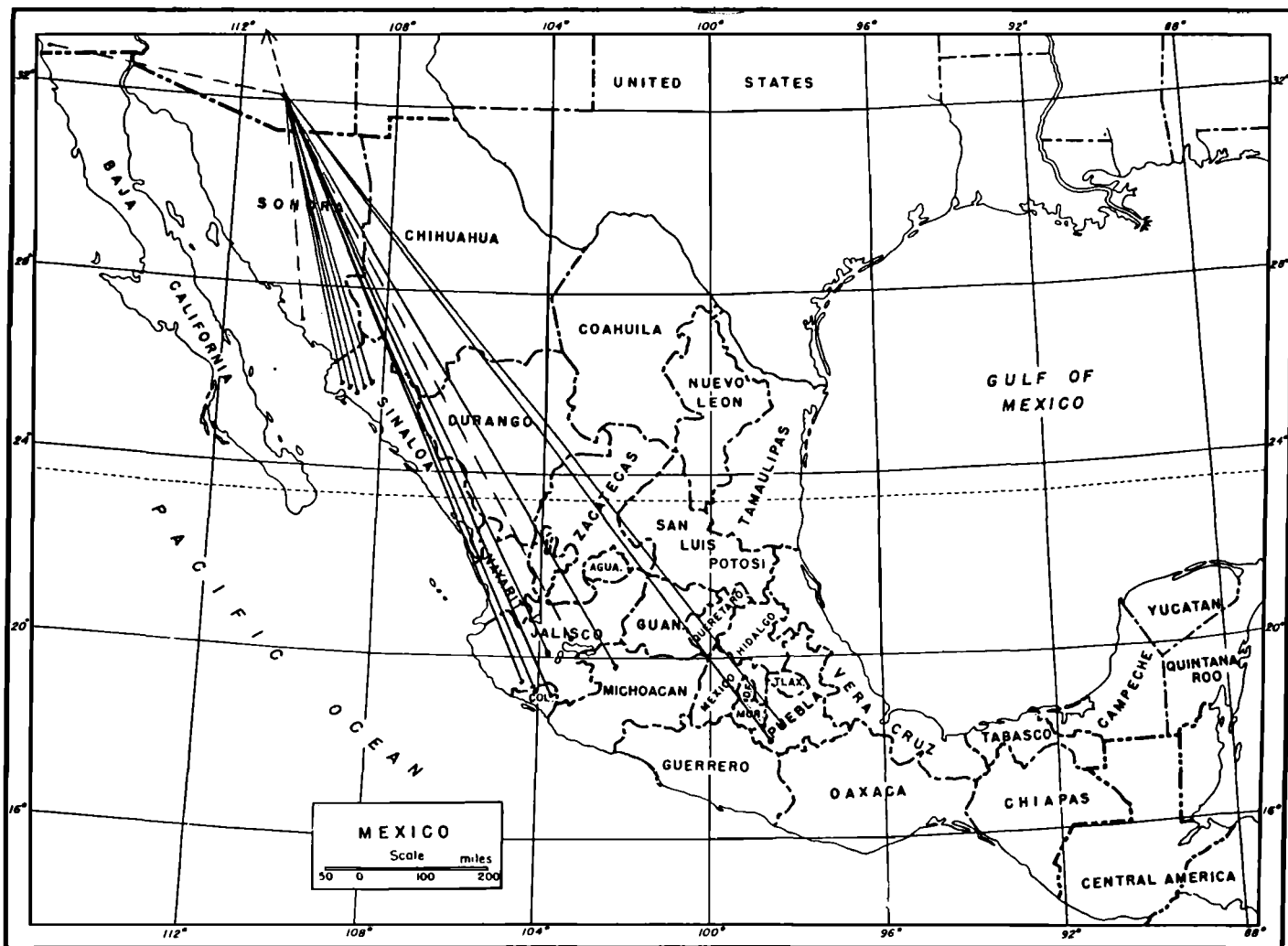


Figure 2. Recoveries of doves banded at Tucson.
 Solid lines: White-winged Doves;
 Broken lines: Mourning Doves.

	Table III			
	1979	1980	1981	1982
Banded	80	45	33	26
Recaptures	66	41	22	21
TOTAL Handled	146	86	55	47

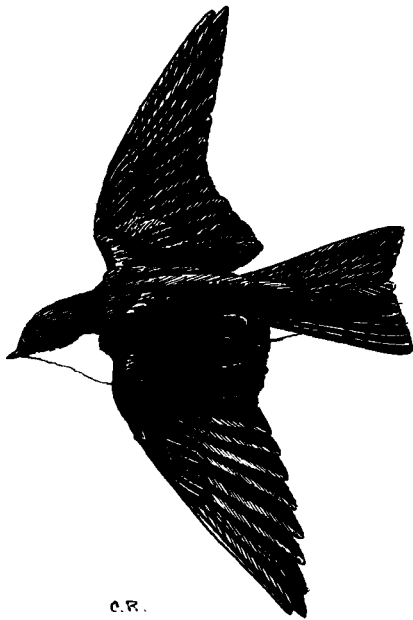
(Recaptures do not include same-day repeats)

	Table IV			
	1979	1980	1981	1982
Banded	132	99	64	52
Recaptures	153	122	70	71
TOTAL Handled	285	221	134	123

	Table V			
	1979	1980	1981	1982
Banded	42	49	48	48
Recaptures	8	5	6	9
TOTAL Handled	50	54	54	57

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