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Bird populations in riparian areas of southeastern Arizona in 1985–86 and 1994–95

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BIRD POPULATIONS IN RIPARIAN AREAS OF SOUTHEASTERN ARIZONA IN 1985–86 AND 1994–95

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Numbers of Nearctic migrant birds are apparently in decline, especially in the eastern United States (e.g., Sauer and Droege 1992, Hagan 1993, Rappole 1995). Declines have also been noted for some western Nearctic migrant species (DeSante and George 1994), although not in all instances (e.g., see review in James and McCulloch 1995). Partially as a result, declines have been questioned by some researchers (e.g., James and McCulloch 1995, Peterjohn et al. 1995), and this issue is difficult to resolve because few studies besides the Breeding Bird Survey (Robbins et al. 1986) have been conducted long-term (Morrison et al. 1996).

In the summers of 1984–1986, Strong and Bock (1990) conducted point counts of birds in riparian stretches in and around the Huachuca Mountains, Arizona, to determine patterns of vegetation use by different species. Western riparian areas support high densities and diversities of migrant breeding birds (Carothers et al. 1974, Knopf 1985, Rosenberg et al. 1991, Skagen et al. 1998), and Strong and Bock's study collected baseline information on abundances of many species of migrants and residents. In the summers of 1994 and 1995, we conducted bird surveys on the same points using the same methods as Strong and Bock to compare the relative abundances and richness of bird species a decade after the initial study, and to bolster the database initiated by them for use in future monitoring studies.

Details on the study areas and sampling methods are in Strong and Bock (1990). In summary, the study area is located in southeastern Arizona, Cochise and Santa Cruz counties

(31°32'N, 110°22'W), primarily in the foothills of the Huachuca Mountains. Birds were counted in riparian vegetation along the Babocomari River on the Babocomari Ranch (1387–1418 m elevation), which has an upland containing moderately grazed grassland with scattered oaks (*Quercus* spp.), cottonwood (*Populus fremontii*) gallery forests, walnuts (*Juglans major*), and willows (*Salix* spp.) along the river. At slightly higher elevations (1418–1494 m), we sampled in riparian areas on ungrazed land on the National Audubon Society Appleton-Whittell Research Ranch (ungrazed since 1967 [Bahre 1977]), the Nature Conservancy Canelo Hills Preserve, and the Coronado National Forest. These areas are covered in the upland by grasslands with scattered oaks and have several different riparian tree species, including Arizona walnut, velvet ash (*Fraxinus velutina*), cottonwood, desert willow (*Chilopsis linearis*), Arizona sycamore (*Platanus wrightii*), and willow. Counts also were done on the Fort Huachuca Military Reservation where grazing did not occur. The riparian sampling area in the foothills of the fort (1448–1524 m) is surrounded in the uplands by grass and mesquite (*Prosopis* spp.), and riparian plants include desert willow, velvet ash, sycamore, and cottonwood. Riparian sampling areas in the mountains (1601–1921 m) are located within the oak-juniper (*Juniperus deppeana*) and pine (*Pinus* spp.)-oak upland belt; riparian plant species in the area include cottonwoods, big-tooth maples (*Acer grandidentatum*), pines, oaks, and sycamores.

In the decade between 1984 and 1995 few apparent changes in the vegetation structure

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and composition occurred on any of the sites, and those vegetation category designations defined by Strong and Bock (1990) remained constant. Changes in vegetation and land structure occurred only on Fort Huachuca, with construction of a ca 6-ha disposal site in the foothills and cessation of tank training. Grazing occurred at a moderate stocking rate on the Babocomari Ranch both during our study and Strong and Bock's study.

In 1984 Strong and Bock (1990) established 132 riparian area point counting stations within the study area. They conducted variable circular plot counts (Reynolds et al. 1980) 6 times during the period 1 May–15 July 1984 to 1986. In 1994 we relocated 123 of the stations (the remaining 9 points could not be accurately relocated) and conducted point counts 3 times from 1 May to 15 July 1994 and 1995. Sampling occurred only 3 times in our study due to time constraints. In both studies birds were not counted in weather conditions (e.g., rain, excessive wind, or low temperatures) that might have inhibited their activities or reduced their detectabilities. Although detection rates of birds can vary among vegetation types, for this research we assumed that detection did not change between study periods because vegetation structure did not change at points.

Three repetitions of counts from both 1985 and 1986 were selected to correspond to the dates we counted in 1994 and 1995; counts from 1984 were not used due to some missing data files from that year. The 3 counts from both 1985 and 1986 were combined across the 2 years, as were counts from 1994 and 1995 (i.e., for each of the 123 points, the number of birds of each species was summed across the 6 total counts in each study [1985 and 1986; 1994 and 1995] at each point). Our objective was to analyze long-term change in the bird community and not to evaluate inter-year variation in bird numbers. Therefore, we combined adjacent count years to derive an average bird abundance for 1985–86 and 1994–95.

Due to similarities in some species' call notes or to our inability to always distinguish between certain species when they flew quickly past a counting station, Brown-headed and Bronzed Cowbirds (scientific names given in Appendixes 1 and 2) were grouped together as "cowbirds," and Chihuahuan and Common Ravens were grouped as "ravens." We observed, as

did Strong and Bock, several hummingbird species but did not determine the abundances of these birds because they sometimes flew so quickly past points that positive identifications were not possible. Species richness for each study was calculated as the total number of different species observed at a count station across the 2 years of each study. For each study we calculated the relative abundance of each bird species at each point as the total number of individual birds observed divided by the number of times that point was counted over the 2 years. These relative abundance estimates, which were not normally distributed, were then used to compare average abundances between the 2 studies using Mann-Whitney *U* tests (Zar 1984:138). Comparisons were made only for bird species that were observed at ≥ 3 points during both studies because fewer observations resulted in too few records for analysis. Those migrant birds that were known not to breed in the area and birds for which point counts are not applicable (e.g., hawks, owls; Fuller and Mosher 1981) were not used in abundance comparisons, but they were included in richness comparisons. We used SPSS/PC+ for all analyses (Norusis 1992), and *P*-values ≤ 0.05 were considered significant.

Strong and Bock counted 121 species in 1985–86 across the 123 count stations; 86 of those species were Nearctic breeding migrants and 7 were nonbreeding migrants. In 1994–95, we counted 129 total species; 83 were breeding migrants and 13 were nonbreeding migrants. Thirteen bird species were unique to the Strong and Bock study, whereas 21 were unique to our study (Appendix 2).

There were 80 species (Appendix 1) for which we calculated abundance estimates. These included 21 resident species, of which 3 (Gambel's Quail, Greater Roadrunner, Montezuma Quail) had significantly lower abundances, and 3 (Canyon Towhee, Rufous-crowned Sparrow, White-breasted Nuthatch) had significantly higher abundances in 1994–95 than 1985–86 (Appendix 1). Of the 59 Nearctic migrants, 4 species (Band-tailed Pigeon, cowbirds, Lesser Goldfinch, Western Kingbird) had significantly lower abundances, and 6 (Botteri's Sparrow, Cassin's Kingbird, Hepatic Tanager, Mourning Dove, Spotted Towhee, Virginia Warbler) had higher abundances in 1994–95 (Appendix 1). The differences found between study periods significantly ($P < 0.05$)

differed from what would be expected from random chance alone (Sokal and Rohlf 1981: 158–159). Our results did not show an overall decline in bird abundances from the mid-1980s to the mid-1990s. Only 14% of resident species and 7% of Neartic migrant species declined over the decade, and 14% and 10% of the bird species, respectively, showed increases. Our study area has changed little over the past decade, and this is seen in the few significant changes in bird populations (see below).

Changes in distribution (as measured by occurrences at count points) of species for which relative abundances were not calculated (e.g., Verdin, Black-throated Sparrow, Ruby-crowned Kinglet, Bell's Vireo, Cordilleran Flycatcher, Indigo Bunting, Olive Warbler) could have been due to a host of factors, including (1) fine-scaled changes in the study area that we could not perceive, but which affected bird distribution; (2) region-wide changes in bird abundance and distribution; (3) potential biases in observers between study periods; and (4) changes on migratory routes and wintering grounds. However, our results can be used to prioritize species for more detailed evaluations of population status, and we have now bolstered the Strong and Bock database that can be used for future trend monitoring.

We did, however, count more bird species in 1994 and 1995 than did Strong and Bock in 1985 and 1986. In both studies there were unique species (Appendix 1); 8 of these species were nomadic, wide-ranging, or nocturnal (Barn Owl, Golden Eagle, Northern Goshawk, Sharp-shinned Hawk, Northern Pygmy-Owl, Spotted Owl, Wild Turkey, and Evening Grosbeak) that could not be adequately addressed by our methodology (e.g., no nocturnal counts).

Species that showed significant declines could be prioritized for additional research. For example, both Montezuma and Gambel's Quail declined, indicating that environmental conditions might be degrading for quail in general. Alternatively, numbers of both Canyon and Spotted Towhee increased, indicating more favorable conditions for these species. Quail and towhees present an interesting paradox and both groups occupy similar habitats. The decline identified for cowbirds is similar to a general decline in the western United States for these species and could be due to reduced livestock grazing in the region (Ortega 1998).

In conclusion, over the past decade our study area has seen little disturbance and few significant changes, overall, in bird abundances or richness. We have not seen effects of breeding ground or wintering ground disturbances on Neartic migrants or resident species overall, although a few individual species did exhibit declines. Because of the multiplicity of interacting factors that could impact both Neartic migrant and temperate resident landbird populations (Rappole and McDonald 1994), however, it is important to continue monitoring these animals in both disturbed and undisturbed areas to increase our knowledge of the trends and possibly elucidate the causes of any declines. With this knowledge, research and management measures can be focused more precisely on those species that are exhibiting declines.

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APPENDIX 1. Bird species (84) included in the analyses of relative abundances between studies, and the number of points at which they were counted in 1985–86 and 1994–95. Asterisk indicates significantly different values between study periods (Mann-Whitney tests, $P \leq 0.05$), southeastern Arizona.

STATUS Species	Number of points		Relative abundances		P-value
	1985–86	1994–95	1985–86 ($s_{\bar{x}}$)	1994–95 ($s_{\bar{x}}$)	
RESIDENTS					
Gambel's Quail (<i>Callipepla gambelii</i>)	9	22	0.944 (0.486)	0.288 (0.194)	0.001*
Scaled Quail (<i>Callipepla squamata</i>)	18	16	0.454 (0.312)	0.385 (0.369)	0.177
Montezuma Quail (<i>Cyrtonyx montezumae</i>)	41	16	0.431 (0.271)	0.202 (0.077)	<0.001*
Greater Roadrunner (<i>Geococcyx californianus</i>)	36	18	0.241 (0.109)	0.178 (0.040)	0.037*
Acorn Woodpecker (<i>Melanerpes formicivorus</i>)	55	68	0.709 (0.602)	0.782 (0.583)	0.419
Ladder-backed Woodpecker (<i>Picoides scalaris</i>)	37	29	0.203 (0.070)	0.201 (0.069)	0.678
Gila Woodpecker (<i>Melanerpes uropygialis</i>)	6	17	0.639 (0.245)	0.680 (0.485)	0.832
Strickland's Woodpecker (<i>Picoides stricklandi</i>)	19	14	0.272 (0.138)	0.210 (0.081)	0.225
Common Raven (<i>Corvus corax</i>) and Chihuahuan Raven (<i>Corvus cryptoleucus</i>)	17	41	0.304 (0.079)	0.315 (0.210)	0.978
Mexican Jay (<i>Aphelocoma ultramarina</i>)	66	81	1.967 (0.136)	2.298 (1.758)	0.400
Steller's Jay (<i>Cyanocitta stelleri</i>)	11	8	0.439 (0.239)	0.292 (0.194)	0.122
Bridled Titmouse (<i>Parus wollweberi</i>)	32	52	0.599 (0.404)	0.606 (0.524)	0.590
Bushtit (<i>Psaltriparus minimus</i>)	18	34	0.787 (0.548)	0.588 (0.497)	0.112
White-breasted Nuthatch (<i>Sitta carolinensis</i>)	44	69	0.360 (0.313)	0.394 (0.217)	0.056*
Bewick's Wren (<i>Thryomanes bewickii</i>)	102	101	1.046 (0.759)	0.985 (0.566)	0.953
Canyon Wren (<i>Catherpes mexicanus</i>)	13	25	0.500 (0.379)	0.440 (0.369)	0.431
Cactus Wren (<i>Campylorhynchus brunneicapillus</i>)	13	33	0.667 (0.379)	0.568 (0.390)	0.349
Curve-billed Thrasher (<i>Toxostoma curvirostre</i>)	8	35	0.188 (0.059)	0.269 (0.172)	0.141

APPENDIX I. Continued.

STATUS Species	Number of points		Relative abundances		<i>P</i> -value
	1985–86	1994–95	1985–86 ($s_{\bar{x}}$)	1994–95 ($s_{\bar{x}}$)	
RESIDENTS (continued)					
Rufous-crowned Sparrow (<i>Aimophila ruficeps</i>)	65	105	0.354 (0.192)	0.776 (0.484)	<0.001*
Canyon Towhee (<i>Pipilo fuscus</i>)	53	50	0.302 (0.196)	0.392 (0.251)	0.038*
Abert's Towhee (<i>Pipilo aberti</i>)	3	6	0.278 (0.193)	0.389 (0.172)	0.347
MIGRANTS					
Killdeer (<i>Charadrius vociferus</i>)	23	10	0.464 (0.301)	0.267 (0.139)	0.087
Cooper's Hawk (<i>Accipiter cooperi</i>)	6	6	0.094 (0.068)	0.183 (0.018)	0.387
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	22	14	0.296 (0.145)	0.329 (0.240)	0.944
Swainson's Hawk (<i>Buteo swainsoni</i>)	4	3	0.167 (0.001)	0.167 (0.000)	1.000
Turkey Vulture (<i>Cathartes aura</i>)	19	17	0.544 (0.657)	0.502 (0.482)	0.945
American Kestrel (<i>Falco sparverius</i>)	12	20	0.403 (0.399)	0.292 (0.161)	0.735
Elegant Trogon (<i>Trogon elegans</i>)	15	19	0.357 (0.211)	0.435 (0.214)	0.263
Mourning Dove (<i>Zenaida macroura</i>)	78	84	0.684 (0.463)	0.855 (0.525)	0.031*
White-winged Dove (<i>Zenaida asiatica</i>)	83	87	0.918 (0.630)	0.835 (0.521)	0.615
Band-tailed Pigeon (<i>Columba fasciata</i>)	6	9	0.417 (0.204)	0.189 (0.055)	0.010*
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	13	6	0.250 (0.073)	0.389 (0.272)	0.100
Common Nighthawk (<i>Chordeiles minor</i>)	29	33	0.305 (0.223)	0.420 (0.427)	0.834
Northern Flicker (<i>Colaptes auratus</i>)	62	80	0.387 (0.204)	0.485 (0.310)	0.115
Vermillion Flycatcher (<i>Pyrocephalus rubinus</i>)	14	24	0.488 (0.436)	0.368 (0.208)	0.852
Western Kingbird (<i>Tyrannus verticalis</i>)	38	28	0.588 (0.419)	0.330 (0.198)	0.006*
Cassin's Kingbird (<i>Tyrannus vociferans</i>)	93	100	1.213 (1.000)	1.568 (1.029)	0.007*
Dusky-capped Flycatcher (<i>Myiarchus tuberculifer</i>)	45	49	0.459 (0.322)	0.522 (0.396)	0.642
Ash-throated Flycatcher (<i>Myiarchus cinerascens</i>)	86	98	0.603 (0.354)	0.674 (0.436)	0.467
Sulphur-bellied Flycatcher (<i>Myiodynastes luteiventris</i>)	16	18	0.625 (0.628)	0.548 (0.598)	0.815
Western Wood-Pewee (<i>Contopus sordidulus</i>)	56	55	1.324 (1.014)	1.069 (0.741)	0.307
Greater Pewee (<i>Contopus pertinax</i>)	8	9	1.146 (1.451)	0.704 (0.389)	0.922
Black Phoebe (<i>Sayornis nigricans</i>)	11	13	0.288 (0.168)	0.295 (0.169)	0.924
Say's Phoebe (<i>Sayornis saya</i>)	8	4	0.354 (0.274)	0.208 (0.083)	0.219
Buff-breasted Flycatcher (<i>Empidonax fulvifrons</i>)	6	7	0.778 (0.502)	1.214 (0.685)	0.223
White-throated Swift (<i>Aeronautes saxatalis</i>)	11	10	1.546 (1.951)	1.217 (1.843)	0.395
Northern Rough-winged Swallow (<i>Stelgidopteryx serripennis</i>)	4	13	0.333 (0.136)	0.346 (0.308)	0.950
Violet-green Swallow (<i>Tachycineta thalassina</i>)	4	8	0.417 (0.289)	1.063 (0.868)	0.198
House Wren (<i>Troglodytes aedon</i>)	5	20	0.267 (0.149)	0.300 (0.207)	0.910
Northern Mockingbird (<i>Mimus polyglottos</i>)	84	62	0.952 (0.600)	0.889 (0.513)	0.115
American Robin (<i>Turdus migratorius</i>)	22	25	0.629 (0.524)	0.701 (0.475)	0.567
Eastern Bluebird (<i>Sialia sialis</i>)	12	23	0.361 (0.223)	0.304 (0.139)	0.618
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	12	13	0.236 (0.150)	0.308 (0.202)	0.392
Phainopepla (<i>Phainopepla nitens</i>)	29	27	0.793 (0.909)	0.394 (0.287)	0.335
Plumbeous Vireo (<i>Vireo plumbeus</i>)	18	25	0.630 (0.456)	0.643 (0.573)	0.921
Hutton's Vireo (<i>Vireo huttoni</i>)	9	24	0.241 (0.169)	0.281 (0.159)	0.187
Warbling Vireo (<i>Vireo gilvus</i>)	8	5	0.208 (0.118)	0.200 (0.075)	0.816
Black-throated Gray Warbler (<i>Dendroica nigrescens</i>)	11	14	0.439 (0.217)	0.250 (0.118)	0.153
Painted Redstart (<i>Myioborus pictus</i>)	17	23	0.470 (0.408)	0.596 (0.399)	0.177
Grace's Warbler (<i>Dendroica graciae</i>)	7	13	0.500 (0.347)	0.749 (0.643)	0.441
Virginia's Warbler (<i>Vermivora virginiae</i>)	3	14	0.167 (0.000)	0.393 (0.192)	0.044*
Lucy's Warbler (<i>Vermivora luciae</i>)	70	57	0.614 (0.525)	0.563 (0.348)	0.658
Yellow Warbler (<i>Dendroica petechia</i>)	9	20	0.426 (0.313)	0.595 (0.643)	0.960
Common Yellowthroat (<i>Geothlypis trichas</i>)	45	44	0.582 (0.459)	0.727 (0.625)	0.313
Yellow-breasted Chat (<i>Icteria virens</i>)	7	8	0.238 (0.089)	0.208 (0.077)	0.480
Red-winged Blackbird (<i>Agelaius phoeniceus</i>)	21	20	0.841 (1.086)	0.405 (0.318)	0.105

APPENDIX I. Continued.

STATUS Species	Number of points		Relative abundances		P-value
	1985–86	1994–95	1985–86 ($s_{\bar{x}}$)	1994–95 ($s_{\bar{x}}$)	
MIGRANTS (continued)					
Eastern Meadowlark (<i>Sturnella magna</i>)	67	60	0.826 (0.875)	0.859 (0.589)	0.177
Brown-headed Cowbird (<i>Molothrus ater</i>) and Bronzed Cowbird (<i>Molothrus aeneus</i>)	103	94	0.694 (0.448)	0.466 (0.343)	0.001*
Bullock's Oriole (<i>Icterus bullockii</i>)	41	28	0.370 (0.304)	0.355 (0.265)	0.802
Scott's Oriole (<i>Icterus parisorum</i>)	33	57	0.253 (0.151)	0.267 (0.125)	0.216
Western Tanager (<i>Piranga ludoviciana</i>)	18	20	0.209 (0.163)	0.265 (0.121)	0.739
Summer Tanager (<i>Piranga rubra</i>)	37	44	0.320 (0.194)	0.423 (0.351)	0.114
Hepatic Tanager (<i>Piranga flava</i>)	14	29	0.238 (0.126)	0.315 (0.119)	0.040*
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	11	18	0.212 (0.078)	0.263 (0.146)	0.392
Botteri's Sparrow (<i>Aimophila botterii</i>)	37	34	0.460 (0.394)	0.912 (0.569)	<0.001*
Spotted Towhee (<i>Pipilo maculatus</i>)	27	51	0.438 (0.311)	0.743 (0.487)	0.007*
Black-headed Grosbeak (<i>Pheucticus melanocephalus</i>)	62	70	0.524 (0.407)	0.413 (0.238)	0.460
Blue Grosbeak (<i>Guiraca caerulea</i>)	66	64	0.366 (0.205)	0.345 (0.205)	0.434
House Finch (<i>Carpodacus mexicanus</i>)	66	72	0.586 (0.433)	0.588 (0.498)	0.714
Lesser Goldfinch (<i>Carduelis psaltria</i>)	30	24	0.728 (0.626)	0.438 (0.395)	0.021*

*Number of points at which the species was observed.

APPENDIX 2. Bird species counted at point counting stations in southeastern Arizona that were not included in abundance estimates of Appendix 1. Species consist of nonbreeding Nearctic migrants that were counted early in each breeding season; hummingbirds; nocturnal species; species unique to 1985–86 or 1994–95; and species counted during both studies but at ≤ 2 points in one study.

When observed STATUS Species	No. points	
	1985–86	1994–95
Observed during both 1985–86 and 1994–95		
RESIDENT		
Great Horned Owl (<i>Bubo virginianus</i>)	6	6
Crissal Thrasher (<i>Toxostoma crissale</i>)	1	1
Yellow-eyed Junco (<i>Junco phaeonotus</i>)	2	7
BREEDING MIGRANT		
Mallard (<i>Anas platyrhynchos</i>)	2	3
Great Blue Heron (<i>Ardea herodias</i>)	2	2
Whip-poor-will (<i>Caprimulgus vociferus</i>)	1	1
Anna's Hummingbird (<i>Calypte anna</i>)	2	2
Costa's Hummingbird (<i>Calypte costae</i>)	1	1
Barn Swallow (<i>Hirundo rustica</i>)	11	2
Brown-crested Flycatcher (<i>Myiarchus tyrannulus</i>)	1	6
Brown Creeper (<i>Certhia americana</i>)	1	8
Rock Wren (<i>Salpinctes obsoletus</i>)	8	2
Hermit Thrush (<i>Catharus guttatus</i>)	3	2
European Starling (<i>Sturnus vulgaris</i>)	13	1
Red-faced Warbler (<i>Cardellinarubrifrons</i>)	1	4
Lark Sparrow (<i>Chondestes grammacus</i>)	12	2
Cassin's Sparrow (<i>Aimophila cassini</i>)	1	15
Green-tailed Towhee (<i>Pipilo chlorurus</i>)	4	1
Lazuli Bunting (<i>Passerina amoena</i>)	1	13
NONBREEDING MIGRANT		
Yellow-rumped Warbler (<i>Dendroica coronata</i>)	7	6
Townsend's Warbler (<i>Dendroica townsendi</i>)	1	1
Wilson's Warbler (<i>Wilsonia pusilla</i>)	12	8
Chipping Sparrow (<i>Spizella passerina</i>)	1	

APPENDIX 2. Continued.

When observed STATUS Species	No. points	
	1985-86	1994-95
Observed only in 1985-86		
RESIDENT		
Barn Owl (<i>Tyto alba</i>)	1	0
Great-tailed Grackle (<i>Quiscalus mexicanus</i>)	2	0
Pyrrhuloxia (<i>Cardinalis sinuatus</i>)	2	0
BREEDING MIGRANT		
Golden Eagle (<i>Aquila chrysaetos</i>)	1	0
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	1	0
Northern Goshawk (<i>Accipiter gentilis</i>)	4	0
Hairy Woodpecker (<i>Picoides villosus</i>)	4	0
Cliff Swallow (<i>Hirundo pyrrhonota</i>)	1	0
Black-throated Sparrow (<i>Amphispiza bilineata</i>)	3	0
Pine Siskin (<i>Carduelis pinus</i>)	5	0
NONBREEDING MIGRANT		
Ruby-crowned Kinglet (<i>Regulus calendula</i>)	1	0
Orange-crowned Warbler (<i>Vermivora celata</i>)	1	0
White-crowned Sparrow (<i>Zonotrichia leucophrys</i>)	1	0
Observed only in 1994-95		
RESIDENT		
Wild Turkey (<i>Meleagris gallopavo</i>)	0	1
Spotted Owl (<i>Strix occidentalis</i>)	0	1
Northern Pygmy-Owl (<i>Glaucidium gnoma</i>)	0	2
Verdin (<i>Auriparus flaviceps</i>)	0	10
Pygmy Nuthatch (<i>Sitta pygmaea</i>)	0	2
Black-tailed Gnatcatcher (<i>Poliophtila melanura</i>)	0	7
Northern Cardinal (<i>Cardinalis cardinalis</i>)	0	7
Evening Grosbeak (<i>Coccothraustes vespertinus</i>)	0	2
BREEDING MIGRANT		
Cordilleran Flycatcher (<i>Empidonax occidentalis</i>)	0	2
Northern Beardless-Tyrannulet (<i>Camptostoma imberbe</i>)	0	1
Blue-gray Gnatcatcher (<i>Poliophtila caerulea</i>)	0	11
Bell's Vireo (<i>Vireo bellii</i>)	0	7
Olive Warbler (<i>Peucedramus taeniatus</i>)	0	1
Hooded Oriole (<i>Icterus cucullatus</i>)	0	16
Black-chinned Sparrow (<i>Spizella atrogularis</i>)	0	7
Song Sparrow (<i>Melospiza melodia</i>)	0	2
Indigo Bunting (<i>Passerina cyanea</i>)	0	1
NONBREEDING MIGRANT		
Dusky Flycatcher (<i>Empidonax oberholseri</i>)	0	1
Horned Lark (<i>Eremophila alpestris</i>)	0	1
American Goldfinch (<i>Carduelis tristis</i>)	0	3
Hummingbirds observed but not analyzed		
Broad-billed Hummingbird (<i>Cyananthus latirostris</i>)	0	1
Broad-tailed Hummingbird (<i>Selasphorus platycercus</i>)	9	20
Magnificent Hummingbird (<i>Eugenes fulgens</i>)	5	5
Black-chinned Hummingbird (<i>Archilochus alexandri</i>)	83	34