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Riparian and Upland Bird Communities at Lower Topanga Canyon, Topanga State Park, California

2004 Annual Report

Prepared for:

California State Parks
Southern Service Center

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
WESTERN ECOLOGICAL RESEARCH CENTER

Riparian and Upland Bird Communities at Lower Topanga Canyon, Topanga State Park, California

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INTRODUCTION

The California Department of State Parks is conducting an inventory of resources in Lower Topanga Canyon, a recent addition to Topanga State Park in Los Angeles County, California. Information obtained during the inventory will identify the Park's resources as well as provide a baseline for future comparisons of resource conditions as State Parks implements improvements, including habitat restoration. This report summarizes the results of bird surveys conducted in 2004 within riparian and upland habitats, and represents the second year of a two-year project initiated in 2003 to inventory the Park's bird communities (Kus et al. 2003).

STUDY SITE AND METHODS

Study Site

Lower Topanga Canyon includes approximately 660 ha (1,650 acres) of land bounded to the south by the Pacific Ocean and to the north by the previous boundary of Topanga State Park (Figure 1). The site is bisected by Topanga Canyon Boulevard which runs north-south adjacent to a narrow perennial stream flowing through the canyon bottom. Vegetation along the stream consists of mixed willow riparian habitat with scattered cottonwoods (*Populus fremontii*), sycamores (*Platanus racemosa*) and oaks (*Quercus agrifolia*). The stream is bordered by steep canyon walls covered with near-pristine chaparral habitat. Lemonade berry (*Rhus integrifolia*) and white sage (*Salvia apiana*) are common among the upland plants.

Methods

Data Collection

Birds were censused using point counts at stations situated at least 250 m apart from one another (Figure 1). Twenty-two of 23 stations established in 2003 were surveyed in 2004; point "U1" (Kus et al. 2003) was not surveyed because the point location, 350 m up a scrub-covered cliff, was inaccessible in 2004. Twelve stations were located along the length of the riparian habitat at the site (designated with an "R"

Figure 1. Locations of point count stations at Lower Topanga Canyon, 2004.

in figures and tables), while 10 were situated in upland habitat (designated with a “U”). Because of the steepness and inaccessibility of much of the terrain, upland points were concentrated in the eastern portion of the site accessible by dirt roads and trails.

Observers relocated points using GPS (Geographic Positioning System) coordinates recorded in 2003. Discrepancies were encountered for a few upland points between the coordinates and the actual point location as determined from annotated aerial photographs and field notes recorded in 2003. In these instances, new coordinates of the actual points were obtained (Appendix 1).

Counts commenced within an hour after sunrise, and continued through late morning (no later than 1100 hr). Both unlimited distance counts (Blondel et al. 1981) and fixed-radius counts (Ralph et al. 1993) were conducted to maximize the amount of information obtained at each plot, and to ensure compatibility with methods used in other bird monitoring studies, thus enabling comparison of results. Each count began immediately upon the arrival of the observer at the plot, and lasted ten minutes. Observers counted all birds detected, and recorded for each whether it occurred inside or outside of a 50-m-radius count circle centered on the observer. Birds flying overhead (“flyovers”) were recorded separately. Data were recorded separately for the first three minutes, the following two minutes, and the remaining five minutes of the count, to allow for potential comparisons with data from investigators using count durations of less than ten minutes. When possible, the age and sex of birds detected were recorded. Observers did not move about the plot during the count, and no attracting devices or sounds (e.g., “pishing”) were used.

Most points were surveyed four times during the study (22-23 May, and 26-27 June) by two observers skilled at identifying birds by sight and sound (Josephine Falcone and Heather Howitt). Observers divided the riparian and upland points between them on each two-day survey period, one counting one set the first day and the second set the following day. Two points (U2, U7; Figure 1) were surveyed during only the 26-27 June period because locations surveyed in May, based on GPS

coordinates from 2003, were determined after consulting maps and notes not to be the actual points (see above).

Data Analysis

Data collected from the point counts allowed analysis of the Lower Topanga Canyon bird community at two scales: site-wide, and by habitat type (riparian or upland). Site-wide analyses were conducted on the combined data from all 22 points, and included frequency of occurrence of each species (percent of surveyed points at which the species was present), average species richness (number of species) per point, total abundance of birds per point, relative abundance of species (percent of all individuals represented by a particular species), and average density of species common enough to be adequately characterized by the point count method (relative abundance $\geq$ 5%). Abundance was calculated as the maximum number of individuals of each species detected at each point over the three surveys. Densities per point were calculated using the formula density = $n/\pi r^2$, where n = number of birds within 50-m-radius circle (using maximum number detected for each species over the three counts) and r = 50 m, and were expressed as individuals per 100 ha. Similar analyses were performed separately for the riparian and upland points, allowing comparison between the two habitat types.

RESULTS AND DISCUSSION

Species Occurrence

A total of 55 species (excluding unidentified hummingbirds and swallows; including *Selasphorus* hummingbirds and an unidentified blackbird) was observed at the point count stations in 2004 (Table 1), comparable to the 56 species (including *Selasphorus* hummingbirds) detected in 2003 (Kus et al. 2003). Nine species not seen in 2003, including American Goldfinch (*Carduelis tristis*), Lawrence's Goldfinch (*C. lawrencei*), Blue-gray Gnatcatcher (*Polioptila caerulea*), unidentified blackbird, Common Peafowl (*Pavo cristatus*), Great Horned Owl (*Bubo virginianus*), Phainopepla (*Phainopepla nitens*), Tree Swallow (*Tachycineta bicolor*), and Turkey Vulture

(*Cathartes aura*), were recorded in 2004, bringing the total list of species for the site to 65. Species seen in 2003 but not detected in 2004 included California Gull (*Larus californicus*), Western Gull (*L. occidentalis*), Costa's Hummingbird (*Calypte costae*), Downy Woodpecker (*Picoides pubescens*), Lazuli Bunting (*Passerina amoena*), unidentified parrot, Rock Pigeon (*Columba livia*), Warbling Vireo (*Vireo gilvus*), White-breasted Nuthatch (*Sitta carolinensis*), and Western Screech-Owl (*Megascops kennicottii*). Five of the 19 species (26%) seen in only one year were detected exclusively as flyovers.

As in 2003, the most common species throughout the study area included the Spotted Towhee (*Pipilo maculatus*) and Wrentit (*Chamaea fasciata*), both present at all points, California Towhee (*Pipilo crissalis*; 21 or 95% of points), Western Scrub-Jay (*Aphelocoma californica*; 20 or 91% of points), Bushtit (*Psaltriparus minimus*), Bewick's Wren (*Thyromanes bewickii*), and Lesser Goldfinch (*C. psaltria*), each seen at 18 or 82% of points, Song Sparrow (*Melospiza melodia;* 17 or 77% of points), Mourning Dove (*Zenaida macroura*) and Black-headed Grosbeak (*Pheucticus melanocephalus*), both seen at 16 or 73% of points, and Orange-crowned Warbler (*Vermivora celata*) and Anna's Hummingbird (*C. anna*), both seen at 15 or 68% of points (Table 1).

Two of the 55 species (4%; Turkey Vulture and an unidentified blackbird) occurred exclusively as flyovers and were never observed on the ground (Table 1). Other species for which the majority of sightings were as flyovers included Mallard (*Anas platyrhynchos;* 83% of 6 sightings), unidentified swallows (78% of 9 sightings), and Common Raven (*Corvus corax;* 80% of 10 sightings). Aside from these species, flyovers made up 5% of all bird detections (n = 1,773). Flyovers are of limited usefulness in assessing land conditions at the scale of the point count stations used in this study, and are excluded from further analyses unless otherwise indicated.

Seven of the species detected during point counts are sensitive species or species of conservation concern (Table 1). Yellow Warbler (*Dendroica petechia*), seen at 50% (11/22) of the points, is a California Species of Special Concern (California

Table 1. Species observed during point counts at Lower Topanga Canyon in 2004.

Species Code	Common Name	Taxonomic Name	Occurrence at Points					
			All Points		Riparian Points		Upland Points	
			#	%	#	%	#	%
ALHU	Allen's Hummingbird	*Selasphorus sasin*	4	18	4	33	0	0
AMCR	American Crow	*Corvus brachyrhynchos*	4	18	1	8	3	30
AMGO	American Goldfinch	*Carduelis tristis*	2	9	2	17	0	0
AMRO	American Robin	*Turdus migratorius*	2	9	2	17	0	0
ANHU	Anna's Hummingbird	*Calypte anna*	15	68	5	42	10	100
ATFL	Ash-throated Flycatcher	*Myiarchus cinerascens*	13	59	8	67	5	50
BCHU	Black-chinned Hummingbird	*Archilochus alexandri*	6	27	5	42	1	10
BEWR	Bewick's Wren	*Thyromanes bewickii*	18	82	8	67	10	100
BGGN	Blue-gray Gnatcatcher	*Polioptila caerulea*	1	5	0	0	1	10
BHCO	Brown-headed Cowbird	*Molothrus ater*	5	23	5	42	0	0
BHGR[c]	Black-headed Grosbeak	*Pheucticus melanocephalus*	16	73	9	75	7	70
BLAC[a]	Unidentified Blackbird		1	5	0	0	1	10
BLPH	Black Phoebe	*Sayornis nigricans*	7	32	7	58	0	0
BTPI	Band-tailed Pigeon	*Patagioenas fasciata*	3	14	2	17	1	10
BUOR	Bullock's Oriole	*Icterus bullockii*	2	9	2	17	0	0
BUSH	Bushtit	*Psaltriparus minimus*	18	82	9	75	9	90
CALT	California Towhee	*Pipilo crissalis*	21	95	12	100	9	90
CANW	Canyon Wren	*Catherpes mexicanus*	13	59	8	67	5	50
CAQU	California Quail	*Callipepla californica*	5	23	0	0	5	50
CATH	California Thrasher	*Toxostoma redivivum*	10	45	1	8	9	90
CLSW	Cliff Swallow	*Petrochelidon pyrrhonota*	7	32	0	0	7	70
COPE	Common Peafowl	*Pavo cristatus*	1	5	0	0	1	10
CORA	Common Raven	*Corvus corax*	7	32	3	25	4	40
COYE[c]	Common Yellowthroat	*Geothlypis trichas*	7	32	5	42	2	20
GHOW	Great Horned Owl	*Bubo virginianus*	1	5	1	8	0	0
HOFI	House Finch	*Carpodacus mexicanus*	10	45	2	17	8	80
HOOR	Hooded Oriole	*Icterus cucullatus*	1	5	1	8	0	0

Table 1 (continued). Species observed during point counts at Lower Topanga Canyon, 2004.

Species Code	Common Name	Taxonomic Name	Occurrence at Points					
			All Points		Riparian Points		Upland Points	
			#	%	#	%	#	%
HUMM	Hummingbird spp.		14	64	9	75	5	50
HUVI	Hutton's Vireo	*Vireo huttoni*	7	32	7	58	0	0
LAGO	Lawrence's Goldfinch	*Carduelis lawrencei*	2	9	2	17	0	0
LEGO	Lesser Goldfinch	*Carduelis psaltria*	18	82	10	83	8	80
MALL	Mallard	*Anas platyrhynchos*	4	18	4	33	0	0
MODO	Mourning Dove	*Zenaida macroura*	16	73	9	75	7	70
NOFL	Northern Flicker	*Colaptes auratus*	8	36	5	42	3	30
NOMO	Northern Mockingbird	*Mimus polyglottos*	2	9	1	8	1	10
NRWS	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	14	64	7	58	7	70
NUWO	Nuttall's Woodpecker	*Picoides nuttallii*	12	55	7	58	5	50
OATI	Oak Titmouse	*Baeolophus inornatus*	10	45	3	25	7	70
OCWA	Orange-crowned Warbler	*Vermivora celata*	15	68	10	83	5	50
OSFL	Olive-sided Flycatcher	*Contopus cooperi*	10	45	10	83	0	0
PHAI	Phainopepla	*Phainopepla nitens*	1	5	0	0	1	10
PSFL	Pacific-slope Flycatcher	*Empidonax difficilis*	13	59	12	100	1	10
PUFI	Purple Finch	*Carpodacus purpureus*	5	23	5	42	0	0
RTHA	Red-tailed Hawk	*Buteo jamaicensis*	7	32	6	50	1	10
SELA	*Selasphorus* hummingbird spp.	*Selasphorus* spp.	4	18	3	25	1	10
SOSP[c]	Song Sparrow	*Melospiza melodia*	17	77	11	92	6	60
SPTO	Spotted Towhee	*Pipilo maculatus*	22	100	12	100	10	100
SWAL	Unidentified swallow		7	32	5	42	2	20
TRES[c]	Tree Swallow	*Tachycineta bicolor*	2	9	2	17	0	0
TUVU[a]	Turkey Vulture	*Cathartes aura*	1	5	0	0	1	10
VGSW	Violet-green Swallow	*Tachycineta thalassina*	5	23	5	42	0	0
WESJ	Western Scrub-Jay	*Aphelocoma californica*	20	91	10	83	10	100
WEWP	Western Wood-Pewee	*Contopus sordidulus*	13	59	10	83	3	30

Table 1(continued). Species observed during point counts at Lower Topanga Canyon, 2004.

Species Code	Common Name	Taxonomic Name	Occurrence at Points					
			All Points		Riparian Points		Upland Points	
			#	%	#	%	#	%
WIWA[c]	Wilson's Warbler	*Wilsonia pusilla*	5	23	3	25	2	20
WREN[d]	Wrentit	*Chamaea fasciata*	22	100	12	100	10	100
WTSW	White-throated Swift	*Aeronautes saxatalis*	6	27	4	33	2	20
YWAR[bc]	Yellow Warbler	*Dendroica petechia*	11	50	10	83	1	10

[a]Species seen only as flyover.

[b]California Species of Special Concern (Calif. Dept. of Fish and Game 1992).

[c]California Partners in Flight Riparian Conservation Focal Species (RHJV 2000).

[d]California Partners in Flight Coastal Scrub and Chaparral Conservation Focal Species (CalPIF 2003).

Department of Fish and Game 1992). Six species are identified as focal species of the California Partners in Flight riparian bird conservation plan (RHJV 2000); in addition to Yellow Warbler, these include Black-headed Grosbeak, Common Yellowthroat (*Geothlypis trichas*), Song Sparrow, Tree Swallow, and Wilson's Warbler (*Wilsonia pusilla*). One species, the Wrentit, is a focal species in the California Partners in Flight coastal scrub and chaparral bird conservation plan (CalPIF 2003). With the exception of Tree Swallow, which was not detected in 2003, and Wrentit, which occurred at all points in both years, sensitive species were more widespread in 2004 than in 2003, occurring at from 1.3-5.8 times more points in 2004.

Forty-eight of the 55 total species were detected at the riparian points, while 40 occurred at the upland points (Table 1). Fifteen species were seen at riparian points but not upland points, while seven (including two species seen only as flyovers) were seen at upland points but not at riparian stations. Among the most common species at both riparian and upland points were Spotted Towhee and Wrentit, both present at all points, as well as Bushtit, California Towhee, Lesser Goldfinch, Mourning Dove, and Western Scrub-Jay. Other common riparian species included Pacific-slope Flycatcher (*Empidonax difficilis*), which occurred at all 12 riparian points, Song Sparrow, detected at 11 of the 12 points, and Orange-crowned Warbler, Olive-sided Flycatcher (*Contopus cooperi*), Western Wood-Pewee (*C. sordidulus*), and Yellow Warbler, each present at 10 of the 12 riparian points. Additional common species in the uplands included Bewick's Wren and Anna's Hummingbird, present at all 10 upland points, and California Thrasher (*Toxostoma redivivum*) and House Finch (*Carpodacus mexicanus*), detected at nine and eight upland points, respectively.

Species Richness

Species richness, or the number of species detected per point, varied according to the size of the area being censused, as well as across habitats (Table 2). Overall, species richness averaged 17 $\pm$ 4 species per point for birds detected within the 50-m radius count circle, and 20 $\pm$ 4 for all birds detected from the point (excluding flyovers). Both of these values are higher than the corresponding values for 2003, when an

average of 11 ± 4 species were detected within 50 m of points, and 16 ± 4 species were counted over all distances (Kus et al. 2003). In 2004, 85 ± 11% of the species detected at a point occurred within 50 m of the point, higher than the 66 ± 16% of species detected within 50 m of points in 2003.

Table 2. Number of species detected per point, by count distance, at Lower Topanga Canyon in 2004.

	Number of Species[a]	
Point[b]	< 50 m	All Distances
R1	18	19
R2	15	24
R3	23	24
R4	18	19
R5	14	19
R6	22	25
R7	15	17
R8	22	22
R9	18	19
R10	23	24
R11	22	26
R12	22	27
U2	11	13
U3	14	18
U4	16	19
U5	22	23
U6	14	18
U7	10	13
U8	14	19
U9	17	18
U10	16	17
U11	13	21

[a]Species seen only as flyovers excluded.

[b]R denotes riparian point, U denotes upland point.

As in 2003, species richness of the riparian points in 2004 was slightly higher than that of the upland points at both count distances. At riparian points, richness averaged 19 ± 3 species and 22 ± 3 species per point for birds within 50 m and at all distances, respectively; corresponding values for the upland points were 15 ± 2 and 18 ± 3 species per point.

Species Abundance

Like species richness, bird abundance varied across points as well as count area (Figure 2). Total bird abundance over all 22 points averaged 35.5 ± 8.6 individuals per point for birds seen within 50 m, and 45.8 ± 9.8 for birds seen at all distances. Both measures of abundance in 2004 were roughly twice those documented in 2003, when abundance within 50 m of points averaged 16.5 ± 6.3 individuals per point, and total abundance averaged 27.6 ± 7.7 individuals per point (Kus et al. 2003). As in 2003, riparian and upland points in 2004 were similar with regard to average bird abundance both within 50 m (riparian: 35.8 ± 6.6; upland: 35.1 ± 10.8), and at all distances (riparian: 42.8 ± 6.8; upland: 49.4 ± 11.9).

Among species, those that were the most common and widespread across points were also the most abundant. Overall, the most abundant species (those making up ≥ approximately 5% of all individuals observed) included Bushtit (7.9% of total individuals), California Towhee (4.8%), Spotted Towhee (9.3%), and Wrentit (9.5%; Figure 3). In 2003, Bewick's Wren, Western Scrub-Jay, and Song Sparrow also comprised 5% or more of all birds detected; however, abundance of these species in 2004 was relatively lower in part because of the large number of Northern Rough-winged Swallows observed foraging in the habitat at point count locations. This species, which was present but not abundant in 2003, made up 7.2% of all birds detected in 2004, and was second only to Wrentits in relative abundance (Figure 3).

Of the species most abundant overall, Bushtit, Spotted Towhee, and Wrentit were among the most abundant species at both riparian and upland points (Figures 4, 5). Also among the most abundant species at riparian points were Song Sparrow (6.8% of individuals) and California Towhee (5.5%), which were not abundant at upland points. In contrast, Bewick's Wren (6.1% of individuals) and Northern Rough-winged Swallow (12.6%) were among the most abundant species at upland points, but occurred in comparatively low numbers at riparian points.

Figure 2. Total species abundance, by point and count distance, of birds at Lower Topanga Canyon in 2004.

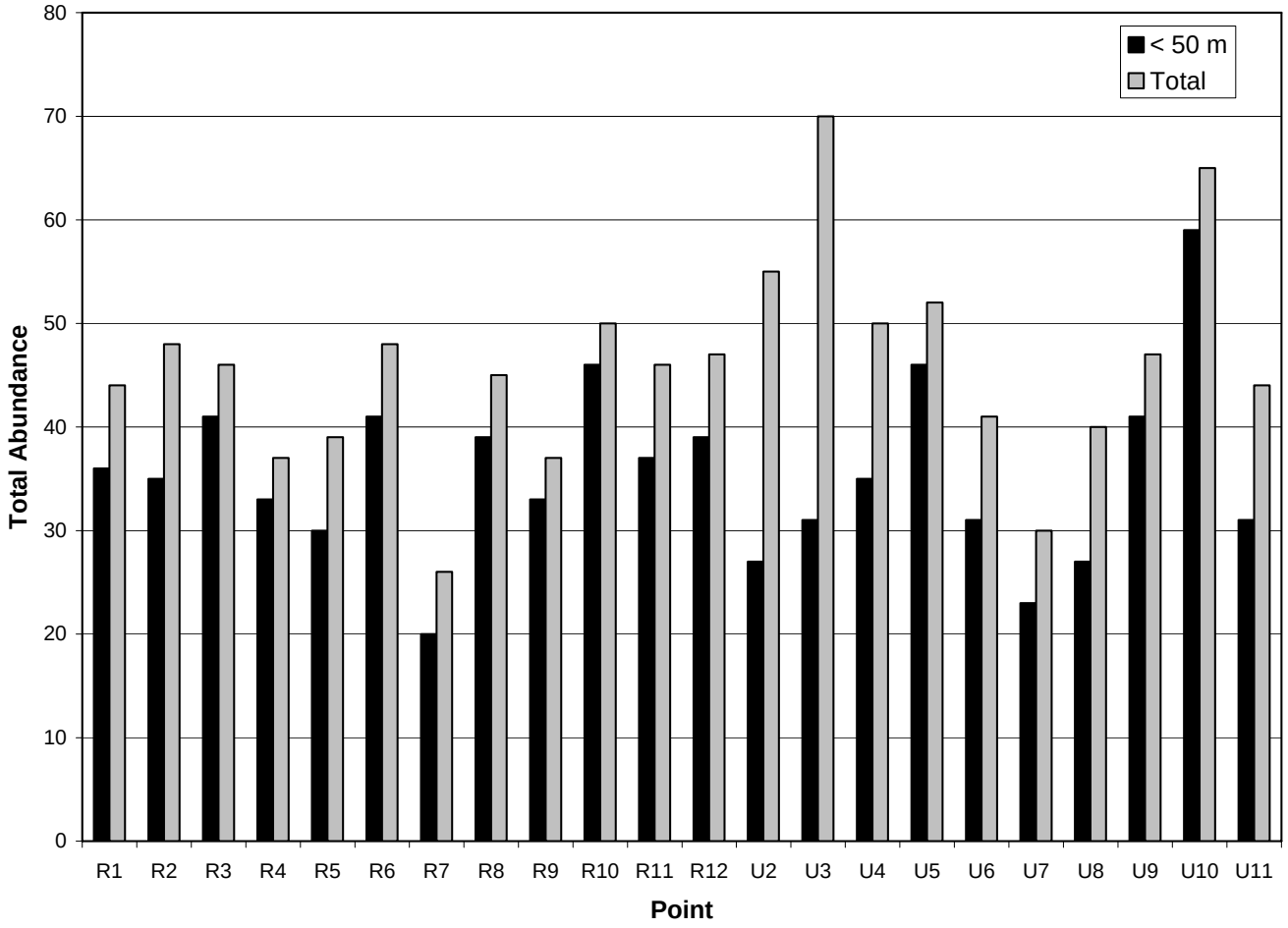


Figure 3. Relative abundance of species at Lower Topanga Canyon in 2004: all points.

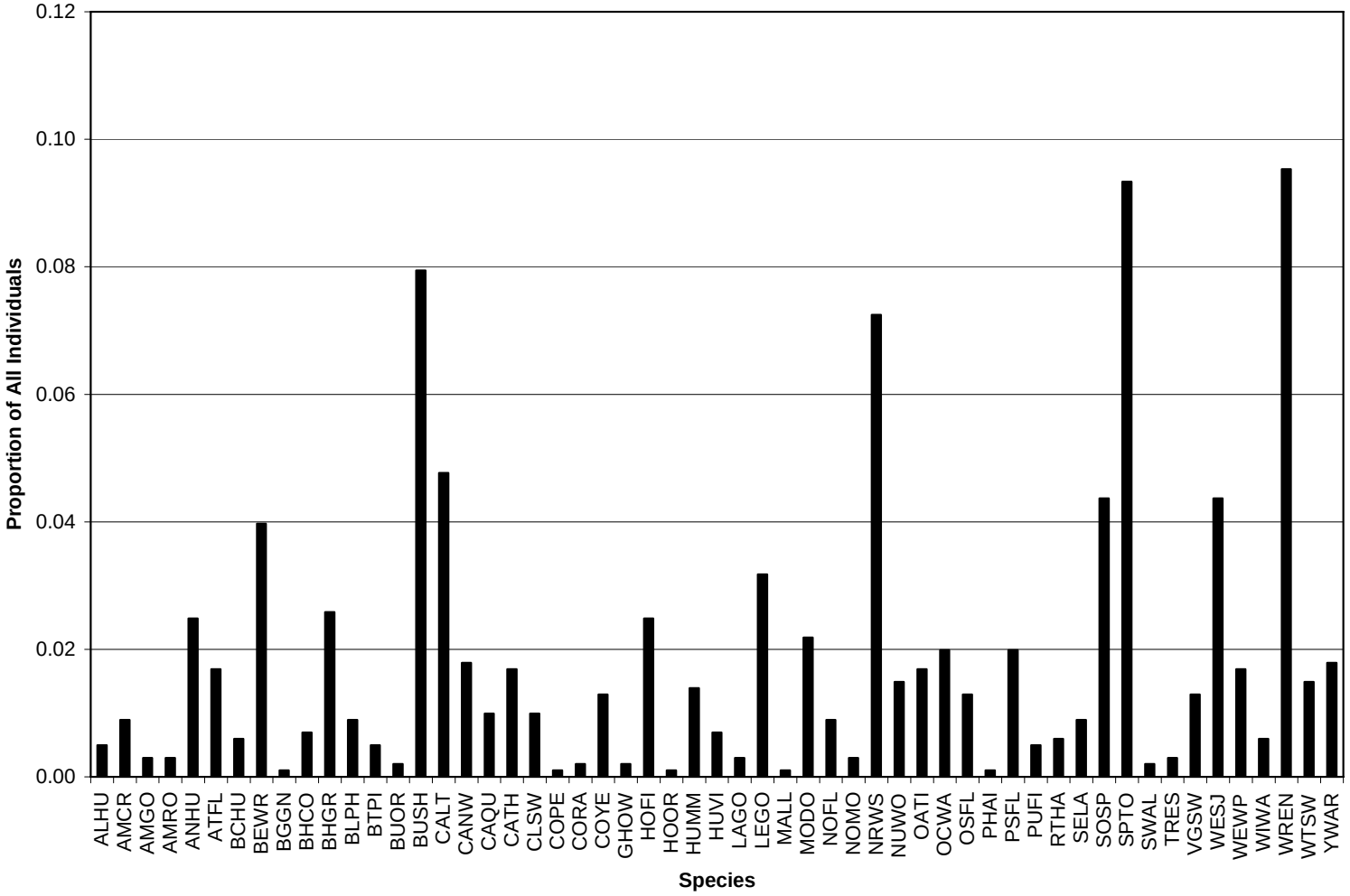


Figure 4. Relative abundance of species at Lower Topanga Canyon in 2004: riparian points.

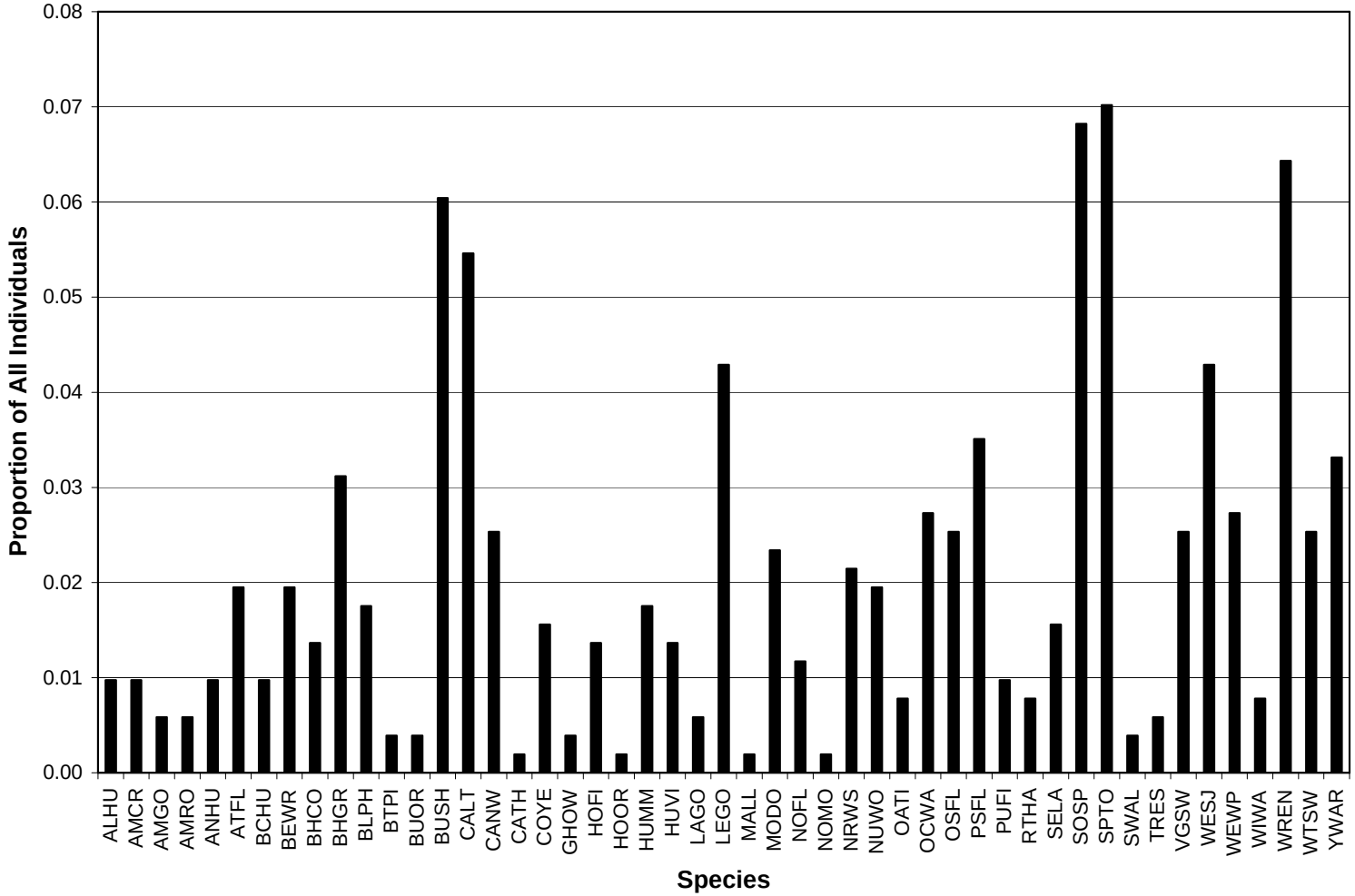
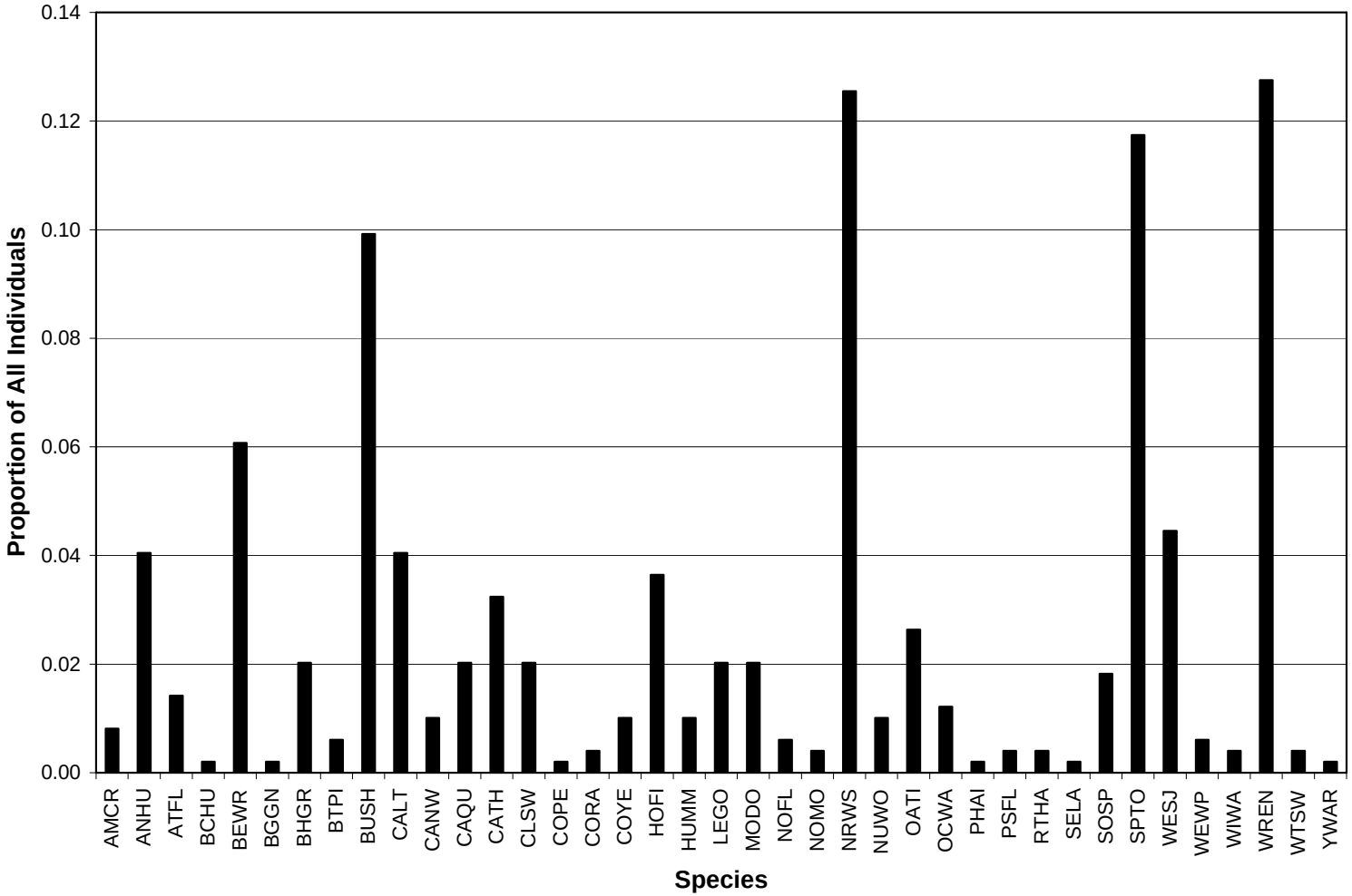


Figure 5. Relative abundance of species at Lower Topanga Canyon in 2004: upland points.



Density

Density of the most abundant species throughout the study area ranged from 146 ± 177 individuals per 100 ha (Northern Rough-winged Swallow) to 457 ± 459 individuals per 100 ha (Bushtit; Table 3). Of the species that were abundant in both riparian and upland habitats, all achieved higher densities in upland areas. Wrentits, which had the third highest relative abundance at riparian points (Figure 4), had the lowest density there, indicating that a large fraction of the Wrentits observed at riparian points were outside of the 50-m circle used to calculate bird densities. Similarly, Northern Rough-winged Swallows, which were the second most abundant species at upland points, exhibited the lowest density there, indicating that most individuals were farther than 50 m from points.

Table 3. Average density (± s.d.) of most abundant species, by habitat, at Lower Topanga Canyon in 2004.

All Points			Riparian Points			Upland Points		
	# per 100 ha			# per 100 ha			# per 100 ha	
Species	Average	s.d.	Species	Average	s.d.	Species	Average	s.d.
BUSH	457	459	BUSH	329	279	BEWR	369	297
CALT	260	144	CALT	276	91	BUSH	611	591
NRWS	146	177	SOSP	340	198	NRWS	153	223
SPTO	411	188	SPTO	318	127	SPTO	522	194
WREN	307	218	WREN	159	96	WREN	484	188

CONCLUSIONS

Data collected in 2004 served to expand the inventory of birds at Topanga Canyon State Park, and captured natural variability in the Park's bird community that will be useful in future examinations of bird response to changes in habitat condition and management. First, the counts revealed that while overall bird species richness was virtually the same in 2003 and 2004, community composition differed between the two years. Ten species seen in 2003 were replaced by nine species seen for the first time in 2004, suggesting that approximately 15-20% of species at the site may differ between

years. Second, the 2004 counts revealed substantial increases in bird abundance relative to 2003. These increases were observed in both riparian and upland habitats, and across species. Despite changes in overall abundance between years, species remained generally stable with regard to relative abundance, although a few differences were noted. Wrentits and Spotted Towhees continued to be the most abundant and widespread species at the count stations, but were joined in 2004 by Bushtits and California Towhees which increased to become similarly widespread and abundant. Song sparrows continued to dominate riparian habitats, but Pacific-slope Flycatchers, which were the fifth most abundant species in 2003, were outnumbered in 2004 by large numbers of California Towhees, Bushtits, and Lesser Goldfinches, and comprised less than 5% of the birds at riparian points. Bewicks' Wrens maintained high densities at upland points, but California Thrasher numbers were comparatively lower than in 2003, with Northern Rough-winged Swallows becoming the second most abundant species at these points. Pacific-slope Flycatchers and California Thrashers were identified in 2003 as potential focal monitoring species in riparian and upland habitats (along with Song Sparrows and Bewick's Wrens) because of their narrow association with these respective habitats. Data from 2004 combined with future data will provide a more complete understanding of spatial and temporal variability in the Park's bird community and permit determination of appropriate species and/or metrics for monitoring and detecting change.

LITERATURE CITED

Blondel, J., C. Ferry, and B. Frochot. 1981. Point counts with unlimited distance. Studies in Avian Biology 6:414-420.

California Department of Fish and Game. 1992. Bird Species of Special Concern. Wildlife Management Branch, Nongame Birds and Mammals Section.

CalPIF (California Partners in Flight). 2003. Version 2. The coastal scrub and chaparral bird conservation plan: a strategy for protecting and managing coastal scrub and chaparral habitats and associate birds in California (J. Lovio, lead author). Point Reyes Bird Observatory. 114 pp.

Kus, B.E., D.A. Kisner, and M.B. Mulrooney. 2003. Riparian and upland bird communities at Lower Topanga Canyon, Topanga Canyon State Park. 2003 Annual Report. Prepared for California State Parks, Southern Service Center, San Diego, CA.

Ralph, C.J., G. Geupel, P. Pyle, T. Martin, and D. DeSante. 1993. Handbook of field methods for monitoring landbirds. Gen. Tech. Rep. PSW-GTR-144. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 41 pp.

RHJV (Riparian Habitat Joint Venture). 2000. Version 1.0. The riparian bird conservation plan: a strategy for reversing the decline of riparian associated birds in California. California Partners in Flight. 98 pp.

Appendix 1. GPS coordinates in decimal degrees of point count stations, Lower Topanga Canyon.

Point[a]	Latitude N	Longitude W
R1	34.04116	-118.58159
R2	34.07324	-118.58833
R3	34.07020	-118.58711
R4	34.06873	-118.58697
R5	34.06610	-118.58677
R6	34.06400	-118.58719
R7	34.06199	-118.58518
R8	34.06004	-118.58460
R9	34.05764	-118.58402
R10	34.05454	-118.58157
R11	34.04910	-118.58085
R12	34.04675	-118.57841
U2	34.07626	-118.57823
U3	34.07353	-118.57760
U4	34.07383	-118.58142
U5	34.07091	-118.57741
U6	34.06748	-118.57936
U7	34.06669	-118.57332
U8	34.06475	-118.56982
U9	34.06313	-118.57585
U10	34.05941	-118.57372
U11	34.05821	-118.57173

[a]R denotes riparian point, U denotes upland point.

Appendix 2. Maximum abundance of species observed during point counts, by point and count distance, Lower Topanga Canyon, 2004.

	Maximum Abundance[a]																							
	R1		R2		R3		R4		R5		R6		R7		R8		R9		R10		R11		R12	
Species Code	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total
ALHU			1	1	2	2	1	1											1	1			1	1
AMCR	2	5																						
AMGO			2	2																			1	1
AMRO			0	1							2	2												
ANHU	1	1					1	1							1	1							1	1
ATFL	1	1			1	1					0	1	1	1	1	2	1	1			2	2	1	1
BCHU					1	1	1	1			1	1					1	1			1	1		
BEWR	1	1	0	1			0	1	0	1			1	2	1	2	1	1			0	1		
BGGN																								
BHCO	1	1	0	1			2	2													1	1	2	2
BHGR			3	3	1	1			0	1			1	1	2	2	3	3	2	2	2	2	0	1
BLPH	2	2			1	1					1	1			2	2			1	1	1	1	1	1
BTPI															2	2								
BUOR			1	1																			1	1
BUSH	7	7	3	3	4	4			5	5	1	1			3	3			4	4	2	2	2	2
CALT	2	2	2	2	2	2	1	1	2	3	2	2	2	2	2	3	3	3	4	4	2	2	2	2
CANW			0	1	3	3	1	1	2	2	0	1	0	1					3	3	0	1		
CAQU																								
CATH																							0	1
CLSW																								
COPE																								
CORA																								
COYE	2	2									1	1	1	1	2	3			1	1				
GHOW																	2	2						
HOFI	3	4																					3	3
HOOR																							0	1

Appendix 2 (continued)**.** Maximum abundance of species observed during point counts, by point and count distance, Lower Topanga Canyon, 2004.

	Maximum Abundance[a]																							
	R1		R2		R3		R4		R5		R6		R7		R8		R9		R10		R11		R12	
Species Code	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total
HUMM	1	1	0	1	1	1	1	1	1	1					1	1	1	1					2	2
HUVI			0	1	1	1			0	1	1	1					1	1	1	1	1	1		
LAGO																					1	1	2	2
LEGO	2	2			2	2	1	1	4	5					2	2			4	4	4	4	2	2
MALL							1	1																
MODO	1	1	2	2							1	1	1	1	3	3	1	1	1	1	1	1	0	1
NOFL	0	1	1	1							1	1	1	1					2	2				
NOMO	1	1																						
NRWS					1	1	2	2	2	2	2	2	2	2					2	2				
NUWO											2	2	1	1	1	1	2	2	1	1	2	2	1	1
OATI			0	1	1	1					2	2												
OCWA			0	1	1	1	1	1	0	1	2	2			1	1	0	1	3	3	2	2	1	1
OSFL	2	2	2	2	2	2			0	1	1	1			1	1	1	1	1	1	1	1	1	1
PHAI																								
PSFL	1	2	0	1	1	1	1	2	1	1	2	2	1	1	2	2	1	1	1	1	2	2	2	2
PUFI			0	1	1	1													1	1	1	1	0	1
RTHA									1	1	0	1	0	1	1	1								
SELA			4	4	1	1																	3	3
SOSP	3	4	2	2			4	5	2	2	3	4	2	2	1	1	6	6	4	4	3	3	2	2
SPTO	2	3	3	3	3	3	2	2	3	4	2	4	1	2	5	5	3	3	2	2	2	2	2	3
SWAL									1	1			1	1										
TRES																			2	2	1	1		
TUVU																								
VGSW					3	3	2	2	2	2	6	6												
WESJ			4	4	2	2			1	1	4	4	1	2	1	2	1	1	3	3	0	1	2	2
WEWP			1	1	1	1	1	1			1	1	1	1	1	1	2	2	1	1	2	3	2	2

Appendix 2 (continued). Maximum abundance of species observed during point counts, by point and count distance, Lower Topanga Canyon, 2004.

	Maximum Abundance[a]																							
	R1		R2		R3		R4		R5		R6		R7		R8		R9		R10		R11		R12	
Species Code	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total
WIWA					1	1			1	1											2	2		
WREN	1	1	2	4	2	2	1	2	1	2	2	3	2	3	2	3	1	4	0	3	0	3	1	3
WTSW					0	5	8	8																
YWAR			2	3	2	2	1	1	1	1	1	1			1	1	2	2	1	2	1	3	1	1
TOTAL	36	44	35	48	41	46	33	37	30	39	41	48	20	26	39	45	33	37	46	50	37	46	39	47

[a]Excluding flyovers.

Appendix 2 (continued). Maximum abundance of species observed during point counts, by point and count distance, Lower Topanga Canyon, 2004.

	Maximum Abundance[a]																					
	U2		U3		U4		U5		U6		U7		U8		U9		U10		U11		TOTAL	
Species Code	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total
ALHU																					6	6
AMCR	0	2	0	1							0	1									2	9
AMGO																					3	3
AMRO																					2	3
ANHU	1	1	4	4	2	2	2	2	3	3	1	1	3	3	2	2	1	1	1	1	24	24
ATFL			0	1	2	2	1	1							1	2			0	1	12	17
BCHU													1	1							6	6
BEWR	2	2	1	1	2	2	2	2	3	4	1	1	2	2	4	4	9	9	3	3	33	40
BGGN													1	1							1	1
BHCO																					6	7
BHGR					0	1	1	1	1	1			1	1	2	2	2	2	1	2	22	26
BLPH																					9	9
BTPI							0	3													2	5
BUOR																					2	2
BUSH	8	8	3	3	6	6	10	10	3	3	3	3	1	1			14	14	0	1	79	80
CALT	1	1			1	1	2	2	1	1	5	5	2	3	1	1	4	4	2	2	45	48
CANW							1	1	0	1					0	1	1	1	0	1	11	18
CAQU	3	3			0	1	3	3							1	1			2	2	9	10
CATH			3	3	2	3	1	1	3	3	0	1	1	1	1	2	1	1	1	1	13	17
CLSW	1	1	2	2			1	1					0	1	4	4	1	1			9	10
COPE									0	1											0	1
CORA													0	1					0	1	0	2
COYE																	4	4	1	1	12	13
GHOW																					2	2
HOFI			3	3			2	2	1	1	1	1	3	4	2	2	3	3	2	2	23	25
HOOR																					0	1

Appendix 2 (continued). Maximum abundance of species observed during point counts, by point and count distance, Lower Topanga Canyon, 2004.

	Maximum Abundance[a]																					
	U2		U3		U4		U5		U6		U7		U8		U9		U10		U11		TOTAL	
Species Code	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total
HUMM					1	1							2	2	1	1			1	1	13	14
HUVI																					5	7
LAGO																					3	3
LEGO			1	1	2	2	1	2	0	1	0	1					1	1	2	2	28	32
MALL																					1	1
MODO	0	1	0	2			1	1	1	2	1	1	0	1	2	2					16	22
NOFL			1	1					1	1									0	1	7	9
NOMO																			1	2	2	3
NRWS	5	25	2	32											2	2	3	3			23	73
NUWO					0	1			0	1	1	1	1	1	1	1					13	15
OATI	2	2			4	4	2	2	2	2			0	1	1	1			0	1	14	17
OCWA					1	1	1	1					0	1	2	2			0	1	15	20
OSFL																					12	13
PHAI							1	1													1	1
PSFL					1	2															16	20
PUFI																					3	5
RTHA	2	2																			4	6
SELA									1	1											9	9
SOSP			1	1	1	1	1	1					1	1			4	4	0	1	40	44
SPTO	1	2	4	5	3	8	3	5	5	5	4	7	4	5	6	7	6	8	5	6	71	94
SWAL																					2	2
TRES																					3	3
TUVU																					0	0
VGSW																					13	13
WESJ	0	1	0	1	3	3	1	1	2	2	2	2	1	2	3	3	0	2	4	5	35	44
WEWP			1	1	1	1	1	1													16	17

Appendix 2 (continued). Maximum abundance of species observed during point counts, by point and count distance, Lower Topanga Canyon, 2004.

	Maximum Abundance[a]																					
	U2		U3		U4		U5		U6		U7		U8		U9		U10		U11		TOTAL	
Species Code	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total	<50m	Total
WIWA			1	1	1	1															6	6
WREN	1	4	4	7	2	7	6	6	4	8	4	5	3	7	5	7	4	6	5	6	53	96
WTSW							2	2													10	15
YWAR																	1	1			14	18
TOTAL	27	55	31	70	35	50	46	52	31	41	23	30	27	40	41	47	59	65	31	44	781	1007

[a]Excluding flyovers.