Monitoring Colorado's Birds: The 2004 field season report

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11 March 2005

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All pictures in this report are courtesy of the photographer, Tony Leukering.

Suggested citation:

Beason, J., R. Levad, and T. Leukering. 2005. Monitoring Colorado's Birds: The 2004 field season report. Unpub. report, Rocky Mountain Bird Observatory, Brighton, CO 80603.

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Executive Summary

In 2004, Rocky Mountain Bird Observatory, in conjunction with its funding partners, Colorado Division of Wildlife, U.S.D.A. Forest Service, and U.S. Bureau of Land Management, conducted the *Monitoring Colorado's Birds* (*MCB*) breeding-bird monitoring plan, as updated in 2001 (Leukering et al. 2001a). We conducted transects in 13 habitats with the continuing aim of generating long-term population trends for as many of Colorado's regularly-occurring breeding birds as possible.

We surveyed 350 of the established 390 transects (30 transects per habitat) between 15 May and 17 July, inclusive, detecting 231 species. Of these, we detected 99 in sufficient numbers (>24) on transects to enable the calculation of density estimates in at least one habitat. Among the 99 species for which we recorded sufficient sample size, 47 are considered to be of concern by Partners in Flight (2004) and/or the participating state and federal agencies.

In 2004, *MCB* also continued its efforts to collect data on limited-range and/or locally-distributed breeding-bird species for which habitat-stratified, randomly-placed transects do not produce sufficient detections, particularly colonially-breeding species. Through the efficient use of volunteers and with a large number of private, state, and federal cooperators (a subsidiary program of *MCB* called *ColonyWatch*), we have collected data permitting annual statewide estimates of breeding populations of most of Colorado's colonial breeding-bird species (e.g., Eared Grebe and Great Blue Heron). These "special species" efforts also gathered occurrence and abundance data on another 56 species that in Colorado occur in low density and/or limited distribution. These data are generated in order to track, with various degrees of rigor, populations of these species.

Monitoring Colorado's Birds should continue to monitor or track at least 154 of Colorado's roughly 240 (65%) regularly-occurring breeding-bird species.

Introduction

Rocky Mountain Bird Observatory (RMBO) initiated efforts to create and conduct a Colorado-wide project to monitor breeding-bird populations in 1995 (see Leukering et al. 2001a). In 1997, after review by statisticians and Colorado Division of Wildlife (CDOW) biologists, we redesigned the program to focus on obtaining count-based data for all breeding bird species in the state on a randomly-allocated and habitat-stratified basis and conducted a pilot effort in 1998 in three habitats (Leukering and Carter 1999). With the success of the 1998 effort, we expanded fieldwork in 1999 to include all originally allocated habitats and special-species efforts and named the program *Monitoring Colorado's Birds* (*MCB*). We conducted the seventh year of this project in 2004 and this report presents the results of that effort. This report also constitutes fulfillment of the requirements in Item 1.H. in our contract with CDOW (PSC-1159-04) and also for our contracts with the U.S.D.A. Forest Service (03-CS-11021300-023) and U.S. Bureau of Land Management (1422 CAA020010 T01).

Methods

We used four methods (transects, colony counts, marsh surveys, and censussing) to obtain population data on Colorado's breeding-bird species, which we briefly outline below (please refer to Leukering et al. (2001b) for specifics on these methods).

Point transects – The established transects consist of 15 point-count stations in each of 30 randomly-selected stands in each of eleven habitats (Alpine Tundra, Aspen, Grassland, High-elevation Riparian, Mixed Conifer, Montane Shrubland, Piñon-Juniper, Ponderosa Pine, Sage Shrubland, Semi-desert Shrubland, and Spruce-Fir). We recorded all birds detected on the points and recorded the measured or estimated distance from the point to each bird. Whenever possible, distances to birds were measured using laser rangefinders. When it was not possible to obtain a measurement to the bird using the rangefinder, a distance to an object near the bird was measured and an accurate estimate was recorded. For low-density species, designated *a priori*, detected on points, we also recorded a distance and a bearing to the individual from the point. We also recorded detections of individuals of low-density species between points, the distance from the observation points to the birds, and the bearings to those individuals. See Leukering et al. (2001b) for more specifics of the various methodologies.

Line transects (Low-elevation Riparian and Wetland) – As traversing these "aquatic" habitats is considerably more difficult than are the more terrestrial habitats, we conduct shorter line transects in them. In line transects, we simply traverse the course of the transect, recording each individual bird detected along the length of the transect. For each individual bird, we record the species, sex (if known), how detected, and the distance of the bird from the line of the transect, measured or estimated perpendicular to the bearing of the transect.

We conduct line transects in Low-elevation Riparian by floating rivers in a canoe or raft in 30 minutes; two people are needed to conduct these transects, a navigator and an observer. For

Wetland transects, we established a 300-meter line transect at each location for which we allocate 30 minutes to complete. We analyze the data from all three transect types as we do for the point transects described above.

In 2004, we changed protocol on transects to treat all non-independent detections of individual birds as part of a 'cluster' together with the first independently observed bird, rather than as separate, independent observations of those individuals. This means that if the detection of an individual bird was dependent upon the previous detection of another individual, the resulting observation was recorded as one independent detection with a cluster size of C, where C is the original individual detected plus any additional individuals detected as a result of the first individual revealing its presence. For example, one bird sings, and is thus detected. The observer then looks over to that bird, and as a result detects a second individual. The observation is recorded as one detection of a cluster of two birds. This practice ensures that we adhere to the assumption inherent in random sampling that all observations are independent.

We used Program DISTANCE, which uses the distance estimates from our transect data to determine density estimates for each species. In this report, all references to density estimates are values provided by DISTANCE from our data. The notation, concepts, and analysis methods of the program were developed by Buckland et al. (1993, 2001). The program can analyze several forms of distance-sampling data, fitting a detection curve to the data set to be analyzed. The program limits some serious biases inherent in traditional analysis of point-count data (e.g., variable detectability among species, habitats, or years), but comes with three assumptions: 1) all birds at distance 0 are detected; 2) distances of birds close to the point are measured accurately; and 3) birds do not move in response to the observer's presence. We conducted an initial analysis of species for which we observed sample sizes of at least 25 individuals. We did this to examine the fit of the detection-function curve and then truncated where needed to eliminate outliers. When analyzing data, we often found it necessary to eliminate outliers prior to final analysis and therefore the number of observations (n) used to estimate densities may be smaller than the total number of individuals observed.

For analysis purposes, species that are considered well-sampled on transects are those with coefficients of variation of the density estimates (CV in habitat tables; hereafter CV) of less than 50%. Species with CVs of >50%, but <80% still provide solid data; those species will simply require more years of data to detect population trends.

Census of colonially-nesting waterbirds – We surveyed nesting sites of the following species: Eared Grebe, Western Grebe, Clark's Grebe, American White Pelican, Double-crested Cormorant, Great Blue Heron, Great Egret, Snowy Egret, Cattle Egret, Black-crowned Night-Heron, White-faced Ibis, Franklin's Gull, California Gull, Forster's Tern, and Black Tern. See Leukering et al. (2001b) for more specifics on these methods. Much of these survey efforts are conducted by *ColonyWatch*, a subsidiary program of *MCB* that coordinates volunteers and agency cooperators.

Secretive marshbird surveys - We attempted surveys for secretive marshbirds at three study sites: Alamosa NWR, Monte Vista NWR, and Russell Lakes SWA. These surveys focused on Pied-billed

Grebe, American Bittern, Virginia Rail, and Sora, but also collected data on a suite of secondary species. The surveys were conducted following protocols developed by the monitoring committee of North American Waterbird Conservation Plan. Each survey consists of a series of point counts, each beginning with a five-minute passive-listening period, followed by 30-second tape playbacks of species likely to be detected at the location interspersed with 30-second listening periods. In order to take advantage of open time for field technicians, we designed these surveys to be conducted in the evening. Persistent high winds in the areas proved to be an insurmountable hindrance, and none of the surveys was completed. The surveys will be re-designed to be run in the morning. The study area established last year at Ft. Lyon was not surveyed in 2004 due to insufficient time.

Bridge Survey - We began a systematic survey of the state's bridges to document their use by nesting birds and to gain data on some uncommon riparian species that may be observed from bridges. We recorded the numbers of adults and nests of the following species: Spotted Sandpiper, Rock Pigeon, Yellow-billed Cuckoo, Belted Kingfisher, Eastern Phoebe, Black Phoebe, Say's Phoebe, Cordilleran Flycatcher, Barn Swallow, Cliff Swallow, Bank Swallow, Northern Rough-winged Swallow, American Dipper, and Chihuahuan and Common ravens.

Other focused species surveys.

Hooded Merganser – We obtained data from *North American Birds* regional editors and other contacts.

Pied-billed Grebe – We collected incidental observations made by field staff at probable and confirmed nesting sites. Formerly unreported sites were entered into the database. This species was also one of the target species for secretive marshbird surveys.

American Bittern – We obtained data on year 2004 from *North American Birds* regional editors and other contacts. We surveyed a portion of the historical sites in association with conducting wetland transects and other monitoring tasks. This species was also one of the target species for secretive marshbird surveys.

Green Heron – We obtained data on year 2004 locations for this species from *North American Birds* regional editors and other contacts.

Osprey – Data were gathered from established monitoring efforts, with volunteers and staff visiting a majority of the other known breeding sites. All sites known to have been active in the past three years were surveyed.

Mississippi Kite – We cataloged sites where breeding was reported as confirmed in Kingery (1998) and at other sites reported by local experts. We obtained data on year 2004 from *North American Birds* regional editors, *Colorado Birds,* and other contacts.

Bald Eagle – We collected data from volunteers and agency biologists and began to catalogue nest sites in anticipation of beginning to monitor of this species if it is federally delisted.

Ferruginous Hawk – We continued cataloging sites and recording nest activity reported by local experts and field technicians.

Black Rail – We conducted no fieldwork on this species this year.

Snowy Plover – We collected data from BLM monitoring efforts at Blanca Wetlands, and we surveyed all reservoirs of Bent, Kiowa, and Prowers counties where nesting had previously been documented.

Black-necked Stilt – We collected observations from NWR personnel, surveyed all reservoirs of Bent, Kiowa, and Prowers counties, and surveyed selected sites where nesting had been documented in the past two years.

Willet – We conducted a census of breeding sites identified in previous years. Sites included Arapaho NWR, Hebron Waterfowl Area, Walden Reservoir, Lake John, Delaney Buttes, Cowdry Reservoir, wetlands along the Yampa River, and Fruitgrowers Reservoir.

Upland Sandpiper – We obtained data on year 2004 from *North American Birds* regional editors, and we continued cataloging information on nesting locations.

Eurasian Collared-Dove – We continued efforts initiated in 2001 to track the invasion of this species by cataloguing all observations reported on the COBIRDS (an electronic listserve) and those reported by field workers. Volunteers monitored a number of sites that had previous history of occupation.

Burrowing Owl – We followed up an intensive inventory conducted in 2002 on the Western Slope of Colorado in a project for the Bureau of Land Management Grand Junction Field Office by recruiting volunteers to survey and monitor all sites that were occupied in that study.

Black Swift – USFS personnel, RMBO staff, and volunteers conducted evening counts at a selection of previously-documented breeding sites and nest checks at all sites where nests had been reported in recent years. We surveyed additional sites for evidence of breeding and suitability for occupation by Black Swifts. Each previously unevaluated site was evaluated according to criteria developed by USFS Region 2.

Chimney Swift – We catalogued general sites reported in the *Colorado Breeding Bird Atlas* and by *MCB* field workers. We recruited volunteers to find and monitor specific nest sites.

White-throated Swift – We continued cataloguing historical colony nest sites, and collected reports of occupancy made by volunteers and field workers.

Lewis's Woodpecker – We continued cataloguing confirmed and probable nest sites. We recorded observations reported by field workers and volunteers and by observers posting to the list serve COBIRDS. We tested a monitoring protocol, utilizing driving transects on randomly selected routes in Lewis's Woodpecker range.

Black Phoebe – We conducted a count of individuals on the San Miguel River by boat, and surveyed all other known historical nesting sites. We also recorded incidental observations at other locations.

Eastern Phoebe – We began a catalogue of historical nest sites. We recorded observations reported by field workers, by observers posting to the listserve COBIRDS, and in the *Colorado Breeding Bird Atlas*. This species was one of the targets for the bridge survey.

Scissor-tailed Flycatcher – We obtained data on this species from *North American Birds* regional editors and other contacts.

Bell's Vireo – Incidental to other surveys, field workers counted all individuals at six of the 16 known breeding sites along the South Platte River and in Yuma County. Other historical sites were not visited this year.

Purple Martin – We visited as many sites with a history of occurrence by this species as possible, counted birds present, and searched for active nest cavities. We visited a selection of the cavities identified in previous years and determined whether they were active in 2004.

American Redstart – We obtained data on year 2004 locations for this species from *North American Birds* regional editors and other contacts.

Ovenbird – We continued cataloguing historical nest sites and recorded observations reported by field workers and by other observers posting to COBIRDS. We also obtained data on year 2004 locations for this species from *North American Birds* regional editors and other contacts. Volunteers and field workers surveyed selected sites in the database.

Northern Cardinal – We obtained data on year 2004 locations for this species from *North American Birds* regional editors, *Colorado Birds* seasonal reports, and from other contacts.

Bobolink – We surveyed all known sites and searched for previously undocumented sites along the Yampa River Valley in Routt and Moffat counties and the White River Valley in Rio Blanco County. We collected data from existing studies in Boulder County, from surveys by volunteers in Montrose, Gunnison, Larimer, Morgan, Douglas, and Elbert counties, and also obtained incidental records from field work.

Scott's Oriole – We obtained data on year 2004 locations for this species from *North American Birds* regional editors and other contacts and incidental records from field work.

Early winter Barrow's Goldeneye and Waterfowl Counts—During a four-day period in early December, we conducted counts of all waterfowl at most of the state's lakes and ponds with a history of having open water during this time period. Observers noted the numbers of each species (by sex when possible); Barrow's Goldeneyes were also recorded by age when possible.

Results and Discussion

We conducted 350 transects in 13 habitats (average 27 per habitat; Figure 1, Table 1). Of these, 47 were conducted in Low-elevation Riparian and Wetland habitats, in which we conduct line transects. In the point-transect habitats (all other habitats conducted in 2004), we conducted 4,419 point counts and delineate in Table 2 average numbers of species and individuals per point in each of these habitats. We obtained data on 227 bird species via the transects and provide summary data in Appendix A for 102 of those. Appendix B lists numbers of all species detected on transects by habitat and the total number of each species detected on transects throughout the state. The Appendix B totals do not necessarily agree with those in Tables 1 and 2, as Appendix B does not include unidentified birds.

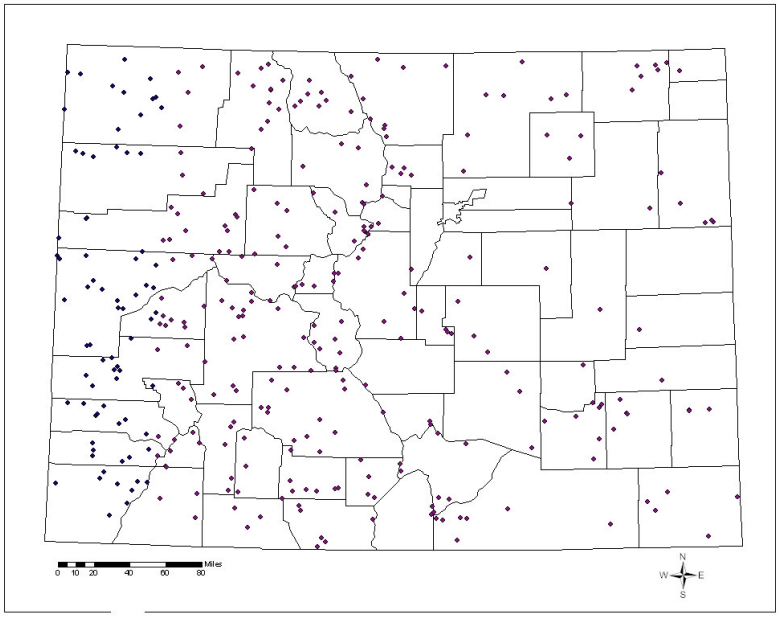

Figure 1. Distribution of Monitoring Colorado's Birds transects conducted, 2004

Table 1. Transect sampling periods of and effort in each habitat, summer 2004.

Habitat	Dates sampled	# point transects	# point counts
Alpine Tundra	15 June – 19 July	29	431
Aspen	2 June – 17 July	30	445
Grassland	22 May – 10 July	25	375
High-elevation Riparian	11 June – 21 July	29	379
Low-elevation Riparian	20 May – 11 July	24	*
Mixed Conifer	4 June – 15 July	28	387
Montane Shrubland	28 May – 30 June	28	413
Piñon-Juniper	16 May – 25 June	27	405
Ponderosa Pine	29 May – 7 July	27	396
Sage Shrubland	20 May – 9 July	25	369
Semi-desert Shrubland	13 May – 25 June	25	374
Spruce-Fir	19 June – 19 July	30	445
Wetland	23 May – 25 June	23	*
All habitats	13 May – 21 July	350	4419

* Low-elevation Riparian and Wetland transects are line transects

Table 2. Numbers of species and individuals recorded on transects, and the associated species-per-point and individuals-per-point averages, conducted in summer 2004.

Habitat	# of species	# of individuals	# of species per point	# of individuals per point
Alpine Tundra	54	2361	3.04	5.48
Aspen	85	3694	5.16	8.30
Grassland	52	2927	3.45	7.81
High-elevation Riparian	89	3303	5.06	8.81
Low-elevation Riparian	108	2406	*	*
Mixed Conifer	96	2952	5.90	7.63
Montane Shrubland	105	3756	5.40	9.09
Piñon-Juniper	91	2974	5.50	7.34
Ponderosa Pine	88	3103	5.09	7.84
Sage Shrubland	90	2639	4.43	7.15
Semi-desert Shrubland	89	1879	3.20	5.02
Spruce-Fir	75	3303	5.39	7.42
Wetland	80	949	*	*
All habitats	227	36248	n/a	n/a

* Low-elevation Riparian and Wetland transects are line transects

Alpine Tundra – We surveyed 29 point transects in Alpine Tundra between 15 June and 19 July (Table 1), recording 2,361 birds of 54 species (Table 2) and from the data are able to provide robust density estimates for ten species in this habitat (CV<50%; Table 3). These ten species, which represent 18% of all species recorded in this habitat, should be effectively monitored through the *MCB* program. The most abundant species in this habitat this season were American Pipit, White-crowned Sparrow, Pine Siskin, Horned Lark, and American Robin.

Colorado Partners in Flight (CO-PIF) lists three priority species for this habitat for the Southern Rocky Mountain area (Physiographic Region 62): White-tailed Ptarmigan, American Pipit, and

Brown-capped Rosy-Finch. We detected sufficient numbers of American Pipits and Brown-capped Rosy-Finches to provide density estimates. We detected 12 White-tailed Ptarmigans, which is also listed as a sensitive species by the Forest Service in Region 2, and are unable to provide a density estimate for this species.

Table 3. Estimated densities of bird species detected on Alpine Tundra transects in Colorado, summer 2004.

Species	D	LCL	UCL	CV	n	K
Horned Lark	0.2644	0.1590	0.4398	25.6%	197	18
Ruby-crowned Kinglet	0.0090	0.0039	0.0209	43.9%	31	12
Mountain Bluebird	0.0597	0.0338	0.1057	29.2%	44	19
Hermit Thrush	0.0025	0.0011	0.0056	42.1%	36	14
American Robin	0.1500	0.1039	0.2166	18.6%	125	23
American Pipit	1.1600	0.8888	1.5139	13.4%	548	29
Lincoln's Sparrow	0.0452	0.0257	0.0793	28.4%	84	17
White-crowned Sparrow	1.0966	0.7693	1.5631	18.1%	728	29
Brown-capped Rosy-Finch	0.0977	0.0515	0.1851	32.8%	42	15
Pine Siskin	0.8786	0.5129	1.5050	27.5%	117	18

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Aspen – RMBO staff surveyed 30 point transects in Aspen between 2 June and 17 July (Table 1), recording 3,694 birds of 85 species (Table 2). We provide robust density estimates for 27 species in this habitat (Table 4), which is 31% of all species recorded in Aspen. The most abundant species in this habitat this season included Dark-eyed Junco, House Wren, Yellow-rumped Warbler, Warbling Vireo, and American Robin.

We detected all four priority species listed by Colorado Partners in Flight (CO-PIF) in Aspen, three of which (Broad-tailed Hummingbird, Red-naped Sapsucker, and Violet-green Swallow) we detected in sufficient numbers to provide density estimates. We recorded 11 individuals of the fourth species, Purple Martin. Though this is insufficient sample to analyze, our special species program annually gathers a large amount of data on that species (see below). The Forest Service Region 2 also lists Purple Martin as a sensitive species.

Table 4. Estimated densities of bird species detected on Aspen transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Broad-tailed Hummingbird	0.6144	0.3580	1.0546	27.5%	48	20
Red-naped Sapsucker	0.3144	0.1345	0.7350	44.6%	52	19
Hairy Woodpecker	0.2014	0.0809	0.5016	48.1%	30	18
Northern Flicker	0.0999	0.0527	0.1892	33.0%	56	25
Western Wood-Pewee	0.1747	0.1226	0.2490	17.8%	144	23
Dusky Flycatcher	0.1810	0.0943	0.3474	33.6%	49	17
Cordilleran Flycatcher	0.2126	0.1000	0.4521	38.9%	30	17
Warbling Vireo	0.9948	0.7582	1.3053	13.6%	371	30
Steller's Jay	0.0535	0.0318	0.0899	26.4%	40	19
Violet-green Swallow	0.1817	0.1107	0.2981	25.1%	62	18
Mountain Chickadee	0.8360	0.6347	1.1010	14.0%	261	26
Red-breasted Nuthatch	0.0798	0.0486	0.1308	24.8%	57	17
House Wren	1.0639	0.7197	1.5726	19.6%	236	27
Ruby-crowned Kinglet	0.2921	0.2039	0.4185	18.2%	171	26
Townsend's Solitaire	0.0579	0.0233	0.1435	47.7%	26	11
Hermit Thrush	0.1231	0.0890	0.1701	16.3%	231	28
American Robin	0.8440	0.6361	1.1198	14.4%	279	30
Orange-crowned Warbler	0.1126	0.0570	0.2224	35.1%	43	13
Yellow-rumped Warbler	1.0058	0.7659	1.3208	13.7%	237	30
MacGillivray's Warbler	0.1918	0.0919	0.4004	37.9%	28	10
Western Tanager	0.2089	0.1091	0.4001	33.4%	79	23
Green-tailed Towhee	0.4703	0.1997	1.1075	45.2%	66	17
Chipping Sparrow	0.1057	0.0561	0.1990	32.5%	49	15
Lincoln's Sparrow	0.2553	0.1502	0.4340	26.6%	130	18
White-crowned Sparrow	0.0752	0.0349	0.1623	39.2%	73	13
Dark-eyed Junco	1.4427	1.1493	1.8110	11.5%	312	30
Pine Siskin	0.7410	0.4041	1.3590	31.4%	127	25

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Grassland – We surveyed 25 point transects in Grassland between 22 May and 10 July (Table 1), recording 2,927 birds of 52 species (Table 2). We provide robust density estimates for 10 species and moderately robust estimates (CV=50-100%) for three species (Table 5), representing 24% of all species recorded in this habitat in 2004. The most abundant species in Grassland this season were Horned Lark, Lark Bunting, Western Meadowlark, Grasshopper Sparrow, and Cliff Swallow.

We detected 11 of 14 priority species listed by CO-PIF for the Central Shortgrass Prairie habitat (Physiographic Region 36) on Grassland transects this season, four in sufficient numbers to provide density estimates. We also detected 9 of the 36 species listed as MIS by the Region 2 Forest Service on Grassland transects; again we provide density estimates for four of these. These four species, Cassin's Sparrow, Brewer's Sparrow, Grasshopper Sparrow, and McCown's Longspur, are being effectively monitored by *MCB*. Additionally, we detected four species on the Grassland transects that are listed by the state of Colorado as threatened or of concern: Burrowing Owl (State

Threatened), Ferruginous Hawk (Special Concern), Mountain Plover (Special Concern), and Long-billed Curlew (Special Concern).

Table 5. Estimated densities of bird species detected on Grassland transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Killdeer	0.0296	0.0137	0.0637	39.7%	35	12
Mourning Dove	0.0668	0.0376	0.1188	29.5%	111	12
Common Nighthawk	0.0146	0.0062	0.0340	43.6%	25	8
Western Kingbird	0.0172	0.0077	0.0384	41.2%	25	13
Horned Lark	1.0672	0.8124	1.4019	13.4%	846	25
Cliff Swallow	0.1104	0.0364	0.3342	59.9%	31	8
Cassin's Sparrow	0.1002	0.0507	0.1980	34.2%	198	13
Brewer's Sparrow	0.0732	0.0254	0.2113	55.3%	30	6
Lark Bunting	0.4269	0.2677	0.6808	23.0%	575	23
Grasshopper Sparrow	0.1710	0.0931	0.3140	30.5%	100	13
McCown's Longspur	0.1040	0.0309	0.3499	64.4%	162	5
Western Meadowlark	0.2003	0.1557	0.2575	12.4%	565	23
Brown-headed Cowbird	0.0301	0.0121	0.0750	47.2%	36	12

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

High-elevation Riparian – We surveyed 29 transects in High-elevation Riparian habitat between 12 June and 10 July (Table 1), recording 3,303 birds of 89 species (Table 2). Data from 29 point transects provided robust density estimates for 24 species and moderately robust estimates (CV=50-100%) for five species (Table 6). The most abundant species in this habitat this season were Lincoln's Sparrow, Wilson's Warbler, White-crowned Sparrow, Broad-tailed Hummingbird, and Dark-eyed Junco.

We detected all four species listed by CO-PIF as priority species in this habitat this season, three in sufficient numbers to provide density estimates this year: Wilson's Warbler (n=180), Cordilleran Flycatcher (n=42), and MacGillivray's Warbler (n=25). We did not detect sufficient numbers of the fourth species, American Dipper (n=5). However, bridge surveys, a new monitoring protocol established this season, provided significant data for American Dippers (see below).

Table 6. Estimated densities of bird species detected on High-elevation Riparian transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Broad-tailed Hummingbird	1.2695	0.7063	2.2820	30.1%	111	20
Red-naped Sapsucker	0.6017	0.2246	1.6119	52.5%	51	15
Northern Flicker	0.0604	0.0312	0.1168	33.9%	35	19
Western Wood-Pewee	0.0277	0.0127	0.0601	40.0%	35	10
Dusky Flycatcher	0.1390	0.0837	0.2309	25.5%	107	19
Cordilleran Flycatcher	0.0637	0.0367	0.1106	28.0%	42	14
Warbling Vireo	0.1305	0.0717	0.2373	30.0%	73	15
Violet-green Swallow	0.3169	0.1588	0.6323	35.7%	62	17
Mountain Chickadee	0.1775	0.1173	0.2687	20.8%	73	23
Ruby-crowned Kinglet	0.2211	0.1585	0.3085	16.7%	153	27
Swainson's Thrush	0.0486	0.0156	0.1515	61.8%	33	8
Hermit Thrush	0.0237	0.0148	0.0381	23.7%	67	19
American Robin	0.6706	0.4794	0.9381	17.0%	184	29
Yellow Warbler	0.0774	0.0339	0.1769	42.9%	26	9
Yellow-rumped Warbler	0.2577	0.1449	0.4583	29.5%	82	20
MacGillivray's Warbler	0.3549	0.1106	1.1390	63.0%	25	12
Wilson's Warbler	2.7421	1.6046	4.6859	27.1%	180	22
Chipping Sparrow	0.0622	0.0311	0.1245	35.6%	37	12
Savannah Sparrow	0.1147	0.0253	0.5194	85.3%	50	2
Fox Sparrow	0.1094	0.0222	0.5392	92.8%	26	10
Song Sparrow	0.0828	0.0437	0.1569	32.3%	38	10
Lincoln's Sparrow	3.5123	2.6838	4.5967	13.5%	594	28
White-crowned Sparrow	1.3092	0.8615	1.9895	21.1%	273	25
Dark-eyed Junco	0.8344	0.5330	1.3064	22.7%	140	23
Red Crossbill	0.0627	0.0287	0.1370	40.6%	33	14
Pine Siskin	0.6661	0.4480	0.9906	20.2%	191	28

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Low-elevation Riparian – We surveyed 24 transects in Low-elevation Riparian habitat between 20 May and 11 July (Table 1) recording 2,406 birds of 108 species (Table 2). The resultant data provided robust density estimates for 29 species, and moderately robust estimates for two species (Table 7). The most abundant species recorded in this habitat this season were Red-winged Blackbird, Common Grackle, Spotted Sandpiper, Bank Swallow, and Brown-headed Cowbird.

We recorded two of three species that are listed by CO-PIF as priority species in Low-elevation Riparian habitat on transects this season. We detected sufficient numbers of Western Kingbirds (n=42) to record a density estimate this season, and narrowly missed being able to provide a density estimate for Lazuli Bunting (n=24). We did not record any Lewis's Woodpeckers on transects.

Table 7. Estimated densities of bird species detected on Low-elevation Riparian transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mallard	0.1585	0.0986	0.2547	24.1%	44	18
Great Blue Heron	0.1062	0.0420	0.2686	48.6%	31	15
Northern Bobwhite	0.0193	0.0072	0.0514	51.0%	27	6
Killdeer	0.2563	0.1213	0.5417	38.6%	34	12
Spotted Sandpiper	0.3747	0.2718	0.5166	16.2%	76	21
Mourning Dove	0.2509	0.1780	0.3537	16.9%	160	22
Northern Flicker	0.0502	0.0303	0.0834	25.5%	45	17
Western Wood-Pewee	0.0621	0.0363	0.1061	27.2%	50	18
Western Kingbird	0.0753	0.0456	0.1242	25.1%	42	16
Eastern Kingbird	0.1633	0.0765	0.3486	39.5%	54	14
Black-billed Magpie	0.0526	0.0266	0.1041	35.0%	26	12
Northern Rough-winged Swallow	0.2804	0.1646	0.4775	26.8%	43	16
Bank Swallow	0.3130	0.1218	0.8040	49.5%	29	10
Cliff Swallow	0.2893	0.0965	0.8669	59.4%	27	12
House Wren	0.1834	0.1082	0.3107	26.0%	131	16
American Robin	0.2043	0.1334	0.3129	21.1%	102	19
European Starling	0.1862	0.1091	0.3178	27.1%	48	15
Yellow Warbler	0.2187	0.1610	0.2970	15.0%	156	23
Common Yellowthroat	0.1178	0.0617	0.2251	32.4%	58	13
Yellow-breasted Chat	0.0756	0.0375	0.1523	35.5%	50	11
Spotted Towhee	0.0409	0.0191	0.0877	38.7%	32	9
Song Sparrow	0.1130	0.0639	0.1999	28.3%	69	13
Black-headed Grosbeak	0.0900	0.0536	0.1513	25.8%	64	16
Blue Grosbeak	0.0489	0.0252	0.0947	33.7%	25	11
Red-winged Blackbird	0.4606	0.2666	0.7955	27.2%	161	20
Western Meadowlark	0.0179	0.0105	0.0304	26.6%	31	13
Common Grackle	0.3821	0.1740	0.8391	40.6%	59	8
Brown-headed Cowbird	0.3012	0.2247	0.4038	14.7%	141	24
Orchard Oriole	0.0736	0.0334	0.1622	40.2%	38	9
Bullock's Oriole	0.1283	0.0785	0.2097	24.3%	60	16
American Goldfinch	0.1042	0.0547	0.1987	32.3%	43	11

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Mixed Conifer – We surveyed 28 point transects in Mixed Conifer between 4 June and 15 July (Table 1), recording 2,952 birds of 96 species (Table 2). From the Mixed Conifer data, we provide robust density estimates for 26 species of birds and moderately robust estimates for two species (Table 8). The most abundant species in this habitat this season were Dark-eyed Junco, Pine Siskin, Yellow-rumped Warbler, Violet-green Swallow, and Chipping Sparrow.

We detected both species listed by CO-PIF as priority species for this habitat in the Southern Rocky Mountains (Physiographic Region 62): Blue Grouse (16 individuals) and Williamson's Sapsucker (68 individuals). The sample size of Williamson's Sapsuckers enabled us to provide a density estimate

for this species. Pygmy Nuthatch (n=26), Brown Creeper (n=20), Olive-sided Flycatcher (n=20), American Three-toed Woodpecker (n=5), Brewer's Sparrow (n=3), Northern Goshawk (n=2), which are Region 2 Forest Service MIS, were also detected on Mixed Conifer transects.

Table 8. Estimated densities of bird species detected on Mixed Conifer transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.0540	0.0250	0.1165	40.0%	40	11
Broad-tailed Hummingbird	0.4412	0.2290	0.8502	33.7%	35	17
Williamson's Sapsucker	0.2744	0.1439	0.5231	32.7%	52	11
Northern Flicker	0.0441	0.0235	0.0828	32.2%	28	17
Western Wood-Pewee	0.0828	0.0455	0.1506	30.0%	42	14
Dusky Flycatcher	0.1376	0.0668	0.2835	37.2%	25	13
Cordilleran Flycatcher	0.1378	0.0543	0.3500	49.1%	28	10
Warbling Vireo	0.3610	0.2280	0.5716	23.3%	137	23
Steller's Jay	0.1087	0.0677	0.1745	24.2%	72	21
Clark's Nutcracker	0.0363	0.0140	0.0942	50.2%	25	12
Violet-green Swallow	0.6513	0.2955	1.4354	41.2%	35	16
Mountain Chickadee	0.4700	0.3282	0.6730	18.3%	137	27
Red-breasted Nuthatch	0.1987	0.1096	0.3602	30.7%	75	20
White-breasted Nuthatch	0.0526	0.0267	0.1038	34.9%	29	15
House Wren	0.3925	0.2346	0.6570	26.1%	90	15
Ruby-crowned Kinglet	0.3117	0.2012	0.4830	21.9%	141	23
Townsend's Solitaire	0.0508	0.0279	0.0923	30.2%	38	16
Hermit Thrush	0.1123	0.0676	0.1866	25.7%	141	24
American Robin	0.4175	0.2728	0.6389	21.7%	157	27
Orange-crowned Warbler	0.1362	0.0576	0.3224	44.7%	31	7
Yellow-rumped Warbler	0.7561	0.5405	1.0578	16.9%	198	26
Western Tanager	0.5356	0.3658	0.7841	19.2%	181	25
Green-tailed Towhee	0.2889	0.1571	0.5314	31.2%	64	16
Chipping Sparrow	0.6258	0.3883	1.0084	24.2%	120	21
Dark-eyed Junco	1.2647	0.8841	1.8090	18.1%	233	26
Black-headed Grosbeak	0.0801	0.0335	0.1917	45.4%	25	11
Red Crossbill	0.5748	0.2152	1.5348	52.3%	27	12
Pine Siskin	0.9935	0.6612	1.4927	20.4%	103	18

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Montane Shrubland – We surveyed 28 point transects in Montane Shrubland between 28 May and 30 June (Table 1), recording 3,756 birds of 105 species (Table 2). Data provided robust density estimates for 25 species and moderately robust estimates for three species (Table 9). Broad-tailed Hummingbird, Green-tailed Towhee, Spotted Towhee, Dusky Flycatcher and Blue-gray Gnatcatcher were the most abundant species in the habitat this year.

We detected both species, Virginia's Warbler and Spotted Towhee, listed by CO-PIF as priority species for Montane Shrubland habitat in the Southern Rocky Mountain area (Physiographic Region

62) and, as sufficient numbers were detected, we provide density estimates for both species. Virginia's Warbler is also listed as a priority species for this habitat in the Colorado Plateau and Basin and Range area (Physiographic Region 87). The other species listed for Physiographic Region 87, Common Poorwill, was not detected on Montane Shrubland transects this season. Eight species were detected on Montane Shrubland transects that are listed as MIS by the Forest Service Region 2: Brewer's Sparrow (n=34), Northern Harrier (n=4), Brown Creeper (n=3), Grasshopper Sparrow (n=3), Pygmy Nuthatch (n=3), Cassin's Sparrow (n=2), Olive-sided Flycatcher (n=2), and Purple Martin (n=2).

Table 9. Estimated densities of bird species detected on Montane Shrubland transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.0348	0.0159	0.0763	40.7%	42	14
Broad-tailed Hummingbird	4.1526	1.8789	9.1779	41.6%	78	23
Northern Flicker	0.0420	0.0268	0.0660	22.9%	46	24
Western Wood-Pewee	0.0687	0.0388	0.1218	29.0%	56	18
Dusky Flycatcher	1.0210	0.7111	1.4660	18.1%	205	27
Plumbeous Vireo	0.2287	0.1021	0.5121	42.2%	46	19
Warbling Vireo	0.8274	0.5483	1.2487	20.6%	308	26
Black-billed Magpie	0.0108	0.0053	0.0219	36.4%	29	11
Violet-green Swallow	0.5322	0.2666	1.0624	35.8%	46	18
Black-capped Chickadee	0.7859	0.2414	2.5583	64.4%	37	14
House Wren	0.4229	0.2605	0.6864	24.4%	118	23
Ruby-crowned Kinglet	0.0524	0.0212	0.1293	46.5%	26	6
Blue-gray Gnatcatcher	0.9955	0.5568	1.7799	29.7%	65	16
Mountain Bluebird	0.0686	0.0377	0.1251	30.5%	45	16
Hermit Thrush	0.0526	0.0273	0.1012	33.8%	50	15
American Robin	0.3783	0.2759	0.5188	15.7%	218	26
Orange-crowned Warbler	0.6119	0.3997	0.9369	21.5%	113	19
Virginia's Warbler	0.6681	0.4151	1.0755	24.1%	176	23
Yellow Warbler	0.3950	0.1851	0.8433	38.8%	79	13
MacGillivray's Warbler	0.3234	0.1663	0.6293	33.6%	47	13
Western Tanager	0.1990	0.0932	0.4248	39.1%	63	17
Green-tailed Towhee	1.3371	1.0342	1.7286	12.8%	413	27
Spotted Towhee	1.1309	0.7769	1.6462	18.9%	326	27
Chipping Sparrow	0.3950	0.2404	0.6493	25.4%	104	25
Brewer's Sparrow	0.0680	0.0217	0.2126	61.7%	30	7
Song Sparrow	0.0459	0.0137	0.1535	65.1%	25	5
Black-headed Grosbeak	0.2737	0.1890	0.3963	18.5%	141	23
Brown-headed Cowbird	0.5917	0.3548	0.9868	26.0%	83	21

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Piñon-Juniper – We surveyed 27 transects in Piñon-Juniper between 16 May and 25 June (Table 1), recording 2,974 birds of 91 species (Table 2). Data collected provided robust density estimates for 29 species and moderately robust estimates for another species (Table 10). Blue-gray Gnatcatcher, Chipping Sparrow, Gray Flycatcher, Broad-tailed Hummingbird, and Black-throated Gray Warbler were the most abundant species this year.

We detected six of eight species listed by CO-PIF as priority species in the Physiographic Region 87 in Piñon-Juniper and five of those six were detected in sufficient numbers to estimate densities: Gray Flycatcher (n=175), Gray Vireo (n=40), Pinyon Jay (n=73), Juniper Titmouse (n=49), and Black-throated Gray Warbler (n=206). Black-chinned Hummingbird was recorded 28 times representing 16 independent detections this season. The two species that were not detected on Piñon-Juniper (PJ) transects and that are on the CO-PIF list, Scott's Oriole and Cassin's Kingbird, have limited ranges in Colorado. However, the former is closely watched by our special-species program and the latter's Colorado distribution is primarily eastern, outside the scope of our PJ transects. We provide a density estimate for Brewer's Sparrow, which is a MIS for Forest Service Region 2 in Piñon-Juniper.

Table 10. Estimated densities of bird species detected on Piñon-Juniper transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.1630	0.1034	0.2570	23.3%	190	24
Broad-tailed Hummingbird	0.5205	0.2525	1.0731	36.9%	41	14
Dusky Flycatcher	0.1393	0.0543	0.3572	49.3%	37	10
Gray Flycatcher	0.6137	0.3897	0.9663	22.9%	173	24
Ash-throated Flycatcher	0.1662	0.0950	0.2908	28.6%	91	18
Gray Vireo	0.0808	0.0243	0.2683	65.6%	31	6
Plumbeous Vireo	0.2187	0.1477	0.3238	19.8%	86	22
Pinyon Jay	0.0199	0.0116	0.0340	27.3%	53	16
Black-billed Magpie	0.0124	0.0052	0.0300	46.0%	28	12
Common Raven	0.0164	0.0082	0.0329	36.0%	41	20
Violet-green Swallow	0.0884	0.0462	0.1692	33.3%	28	15
Mountain Chickadee	0.0282	0.0135	0.0587	37.5%	26	12
Juniper Titmouse	0.1366	0.0834	0.2238	25.0%	44	17
Rock Wren	0.0287	0.0167	0.0494	27.4%	57	17
Bewick's Wren	0.4428	0.2623	0.7474	26.4%	167	19
Blue-gray Gnatcatcher	0.9655	0.6428	1.4503	20.4%	114	23
Mountain Bluebird	0.3579	0.2230	0.5743	23.6%	151	21
American Robin	0.0935	0.0458	0.1906	36.9%	49	15
Virginia's Warbler	0.3294	0.1665	0.6515	34.5%	69	14
Black-throated Gray Warbler	0.4682	0.3211	0.6828	18.9%	205	26
Western Tanager	0.0429	0.0192	0.0960	41.7%	25	12
Green-tailed Towhee	0.3471	0.1818	0.6629	33.0%	103	14
Spotted Towhee	0.4477	0.2548	0.7866	28.6%	151	20
Chipping Sparrow	0.8962	0.6448	1.2455	16.6%	166	27

Brewer's Sparrow	0.1081	0.0500	0.2338	39.3%	39	9
Vesper Sparrow	0.0260	0.0115	0.0590	41.7%	35	9
Black-headed Grosbeak	0.0338	0.0134	0.0849	47.8%	32	10
Western Meadowlark	0.0088	0.0041	0.0191	39.5%	51	11
Brown-headed Cowbird	0.1305	0.0738	0.2307	28.7%	49	14
House Finch	0.1421	0.0796	0.2538	29.2%	71	16

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Ponderosa Pine – We surveyed 27 point transects in Ponderosa Pine between 29 May and 7 July (Table 1), recording 3,103 birds of 88 species (Table 2). Data provided robust density estimates for 32 species, and moderately robust estimates for two species (Table 11). The most abundant species in this habitat this year were Dark-eyed Junco, Violet-green Swallow, Broad-tailed Hummingbird, Pygmy Nuthatch, and Mountain Chickadee.

Six species are listed by CO-PIF as sensitive species in Physiographic areas 62 and 87 for this habitat. Transects provided data on four of the species and sufficient data to provide density estimates for one: Western Bluebird. Grace's Warbler (n=18), Lewis's Woodpecker (n=2), and Band-tailed Pigeon (n=1) are the other three species detected on transects and found on the CO-PIF list. Seven species listed as Region 2 Forest Service MIS were detected on Ponderosa Pine transects: Pygmy Nuthatch (n=119), Brown Creeper (n=18), Olive-sided Flycatcher (n=15), American Three-toed Woodpecker (n=7), Lewis's Woodpecker (n=2), Northern Goshawk (n=2), and Black Swift (n=1).

Table 11. Estimated densities of bird species detected on Ponderosa Pine transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.1145	0.0756	0.1734	20.9%	133	22
Broad-tailed Hummingbird	0.4459	0.2091	0.9507	39.1%	63	17
Williamson's Sapsucker	0.0680	0.0394	0.1174	27.7%	30	17
Hairy Woodpecker	0.0490	0.0245	0.0983	35.7%	30	16
Northern Flicker	0.0341	0.0217	0.0535	22.8%	53	21
Western Wood-Pewee	0.1854	0.1268	0.2712	18.8%	177	24
Dusky Flycatcher	0.1711	0.0795	0.3681	39.3%	53	11
Plumbeous Vireo	0.1032	0.0615	0.1732	26.0%	46	16
Warbling Vireo	0.1493	0.0842	0.2647	28.8%	83	16
Steller's Jay	0.0609	0.0369	0.1004	25.3%	80	21
Clark's Nutcracker	0.0160	0.0076	0.0337	38.1%	27	11
Common Raven	0.0144	0.0073	0.0285	34.9%	37	20
Violet-green Swallow	0.4753	0.2833	0.7975	26.5%	93	22
Mountain Chickadee	0.3622	0.2368	0.5541	21.4%	125	22
White-breasted Nuthatch	0.2590	0.1786	0.3755	18.8%	81	23
Pygmy Nuthatch	0.4266	0.2691	0.6762	22.9%	114	24
House Wren	0.1332	0.0686	0.2586	34.1%	69	17
Ruby-crowned Kinglet	0.0409	0.0166	0.1008	46.3%	36	9
Western Bluebird	0.1924	0.1055	0.3508	30.2%	50	14
Mountain Bluebird	0.1111	0.0425	0.2905	50.8%	32	13
Townsend's Solitaire	0.1176	0.0696	0.1987	26.7%	47	19
Hermit Thrush	0.0472	0.0285	0.0781	25.5%	95	19
American Robin	0.1621	0.1098	0.2391	19.5%	159	26
Virginia's Warbler	0.0941	0.0494	0.1793	32.9%	49	11
Yellow-rumped Warbler	0.3443	0.2297	0.5160	20.4%	160	24
Western Tanager	0.2838	0.1763	0.4568	23.7%	144	24
Green-tailed Towhee	0.1293	0.0683	0.2448	32.8%	86	16
Spotted Towhee	0.0392	0.0170	0.0901	43.0%	42	7
Chipping Sparrow	0.2312	0.1672	0.3196	16.1%	123	26
Vesper Sparrow	0.0101	0.0039	0.0265	50.3%	25	6
Dark-eyed Junco	0.5989	0.4017	0.8928	20.2%	169	23
Black-headed Grosbeak	0.0300	0.0142	0.0632	38.0%	29	10
Red Crossbill	0.0294	0.0122	0.0711	45.6%	31	8
Pine Siskin	0.1857	0.0868	0.3973	39.5%	38	12

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Sage Shrubland – We surveyed 25 point transects in Sage Shrubland between 20 May and 9 July (Table 1), recording 2,639 birds of 90 species (Table 2). Data provided robust density estimates for 14 species, and moderately robust estimates for three species (Table 12). The most abundant species in this habitat this year were Brewer's Sparrow, Horned Lark, Vesper Sparrow, Western Meadowlark, and Green-tailed Towhee.

Two species for which we provide density estimates, Brewer's Sparrow and Sage Sparrow, are listed by CO-PIF (in Physiographic Regions 62 and 87) and Region 2 Forest Service as MIS in Sage Shrubland habitat. We also detected sufficient numbers of two additional species listed by Forest Service Region 2, Cassin's Sparrow and Grasshopper Sparrow to estimate a density. Other MIS detected on transects were Loggerhead Shrike (n=8), and Ferruginous Hawk (n=1).

Table 12. Estimated densities of bird species detected on Sage Shrubland transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.0427	0.0236	0.0773	30.5%	64	12
Dusky Flycatcher	0.0185	0.0057	0.0600	62.9%	25	4
Common Raven	0.0023	0.0011	0.0048	37.8%	25	11
Horned Lark	0.4774	0.2625	0.8680	30.0%	185	16
American Robin	0.0187	0.0084	0.0413	41.1%	25	14
Sage Thrasher	0.1306	0.0715	0.2384	30.2%	173	17
Green-tailed Towhee	0.1463	0.0830	0.2579	28.3%	217	16
Cassin's Sparrow	0.0420	0.0175	0.1005	45.0%	62	5
Brewer's Sparrow	1.2944	0.9115	1.8383	17.6%	377	22
Vesper Sparrow	0.2137	0.1509	0.3029	17.2%	243	21
Lark Sparrow	0.1191	0.0545	0.2601	40.5%	64	9
Sage Sparrow	0.0268	0.0127	0.0565	37.4%	58	9
Lark Bunting	0.0899	0.0234	0.3452	72.9%	102	5
Grasshopper Sparrow	0.0628	0.0168	0.2354	71.4%	48	4
Western Meadowlark	0.1531	0.0954	0.2455	23.5%	365	19
Brewer's Blackbird	0.0295	0.0113	0.0771	49.9%	30	9
Brown-headed Cowbird	0.1315	0.0662	0.2611	35.2%	45	14

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Semi-desert Shrubland – We surveyed 25 point transects in Semi-desert Shrubland between 15 May and 25 June (Table 1), recording 1,879 birds of 89 species (Table 2). Data provided robust density estimates for ten species (Table 13), and moderately robust estimates for an additional four species. The most abundant species in this habitat this season were Horned Lark, Brewer's Sparrow, Lark Sparrow, Western Meadowlark, and Vesper Sparrow.

A density estimate for Horned Lark (priority species in this habitat by CO-PIF in the Colorado Plateau area), is provided this season, as per usual. Also per usual, we detected a sufficient number of Brewer's Sparrow (Region 2 Forest Service MIS) to provide a density estimate. We recorded only seven Loggerhead Shrikes (priority species in CO-PIF Physiographic Region 87 and Region 2 Forest Service MIS) in this habitat. Other Region 2 Forest Service MIS encountered on Semi-desert Shrubland transects were: Sage Sparrow (n=20), Cassin's Sparrow (n=16), Grasshopper Sparrow (n=1), Long-billed Curlew (n=1), and Northern Harrier (n=1).

Table 13. Estimated densities of bird species detected on Semi-desert Shrubland transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.0543	0.0325	0.0907	26.0%	103	18
Western Kingbird	0.0196	0.0086	0.0445	42.7%	35	11
Black-billed Magpie	0.0076	0.0028	0.0208	52.5%	43	11
Common Raven	0.0058	0.0027	0.0127	40.5%	47	14
Horned Lark	0.3541	0.2312	0.5423	21.2%	263	21
Rock Wren	0.0167	0.0065	0.0427	49.5%	25	8
Northern Mockingbird	0.0129	0.0062	0.0267	37.1%	54	9
Sage Thrasher	0.0231	0.0077	0.0690	58.0%	48	6
Brewer's Sparrow	0.3012	0.1470	0.6174	36.8%	153	16
Vesper Sparrow	0.0798	0.0277	0.2298	56.1%	50	8
Lark Sparrow	0.2196	0.1394	0.3460	22.7%	145	16
Lark Bunting	0.0522	0.0212	0.1283	46.2%	110	8
Red-winged Blackbird	0.0078	0.0019	0.0324	78.6%	29	4
Western Meadowlark	0.1086	0.0643	0.1835	26.0%	318	22

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Spruce-Fir – We surveyed 30 transects in Spruce-Fir between 19 June and 19 July (Table 1), recording 3,303 birds of 75 species (Table 2). Data provided robust density estimates for 21 species, and moderately robust estimates for two species. The most abundant species in this habitat this season were Red Crossbill, Pine Siskin, Mountain Chickadee, Dark-eyed Junco, and Yellow-rumped Warbler (Table 14).

All three priority species listed by CO-PIF in the Southern Rocky Mountains (Physiographic Region 62) were recorded on transects: Hammond's Flycatcher (n=24), Olive-sided Flycatcher (n=23), and Boreal Owl (n=1). We provide density estimates for Brown Creeper and American Three-toed Woodpecker, which are Region 2 Forest Service MIS. Other Region 2 Forest Service MIS recorded in this habitat were Olive-sided Flycatcher, Pygmy Nuthatch (n=3), Boreal Owl (n=1), and Brewer's Sparrow (n=1).

Table 14. Estimated densities of bird species detected on Spruce-Fir transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Hairy Woodpecker	0.0498	0.0213	0.1168	44.3%	34	14
American Three-toed Woodpecker	0.0533	0.0239	0.1188	41.4%	25	9
Warbling Vireo	0.0453	0.0195	0.1057	43.8%	25	8
Gray Jay	0.3135	0.1731	0.5680	30.6%	74	24
Steller's Jay	0.0604	0.0299	0.1220	36.1%	27	12
Clark's Nutcracker	0.0218	0.0112	0.0426	34.3%	37	15
Mountain Chickadee	1.3365	0.9993	1.7876	14.8%	267	30
Red-breasted Nuthatch	0.3464	0.2201	0.5453	23.0%	127	26
Brown Creeper	0.4792	0.1762	1.3033	52.6%	27	16
Golden-crowned Kinglet	0.4187	0.2238	0.7830	32.0%	28	14
Ruby-crowned Kinglet	0.8001	0.6122	1.0457	13.6%	364	29
Swainson's Thrush	0.0753	0.0290	0.1953	50.0%	43	7
Hermit Thrush	0.1245	0.0893	0.1735	16.8%	227	26
American Robin	0.5031	0.3407	0.7428	19.8%	133	24
Yellow-rumped Warbler	0.9399	0.6841	1.2914	16.1%	251	29
Western Tanager	0.1616	0.0672	0.3884	45.8%	59	12
Chipping Sparrow	0.1631	0.0686	0.3875	45.5%	39	16
Lincoln's Sparrow	0.1522	0.0757	0.3058	36.1%	73	16
White-crowned Sparrow	0.1595	0.0869	0.2926	31.2%	74	20
Dark-eyed Junco	1.2622	0.9820	1.6223	12.7%	357	30
Pine Grosbeak	0.2134	0.1179	0.3861	29.9%	30	15
Red Crossbill	2.1258	1.1444	3.9490	32.1%	110	23
Pine Siskin	1.9520	1.4893	2.5584	13.7%	258	30

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Wetland – We surveyed 23 transects in Wetland between 22 May and 26 June (Table 1), recording 949 birds of 80 species (Table 2). Data provided robust density estimates for 16 species, and moderately robust estimates for three additional species (Table 15). The most abundant species recorded on Wetland transects this season were Red-winged Blackbird, Common Yellowthroat, Marsh Wren, Yellow-headed Blackbird, and Mourning Dove.

We recorded two CO-PIF priority species in this habitat: Willet (n=2) and Northern Harrier (n=2). Region 2 Forest Service MIS recorded on Wetland transects were American Bittern (n=3), Cassin's Sparrow (n=2), Northern Harrier, and Burrowing Owl (n=1). Obviously, the priority species listed here are not well-monitored via transects, however, the special-species program monitors Willet numbers in Colorado quite closely and provides significant data on other wetland species as well (see below).

Table 15. Estimated densities of bird species detected on Wetland transects in Colorado, summer 2004

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.3007	0.1420	0.6365	38.5%	36	15
Marsh Wren	0.7259	0.2165	2.4331	63.9%	38	9
Common Yellowthroat	0.9228	0.5632	1.5120	24.6%	90	16
Red-winged Blackbird	3.6059	2.3866	5.4483	20.3%	218	19
Western Meadowlark	0.1326	0.0814	0.2160	24.0%	35	13
Yellow-headed Blackbird	0.6378	0.2419	1.6819	49.5%	76	7

D = density estimate in birds/hectare; **LCL** and **UCL** = lower and upper 95% confidence limits on D; **CV** = coefficient of variation of D; **n** = number of observations used to estimate D; **K** = number of transects on which we recorded the species

Colonial Waterbirds – With few exceptions (most notably Empire Reservoir, for which we were denied access; other unvisited sites were small, intermittently occupied sites), we visited and censussed all nesting sites that are known to have been occupied within the past three years (Table 16). Individuals requiring specific site data should contact the authors.

Table 16. Summary of colonial waterbird counts in Colorado, summer 2004.

Species	# of sites in database	# of sites surveyed	# of sites with adults present	# of adults	# sites w/ confirmed breeding	# of juveniles	# of active nests
Eared Grebe	65	60	14	1618	16	67	793*
Western Grebe	26	22	9	431	7	6	20*
Clark's Grebe	35	29	4	9	2	5	5*
Am. White Pelican	3	3	2	1800	2	662*	nc
Double-crested Cormorant	36	35	17	1860	14	233	976*
Great Blue Heron	205	159	83	1877	85	261	1563*
Great Egret	3	3	1	22	1	0	22*
Snowy Egret	23	23	3	354	3	6	243*
Cattle Egret	13	13	2	52	2	0	50*
Black-crowned Night-Heron	48	43	21	1028	19	37	513*
White-faced Ibis	25	25	4	838	5	0	2120*
California Gull	9	9	4	3861	4	1038*	nc
Franklin's Gull	2	2	2	65	1	0	17*
Forster's Tern	7	6	3	86	2	0	42*
Black Tern	13	13	2	6	0	0	0*
Total	513	409	170	13873	163	2315	6338

* Monitoring parameter for the given species (active nests for grebes species = count of active nests plus ½ count of juveniles, active nests for Great Blue Herons = a direct count, for other colonial birds = total of estimates at each site).

Surveys of other localized species. We counted individuals of twenty limited-distribution and/or peripheral species and catalogued site-location information on another four, with a summary provided in Table 16. Again, individuals requiring specific site data should contact the authors.

Bridge surveys – We surveyed 304 bridges in 43 counties (Figure 2). Interestingly, for Cliff Swallows, the number of adults noted at bridges was not particularly correlated with the number of nests counted/ estimated (Table 17). We detected each of the species that we anticipated finding at least

once (Table 18) and found Barn Owls roosting under two bridges and a Great Horned Owl roosting under another. These species will be added to the 2005 form.

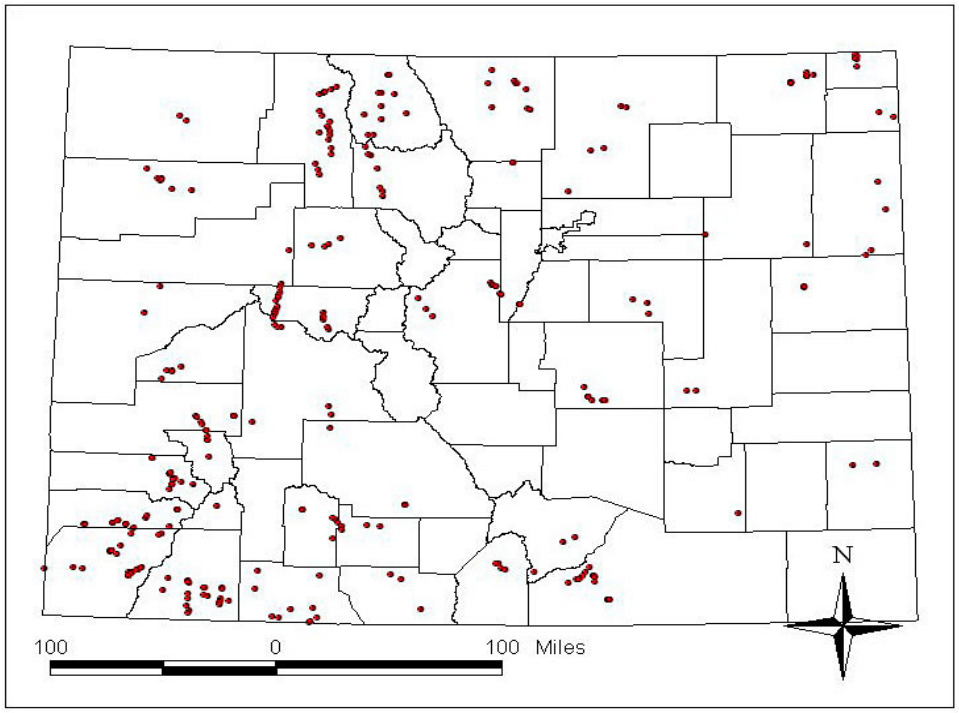

Figure 2. Locations of bridges surveyed in Colorado, summer 2004.

Table 17. Count by colony size category of bridges where colonial birds and nests were detected during 2004 Colorado Bridge survey.

Colony Size Category	A (1-10)	B (11-25)	C(26-50)	D(51-100)	E(100+)
Rock Pigeon	15	5	0	0	0
Rock Pigeon nests	13	1	0	0	0
Barn Swallow	41	1	4	1	0
Barn Swallow nests	32	18	2	0	0
Cliff Swallows	31	25	15	11	19
Cliff Swallow nests	13	32	23	17	21
Bank Swallows	2	0	3	0	0
Bank Swallow nests	2	3	1	1	0

Table 18. Results of 2004 survey of 304 bridges in Colorado, Summer 2004.

Species	# of bridges adults present	# of bridges nests present	# of bridges adults and nests present	# of bridges with potential for species[1]
Spotted Sandpiper	14	0	0	69
Rock Pigeon	20	13	9	30
Yellow-billed Cuckoo	1	0	0	14
Belted Kingfisher	10	1	0	20
Eastern Phoebe	4	4	2	9
Black Phoebe	4	1	1	16
Say's Phoebe	16	9	8	28
Cordilleran Flycatcher	11	1	1	18
Barn Swallow	52	56	25	115
Cliff Swallow	101	106	78	63
Bank Swallow	5	7	4	14
N. Rough-winged Swallow	13	2	2	15
American Dipper	33	55	29	43
Common Raven	2	1	1	13
Chihuahuan Raven	1	0	0	0

[1]Includes only bridges where neither adults nor nests were present.

Early winter Barrow's Goldeneye and Waterfowl Counts – We counted water birds at 229 bodies of water in 35 counties. Individuals requiring data on specific sites should contact the authors.

We completed 350 of 390 transects this season, the second-best percentage in the history of the project (except for the pilot effort in 1998 in only three habitats). This year we did not have sufficient early-season assistance to complete all of the low-elevation transects. On the bright side, however, we completed the highest percentage ever (98.3%) of the 120 high-elevation/late-season transects. Another highlight is that the 350 completed transects provided sufficient data to have large sample sizes and many low-density species were detected in reasonable numbers. In fact, the list of low-density species that we are able to provide density estimates for this season is noteworthy (e.g., Brown-capped Rosy-Finch in Alpine Tundra, Fox Sparrow in High-elevation Riparian, Gray Vireo in Piñon-Juniper, and American Three-toed Woodpecker in Spruce-Fir).

Analysis of the data collected on transects conducted in 2004 produced density estimates of <50% in at least one habitat for 95 species and CVs of between 50% and 80% for an additional seven species – a total of 102 species (Appendix A); we did not obtain sufficient sample sizes for other species on point counts. These data are statistically promising as we provided density estimates for 79 species in 2002 and 76 species in 2001.

As all partners and funders are interested in management implications of the *MCB* data, we here provide brief synopses of 2004 results for species deemed of most concern and/or interest in Colorado. Various bird species are listed by different agencies as being of concern, with some overlap among lists. The following discussion includes all birds listed by the US Fish and Wildlife Service as Threatened, Endangered, or Species of Concern (US-ETSC), by the state of Colorado as

Endangered, Threatened, or Species of Special Concern (CO ETSC), by the All-Bird Coordinator at the CDOW (CO-ABC), by the Colorado BLM office as a Sensitive Species, (BLM-SS), by the USFS Region 2 as a Sensitive Species (FS-SS), by any of the Colorado units of the USFS as a Management Indicator Species (FS-MIS), or by the Colorado Partners in Flight Bird Conservation Plan as a priority species for at least one habitat (CO-PIF).

For various reasons, CO-PIF did not consider waterbirds or marshbirds in its planning process. Wetlands are generally considered among the most-threatened habitats and because *MCB* has been able to gather extensive data on these species, we also present here discussion on all of Colorado's colonial waterbirds and secretive marsh birds.

Species Discussion

Barrow's Goldeneye (BLM-SS) – Volunteers surveyed more than 200 bodies of water during the period 4-7 Dec 2004 and counted 226 Barrow's Goldeneyes at 14 sites (Table 19). Over six years of counts, this species has been counted at 33 sites, but fifteen sites have accounted for a preponderance of the birds on each count. In general, these are sites in the vicinity of the known breeding area in the Flat Tops Wilderness Area. Lake Avery has accounted for approximately 25% of the total of each count. Exceptions, which may suggest an influx of birds from outside of the state or undiscovered breeding areas within the state, include Jerry Creek Reservoirs in Mesa County, Blue Mesa Reservoir in Gunnison County, and Horsetooth Reservoir in Larimer County. During the 2004 breeding season (July 26-28), CDOW, and USFS personnel searched more than 50 small lakes on the Flat Tops Wilderness for Barrow's Goldeneye broods. Two broods (of five and eight ducklings) were located, as were three non-breeding adults. One adult female Goldeneye was observed landing in a tree, lending support to the proposition that these birds are using tree cavities rather than rock ledges for nesting in this area. If this is so, the area may see a loss of these birds as nearly all potential cavities are in old snags.

Table 19. Summary of early-winter counts of Barrow's Goldeneye in Colorado, 1999-2004.

	1999	2000	2001	2002	2003	2004
# sites found	8	16	21	16	21	14
# birds present	229	109	216	189	245	226
% at Top 5 sites	83%	40%	69%	69%	63%	73%
% at Top 10 sites	86%	75%	86%	89%	83%	77%
% at Top 15 sites	99%	91%	92%	95%	96%	98%

Hooded Merganser – Following evidence of nesting in 2003 at Marston Reservoir in Denver County, adults were reported in Weld and El Paso counties during the 2004 breeding season, but no evidence of breeding by this species was detected.

Greater Sage-Grouse (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – *MCB* staff detected four individuals on one transect in Sage Shrubland habitat. Gallinaceous gamebirds are not within the purview of the program.

Gunnison Sage-Grouse (US ETSC, CO ETSC; FS-SS, FS-MIS, BLM-SS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program. No individuals of this species were detected on *MCB* transects.

White-tailed Ptarmigan (FS-SS, FS-MIS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program; however, we recorded twelve individuals on eight transects in Alpine Tundra.

Blue Grouse (FS-MIS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program; however, we detected 41 individuals of this species on 27 transects in seven habitats.

Columbian Sharp-tailed Grouse (FS-SS, FS-MIS, BLM-SS) – Gallinaceous gamebirds are not within the purview of the program. No individuals of this species were detected on *MCB* transects.

Plains Sharp-tailed Grouse (CO ETSC, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program. No individuals of this species were detected on *MCB* transects.

Greater Prairie-Chicken (FS-SS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program. No individuals of this species were detected on *MCB* transects.

Lesser Prairie-Chicken (US ETSC, CO ETSC; FS-SS, FS-MIS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program and we detected none on transects.

Scaled Quail (FS-MIS) – Gallinaceous gamebirds are not within the purview of the program; however, we detected 12 individuals of this species on three transects in two habitats. Breeding Bird Survey data over almost three decades suggest a fairly steep decline in populations of this species.

Northern Bobwhite (FS-MIS) – Gallinaceous gamebirds are not within the purview of the program, however we provide a density estimate in Low-elevation Riparian (Table 7).

Wild Turkey (FS-MIS) – Gallinaceous gamebirds are not within the purview of the program, however, we recorded eight individuals on five *MCB* transects in four habitats.

Pied-billed Grebe – We recorded two detections of this species on two wetland transects. Incidental reports of probable or confirmed breeding were submitted by volunteers and field workers for 16 sites, including nine that had not previously been documented. Eleven of the sites were occupied by Pied-billed Grebes, and breeding was confirmed at four sites. The developing catalogue of confirmed and probable nesting sites now includes 100 locations.

Eared Grebe – We recorded 14 detections of this species on one wetland transect. *MCB* staff surveyed 59 of 65 sites that have a history of confirmed nesting or are deemed to have suitable conditions for nesting, including all major historical sites. None of the unvisited sites has ever hosted more than 10 pairs, and only one has been active in the past three years. We have documented nesting at 48 sites since beginning surveys in 1998. One new breeding site was established in 2004, at the wetlands development at San Luis Lakes SWA. Although small (three nests), this development is significant as the San Luis Lakes area was formerly one of the state's most productive sites for this species but has not been active since we began surveys. Nesting was confirmed at 14 sites, and the nest count increased to 793 (Table 20) as water conditions in the state improved. It is likely, however, that a high proportion of those nests were not successful as many were in very shallow, receding water. The largest colonies were at Walden Reservoir in Jackson County (364 nests), Big Lake in Saguache County (133 nests), and Hebron Slough in Jackson County (99 nests). The monitoring parameter is the estimated number of active nests, which equals the total of nests counted plus ½ of juveniles counted.

Table 20. Summary of Eared Grebe adult and nest counts in Colorado, 1998-2004 (the 1999 count was incomplete).

	Counts							5 -year Averages[1]		
Year(s)	1998	1999	2000	2001	2002	2003	2004	98-02	99-03	00-04
# of sites occupied	20	13	36	36	20	19	23	52	53	56
# of adults present	2531	1331	2393	2359	2015	1254	1618	2901	2222	2107
# of active nest sites	14	4	21	23	10	11	14	43	43	45
# of active nests	1194	18	713	495	555	345	793	642	474	596

[1]Multi-year averages are computed by summing the average count at each colony for that period. Multi-year # of sites is a total of sites active at least one year during the period.

Western Grebe – One individual of this species was detected on a wetland transect. We surveyed 23 of 27 sites with a history of nesting. Nesting was limited as low water levels continued to limit or eliminate nesting opportunities at many reservoirs; we confirmed breeding at seven sites and calculated a total of 20 active nests (Table 21). Since 1998, we have recorded nesting at 27 different sites; most of these sites (20), however, have been used only once during the period, and no sites have been active in all years. The most productive site has been Sullenberger Reservoir in Archuleta County (59 active nests in five years). Other leading sites include Elevenmile Reservoir in Park County (48 nests in two years, but currently inactive), Fruitgrowers Reservoir in Delta County (44 nests in six years), and Smith Reservoir in Costilla County (34 nests in three years). No other site has had more than 11 nests during the seven years of surveys. We attribute the downward trend in nesting by this species to drought conditions. The monitoring parameter is number of active nests, which is a total of nests counted plus ½ of juveniles counted.

Table 21. Summary of Western Grebe nest counts in Colorado, 1998-2004 (the 1999 count was incomplete).

	Counts							5 -year Averages[1]		
Year(s)	1998	1999	2000	2001	2002	2003	2004	98-02	99-03	00-04
# of active nest sites	11	3	7	6	2	5	7	21	16	18
Est. # of active nests	58	35	59	42	43	22	20	47	40	37

[1]Multi-year average # of active nests are computed by summing the average count at each colony for that period. Multi-year # of sites is the total number of sites active at least one year during the period.

Clark's Grebe (ABC-GL) – One individual of this species was detected on a wetland transect. We surveyed 29 of 35 historical and possible nesting sites listed in our database, including all sites that had been active at any time in the past five years. We have confirmed nesting at 15 sites since beginning surveys in 1998, but ten of those have been active only one year during that period. In 2004, we confirmed nesting at only two sites (Table 22): Trites Lake at Russell Lakes SWA in Saguache County (estimated 1 nest) and Union Reservoir in Boulder County (two nests). Since we began surveys in 1998, the Russell Lakes SWA complex of lakes in Saguache County has had the most significant colonies of nesting Clark's Grebes with nearly 60% of all production. We attribute the downward trend in nesting by this species to drought conditions.

Table 22. Summary of Clark's Grebe nest counts in Colorado, 1998-2004. The monitoring parameter is number of active nests, which is a total of nests counted plus ½ of juveniles counted. The 1999 count was incomplete.

	Counts							5 -year Averages[1]		
Year(s)	1998	1999	2000	2001	2002	2003	2004	98-02	99-03	00-04
# of active nest sites	6	3	5	4	3	2	2	14	11	9
Est. # of active nests	37	16	40	12	6	4	3	20	14	13

[1]Multi-year average # of active nests are computed by summing the average count at each colony for that period. Multi-year # of sites is the total number of sites active at least one year during the period.

American White Pelican (BLM–SS) – We detected six individuals on two Wetland and four individuals on three Low-elevation Riparian transects in 2004. On 10 July, CDOW and RMBO staff banded 100 juveniles at Riverside Reservoir of the estimated 600 juveniles present. On 13 July, RMBO volunteers counted 62 juveniles and 200 adults at MacFarlane Reservoir. This figure is significantly lower than in previous years (Table 23). At Antero Reservoir, low water levels due to construction precluded any breeding as the usual island on which the pelicans nest was connected to the mainland throughout the season.

Table 23. Summary of numbers of American White Pelican juveniles counted at Colorado colonies, 1999-2004 (nc=no count; entries for Riverside Reservoir are estimates).

Year	Riverside	MacFarlane	Antero
1999	nc	146	33
2000	nc	167	0
2001	200	278	0
2002	850	320	180
2003	800	130	0
2004	600	62	0

Double-crested Cormorant – Three individuals of this species were detected on three Low-elevation Riparian transects. We surveyed 35 of 36 sites with a history of confirmed or possible nesting; we were denied access to Empire Reservoir, which probably hosts a colony. Adults were present at 17 sites, and breeding was confirmed at 14 sites; 1860 adults and 976 active nests were counted. The total number of active nests has remained relatively stable for the past five years (see Table 24), and changes in the three-year averages are within the margin of error.

Table 24. Counts of breeding Double-crested Cormorants in Colorado, 2000-2004.

	Counts					3 -year Averages		
Year(s)	2000	2001	2002	2003	2004	00-02	01-03	02-04
# of active sites	11	17	14	12	14	19	21	19
# of active nests	710	971	1090	914	976	1057	1026	1118

[1]Multi-year average # of active nests are computed by summing the average count at each colony for that period. Multi-year # of active sites is the total number of sites active at least one year during the period.

American Bittern (FS-SS) -- Three American Bitterns were detected on Wetland transects. In addition to data from sites where we conducted transects or surveys, we visited or received incidental reports of 21 birds at 12 sites. We continued compiling locations of historical nesting

sites for surveying in the future; the database now lists 46 sites where, in the past five years, breeding by this species has been suspected or confirmed.

Least Bittern – We received one breeding-season report of this species, at Ft. Lyon on 30 June. A pair summered here in 2003 and though nesting has not been confirmed, it is probable.

Great Blue Heron – We detected 54 individuals on 20 transects in five habitats, and provide a density estimate in Low-elevation Riparian habitat. We surveyed 174 of 205 sites in the database. We were denied access to Empire Reservoir, and did not survey sites at Bayfield and Riverside Reservoir, the only unvisited sites with a likelihood of having more than five nests. Of those visited, 75 sites had at least one active nest; these sites contained a total of 1565 active nests (Table 25). Drought conditions seemed to have little effect on this species as the three-year average number of active nests remained fairly stable.

Table 25. Comparison of breeding Great Blue Heron colony counts in Colorado, 1999-2004.

	Counts						3 -year Averages			
Year(s)	1999	2000	2001	2002	2003	2004	99-01	00-02	01-03	02-04
# of Active Sites	38	57	73	72	81	75	56	66	74	75
# of Active Nests	886	1247	1205	1198	1418	1565	1296	1259	1335	1500

[1]Multi-year average # of active nests are computed by summing the average count at each colony for that period. Multi-year # of active sites is the total number of sites active at least one year during the period.

Great Egret – The Boulder Creek colony, which has historically been the only significant colony in the state, completed its move to its new site near Longmont in 2002. In 2004, all 22 nests in Colorado were at this site, which is now included in the new St. Vrain State Park. This nest count is the highest total on record for the state. The ColonyWatch volunteer at Milton Reservoir reported no active nests at that site, which had a single nest in 2002. Five adults were counted on a flight line count at Russell Lakes SWA; this species has been present here in small numbers for the past three nesting seasons, but nesting has not yet been confirmed.

Snowy Egret – We detected five individuals on three wetland transects and surveyed all of the 23 historical and potential breeding sites in the database. We found nests and/or juveniles at five sites and counted 354 adults at these sites (Table 26). Based on flight-line and nest counts, we estimate that there were 258 active nests in 2004. The largest colony, of an estimated 200 pairs, was at Bowen Pond in Monte Vista NWR. The other active colonies were at Riverside Reservoir in Weld County (~25 nests), Lake Sangraco in Adams Count (18 nests), and at two sites in Russell Lakes SWA in Rio Grande County (~15 nests total). Numbers have fluctuated greatly in the past five years and most of that fluctuation is a result of greatly fluctuating water availability. Some fluctuation may be due to the difficulties inherent in accurately counting marsh-nesting colonial waterbirds. The 1999 survey was incomplete, but the surveys since have been complete.

Table 26. Summary of counts of breeding Snowy Egrets in Colorado, 1999-2004.

	Counts						3 -year Averages			
Year(s)	1999	2000	2001	2002	2003	2004	99-01	00-02	01-03	02-04
# of active sites	1	5	6	5	3	5	6	6	6	6
# of active nests	125	225	232	91	288	258	194	183	204	212

[1]Multi-year average # of active nests are computed by summing the average count at each colony for that period. Multi-year # of active sites is the total number of sites active at least one year during the period.

Cattle Egret – All 13 of the historical and/or potential breeding sites in the database were surveyed and we counted 52 adults. Based on flight-line and nest counts, we estimate that there were 50 active nests in 2004 (Table 27), in two sites: Bowen Pond at Monte Vista NWR in Rio Grande County and Riverside Reservoir in Weld County. A pair was present at Lake Sangraco in Adams County during the nesting season, but breeding was not confirmed. One individual was detected on a Grassland transect.

Table 27. Estimated number of active Cattle Egret nests in Colorado, 2000-2004.

	2000	2001	2002	2003	2004
# of active sites	1	3	2	1	2
Estimated # of active nests	3	67	34	75	50

Green Heron – Green Herons were reported from four locations this past summer: Rocky Ford, Otero County, Cottonwood Hollow in Fort Collins, and Green Heron Pond near Grand Junction, where the presence of four juveniles in July suggested successful breeding. One individual was detected on a Wetland transect near John Martin Reservoir, Bent County.

Black-crowned Night-Heron – We detected 25 individuals on seven transects in three habitats and surveyed 43 of 48 historical and potential sites in the database, counting nests and/or juveniles at 19 (Table 28). Sites not visited were Empire Reservoir, a private site where access was denied, Riverside Reservoir, and three small sites that have not been recently active. Based on nest counts, flush counts, and flight-line counts, we estimate approximately 513 active nests. More than 60% of the active nests were at two sites, Bowen Pond at Monte Vista NWR (200 nests) and Denver City Park (119nests). Eleven sites had 10 or fewer nests. The increase in the number of sites is due to the detection of several new small sites. Because marsh-nesting colonies are difficult to count without undue disturbance of nesting activities, these estimates have a fairly wide margin of error. Despite this difficulty, the three-year averages of nest estimates appear to be quite stable.

Table 28. Estimated number of active Black-crowned Night-Heron nests in Colorado, 1999-2004.

	Counts						3-yr averages			
	1999	2000	2001	2002	2003	2004	99-01	00-02	01-03	02-04
# of sites	7	9	11	10	16	19	20	19	25	23
Estimated # of active nests	320	155	428	336	437	513	495	377	466	476

Note: The 2000 count total probably does not reflect a major decline as the colony at Denver City Park, the states largest colony in recent years, was not surveyed that year; the averages are computed as sums of averages for each colony, which minimizes the effect of annual differences in survey effort. Multi-year # of active sites is the total number of sites active at least one year during the period.

White-faced Ibis (BLM-SS) – We detected 16 individuals on three Wetland transects. *MCB* staff, volunteers, and U.S. Fish & Wildlife Service employees surveyed all 25 sites where nesting by this species has been previously confirmed or deemed possible. Breeding was confirmed at five sites, all in the San Luis Valley. Adams Lake hosted the largest colony (~940 active nests); Bowen Pond at Monte Vista NWR had an estimated 725 nests, and Russell Lakes SWA had three small colonies, totaling 445 nests. This species was dramatically affected by drought conditions, its Colorado breeding population crashing in 2002 (Table 29). The colony at Adams Lake had failed in

each of the past two years due to inadequate water. The population has been recovering in 2003 and 2004 as more suitable nesting and foraging habitat has become available. Because this species is very difficult to monitor without undue disturbance of nesting activities, these estimates have a fairly wide margin of error; however, the year-to-year variations have been dramatic in the past five years, and direction and magnitude of the trend is clear.

Table 29. Estimated number of active White-faced Ibis nests in Colorado, 2000-2004.

	Counts					3-yr averages		
	2000	2001	2002	2003	2004	00-02	01-03	02-04
# of sites	3	5	3	5	5	7	9	9
Estimated # of active nests	3000	3525	202	1073	2120	2277	1751	1460

Osprey (FS-MIS) – We detected six individuals on five transects in three habitats. We either surveyed or solicited reports on 95 of 125 nest sites in our database (Table 30). Unvisited sites were low-priority sites that have not had recent use (generally trees or platforms that have fallen) and a few sites for which we had inadequate information to find; these sites are unlikely to have hosted many, if any, active nests in 2004. Staff, volunteers, and cooperators found 65 nests to be active, 29 of those in Grand County. Surveys conducted since 2000 indicate a continuing expansion of this species' range in Colorado and a slight increase in numbers; however, they also indicate a slight decline in productivity, which might be expected from a generally young breeding population (newly-established pairs typically have lower reproductive success than do established pairs).

Table 30 Summary of breeding Osprey surveys in Colorado, 2000-2004.

Year	# of sites in the database	# of sites surveyed	# of nest starts documented	# of nests outcome determined	# of successful nests	# of young produced	# young per nest start	# young per successful nest
2000	n/a	56	42	35	21	40	1.14	1.90
2001	88	78	52	38	21	37	0.97	1.76
2002	97	62	46	42	24	42	1.00	1.75
2003	104	76	50	43	34	52	1.20	1.53
2004	125	95	65	52	34	51	0.98	1.50

Mississippi Kite (FS-MIS) – We currently have 21 nesting areas catalogued in our database, primarily in the Arkansas Valley and southeast canyon country. This species consolidated and continued its range expansion in the state this summer. Notable observations include five reported from Sterling, one at Barr Lake in Adams County, and one near Nucla in western Montrose County.

Bald Eagle (CO ETSC; US T&E-T) – We have catalogued 63 active and/or historical nests and received reports on 56 in 2004 (Table 31). Breeding was confirmed at 42 of the nests surveyed; of 39 nests for which the outcome was determined, 21 were successful, producing 34 young.

Table 31. Summary of breeding Bald Eagles in Colorado, 2003-2004.

Year	# of sites in database	# of sites surveyed	# of nest starts documented	# of nests outcome determined	# of successful nests	# of young produced	# young per nest start	# young per successful nest
2003	36	28	26	17	13	27	1.60	2.07

2004	63	56	42	39	21	34	1.05	1.90

Northern Harrier (FS-SS; CO-PIF) – *MCB* field workers recorded nine detections on six transects in four habitats. As usual, we conducted no additional fieldwork focused on this species.

Sharp-shinned Hawk – *MCB* field workers detected ten on ten transects in seven habitats.

Northern Goshawk (FS-SS, FS-MIS, BLM-SS) – *MCB* field workers detected six on five transects in three habitats. Several USFS units have done extensive surveying for this species, and *MCB* has not collected data nor have these data been compiled into a statewide or region-wide database, as far as we are aware.

Swainson's Hawk (CO-PIF) – *MCB* field workers detected 24 on 20 transects in eight habitats.

Ferruginous Hawk (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – We surveyed historical nesting sites in western Colorado and found one active nest. We incidentally found two new nests in the San Luis Valley. We currently have twenty nest sites recorded in our database. We detected two individuals of this species on two *MCB* transects in two habitats. RMBO's Section Survey project on the eastern plains recorded Ferruginous Hawk at 30 of 3749 points -- 0.050 detections per point.

Golden Eagle (CO-ABC) – *MCB* staff detected 15 individuals on 12 transects in seven habitats.

Peregrine Falcon – *MCB* staff detected three individuals on three transects in two habitats. CDOW responsibility for monitoring this species extends through five years following de-listing.

Prairie Falcon (CO-PIF) – *MCB* staff detected six individuals on four transects in three habitats.

Black Rail – We detected seven individuals of this species on two Wetland transects. The secretive marshbird survey at the Ft. Lyon study area was not conducted in 2004 due to shortage of manpower. A report of singing Black Rails at a previously unreported site in Bent County was received.

Greater Sandhill Crane (CO ETSC, FS-MIS) – We recorded five individuals on four transects in three habitats (in Jackson, Moffat, and Routt counties). CDOW counts at California Park and Steamboat Lake in Routt County, historically the sites of the state's largest nesting concentrations, were not conducted in 2004. Five adults were seen at three sites in Rio Blanco County, and the pair at Fawn Creek produced two young. No birds were found at the historical site in Unaweep Canyon in Mesa County, although it was surveyed several times by volunteers; however a pair successfully raised two chicks at a new site east of Collbran in eastern Mesa County. The pair near Nucla in Western Montrose County, which reared two chicks in 2003, was present in 2004, but apparently unsuccessful.

Whooping Crane (US ETSC, CO ETSC) – This species occurs in Colorado only as an accidental migrant and is outside the purview of *MCB*.

Snowy Plover (CO ETSC; BLM-SS) – RMBO volunteers and BLM field workers surveyed 22 of the 25 known and likely breeding sites in the state; three playas at Blanca Wetland which have recently hosted Snow Plovers were not surveyed. A total of 214 birds (204 adults, 10 juveniles) was counted at 13 playas and reservoirs. All of the birds were found at Blanca Wetlands in Alamosa County and at reservoirs in the lower Arkansas Valley. Antero Reservoir was not surveyed. There are, undoubtedly, sites on private lands that we have not located.

Piping Plover (US ETSC, CO ETSC, CO-PIF) – CDOW contract personnel counted a record 27 adults, an increase of two birds from the previous year. The nine nesting pairs equaled known historic highs. Eight of nine nesting pairs were concentrated on four adjacent points on the south shore of John Martin Reservoir, and one pair nested at Adobe Creek Reservoir. The eight plover pairs at John Martin Reservoir produced 14 nests and 48 eggs. The seven earliest nests were depredated, often before clutches were complete. Predator–resistant cages protected all nests found after 17 May. Ultimately, 18 plover eggs (from 5 plover nests) hatched. Coyotes claimed six young, while a late hailstorm killed one adult and two young plovers only a week from fledging. John Martin Reservoir produced eight plover fledglings and the lone Piping Plover pair at Adobe Creek Reservoir fledged two young. A total of ten Piping Plovers was produced in Southeast Colorado in 2004. One pair nested at Prewitt Reservoir in Washington County; two adults and a juvenile bird were observed there on 10 July. Colorado's first nest of this species was found at this site in 1949, but no subsequent breeding had been found away from the Arkansas Valley until this summer.

Mountain Plover (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – *MCB* detected two birds on Grassland transects.

American Avocet (CO-ABC) – *MCB* field workers detected 14 birds on four transects in two habitats.

Black-necked Stilt – We received reports on 10 of 29 historical nesting sites in the database. Only one site, Hog Lake at Brown's Park NWR was occupied. Three breeding pairs were present. Anecdotal evidence suggests that numbers of this species were down due to low water levels, especially in the San Luis Valley and Arkansas Valley, but there is no earlier baseline with which to compare these numbers.

Willet (CO-PIF) – Nesting Willets in 2004 appeared to begin a recovery from low levels the previous two years (Table 32). Volunteers and *MCB* staff surveyed all major historical nesting locations in North Park and counted 52 birds. One pair of Willets successfully nested at Fruitgrowers Reservoir, Delta County, producing two young. Two adults were present at Yampa River wetlands in Moffat County on 13 June, but we do not know whether they bred locally.

Table 32. Summary of counts of breeding Willets in Colorado, 1998-2004.

Year	1998	1999	2000	2001	2002	2003	2004
# Active Sites	10	8	12	12	5	8	6
Total Birds	116	81	87	109	28	30	52

Upland Sandpiper (CO-PIF) – Two individuals were detected on two transects in two habitats. Six incidental reports of this species were submitted. This species is a leading candidate for more intensive surveys.

Long-billed Curlew (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – *MCB* detected three birds on Grassland transects and one on a Semi-desert Shrubland transect in Mesa County.

Wilson's Snipe (CO-ABC) – *MCB* field workers detected 35 individuals on 17 transects in seven habitats.

Wilson's Phalarope (CO-ABC) – *MCB* field workers detected 28 individuals on four transects in two habitats. The addition of more wetland transects, along with eventual relief from drought, should enable us to effectively monitor this species.

Franklin's Gull – Walden Reservoir and Lake John Annex in Jackson County, the only documented breeding sites in Colorado, were surveyed for this species in June and July. Despite unfavorable water conditions, this species seems to be continuing its expansion of population size in Colorado. On 11 June, we counted 55 adults, all territorial, at Lake John and saw several nests (one with three eggs). Most nests apparently failed as only 20 adults were present on 10 July, and no juveniles were seen. Ten Franklin's Gulls were at Walden Reservoir on 11 July, but no evidence of breeding by this species was found in 2004.

California Gull – RMBO field workers and volunteers visited all nine of the historical nesting sites, confirming breeding at four (Table 33): MacFarlane and Walden reservoirs in North Park, Elevenmile Reservoir in Park County, and Riverside Reservoir in Weld County. This species was again discouraged from nesting at Arkansas Valley sites to protect nesting Least Terns and Piping Plovers from predation.

Table 33. Summary of California Gull colony counts 2000-2004. Counts were not conducted at Riverside Reservoir (240 juveniles in 2002, 300 in 2004) in 2001 and 2003.

Year	2000	2001	2002	2003	2004
Active Sites	3	3	5	2	4
Juveniles	292	273	418	110	1038

Forster's Tern – We surveyed all six historical nesting sites in the San Luis Valley and North Park. On the basis of counts of territorial birds, we estimated a total of 42 active nests, 22 at Lake John Annex and 20 at Walden Reservoir. No nesting has been documented in the San Luis Valley since 1993.

Least Tern (US ETSC, CO ETSC, CO-PIF) – CDOW contract personnel reported that a minimum of 16 pairs of Least Terns nested at John Martin Reservoir, with 23 nests found. Of 47 eggs laid, six broods hatched, producing 14 hatchlings. Coyotes keyed in on tern nests and young, and no young terns survived to fledge at John Martin Reservoir. Two tern pairs nested (four eggs total) at Adobe Creek Reservoir and both nests failed as a result of a hailstorm on 20 June. Of seven early nests at Neenoshe Reservoir, one (two eggs) was lost to coyotes, while six nests (12 eggs) and three adults were killed by a hailstorm on 20 June. A late three-egg clutch was lost to heavy rain on 6 August. Nine presumed renests were initiated in late July at Neegrande Reservoir in late July, and produced 19 eggs, all of which hatched. Two dead young were found in separate nests on 26 July, casualties of yet another hailstorm; other young probably also died from a storm on 26 July. Eventually, ten young fledged from the Neegrande tern colony, the only fledged terns from the 84 eggs laid statewide. All tern nesting took place on habitat cleared of vegetation the previous off-season.

Black Tern (FS-SS, BLM-SS, CO-ABC) – All recently occupied sites in North Park and the San Luis Valley were surveyed. Four birds were present and may have been nesting along the auto tour route at Alamosa NWR on 7 July. A pair was seen exhibiting territorial behavior at Walden Reservoir on 13 June, but these birds were not seen on later surveys and any nest attempt here probably failed. In the first half of the 20th century, significant colonies of these terns nested in North Park and the San Luis Valley and in the marshes of the South Platte and Arkansas rivers. This species is on the verge of extirpation as a breeder in the state and requires immediate attention (cf. Kingery 1998 for data from the Breeding Bird Atlas period). In February of 2003, the

Intermountain Waterbird Conservation Plan working group designated this species as one of the three highest priority species for conservation in BCR 16 (Southern Rocky Mountains/Colorado Plateau).

Band-tailed Pigeon (CO-PIF) – *MCB* recorded twelve detections on six transects in five habitats. This species is a gamebird and thus falls outside the purview of the program.

Eurasian Collared-Dove – Field workers and volunteers submitted incidental observations of 1323 adults at 78 sites. By the end of 2004, this invader, which was first reported in the state in 1996, had been recorded in at least 136 towns and cities in 47 of Colorado's 64 counties.

White-winged Dove – This species continues to expand its breeding range into Colorado. The most significant observations included six in Rocky Ford, in Otero County, present through the summer. At least one pair successfully nested, producing at least two fledglings. Additionally, at least 75 individuals were found in at least five Colorado towns during the winter of 2004-2005, the most that have ever wintered (or attempted such) in the state.

Mourning Dove (FS-MIS) – This species is well-monitored in nine habitats (Grassland, Low-elevation Riparian, Mixed Conifer, Montane Shrubland, Piñon-Juniper, Ponderosa Pine, Sage Shrubland, Semi-desert Shrubland, and Wetland), with CVs ranging from 17% to 41%.

Inca Dove – This species continues to expand its population in the state. Up to four Inca Doves were observed throughout this past summer at the traditional location of Rocky Ford, in Otero County.

Yellow-billed Cuckoo (BLM-SS; FS-SS) – *MCB* transects yielded a single detection on a Low-elevation Riparian transect. No other attempts to obtain data on this species in the eastern part of the state were made in 2004.

"Western" Yellow-billed Cuckoo (US ETSC) – We received two reports of probable "Western" Yellow-billed Cuckoos from the Southern Rocky Mountain/Colorado Plateau Bird Conservation Region (BCR 16), one from the North Fork of the Gunnison River in Delta County and one from the Conejos River in Conejos County.

Flammulated Owl (FS-SS, FS-MIS, CO-PIF) – *MCB* collected no data on this species in 2004. Several USFS units have placed arrays of nest boxes that have been used by this species. The data may have some statewide inference when those collected by each forest are collated. Nocturnal transects targeting this species conducted mid-May though early June may provide a useful index.

Great Horned Owl (FS-MIS) – *MCB* field workers recorded a total of five detections on four transects in four habitats.

Burrowing Owl (CO T&E-T; FS-SS) – *MCB* detected six individuals on four transects in two habitats. On the West Slope, we followed up previous inventories with a survey of all sites where nesting attempts occurred in 2002 and 2003. We detected Burrowing Owls at eight locations, the same number that we found active last year. Outcome was determined at only five nests; these produced 19 young. Time and logistical difficulties prevented close monitoring of other nests. This species appears to have declined sharply in the western part of the state during the past decade. Incidental reports from field workers and volunteers on the eastern plains totaled 33 adults at seven sites.

Spotted Owl (US ETSC, CO ETSC, CO-PIF) – *MCB* transects have not detected this species, and no special monitoring projects have been initiated to date. USFS and BLM have conducted extensive surveys in the past for this species.

Short-eared Owl (FS-SS, CO-PIF) – *MCB* transects have not detected this species, and no special monitoring projects have been initiated to date. A few pairs nest annually in the San Luis Valley, in North Park, and at scattered locations in the South Platte drainage.

Boreal Owl (FS-SS, CO-PIF) – Amazingly enough, one individual was found on a Spruce-Fir transect; *MCB* collected no other data on this species in 2004. Several USFS units have placed arrays of nest boxes that have been used by this species. The data may have some statewide inference when those collected by each forest are collated. Nocturnal transects conducted in September may provide a useful index.

Common Poorwill (CO-PIF) – Four birds were recorded on four transects in two habitats and we collected no other data on this species in 2004. Efforts to conduct transects focused on Flammulated Owls may provide an avenue to monitor this species as well.

Black Swift (FS-SS). – RMBO staff and volunteers visited 98 waterfalls this season, surveying 65 of the 99 previously known individual nest sites and searching for evidence of nesting at 34 other waterfalls, including 12 previously unevaluated sites (Table 34). They observed adults, active nests, or juveniles at 45 sites and discovered three new breeding colonies. Since 1998, this effort has now evaluated 366 waterfalls and discovered 63 new colonies. The database contains 60 waterfalls that have not yet been evaluated and there are, undoubtedly, quite a few waterfalls of which we are unaware. A number of waterfalls that have received an initial evaluation need further study.

The focus of this year's effort was directed toward establishing a monitoring protocol rather than increasing the inventory as in previous years. A selection of sites (n=22) that had been previously identified as active (n=17) and sites that had high scores on previous evaluations (n=5) were surveyed for occupation. Of these 15 (68%) were determined to be occupied in 2004. All of the occupied sites were in the set of sites previously determined to be occupied, giving this set an 88% occupancy rate. In addition, our survey effort conducted nest counts at 56 of the 60 sites where nests had been reported as visible without undue risk to the observer. We found 109 nests at 38 sites, including 87 nests that showed evidence of use in 2004; 53 were occupied by juvenile birds, 1 by an egg, 15 by incubating or brooding adults, and 18 showed other evidence (fresh moss, fresh whitewash) of use in the current year.

Table 34. Summary of Black Swift surveys in Colorado, 1998-2004. Numbers are not strictly comparable, as distribution and extent of effort varied greatly among years.

Year	Sites in database	Sites surveyed	Historical Sites Surveyed	Sites w. adults Present	Sites breeding confirm.	Active nests found	Total adults seen	New colonies found
1998	NA	43	16	20	19	45	62	5
1999	NA	62	15	19	21	33	53	5
2000	NA	109	22	19	25	35	92	5
2001	311	117	39	48	27	53	216	21
2002	352	107	17	25	36	63	91	19
2003	417	155	13	24	16	44	65	10
2004	426	98	65	21	38	80	87	3

Chimney Swift – RMBO field workers surveyed 35 towns on Colorado's eastern plains, counting 87 adults in 13 towns. The database contains records from 64 towns on the eastern plains.

White-throated Swift (CO-PIF) – Since we initiated efforts to log colony sites of this species, 106 have been catalogued for future tracking efforts; of those we have specific location information on 37; the others are Breeding Bird Atlas reports. Incidental reports were received on six colonies, reporting a total of 70 adults. Additionally, we detected 130 individuals on 23 transects in eight habitats.

Black-chinned Hummingbird (CO-PIF) – *MCB* recorded a total of 42 detections on 21 transects in five habitats.

Lewis's Woodpecker (FS-SS, FS-MIS, CO-PIF) – We completed four driving transects and a fifth was truncated after 10 points due to inclement weather. Of the 90 points completed, 13 Lewis's Woodpeckers were detected. This detection rate suggests that a useable index for this species may be developed through these transects. In 2004, the catalogue of known and suspected nesting sites increased to 222, of which 118 are specific locations. The remaining sites are general locations from the Breeding Bird Atlas project. Volunteers and field workers visited 19 sites, counting 39 adults and confirming breeding at 13 sites. Three individuals were encountered on two Ponderosa Pine transects.

Red-headed Woodpecker (FS-MIS) – *MCB* recorded three individuals on three Low-elevation Riparian transects.

Acorn Woodpecker – This year, we received two reports of Acorn Woodpeckers away from the current Durango location, both from Las Animas County (whence a previous record originates). The first was of a male visiting a feeder in Aguilar in mid-April. An RMBO staff member discovered a male Acorn Woodpecker along the Apishapa River west of Gulnare on 29 June; whether these records refer to the same individual is unknown. We did not receive any specific information on the Durango colony this year, other than it is still extant.

Williamson's Sapsucker (CO-PIF) – *MCB* transects provided sufficient data to estimate densities in both Mixed Conifer and Ponderosa Pine (Appendix A).

Red-naped Sapsucker (FS-MIS, CO-PIF) – *MCB* Transects provided sufficient detections in both Aspen and High-elevation Riparian to calculate density estimates (Appendix A).

Hairy Woodpecker (FS-SS, FS-MIS) – Sufficient data were recorded on transects this season for density estimates to be provided in Aspen, Ponderosa Pine, and Spruce-Fir (Appendix A).

American Three-toed Woodpecker (FS-SS, FS-MIS) – *MCB* field workers detected 39 on Spruce-Fir transects and, a first for the program, a density estimate was determined for this habitat (Table 14).

Olive-sided Flycatcher (FS-SS) – *MCB* recorded a total of 81 detections on 46 transects in eight habitats.

Western Wood-Pewee (CO-ABC) – A total of 545 was recorded on transects in all habitats. This species is well-monitored in six habitats: Aspen, High-elevation Riparian, Low-elevation Riparian, Mixed Conifer, Montane Shrubland, and Ponderosa Pine (Appendix A).

"Southwestern" Willow Flycatcher (US ETSC, CO ETSC) – *MCB* has not collected data on this subspecies. USFS and USFWS have conducted extensive surveys in Colorado.

Hammond's Flycatcher (CO-PIF) – Eighty-eight were detected on 45 transects in nine habitats.

Gray Flycatcher (CO-PIF) – One of the most frequently detected species in Piñon-Juniper (n=175), we provide a density estimate for this habitat (Table 10).

Dusky Flycatcher (CO-ABC) – *MCB* field staff detected 549 Dusky Flycatchers on transects. This species is well-monitored in six habitats: Aspen, High-elevation Riparian, Mixed Conifer, Montane Shrubland, Piñon-Juniper, and Ponderosa Pine (Appendix A).

Cordilleran Flycatcher (CO-PIF) – This species was recorded on *MCB* transects 163 times this season and transect data provided density estimates in Aspen, High-elevation Riparian, and Mixed Conifer (Appendix A).

Black Phoebe – Field technicians floated from Naturita to the Dolores River and downstream about 5 miles on the Dolores River below the confluence. They located birds at 49 sites and located old nests at another 9 sites. The San Miguel and Dolores Rivers total was of 45 active nests. Black Phoebes should now be considered a common resident along the lower San Miguel River. At least two pairs nested in Mesa County along the Colorado River, the first breeding records for that county. Two pairs were reported in La Plata County: one in Ignacio and one at the Weaselskin Bridge south of Durango (both of which sites were occupied in 2002). On the Eastern Slope, two nesting pairs were reported from Fremont County, and a territorial male was heard and seen near the Burnt Mill Bridge on the St. Charles River, a site of previous nesting. None was found where a pair nested in 2003 along McElmo Creek west of Cortez in Montezuma County despite several searches.

Eastern Phoebe – In the statewide survey of bridges (n=304), seven adults were found at four bridges. Nests were found at two of these and at an additional two where birds were not seen. Observers indicated another nine bridges had potential for this species. All of the birds were seen in northeastern Colorado. Few bridges were surveyed in the southeast where this species would be expected. Incidental reports of seven birds at six locations were submitted.

Say's Phoebe (CO-ABC) – Sixty-two were detected on 30 transects in five habitats.

Cassin's Kingbird (CO-PIF) – Two were detected on two transects in two habitats. Were we to conduct Piñon-Juniper transects in eastern Colorado, we would record substantial numbers of Cassin's Kingbirds.

Western Kingbird (CO-PIF) – *MCB* field staff recorded 121 detections on transects and we are able to provide density estimates from Grassland, Low-elevation Riparian, and Semi-desert Shrubland (Appendix A).

Scissor-tailed Flycatcher – One bird was present in near Lamar during the breeding season, but nesting was not confirmed. Other individuals were reported from El Paso, Bent, Otero, and Alamosa counties.

Loggerhead Shrike (FS-SS) – Twenty-four were recorded on 13 *MCB* transects in three habitats, an insufficient number to provide a density estimate of any kind.

Bell's Vireo (CO-PIF) – Four singing males were reported at the six sites surveyed; eight known sites in northeastern Colorado were not surveyed. However, there was an apparent shift in occupied locations in the Bonny Reservoir area. A long-occupied site was abandoned and multiple singing males were detected in May and June in the extensive stands of sapling Plains Cottonwood colonizing the bare beach left by low water levels on the reservoir as a result of drought conditions. Time will tell whether these stands remain with projected higher water levels and then, whether Bell's Vireos will continue to consider these sites habitat.

Gray Vireo (CO-PIF) – For the first time, *MCB* field staff recorded sufficient detections (n=40) to provide a density estimate for Gray Vireo in Piñon-Juniper (Table 10).

Plumbeous Vireo (CO-ABC) – *MCB* recorded 222 detections on transects. This species is well-monitored in Montane Shrubland, Piñon-Juniper, and Ponderosa Pine (Appendix A).

Pinyon Jay (CO-PIF) – *MCB* field staff recorded 98 on transects this year. Pinyon Jay is well-monitored in Piñon-Juniper where we detected 73 individuals (Table 10).

Horned Lark (CO-PIF) – *MCB* field staff recorded 1518 detections on transects in eight habitats. This species is well-monitored in four habitats: Alpine Tundra, Grassland, Sage Shrubland, and Semi-desert Shrubland (Appendix A).

Purple Martin (FS-SS) – RMBO field staff and volunteers surveyed 100 sites with a history of confirmed or possible nesting by this species and documented 21 previously unknown sites. Of the 454 adults observed (Table 35), 145 were adult males. The database now contains 213 entries: 134 sites where nesting has been confirmed, 62 where Purple Martins have been observed in appropriate habitat, and 17 sites that appear suitable for martins to nest.

Table 35. Summary of Purple Martin surveys in Colorado, 1999-2004.

Year	# sites in database	# sites visited	# sites adults observed	# adults observed	# sites breeding confirmed	# of active nests located	# new colonies found
1999	na	37	30	na	na	na	2
2000	101	66	40	180	?	9	4
2001	124	92	69	262	54	107	38
2002	136	88	63	366	56	136	19
2003	180	116	89	503	60	130	21
2004	213	100	81	454	61	132	21

Violet-green Swallow (CO-PIF) - We recorded 366 individuals on transects. This species is well-monitored in six habitats: Aspen, High-elevation Riparian, Mixed Conifer, Montane Shrubland, Piñon-Juniper, and Ponderosa Pine (Appendix A).

Cliff Swallow (FS-MIS) – Those conducting transects recorded 115 individuals on transects this season. This species is adequately-monitored in Grassland and Low-elevation Riparian (Appendix A).

Juniper Titmouse (FS-MIS, CO-PIF) – This species was recorded 49 times on Piñon-Juniper transects and a density estimate is provided in this habitat (Table 10).

Pygmy Nuthatch (FS-MIS) – We recorded 119 on Ponderosa Pine transects and are able to provide a density estimate in this habitat (Table 11).

Brown Creeper (FS-MIS) – *MCB* field workers recorded 120 detections on 54 transects in seven habitats. We detected 41 individuals in Spruce-Fir and provide a density estimate in that habitat (Table 14).

Bewick's Wren (FS-MIS) – *MCB* had 169 detections on transects and this species is well monitored in Piñon-Juniper (Table 10).

American Dipper (CO-PIF) – We surveyed 304 bridges and culverts statewide and found either Dippers or Dipper nests at 59. Of these, both nests and birds were present at 29; birds were present at 33 (Table 18). In addition, surveyors indicated that another 43 had the potential to support dipper nests. In conjunction with Black Swift surveys, we visited 98 waterfalls and recorded 29 Dippers at 24 waterfalls, with 13 nests at 11 sites. Because the Black Swift surveys take place

after Dippers have fledged, the data do not indicate whether nests were active. Eight were detected on seven *MCB* transects in two habitats.

Ruby-crowned Kinglet (FS-MIS) - *MCB* recorded 973 detections on transects and this species is well-monitored in Aspen, Alpine Tundra, High-elevation Riparian, Mixed Conifer, Montane Shrubland, Ponderosa Pine, and Spruce-Fir (Appendix A).

Blue-gray Gnatcatcher (FS-MIS) – We recorded 265 individuals on transects in 2004 and this species is well-monitored in two habitats, Montane Shrubland and Piñon-Juniper (Appendix A).

Western Bluebird (CO-PIF) – *MCB* field staff recorded 92 detections on transects; this species is well-monitored in Ponderosa Pine (Table 11).

Mountain Bluebird (FS-MIS) – We obtained 367 detections on transects. This species is well-monitored in three habitats, Alpine Tundra, Montane Shrubland, Piñon-Juniper (Appendix A).

Brown Thrasher (FS-MIS) – *MCB* recorded 15 detections on eight transects in two habitats.

American Pipit (FS-MIS, CO-PIF) – We obtained 585 detections on transects and American Pipit is well monitored in Alpine Tundra (Table 3).

Cedar Waxwing (FS-MIS) – *MCB* field workers recorded 20 detections on nine transects in five habitats.

Virginia's Warbler (FS-MIS, CO-PIF) – We recorded 350 individuals on transects in 2004. This species is well-monitored in Montane Shrubland, Piñon-Juniper, and Ponderosa Pine (Appendix A).

Yellow Warbler (FS-MIS) – *MCB* detected 294 individuals on transects and the species is well-monitored in three habitats: High-elevation Riparian, Low-elevation Riparian, and Montane Shrubland (Appendix A).

Black-throated Gray Warbler (FS-MIS, CO-PIF) – *MCB* staff recorded 220 on transects. This species is well-monitored in Piñon-Juniper (Table 10).

Grace's Warbler (FS-MIS, CO-PIF) – *MCB* staff recorded 22 on transects, 18 on Ponderosa Pine transects. Unfortunately, this is a much lower sample size than is typical. In fact, we have never before obtained insufficient sample size to determine a density estimate. What this dip in numbers detected represents is currently unknown.

American Redstart – Three birds were recorded on *MCB* transects; one each in Low-Elevation Riparian, Mixed Conifer, and Montane Shrubland. Incidental reports of two singing males at two sites were received this season and the annual survey of the Chatfield Basin provided a relatively low total of five this year.

Ovenbird – Four individuals were found on *MCB* transects this season. One was heard singing on a High-elevation Riparian transect near Como and the other three were discovered at the Air Force Academy (on a Montane Shrubland transect). The catalogue of confirmed and probable nesting sites was expanded to 40. Four singing males were detected at three of the five locations surveyed.

Northern Waterthrush – We received no breeding-season reports this year.

MacGillivray's Warbler (CO-PIF) – We detected 201 individuals on *MCB* transects, which provided sufficient data to obtain densities in three habitats: Aspen, High-elevation Riparian, and Montane Shrubland (Appendix A).

Wilson's Warbler (FS-MIS, CO-PIF) – *MCB* field staff recorded 186 on *MCB* transects from which we obtained a density estimate in High-elevation Riparian (Table 6).

Green-tailed Towhee (FS-MIS, CO-PIF) – *MCB* field workers recorded 996 on transects. From those data, we determined density estimates in six habitats: Aspen, Mixed Conifer, Montane Shrubland, Piñon-Juniper, Ponderosa Pine, and Sage Shrubland (Appendix A).

Spotted Towhee (CO-ABC) – *MCB* field staff detected 587 individuals on transects. We obtained density estimates in four habitats: Low-elevation Riparian, Montane Shrubland, Piñon-Juniper, and Ponderosa Pine (Appendix A).

Cassin's Sparrow (FS-SS, FS-MIS, CO-PIF) – *MCB* scored 302 on transects in 2004, with data providing density estimates in two habitats: Grassland and Sage Shrubland (Appendix A).

Brewer's Sparrow (FS-SS, FS-MIS, CO-PIF) – Field staff recorded 743 Brewer's Sparrows on transects and obtained density estimates in five habitats: Grassland, Montane Shrubland, Piñon-Juniper, Sage Shrubland, and Semi-desert Shrubland (Appendix A).

Vesper Sparrow (FS-MIS) – *MCB* staff detected 355 individuals on transects. This species is well-monitored in three habitats: Piñon-Juniper, Sage Shrubland, and Semi-desert Shrubland (Appendix A).

Lark Sparrow (CO-ABC) – We recorded 264 individuals on *MCB* transects this year and Lark Sparrow is well-monitored in two habitats: Sage Shrubland and Semi-desert Shrubland) (Appendix A).

Sage Sparrow (FS-SS, CO-PIF) – *MCB* had 82 detections on transects and the species is well-monitored in Sage Shrubland (Table 12).

Lark Bunting (FS-SS, FS-MIS, CO-PIF) – *MCB* staff recorded 818 Lark Buntings on transects. We here provide density estimates for Grassland, Sage Shrubland, and Semi-desert Shrubland (Appendix A).

Grasshopper Sparrow (FS-SS, CO-PIF) – Transect staff detected 152 on transects with the data resulting in density estimates in both Grassland and Sage Shrubland (Appendix A).

Lincoln's Sparrow (FS-MIS) – We obtained 923 detections on *MCB* transects, with those data providing density estimates in four habitats: Alpine Tundra, Aspen, High-elevation Riparian, and Spruce-Fir (Appendix A).

McCown's Longspur (FS-SS, FS-MIS, CO-PIF) – *MCB* recorded 166 individuals on five Grassland transects. We typically detect the species on three Grassland transects, on which the species is abundant. Thus, the 2004 density estimate (Table 5) is the result of spreading a very high density from a small number of transects over the remainder of the transects on which we record zero individuals.

Chestnut-collared Longspur (FS-SS) - We recorded no detections of this species on transects in 2004. The species is peripheral to the state and would require focused effort to monitor unless the Section Survey project (another RMBO monitoring project) can monitor the species' population in Colorado.

Northern Cardinal – We received reports of five birds in three locations. Pairs probably nested at Ovid, Sedgwick County, and Las Animas Junction, Bent, with the latter birds far out of range.

Lazuli Bunting (CO-PIF) – *MCB* recorded 77 detections on transects on 23 transects in eight habitats.

Dickcissel (CO-ABC) – *MCB* had five detections on three transects in two habitats. As this species is typically associated with agriculture (particularly alfalfa) in Colorado, we do not expect the

transects to provide monitoring data on it. In its efforts in agricultural habitats, the Section Survey program may be able to obtain monitoring data on Dickcissel.

Bobolink – RMBO field staff and volunteers surveyed 26 of 81 fields in the database, found 23 of those occupied, and counted 108 adults (91 singing males). All but three of the sites visited were in Routt and Rio Blanco counties. Prior to 2002, Boulder Open Space identified 31 fields where Bobolinks had nested; these fields were not surveyed in 2004. We received no reports of the species from the South Platte River valley. One singing male was detected near La Veta in Huerfano County providing at least the second record at this location.

Bullock's Oriole (FS-MIS) – We obtained 82 detections on transects and those data provided a density estimate in Low-elevation Riparian (Appendix A).

Scott's Oriole (CO-PIF) – Three adult males were found defending territories in Garfield County. The known nesting areas in Mesa County were not surveyed. Searches in Montezuma County failed to find any Scott's Orioles, but a single male was detected near Navajo Reservoir in Archuleta County and another was in San Miguel County.

Brown-capped Rosy-Finch (FS-MIS, CO-PIF) – We recorded 62 individuals on 15 Alpine Tundra transects in 2004 and for the first time since this monitoring project was initiated, we are able to provide a density for this species (Table 3).

Pine Grosbeak (FS-MIS) – We detected 87 individuals on 39 *MCB* transects in six habitats in 2004. We provide a density estimate for Spruce-Fir habitat this season (Appendix A).

Cassin's Finch (FS-MIS) – *MCB* staff recorded 68 detections of Cassin's Finch on 38 transects in nine habitats.

Red Crossbill (FS-MIS) – We recorded 294 individuals of this highly nomadic species on 75 *MCB* transects in eight habitats. We provide density estimates in High-elevation Riparian, Mixed Conifer, Ponderosa Pine, and Spruce-Fir this season (Appendix A).

White-winged Crossbill – Eleven were recorded on three *MCB* transects in two habitats in 2004. A number of White-winged Crossbills spent the summer in the south-central mountains during the summer of 2003, but we received only two reports of this species in 2004, from Rocky Mountain National Park and from Mineral County in the San Juan Mountains.

Acknowledgments

We would like to thank the funding agencies for their continued support of this important project: Colorado Division of Wildlife (through contract PSC-1159-04), U.S.D.A. Forest Service (03-CS-11021300-023), and the Bureau of Land Management (1422 CAA010010 T01)). We would specifically like to thank David Klute at CDOW, and Ron Lambeth (BLM) for particular assistance. Thanks also go to the numerous District Biologists of the U.S.D.A. Forest Service that provided logistical advice on specific transects. We would also like to thank Jeff Connor and Rocky Mountain National Park for additional funding and logistic support. Of course, none of this would be possible were it not for the excellent field assistance provided by an almost uncountable number of field staff, volunteers, and agency cooperators. We would particularly like to single out the excellent birders that conducted the 2004 transects: Larry Arnold, Ken Behrens, Steve Bouricius, Lori Brummer, Rob Comey, Bill Day, Coen Dexter, Glenn Giroir, Mike Henwood, Pete Hosner, Michelle Johnson, Arvind Panjabi, Mark Peterson, Eric Plage, Pete Plage, Karen Rosen, Bill Schmoker, Larry Semo, Randy Siebert, Rob Sparks, George Steele, Walt Wilson, and Chris Wood. We appreciate all of the information on various species provided by North American Birds regional and sub-regional editors. All pictures are compliments of Tony Leukering. Finally, we thank David Hanni and Scott Gillihan for reviewing and commenting on earlier drafts of this manuscript.

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Appendix A. *MCB* year 2004 results of DISTANCE analysis for species with sample sizes >24 in individual habitats or in all habitats combined. *= target habitat for species indicated; D=density estimate, individuals per hectare (from program DISTANCE); LCL and UCL=Lower and upper, respectively, 95% confidence intervals of density estimate; CV=coefficient of variation of the density estimate; P=probability of detection; Sample n=sample size used in selected model; Total n=untruncated sample size; % n used=proportion of Total n used in the selected model.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
Mallard	LR	0.1585	0.0986	0.2547	24.1%	0.26	18	44	44	100.00%
Northern Bobwhite	LR*	0.0193	0.0072	0.0514	51.0%	0.79	6	27	27	100.00%
Great Blue Heron	LR	0.1062	0.0420	0.2686	48.6%	0.43	15	31	37	83.78%
Killdeer	GR	0.0296	0.0137	0.0637	39.7%	0.06	12	34	34	100.00%
Killdeer	LR	0.2563	0.1213	0.5417	38.6%	0.28	12	34	36	94.44%
Spotted Sandpiper	LR	0.3747	0.2718	0.5166	16.2%	0.36	21	76	76	100.00%
Mourning Dove	GR	0.0668	0.0376	0.1188	29.5%	0.16	12	111	111	100.00%
Mourning Dove	LR	0.2509	0.1780	0.3537	16.9%	0.39	22	160	160	100.00%
Mourning Dove	MC	0.0540	0.0250	0.1165	40.0%	0.07	11	40	40	100.00%
Mourning Dove	MS	0.0348	0.0159	0.0763	40.7%	0.29	14	42	64	65.63%
Mourning Dove	PJ	0.1630	0.1034	0.2570	23.3%	0.04	24	190	190	100.00%
Mourning Dove	PP	0.1145	0.0756	0.1734	20.9%	0.14	22	133	149	89.26%
Mourning Dove	SA	0.0427	0.0236	0.0773	30.5%	0.18	12	64	80	80.00%
Mourning Dove	SE	0.0543	0.0325	0.0907	26.0%	0.15	18	103	107	96.26%
Mourning Dove	WE	0.3007	0.1420	0.6365	38.5%	0.33	15	36	37	97.30%
Common Nighthawk	GR*	0.0146	0.0062	0.0340	43.6%	0.06	8	25	32	78.13%
Broad-tailed Hummingbird	AS	0.6144	0.3580	1.0546	27.5%	0.12	20	48	50	96.00%
Broad-tailed Hummingbird	HR	1.2695	0.7063	2.2820	30.1%	0.06	20	111	113	98.23%
Broad-tailed Hummingbird	MC	0.4412	0.2290	0.8502	33.7%	0.22	17	35	41	85.37%
Broad-tailed Hummingbird	MS	4.1526	1.8789	9.1779	41.6%	0.07	23	78	92	84.78%
Broad-tailed Hummingbird	PJ	0.5205	0.2525	1.0731	36.9%	0.05	14	41	42	97.62%
Broad-tailed Hummingbird	PP	0.4459	0.2091	0.9507	39.1%	0.03	17	63	63	100.00%
Red-naped Sapsucker	AS*	0.3144	0.1345	0.7350	44.6%	0.06	19	52	89	58.43%
Red-naped Sapsucker	HR*	0.6017	0.2246	1.6119	52.5%	0.01	15	51	64	79.69%
Williamson's Sapsucker	MC*	0.2744	0.1439	0.5231	32.7%	0.22	11	52	68	76.47%
Williamson's Sapsucker	PP*	0.0680	0.0394	0.1174	27.7%	0.40	17	30	52	57.69%
Hairy Woodpecker	AS*	0.2014	0.0809	0.5016	48.1%	0.06	18	30	45	66.67%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
Hairy Woodpecker	PP*	0.0490	0.0245	0.0983	35.7%	0.02	16	30	41	73.17%
Hairy Woodpecker	SF*	0.0498	0.0213	0.1168	44.3%	0.28	14	34	52	65.38%
American Three-toed Woodpecker	SF*	0.0533	0.0239	0.1188	41.4%	0.21	9	25	39	64.10%
Northern Flicker	AS	0.0999	0.0527	0.1892	33.0%	0.04	25	56	59	94.92%
Northern Flicker	HR	0.0604	0.0312	0.1168	33.9%	0.16	19	35	35	100.00%
Northern Flicker	LR	0.0502	0.0303	0.0834	25.5%	0.22	17	45	45	100.00%
Northern Flicker	MC	0.0441	0.0235	0.0828	32.2%	0.22	17	28	31	90.32%
Northern Flicker	MS	0.0420	0.0268	0.0660	22.9%	0.42	24	46	55	83.64%
Northern Flicker	PP	0.0341	0.0217	0.0535	22.8%	0.24	21	53	53	100.00%
Western Wood-Pewee	AS	0.1747	0.1226	0.2490	17.8%	0.21	23	144	147	97.96%
Western Wood-Pewee	HR	0.0277	0.0127	0.0601	40.0%	0.38	10	35	35	100.00%
Western Wood-Pewee	LR	0.0621	0.0363	0.1061	27.2%	0.91	18	50	50	100.00%
Western Wood-Pewee	MC	0.0828	0.0455	0.1506	30.0%	0.32	14	42	45	93.33%
Western Wood-Pewee	MS	0.0687	0.0388	0.1218	29.0%	0.24	18	56	56	100.00%
Western Wood-Pewee	PP	0.1854	0.1268	0.2712	18.8%	0.33	24	177	190	93.16%
Dusky Flycatcher	AS*	0.1810	0.0943	0.3474	33.6%	0.11	17	49	59	83.05%
Dusky Flycatcher	HR	0.1390	0.0837	0.2309	25.5%	0.41	19	107	116	92.24%
Dusky Flycatcher	MC	0.1376	0.0668	0.2835	37.2%	0.22	13	25	25	100.00%
Dusky Flycatcher	MS	1.0210	0.7111	1.4660	18.1%	0.17	27	205	209	98.09%
Dusky Flycatcher	PJ	0.1393	0.0543	0.3572	49.3%	0.22	10	37	37	100.00%
Dusky Flycatcher	PP	0.1711	0.0795	0.3681	39.3%	0.13	11	53	53	100.00%
Dusky Flycatcher	SA	0.0185	0.0057	0.0600	62.9%	0.43	4	25	26	96.15%
Gray Flycatcher	PJ	0.6137	0.3897	0.9663	22.9%	0.11	24	173	175	98.86%
Cordilleran Flycatcher	AS*	0.2126	0.1000	0.4521	38.9%	0.15	17	30	40	75.00%
Cordilleran Flycatcher	HR*	0.0637	0.0367	0.1106	28.0%	0.32	14	42	45	93.33%
Cordilleran Flycatcher	MC*	0.1378	0.0543	0.3500	49.1%	0.30	10	28	37	75.68%
Ash-throated Flycatcher	PJ	0.1662	0.0950	0.2908	28.6%	0.10	18	91	94	96.81%
Western Kingbird	GR	0.0172	0.0077	0.0384	41.2%	0.23	13	25	28	89.29%
Western Kingbird	LR	0.0753	0.0456	0.1242	25.1%	0.62	16	42	42	100.00%
Western Kingbird	SE	0.0196	0.0086	0.0445	42.7%	0.18	11	35	36	97.22%
Eastern Kingbird	LR	0.1633	0.0765	0.3486	39.5%	0.48	14	54	56	96.43%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
Gray Vireo	PJ*	0.0808	0.0243	0.2683	65.6%	0.17	6	31	40	77.50%
Plumbeous Vireo	MS	0.2287	0.1021	0.5121	42.2%	0.19	19	46	52	88.46%
Plumbeous Vireo	PJ	0.2187	0.1477	0.3238	19.8%	0.20	22	86	92	93.48%
Plumbeous Vireo	PP	0.1032	0.0615	0.1732	26.0%	0.37	16	46	56	82.14%
Warbling Vireo	AS	0.9948	0.7582	1.3053	13.6%	0.06	30	371	372	99.73%
Warbling Vireo	HR	0.1305	0.0717	0.2373	30.0%	0.33	15	73	78	93.59%
Warbling Vireo	MC	0.3610	0.2280	0.5716	23.3%	0.13	23	137	141	97.16%
Warbling Vireo	MS	0.8274	0.5483	1.2487	20.6%	0.12	26	308	308	100.00%
Warbling Vireo	PP	0.1493	0.0842	0.2647	28.8%	0.27	16	83	86	96.51%
Warbling Vireo	SF	0.0453	0.0195	0.1057	43.8%	0.22	8	25	27	92.59%
Gray Jay	SF*	0.3135	0.1731	0.5680	30.6%	0.05	24	74	95	77.89%
Steller's Jay	AS	0.0535	0.0318	0.0899	26.4%	0.40	19	40	42	95.24%
Steller's Jay	MC	0.1087	0.0677	0.1745	24.2%	0.06	21	72	72	100.00%
Steller's Jay	PP	0.0609	0.0369	0.1004	25.3%	0.17	21	80	80	100.00%
Steller's Jay	SF	0.0604	0.0299	0.1220	36.1%	0.40	12	27	32	84.38%
Pinyon Jay	PJ*	0.0199	0.0116	0.0340	27.3%	0.21	16	53	73	72.60%
Clark's Nutcracker	MC*	0.0363	0.0140	0.0942	50.2%	0.06	12	25	32	78.13%
Clark's Nutcracker	PP*	0.0160	0.0076	0.0337	38.1%	0.40	11	27	33	81.82%
Clark's Nutcracker	SF*	0.0218	0.0112	0.0426	34.3%	0.11	15	37	45	82.22%
Black-billed Magpie	LR	0.0526	0.0266	0.1041	35.0%	0.55	12	26	26	100.00%
Black-billed Magpie	MS	0.0108	0.0053	0.0219	36.4%	0.15	11	29	29	100.00%
Black-billed Magpie	PJ	0.0124	0.0052	0.0300	46.0%	0.55	12	28	38	73.68%
Black-billed Magpie	SE	0.0076	0.0028	0.0208	52.5%	0.33	11	43	43	100.00%
Common Raven	PJ*	0.0164	0.0082	0.0329	36.0%	0.24	20	41	64	64.06%
Common Raven	PP*	0.0144	0.0073	0.0285	34.9%	0.01	20	37	46	80.43%
Common Raven	SA*	0.0023	0.0011	0.0048	37.8%	0.08	11	25	28	89.29%
Common Raven	SE*	0.0058	0.0027	0.0127	40.5%	0.06	14	47	67	70.15%
Horned Lark	AT	0.2644	0.1590	0.4398	25.6%	0.12	18	197	197	100.00%
Horned Lark	GR	1.0672	0.8124	1.4019	13.4%	0.11	25	840	840	100.00%
Horned Lark	SA	0.4774	0.2625	0.8680	30.0%	0.11	16	185	188	98.40%
Horned Lark	SE	0.3541	0.2312	0.5423	21.2%	0.21	21	263	287	91.64%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
Violet-green Swallow	AS	0.1817	0.1107	0.2981	25.1%	0.25	18	62	64	96.88%
Violet-green Swallow	HR	0.3169	0.1588	0.6323	35.7%	0.19	17	62	66	93.94%
Violet-green Swallow	MC	0.6513	0.2955	1.4354	41.2%	0.06	16	35	35	100.00%
Violet-green Swallow	MS	0.5322	0.2666	1.0624	35.8%	0.06	18	46	48	95.83%
Violet-green Swallow	PJ	0.0884	0.0462	0.1692	33.3%	0.18	15	28	28	100.00%
Violet-green Swallow	PP	0.4753	0.2833	0.7975	26.5%	0.03	22	93	94	98.94%
Northern Rough-winged Swallow	LR*	0.2804	0.1646	0.4775	26.8%	0.48	16	43	45	95.56%
Bank Swallow	LR*	0.3130	0.1218	0.8040	49.5%	0.53	10	29	29	100.00%
Cliff Swallow	GR	0.1104	0.0364	0.3342	59.9%	0.13	8	31	34	91.18%
Cliff Swallow	LR	0.2893	0.0965	0.8669	59.4%	0.43	12	27	27	100.00%
Black-capped Chickadee	MS*	0.7859	0.2414	2.5583	64.4%	0.02	14	37	51	72.55%
Mountain Chickadee	AS	0.8360	0.6347	1.1010	14.0%	0.16	26	109	109	100.00%
Mountain Chickadee	HR	0.1775	0.1173	0.2687	20.8%	0.39	23	73	77	94.81%
Mountain Chickadee	MC	0.4700	0.3282	0.6730	18.3%	0.20	27	137	143	95.80%
Mountain Chickadee	PJ	0.0282	0.0135	0.0587	37.5%	0.63	12	26	28	92.86%
Mountain Chickadee	PP	0.3622	0.2368	0.5541	21.4%	0.02	22	125	126	99.21%
Mountain Chickadee	SF	1.3365	0.9993	1.7876	14.8%	0.13	30	267	273	97.80%
Juniper Titmouse	PJ	0.1366	0.0834	0.2238	25.0%	0.18	17	44	49	89.80%
Red-breasted Nuthatch	AS*	0.0798	0.0486	0.1308	24.8%	0.35	17	57	70	81.43%
Red-breasted Nuthatch	MC*	0.1987	0.1096	0.3602	30.7%	0.12	20	75	86	87.21%
Red-breasted Nuthatch	SF*	0.3464	0.2201	0.5453	23.0%	0.12	26	127	157	80.89%
White-breasted Nuthatch	MC*	0.0526	0.0267	0.1038	34.9%	0.16	15	29	35	82.86%
White-breasted Nuthatch	PP*	0.2590	0.1786	0.3755	18.8%	0.30	23	81	85	95.29%
Pygmy Nuthatch	PP	0.4266	0.2691	0.6762	22.9%	0.32	24	114	119	95.80%
Brown Creeper	SF*	0.4792	0.1762	1.3033	52.6%	0.12	16	27	41	65.85%
Rock Wren	PJ*	0.0287	0.0167	0.0494	27.4%	0.19	17	57	61	93.44%
Rock Wren	SE*	0.0167	0.0065	0.0427	49.5%	0.13	8	25	27	92.59%
Bewick's Wren	PJ	0.4428	0.2623	0.7474	26.4%	0.13	19	167	169	98.82%
House Wren	AS	1.0639	0.7197	1.5726	19.6%	0.08	27	236	237	99.58%
House Wren	LR	0.1834	0.1082	0.3107	26.0%	0.81	16	131	135	97.04%
House Wren	MC	0.3925	0.2346	0.6570	26.1%	0.24	15	90	92	97.83%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
House Wren	MS	0.4229	0.2605	0.6864	24.4%	0.18	23	118	118	100.00%
House Wren	PP	0.1332	0.0686	0.2586	34.1%	0.14	17	69	69	100.00%
Marsh Wren	WE	0.7259	0.2165	2.4331	63.9%	0.45	9	38	38	100.00%
Golden-crowned Kinglet	SF	0.4187	0.2238	0.7830	32.0%	0.07	14	28	29	96.55%
Ruby-crowned Kinglet	AS	0.2921	0.2039	0.4185	18.2%	0.10	26	171	172	99.42%
Ruby-crowned Kinglet	AT	0.0090	0.0039	0.0209	43.9%	0.06	12	31	31	100.00%
Ruby-crowned Kinglet	HR	0.2211	0.1585	0.3085	16.7%	0.19	27	153	157	97.45%
Ruby-crowned Kinglet	MC	0.3117	0.2012	0.4830	21.9%	0.25	23	141	155	90.97%
Ruby-crowned Kinglet	MS	0.0524	0.0212	0.1293	46.5%	0.33	6	26	29	89.66%
Ruby-crowned Kinglet	PP	0.0409	0.0166	0.1008	46.3%	0.34	9	36	42	85.71%
Ruby-crowned Kinglet	SF	0.8001	0.6122	1.0457	13.6%	0.14	29	364	379	96.04%
Blue-gray Gnatcatcher	MS	0.9955	0.5568	1.7799	29.7%	0.22	16	65	92	70.65%
Blue-gray Gnatcatcher	PJ	0.9655	0.6428	1.4503	20.4%	0.18	23	114	138	82.61%
Western Bluebird	PP*	0.1924	0.1055	0.3508	30.2%	0.35	14	50	69	72.46%
Mountain Bluebird	AT	0.0597	0.0338	0.1057	29.2%	0.12	19	44	46	95.65%
Mountain Bluebird	MS	0.0686	0.0377	0.1251	30.5%	0.18	16	45	48	93.75%
Mountain Bluebird	PJ	0.3579	0.2230	0.5743	23.6%	0.19	21	151	175	86.29%
Mountain Bluebird	PP	0.1111	0.0425	0.2905	50.8%	0.06	13	32	32	100.00%
Townsend's Solitaire	AS	0.0579	0.0233	0.1435	47.7%	0.16	11	26	26	100.00%
Townsend's Solitaire	MC	0.0508	0.0279	0.0923	30.2%	0.37	16	38	45	84.44%
Townsend's Solitaire	PP	0.1176	0.0696	0.1987	26.7%	0.11	19	47	56	83.93%
Swainson's Thrush	HR*	0.0486	0.0156	0.1515	61.8%	0.17	8	33	40	82.50%
Swainson's Thrush	SF*	0.0753	0.0290	0.1953	50.0%	0.20	7	43	51	84.31%
Hermit Thrush	AS	0.1231	0.0890	0.1701	16.3%	0.02	28	231	231	100.00%
Hermit Thrush	AT	0.0025	0.0011	0.0056	42.1%	0.09	14	36	36	100.00%
Hermit Thrush	HR	0.0237	0.0148	0.0381	23.7%	0.68	19	67	69	97.10%
Hermit Thrush	MC	0.1123	0.0676	0.1866	25.7%	0.26	24	141	148	95.27%
Hermit Thrush	MS	0.0526	0.0273	0.1012	33.8%	0.17	15	50	52	96.15%
Hermit Thrush	PP	0.0472	0.0285	0.0781	25.5%	0.11	19	95	100	95.00%
Hermit Thrush	SF	0.1245	0.0893	0.1735	16.8%	0.21	26	227	244	93.03%
American Robin	AS	0.8440	0.6361	1.1198	14.4%	0.11	30	279	286	97.55%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
American Robin	AT	0.1500	0.1039	0.2166	18.6%	0.11	23	125	125	100.00%
American Robin	HR	0.6706	0.4794	0.9381	17.0%	0.07	29	184	187	98.40%
American Robin	LR	0.2043	0.1334	0.3129	21.1%	0.48	19	102	104	98.08%
American Robin	MC	0.4175	0.2728	0.6389	21.7%	0.07	27	157	158	99.37%
American Robin	MS	0.3783	0.2759	0.5188	15.7%	0.18	26	218	227	96.04%
American Robin	PJ	0.0935	0.0458	0.1906	36.9%	0.26	15	49	54	90.74%
American Robin	PP	0.1621	0.1098	0.2391	19.5%	0.16	26	159	166	95.78%
American Robin	SA	0.0187	0.0084	0.0413	41.1%	0.26	14	25	25	100.00%
American Robin	SF	0.5031	0.3407	0.7428	19.8%	0.04	24	133	135	98.52%
Northern Mockingbird	SE	0.0129	0.0062	0.0267	37.1%	0.15	9	54	54	100.00%
Sage Thrasher	SA	0.1306	0.0715	0.2384	30.2%	0.25	17	173	175	98.86%
Sage Thrasher	SE	0.0231	0.0077	0.0690	58.0%	0.19	6	48	50	96.00%
American Pipit	AT	1.1600	0.8888	1.5139	13.4%	0.16	29	548	581	94.32%
European Starling	LR	0.1862	0.1091	0.3178	27.1%	0.54	15	48	48	100.00%
Orange-crowned Warbler	AS*	0.1126	0.0570	0.2224	35.1%	0.20	13	43	61	70.49%
Orange-crowned Warbler	MC*	0.1362	0.0576	0.3224	44.7%	0.22	7	31	44	70.45%
Orange-crowned Warbler	MS	0.6119	0.3997	0.9369	21.5%	0.10	19	113	113	100.00%
Virginia's Warbler	MS	0.6681	0.4151	1.0755	24.1%	0.09	23	176	183	96.17%
Virginia's Warbler	PJ*	0.3294	0.1665	0.6515	34.5%	0.20	14	69	90	76.67%
Virginia's Warbler	PP	0.0941	0.0494	0.1793	32.9%	0.22	11	49	52	94.23%
Yellow Warbler	HR	0.0774	0.0339	0.1769	42.9%	0.22	9	26	26	100.00%
Yellow Warbler	LR	0.2187	0.1610	0.2970	15.0%	0.69	23	156	156	100.00%
Yellow Warbler	MS	0.3950	0.1851	0.8433	38.8%	0.19	13	79	81	97.53%
Yellow-rumped Warbler	AS	1.0058	0.7659	1.3208	13.7%	0.03	30	237	239	99.16%
Yellow-rumped Warbler	HR	0.2577	0.1449	0.4583	29.5%	0.16	20	82	83	98.80%
Yellow-rumped Warbler	MC	0.7561	0.5405	1.0578	16.9%	0.11	26	198	200	99.00%
Yellow-rumped Warbler	PP	0.3443	0.2297	0.5160	20.4%	0.33	24	160	164	97.56%
Yellow-rumped Warbler	SF	0.9399	0.6841	1.2914	16.1%	0.12	29	251	260	96.54%
Black-throated Gray Warbler	PJ	0.4682	0.3211	0.6828	18.9%	0.09	26	205	206	99.51%
MacGillivray's Warbler	AS*	0.1918	0.0919	0.4004	37.9%	0.11	10	28	43	65.12%
MacGillivray's Warbler	HR*	0.3549	0.1106	1.1390	63.0%	0.07	12	25	37	67.57%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
MacGillivray's Warbler	MS*	0.3234	0.1663	0.6293	33.6%	0.37	13	47	68	69.12%
Common Yellowthroat	LR	0.1178	0.0617	0.2251	32.4%	0.64	13	58	58	100.00%
Common Yellowthroat	WE	0.9228	0.5632	1.5120	24.6%	0.72	16	90	94	95.74%
Wilson's Warbler	HR	2.7421	1.6046	4.6859	27.1%	0.14	22	180	186	96.77%
Yellow-breasted Chat	LR	0.0756	0.0375	0.1523	35.5%	0.38	11	50	50	100.00%
Western Tanager	AS	0.2089	0.1091	0.4001	33.4%	0.16	23	79	81	97.53%
Western Tanager	MC	0.5356	0.3658	0.7841	19.2%	0.08	25	181	187	96.79%
Western Tanager	MS	0.1990	0.0932	0.4248	39.1%	0.11	17	63	69	91.30%
Western Tanager	PJ	0.0429	0.0192	0.0960	41.7%	0.08	12	25	25	100.00%
Western Tanager	PP	0.2838	0.1763	0.4568	23.7%	0.20	24	144	149	96.64%
Western Tanager	SF	0.1616	0.0672	0.3884	45.8%	0.05	12	59	60	98.33%
Green-tailed Towhee	AS	0.4703	0.1997	1.1075	45.2%	0.04	17	66	66	100.00%
Green-tailed Towhee	MC	0.2889	0.1571	0.5314	31.2%	0.27	16	64	68	94.12%
Green-tailed Towhee	MS	1.3371	1.0342	1.7286	12.8%	0.12	27	413	419	98.57%
Green-tailed Towhee	PJ	0.3471	0.1818	0.6629	33.0%	0.15	14	103	106	97.17%
Green-tailed Towhee	PP	0.1293	0.0683	0.2448	32.8%	0.15	16	86	89	96.63%
Green-tailed Towhee	SA	0.1463	0.0830	0.2579	28.3%	0.16	16	217	218	99.54%
Spotted Towhee	LR	0.0409	0.0191	0.0877	38.7%	0.68	9	32	32	100.00%
Spotted Towhee	MS	1.1309	0.7769	1.6462	18.9%	0.04	27	326	332	98.19%
Spotted Towhee	PJ	0.4477	0.2548	0.7866	28.6%	0.04	20	151	152	99.34%
Spotted Towhee	PP	0.0392	0.0170	0.0901	43.0%	0.11	7	42	42	100.00%
Cassin's Sparrow	GR	0.1002	0.0507	0.1980	34.2%	0.50	13	198	208	95.19%
Cassin's Sparrow	SA	0.0420	0.0175	0.1005	45.0%	0.49	5	62	73	84.93%
Chipping Sparrow	AS	0.1057	0.0561	0.1990	32.5%	0.24	15	49	54	90.74%
Chipping Sparrow	HR	0.0622	0.0311	0.1245	35.6%	0.27	12	37	38	97.37%
Chipping Sparrow	MC	0.6258	0.3883	1.0084	24.2%	0.02	21	120	124	96.77%
Chipping Sparrow	MS	0.3950	0.2404	0.6493	25.4%	0.14	25	104	106	98.11%
Chipping Sparrow	PJ	0.8962	0.6448	1.2455	16.6%	0.16	27	166	179	92.74%
Chipping Sparrow	PP	0.2312	0.1672	0.3196	16.1%	0.17	26	123	135	91.11%
Chipping Sparrow	SF	0.1631	0.0686	0.3875	45.5%	0.13	16	39	44	88.64%
Brewer's Sparrow	GR	0.0732	0.0254	0.2113	55.3%	0.34	6	30	27	111.11%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
Brewer's Sparrow	MS	0.0680	0.0217	0.2126	61.7%	0.28	7	30	34	88.24%
Brewer's Sparrow	PJ	0.1081	0.0500	0.2338	39.3%	0.38	9	39	48	81.25%
Brewer's Sparrow	SA	1.2944	0.9115	1.8383	17.6%	0.20	22	377	447	84.34%
Brewer's Sparrow	SE	0.3012	0.1470	0.6174	36.8%	0.26	16	153	167	91.62%
Vesper Sparrow	PJ	0.0260	0.0115	0.0590	41.7%	0.35	9	35	36	97.22%
Vesper Sparrow	PP	0.0101	0.0039	0.0265	50.3%	0.19	6	25	25	100.00%
Vesper Sparrow	SA	0.2137	0.1509	0.3029	17.2%	0.12	21	243	244	99.59%
Vesper Sparrow	SE	0.0798	0.0277	0.2298	56.1%	0.08	8	50	50	100.00%
Lark Sparrow	SA	0.1191	0.0545	0.2601	40.5%	0.08	9	64	66	96.97%
Lark Sparrow	SE	0.2196	0.1394	0.3460	22.7%	0.07	16	145	148	97.97%
Sage Sparrow	SA*	0.0268	0.0127	0.0565	37.4%	0.31	9	58	62	93.55%
Lark Bunting	GR	0.4269	0.2677	0.6808	23.0%	0.34	23	575	596	96.48%
Lark Bunting	SA	0.0899	0.0234	0.3452	72.9%	0.19	5	102	103	99.03%
Lark Bunting	SE	0.0522	0.0212	0.1283	46.2%	0.17	8	110	119	92.44%
Savannah Sparrow	HR	0.1147	0.0253	0.5194	85.3%	0.41	2	50	50	100.00%
Grasshopper Sparrow	GR	0.1710	0.0931	0.3140	30.5%	0.15	13	100	100	100.00%
Grasshopper Sparrow	SA	0.0628	0.0168	0.2354	71.4%	0.28	4	48	48	100.00%
Fox Sparrow	HR*	0.1094	0.0222	0.5392	92.8%	0.11	10	26	31	83.87%
Song Sparrow	HR	0.0828	0.0437	0.1569	32.3%	0.34	10	38	38	100.00%
Song Sparrow	LR	0.1130	0.0639	0.1999	28.3%	0.44	13	69	69	100.00%
Song Sparrow	MS	0.0459	0.0137	0.1535	65.1%	0.30	5	25	25	100.00%
Lincoln's Sparrow	AS	0.2553	0.1502	0.4340	26.6%	0.15	18	130	131	99.24%
Lincoln's Sparrow	AT	0.0452	0.0257	0.0793	28.4%	0.13	17	84	84	100.00%
Lincoln's Sparrow	HR	3.5123	2.6838	4.5967	13.5%	0.11	28	594	613	96.90%
Lincoln's Sparrow	SF	0.1522	0.0757	0.3058	36.1%	0.19	16	73	73	100.00%
White-crowned Sparrow	AS	0.0752	0.0349	0.1623	39.2%	0.18	13	73	73	100.00%
White-crowned Sparrow	AT	1.0966	0.7693	1.5631	18.1%	0.09	29	728	760	95.79%
White-crowned Sparrow	HR	1.3092	0.8615	1.9895	21.1%	0.14	25	273	292	93.49%
White-crowned Sparrow	SF	0.1595	0.0869	0.2926	31.2%	0.03	20	74	74	100.00%
Dark-eyed Junco	AS	1.4427	1.1493	1.8110	11.5%	0.11	30	312	319	97.81%
Dark-eyed Junco	HR	0.8344	0.5330	1.3064	22.7%	0.10	23	140	146	95.89%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
Dark-eyed Junco	MC	1.2647	0.8841	1.8090	18.1%	0.09	26	233	241	96.68%
Dark-eyed Junco	PP	0.5989	0.4017	0.8928	20.2%	0.04	23	169	169	100.00%
Dark-eyed Junco	SF	1.2622	0.9820	1.6223	12.7%	0.10	30	357	368	97.01%
McCown's Longspur	GR*	0.1040	0.0309	0.3499	64.4%	0.41	5	162	166	97.59%
Black-headed Grosbeak	LR	0.0900	0.0536	0.1513	25.8%	0.54	16	64	64	100.00%
Black-headed Grosbeak	MC	0.0801	0.0335	0.1917	45.4%	0.19	11	25	26	96.15%
Black-headed Grosbeak	MS	0.2737	0.1890	0.3963	18.5%	0.12	23	141	142	99.30%
Black-headed Grosbeak	PJ	0.0338	0.0134	0.0849	47.8%	0.27	10	32	34	94.12%
Black-headed Grosbeak	PP	0.0300	0.0142	0.0632	38.0%	0.38	10	29	29	100.00%
Blue Grosbeak	LR	0.0489	0.0252	0.0947	33.7%	0.71	11	25	25	100.00%
Red-winged Blackbird	LR	0.4606	0.2666	0.7955	27.2%	0.33	20	161	161	100.00%
Red-winged Blackbird	SE	0.0078	0.0019	0.0324	78.6%	0.42	4	29	32	90.63%
Red-winged Blackbird	WE	3.6059	2.3866	5.4483	20.3%	0.58	19	218	241	90.46%
Western Meadowlark	GR	0.2003	0.1557	0.2575	12.4%	0.22	23	565	570	99.12%
Western Meadowlark	LR	0.0179	0.0105	0.0304	26.6%	0.47	13	31	31	100.00%
Western Meadowlark	PJ	0.0088	0.0041	0.0191	39.5%	0.18	11	51	51	100.00%
Western Meadowlark	SA	0.1531	0.0954	0.2455	23.5%	0.22	19	365	373	97.86%
Western Meadowlark	SE	0.1086	0.0643	0.1835	26.0%	0.14	22	318	329	96.66%
Western Meadowlark	WE	0.1326	0.0814	0.2160	24.0%	0.53	13	35	35	100.00%
Yellow-headed Blackbird	WE	0.6378	0.2419	1.6819	49.5%	0.80	7	76	78	97.44%
Brewer's Blackbird	SA	0.0295	0.0113	0.0771	49.9%	0.40	9	30	37	81.08%
Common Grackle	LR	0.3821	0.1740	0.8391	40.6%	0.32	8	59	59	100.00%
Brown-headed Cowbird	GR	0.0301	0.0121	0.0750	47.2%	0.24	12	36	36	100.00%
Brown-headed Cowbird	LR	0.3012	0.2247	0.4038	14.7%	0.64	24	141	141	100.00%
Brown-headed Cowbird	MS	0.5917	0.3548	0.9868	26.0%	0.07	21	83	89	93.26%
Brown-headed Cowbird	PJ	0.1305	0.0738	0.2307	28.7%	0.17	14	49	56	87.50%
Brown-headed Cowbird	SA	0.1315	0.0662	0.2611	35.2%	0.22	14	45	49	91.84%
Orchard Oriole	LR	0.0736	0.0334	0.1622	40.2%	0.67	9	38	38	100.00%
Bullock's Oriole	LR	0.1283	0.0785	0.2097	24.3%	0.55	16	60	60	100.00%
Brown-capped Rosy-Finch	AT*	0.0977	0.0515	0.1851	32.8%	0.13	15	42	62	67.74%
Pine Grosbeak	SF*	0.2134	0.1179	0.3861	29.9%	0.33	15	30	56	53.57%

Appendix A. Continued.

Species	Habitat	D	LCL	UCL	CV	P	K	Sample n	Total n	% n used
House Finch	PJ	0.1421	0.0796	0.2538	29.2%	0.19	16	71	81	87.65%
Red Crossbill	HR*	0.0627	0.0287	0.1370	40.6%	0.09	14	33	41	80.49%
Red Crossbill	MC*	0.5748	0.2152	1.5348	52.3%	0.04	12	27	36	75.00%
Red Crossbill	PP*	0.0294	0.0122	0.0711	45.6%	0.37	8	31	36	86.11%
Red Crossbill	SF*	2.1258	1.1444	3.9490	32.1%	0.04	23	110	135	81.48%
Pine Siskin	AS	0.7410	0.4041	1.3590	31.4%	0.10	25	127	129	98.45%
Pine Siskin	AT	0.8786	0.5129	1.5050	27.5%	0.03	18	117	118	99.15%
Pine Siskin	HR	0.6661	0.4480	0.9906	20.2%	0.18	28	191	191	100.00%
Pine Siskin	MC	0.9935	0.6612	1.4927	20.4%	0.18	18	103	110	93.64%
Pine Siskin	PP	0.1857	0.0868	0.3973	39.5%	0.16	12	38	39	97.44%
Pine Siskin	SF	1.9520	1.4893	2.5584	13.7%	0.05	30	258	275	93.82%
American Goldfinch	LR	0.1042	0.0547	0.1987	32.3%	0.58	11	43	43	100.00%

Appendix B. Species (and scientific names) detected on transects, with numbers per habitat, in Colorado during Summer 2004, and species mentioned in the text of the MCB 2004 field season report. AS=Aspen; AT=Alpine Tundra; GR=Grassland; HR=High-elevation Riparian; LR=Low-elevation Riparian; MC=Mixed Conifer; MS=Montane Shrubland; PJ=Piñon-Juniper; SA=Sage Shrubland; SE=Semi-desert Shrubland; and WE=Wetland.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Pied-billed Grebe	*Podilymbus podiceps*	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Eared Grebe	*Podiceps nigricollis*	0	0	0	0	0	0	0	0	0	0	0	0	14	14
Western Grebe	*Aechmophorus occidentalis*	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Clark's Grebe	*Aechmophorus clarkia*	0	0	0	0	0	0	0	0	0	0	0	0	1	1
American White Pelican	*Pelecanus erythrorhynchos*	0	0	0	0	3	0	0	0	0	0	0	0	2	5
Double-crested Cormorant	*Phalacrocorax auritus*	0	0	0	0	3	0	0	0	0	0	0	0	0	3
American Bittern	*Botaurus lentiginosus*	0	0	0	0	0	0	0	0	0	0	0	0	3	3
Great Blue Heron	*Ardea herodias*	0	0	0	1	37	0	0	0	0	1	1	0	1	41
Snowy Egret	*Egretta thula*	0	0	0	0	0	0	0	0	0	0	0	0	5	5
Cattle Egret	*Bubulcus ibis*	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Green Heron	*Butorides striatus*	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Black-crowned Night-Heron	*Nycticorax nycticorax*	0	0	0	1	3	0	0	0	0	0	0	0	8	12
White-faced Ibis	*Nyctanassa violacea*	0	0	0	0	0	0	0	0	0	0	0	0	13	13
Turkey Vulture	*Cathartes aura*	3	0	1	2	4	8	5	5	9	0	3	0	0	40
Canada Goose	*Branta canadensis*	0	0	0	1	7	0	0	2	1	7	9	0	0	27
Wood Duck	*Aix sponsa*	0	0	0	0	8	0	0	0	0	0	0	0	0	8
Gadwall	*Anas strepera*	0	0	0	2	1	0	0	0	0	1	0	0	7	11
American Wigeon	*Anas americana*	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Mallard	*Anas platyrhynchos*	8	0	4	14	44	0	0	0	0	1	9	4	9	93
Blue-winged Teal	*Anas discors*	0	0	0	0	1	0	0	0	0	0	0	0	6	7
Cinnamon Teal	*Anas cyanoptera*	0	0	0	0	0	0	0	0	0	0	0	0	6	6
Northern Shoveler	*Anas clypeata*	0	0	0	0	0	0	0	0	0	0	0	0	3	3
Northern Pintail	*Anas acuta*	0	0	4	0	0	0	0	0	0	0	0	0	0	4
Green-winged Teal	*Anas crecca*	1	0	0	2	0	0	0	0	0	0	0	0	3	6
Redhead	*Aythya americana*	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Ring-necked Duck	*Aythya collaris*	2	0	0	2	0	1	0	0	1	0	0	0	0	6
Lesser Scaup	*Aythya affinis*	0	0	0	0	0	0	0	0	0	0	0	0	7	7
Common Merganser	*Mergus merganser*	0	0	0	1	10	0	0	0	0	0	0	0	0	11
Ruddy Duck	*Oxyura jamaicensis*	0	0	0	0	0	0	0	0	0	0	0	0	10	10

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Osprey	*Pandion haliaetus*	0	0	0	0	4	0	1	0	1	0	0	0	0	6
Northern Harrier	*Circus cyaneus*	0	0	2	0	0	0	4	0	0	0	1	0	2	9
Sharp-shinned Hawk	*Accipiter striatus*	1	0	0	1	0	1	3	2	0	0	0	1	0	9
Cooper's Hawk	*Accipiter cooperii*	2	0	0	0	1	5	4	1	0	0	0	1	0	14
Northern Goshawk	*Accipiter gentiles*	2	0	0	0	0	2	0	0	2	0	0	0	0	6
Swainson's Hawk	*Buteo swainsoni*	1	0	12	2	1	0	0	0	0	1	4	2	0	23
Red-tailed Hawk	*Buteo jamaicensis*	5	0	0	1	11	6	16	7	9	3	3	2	1	64
Ferruginous Hawk	*Buteo regalis*	0	0	1	0	0	0	0	0	0	1	0	0	0	2
Golden Eagle	*Aquila chrysaetos*	0	0	0	0	0	0	2	1	1	1	5	1	0	11
American Kestrel	*Falco sparverius*	1	0	2	1	14	1	3	0	3	10	13	0	1	49
Prairie Falcon	*Falco mexicanus*	0	0	1	0	0	0	0	0	0	0	2	0	0	3
Peregrine Falcon	*Falco peregrinus*	0	0	0	0	2	0	0	1	0	0	0	0	0	3
Chukar	*Alectoris chukar*	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Ring-necked Pheasant	*Phasianus colchicus*	0	0	4	0	15	0	0	0	0	18	2	0	2	41
Greater Sage-Grouse	*Centrocercus urophasianus*	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Blue Grouse	*Dendragapus obscurus*	7	0	0	2	0	16	12	1	1	0	0	2	0	41
White-tailed Ptarmigan	*Lagopus leucurus*	0	12	0	0	0	0	0	0	0	0	0	0	0	12
Wild Turkey	*Meleagris gallopavo*	0	0	0	0	1	2	2	0	1	0	0	0	0	6
Northern Bobwhite	*Colinus virginianus*	0	0	0	0	27	0	0	0	0	1	0	0	1	29
Scaled Quail	*Callipepla squamata*	0	0	2	0	0	0	0	0	0	0	8	0	0	10
Gambel's Quail	*Callipepla gambelii*	0	0	0	0	12	0	0	0	0	0	1	0	0	13
Black Rail	*Laterallus jamaicensis*	0	0	0	0	0	0	0	0	0	0	0	0	7	7
Virginia Rail	*Rallus limicola*	0	0	0	0	1	0	0	0	0	0	0	0	8	9
Sora	*Porzana carolina*	0	0	0	0	0	0	0	0	0	0	0	0	3	3
American Coot	*Fulica americana*	1	0	1	0	3	0	0	0	1	0	0	0	21	27
Sandhill Crane	*Grus canadensis*	2	0	0	0	0	0	1	0	0	1	0	0	0	4
Killdeer	*Charadrius vociferous*	0	0	34	1	36	0	0	1	0	15	8	0	24	119
Mountain Plover	*Charadrius montanus*	0	0	2	0	0	0	0	0	0	1	0	0	0	3
American Avocet	*Recurvirostra americana*	0	0	0	0	1	0	0	0	0	0	0	0	11	12
Willet	*Catoptrophorus semipalmatus*	0	0	0	0	0	0	0	0	0	0	0	0	2	2

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Spotted Sandpiper	*Actitis macularia*	1	0	0	20	76	0	0	0	0	7	0	1	0	105
Upland Sandpiper	*Bartramia longicauda*	0	0	1	0	1	0	0	0	0	0	0	0	0	2
Long-billed Curlew	*Numenius americanus*	0	0	3	0	0	0	0	0	0	0	1	0	0	4
Wilson's Snipe	*Gallinago delicata*	2	0	1	12	0	0	0	0	0	0	6	2	5	28
Wilson's Phalarope	*Phalaropus tricolor*	0	0	0	0	0	0	0	0	0	0	2	0	13	15
Ring-billed Gull	*Larus delawarensis*	0	0	0	0	1	1	0	0	0	1	0	3	2	8
California Gull	*Larus californicus*	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Forster's Tern	*Sterna forsteri*	0	0	0	0	0	0	0	0	0	0	0	0	4	4
Rock Pigeon	*Columba livia*	0	0	0	0	6	0	0	2	0	0	0	0	0	8
Band-tailed Pigeon	*Patagoienas fasciata*	3	0	0	0	0	1	0	0	1	0	1	3	0	9
Eurasian Collared-Dove	*Streptopelia decaocto*	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Mourning Dove	*Zenaida macroura*	12	1	111	13	160	40	64	190	149	80	107	2	37	966
Yellow-billed Cuckoo	*Coccyzus americanus*	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Great Horned Owl	*Bubo virginianus*	1	0	0	0	1	0	0	0	1	0	1	0	0	4
Northern Pygmy-Owl	*Glaucidium gnoma*	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Burrowing Owl	*Athene cunicularia*	0	0	5	0	0	0	0	0	0	0	0	0	1	6
Boreal Owl	*Aegolius funerus*	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Common Nighthawk	*Chordeiles minor*	0	0	32	2	2	5	2	3	10	7	3	0	3	69
Common Poorwill	*Phaenoptilus nuttallii*	0	0	0	0	0	1	0	3	0	0	0	0	0	4
Black Swift	*Cypseloides niger*	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Chimney Swift	*Chaetura pelagica*	0	0	0	0	0	0	0	0	0	0	0	0	1	1
White-throated Swift	*Aeronautes saxatalis*	0	21	0	0	2	4	5	9	5	7	1	0	0	54
Black-chinned Hummingbird	*Archilochus alexandri*	0	0	0	0	6	0	5	28	0	2	1	0	0	42
Calliope Hummingbird	*Stellula calliope*	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Broad-tailed Hummingbird	*Selasphorus platycercus*	50	23	0	113	0	41	92	42	63	24	24	25	0	497
Rufous Hummingbird	*Selasphorus rufus*	0	5	0	0	0	0	1	0	0	0	0	1	0	7
Belted Kingfisher	*Ceryle alcyon*	1	0	0	3	17	2	1	0	0	0	0	0	2	26
Lewis's Woodpecker	*Melanerpes lewis*	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Red-headed Woodpecker	*Melanerpes erythrocephalus*	0	0	0	0	3	0	0	0	0	0	0	0	0	3
Red-bellied Woodpecker	*Melanerpes carolinus*	0	0	0	0	3	0	0	0	0	0	0	0	0	3

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Red-naped Sapsucker	*Sphyrapicus nuchalis*	89	0	0	64	0	25	20	0	2	0	0	8	0	208
Williamson's Sapsucker	*Sphyrapicus thyroideus*	9	0	0	3	0	68	1	2	52	0	0	17	0	152
Downy Woodpecker	*Picoides pubescens*	5	0	0	9	12	9	6	0	5	0	0	5	0	51
Hairy Woodpecker	*Picoides villosus*	45	2	0	7	2	25	12	2	41	0	0	52	0	188
Amer. Three-toed Woodpecker	*Picoides dorsalis*	3	2	0	4	0	5	0	0	7	0	0	39	0	60
Northern Flicker	*Colaptes auratus*	59	3	0	35	45	31	55	9	53	5	4	21	0	320
Olive-sided Flycatcher	*Contopus cooperi*	7	5	0	8	0	20	2	1	15	0	0	23	0	81
Western Wood-Pewee	*Contopus sordidulus*	147	0	0	35	50	45	56	5	190	0	1	16	0	545
Willow Flycatcher	*Empidonax traillii*	0	0	0	7	0	0	0	0	0	0	0	1	0	8
Least Flycatcher	*Empidonax minimus*	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Hammond's Flycatcher	*Empidonax hammondii*	20	1	0	10	0	15	4	1	10	3	0	24	0	88
Dusky Flycatcher	*Empidonax oberholseri*	59	23	0	116	0	25	209	37	53	26	1	0	0	549
Gray Flycatcher	*Empidonax wrightii*	0	0	0	0	0	0	8	175	1	8	2	0	0	194
Cordilleran Flycatcher	*Empidonax occidentalis*	40	1	0	45	0	37	4	1	14	0	0	21	0	163
Black Phoebe	*Sayornis nigricans*	0	0	0	0	6	0	0	0	0	0	0	0	0	6
Eastern Phoebe	*Sayornis phoebe*	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Say's Phoebe	*Sayornis saya*	0	0	11	0	4	0	0	8	0	20	19	0	0	62
Ash-throated Flycatcher	*Myiarchus cinerascens*	0	0	0	0	12	0	3	94	0	3	5	0	0	116
Great-crested Flycatcher	*Myiarchus crinitus*	0	0	0	0	15	0	0	0	0	0	0		1	16
Cassin's Kingbird	*Tyrannus vociferans*	0	0	1	0	0	0	0	0	0	0	1	0	0	2
Western Kingbird	*Tyrannus verticalis*	0	0	28	0	42	0	0	4	0	1	36	0	10	121
Eastern Kingbird	*Tyrannus tyrannus*	0	0	1	0	56	0	0	0	0	12	0	0	7	76
Loggerhead Shrike	*Lanius ludovicianus*	0	0	4	0	0	0	0	0	0	8	7	0	0	19
Gray Vireo	*Vireo vicinior*	0	0	0	0	0	1	0	40	0	0	0	0	0	41
Plumbeous Vireo	*Vireo plumbeus*	0	0	0	0	5	14	52	92	56	3	0	0	0	222
Warbling Vireo	*Vireo gilvus*	372	1	0	78	18	141	308	7	86	6	0	27	0	1044
Red-eyed Vireo	*Vireo olivaceus*	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Gray Jay	*Perisoreus Canadensis*	10	2	0	18	0	7	0	1	0	0	0	95	0	133
Steller's Jay	*Cyanocitta stelleri*	42	0	0	11	0	72	9	3	80	0	0	32	0	249
Blue Jay	*Cyanocitta cristata*	0	0	0	0	24	0	0	0	1	1	0	0	1	27

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Western Scrub-Jay	*Aphelocoma coerulescens*	0	0	0	0	1	0	20	20	0	0	0	0	0	41
Pinyon Jay	*Gymnorhinus cyanocephalus*	0	0	0	0	2	3	1	73	5	5	9	0	0	98
Clark's Nutcracker	*Nucifraga Columbiana*	22	16	0	8	0	32	9	17	33	0	0	45	0	182
Black-billed Magpie	*Pica hudsonia*	0	0	0	5	26	4	29	38	6	21	43	0	0	172
American Crow	*Corvus brachyrhynchos*	3	0	2	9	8	11	24	4	12	6	2	2	0	83
Chihuahuan Raven	*Corvus cryptoleucus*	0	0	1	0	0	0	0	0	0	0	10	0	0	11
Common Raven	*Corvus corax*	23	15	0	24	6	27	22	64	46	28	67	24	0	346
Horned Lark	*Eremophila alpestris*	0	197	840	0	1	0	0	2	0	188	287	1	2	1518
Purple Martin	*Progne subis*	11	0	0	0	0	0	2	0	0	0	0	0	0	13
Tree Swallow	*Tachycineta bicolor*	26	0	1	16	2	5	16	1	2	2	1	1	5	78
Violet-green Swallow	*Tachycineta thalassina*	64	7	0	66	2	35	48	28	94	7	8	7	0	366
N. Rough-winged Swallow	*Stelgidopteryx serripennis*	0	0	0	3	45	1	0	2	0	3	4	0	2	60
Bank Swallow	*Riparia riparia*	0	0	0	0	29	0	0	0	0	1	1	0	1	32
Cliff Swallow	*Petrochelidon pyrrhonota*	0	0	34	5	27	2	3	3	3	6	9	0	23	115
Barn Swallow	*Hirundo rustica*	0	0	6	0	20	0	0	1	1	6	7	0	5	46
Black-capped Chickadee	*Poecile atricapillus*	17	1	0	8	6	11	51	6	2	0	0	2	1	105
Mountain Chickadee	*Poecile gambeli*	109	14	0	77	0	143	21	28	126	0	0	273	0	791
Juniper Titmouse	*Baeolophus griseus*	0	0	0	0	0	0	0	49	0	0	2	0	0	51
Bushtit	*Psaltriparus minimus*	0	0	0	0	4	2	6	22	5	0	0	0	0	39
Red-breasted Nuthatch	*Sitta Canadensis*	70	2	0	11	0	86	7	0	23	0	0	157	0	356
White-breasted Nuthatch	*Sitta carolinensis*	9	0	0	2	3	35	13	20	85	0	0	15	0	182
Pygmy Nuthatch	*Sitta pygmaea*	1	0	0	0	0	26	3	0	119	0	0	3	0	152
Brown Creeper	*Certhia Americana*	14	1	0	16	0	20	3	0	18	0	0	41	0	113
Rock Wren	*Salpinctes obsoletus*	0	20	5	24	3	5	3	61	13	24	27	0	0	185
Canyon Wren	*Catherpes mexicanus*	0	0	0	0	0	2	0	10	1	0	1	0	0	14
Bewick's Wren	*Thryomanes bewickii*	0	0	0	0	8	0	9	169	0	9	1	0	0	196
House Wren	*Troglodytes aedon*	237	1	0	0	135	92	118	6	69	1	0	11	11	681
Marsh Wren	*Cistothorus palustris*	0	0	0	0	0	0	0	0	0	0	0	0	38	38
American Dipper	*Cinclus mexicanus*	0	0	0	5	1	0	0	0	0	0	0	2	0	8
Golden-crowned Kinglet	*Regulus satrapa*	4	0	0	5	0	9	1	0	0	0	0	29	0	48

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Ruby-crowned Kinglet	*Regulus calendula*	172	31	0	157	0	155	29	8	42	0	0	379	0	973
Blue-gray Gnatcatcher	*Polioptila caerulea*	0	0	0	0	1	9	92	138	10	11	4	0	0	265
Western Bluebird	*Sialia mexicana*	0	0	0	0	0	8	13	1	69	0	0	1	0	92
Mountain Bluebird	*Sialia currucoides*	14	46	0	5	0	10	48	175	32	25	5	7	0	367
Townsend's Solitaire	*Myadestes townsendi*	26	9	0	3	0	45	5	10	56	2	0	22	0	178
Veery	*Catharus fuscescens*	0	0	0	5	0	0	0	0	0	0	0	0	0	5
Swainson's Thrush	*Catharus ustulatus*	16	0	0	40	0	0	4	0	0	0	0	51	0	111
Hermit Thrush	*Catharus guttatus*	231	36	0	69	0	148	52	11	100	0	0	244	0	891
American Robin	*Turdus migratorius*	286	125	0	187	104	158	227	54	166	25	2	135	8	1477
Gray Catbird	*Dumetella carolinensis*	0	0	0	0	14	0	15	0	0	0	1	0	0	30
Northern Mockingbird	*Mimus polyglottos*	0	0	8	0	0	0	1	1	0	7	54	0	5	76
Sage Thrasher	*Oreoscoptes montanus*	0	0	2	0	1	0	5	0	0	175	50	0	4	237
Brown Thrasher	*Toxostoma rufum*	0	0	0	0	13	0	0	0	0	3	0	0	2	18
Curve-billed Thrasher	*Toxostoma curvirostre*	0	0	1	0	0	0	0	0	0	0	0	0	0	1
American Pipit	*Anthus rubescens*	0	581	0	1	0	0	0	0	0	0	0	3	0	585
Cedar Waxwing	*Bombycilla cedrorum*	1	0	0	7	1	1	5	0	0	0	0	0	0	15
European Starling	*Sturnus vulgaris*	0	0	0	0	48	0	0	3	0	0	7	0	2	63
Orange-crowned Warbler	*Vermivora celata*	61	1	0	3	0	44	113	17	18	0	0	3	0	260
Virginia's Warbler	*Vermivora virginiae*	6	0	0	2	0	16	183	90	52	1	0	0	0	350
Yellow Warbler	*Dendroica petechia*	17	0	2	26	156	1	81	1	1	2	1	0	6	294
Yellow-rumped Warbler	*Dendroica coronata*	239	10	0	83	0	200	17	2	164	6	0	260	0	981
Black-throated Gray Warbler	*Dendroica nigrescens*	0	0	0	0	1	9	4	206	0	0	0	0	0	220
Grace's Warbler	*Dendroica graciae*	0	0	0	0	0	3	0	1	18	0	0	0	0	22
American Redstart	*Setophaga ruticilla*	0	0	0	0	1	1	1	0	0	0	0	0	0	3
Ovenbird	*Seiurus aurocapillus*	0	0	0	1	0	0	3	0	0	0	0	0	0	4
MacGillivray's Warbler	*Oporornis tolmiei*	43	2	0	37	0	31	68	13	0	0	0	7	0	201
Common Yellowthroat	*Geothlypis trichas*	0	0	1	0	58	0	0	0	0	1	0	0	94	154
Wilson's Warbler	*Wilsonia pusilla*	11	19	0	186	0	1	2	1	0	2	0	15	0	237
Yellow-breasted Chat	*Icteria virens*	0	0	0	0	50	0	0	0	0	0	3	0	4	57
Western Tanager	*Piranga ludoviciana*	81	0	0	21	0	187	69	25	149	1	1	60	0	594

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Green-tailed Towhee	*Pipilo chlorurus*	66	3	0	12	0	68	419	106	89	218	5	10	0	996
Spotted Towhee	*Pipilo maculates*	1	0	0	0	32	18	332	152	42	5	3	2	0	587
Canyon Towhee	*Pipilo fuscus*	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Cassin's Sparrow	*Aimophila cassinii*	0	0	208	0	0	0	2	0	0	73	16	0	2	302
Rufous-crowned Sparrow	*Aimophila ruficeps*	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Chipping Sparrow	*Spizella passerine*	54	3	1	38	0	124	106	179	136	7	7	44	0	698
Brewer's Sparrow	*Spizella breweri*	5	8	27	3	0	3	34	48	0	447	167	1	0	743
Field Sparrow	*Spizella pusilla*	0	0	0	0	2	0	0	0	0	2	0	0	0	4
Vesper Sparrow	*Pooecetes gramineus*	7	0	2	10	2	6	11	36	25	244	50	0	3	396
Lark Sparrow	*Chondestes grammacus*	0	0	24	0	4	0	2	16	4	66	148	0	0	264
Black-throated Sparrow	*Amphispiza bilineata*	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Sage Sparrow	*Amphispiza belli*	0	0	0	0	0	0	0	0	0	62	20	0	0	82
Lark Bunting	*Calamospiza melanocorys*	0	0	596	0	0	0	0	0	0	103	119	0	0	818
Savannah Sparrow	*Passerculus sandwichensis*	0	11	2	50	0	0	0	0	0	1	2	0	15	81
Grasshopper Sparrow	*Ammodramus savannarum*	0	0	100	0	0	0	3	0	0	48	1	0	0	152
Fox Sparrow	*Passerella iliaca*	9	15	0	31	0	3	7	0	0	0	0	1	0	66
Song Sparrow	*Melospiza melodia*	6	0	0	38	69	3	25	0	1	1	2	0	19	164
Lincoln's Sparrow	*Melospiza lincolnii*	131	84	0	613	1	16	3	0	0	2	0	73	0	923
White-crowned Sparrow	*Zonotrichia leucophrys*	73	760	0	292	0	1	13	0	0	0	1	74	0	1214
Dark-eyed Junco	*Junco hyemalis*	319	24	0	146	0	241	23	2	169	0	0	368	0	1292
McCown's Longspur	*Calcarius mccownii*	0	0	166	0	0	0	0	0	0	0	0	0	0	166
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Black-headed Grosbeak	*Pheucticus melanocephalus*	7	0	0	9	64	26	142	34	29	11	1	1	0	324
Blue Grosbeak	*Passerina guiraca*	0	0	1	0	25	1	3	0	3	2	12	0	1	48
Lazuli Bunting	*Passerina amoena*	5	0	0	1	24	3	30	9	1	0	0	4	0	77
Indigo Bunting	*Passerina cyanea*	0	0	0	0	3	2	0	0	0	0	0	0	0	5
Dickcissel	*Spiza Americana*	0	0	0	0	0	0	0	0	0	2	0	0	3	5
Red-winged Blackbird	*Agelaius phoeniceus*	2	0	18	15	161	0	2	2	5	20	32	0	241	498
Western Meadowlark	*Sturnella neglecta*	2	0	570	0	31	0	24	51	5	373	329	0	35	1420
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	0	0	0	0	19	0	0	0	0	0	0	0	78	97

Appendix B. Continued.

Common Name	Scientific Name	AS	AT	GR	HR	LR	MC	MS	PJ	PP	SA	SE	SF	WE	Totals
Brewer's Blackbird	*Euphagus cyanocephalus*	3	0	0	10	7	1	11	10	10	37	10	0	3	102
Common Grackle	*Quiscalus quiscula*	0	0	0	0	59	0	0	0	0	2	9	0	13	83
Great-tailed Grackle	*Quiscalus mexicanus*	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Brown-headed Cowbird	*Molothrus ater*	5	0	36	18	141	8	89	56	18	49	13	1	27	461
Orchard Oriole	*Icterus spurious*	0	0	0	0	38	0	0	0	0	0	1	0	7	46
Baltimore Oriole	*Icterus galbula*	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Bullock's Oriole	*Icterus bullockii*	0	0	2	0	60	0	2	0	0	0	16	0	2	82
Brown-capped Rosy-Finch	*Leucosticte australis*	0	62	0	0	0	0	0	0	0	0	0	0	0	62
Pine Grosbeak	*Pinicola enucleator*	7	6	0	13	0	3	2	0	0	0	0	56	0	87
Cassin's Finch	*Carpodacus cassinii*	4	16	0	7	0	4	3	3	12	1	0	18	0	68
House Finch	*Carpodacus mexicanus*	0	1	0	0	10	1	2	81	7	2	5	0	0	109
Red Crossbill	*Loxia curvirostra*	27	14	0	41	0	36	0	4	36	1	0	135	0	294
White-winged Crossbill	*Loxia leucoptera*	3	0	0	0	0	0	0	0	0	0	0	6	0	9
Pine Siskin	*Carduelis pinus*	129	118	0	191	0	110	23	6	39	1	0	275	0	892
Lesser Goldfinch	*Carduelis psaltria*	0	0	0	0	6	9	12	17	0	2	2	0	0	48
American Goldfinch	*Carduelis tristis*	0	0	0	0	43	8	10	0	1	1	2	0	9	74
Evening Grosbeak	*Coccothraustes vespertinus*	2	0	0	1	0	1	2	0	3	0	0	1	0	10
House Sparrow	*Passer domesticus*	0	0	2	0	4	0	0	0	0	1	1	0	0	8