

Monitoring Colorado's Birds:

The 2003 field season report

Submitted by

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Executive Summary

In 2003, 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* breeding-bird monitoring plan, as updated in 2001 (Leukering et al. 2001a).

We conducted transects in 11 habitats this year. We did not conduct transects in Ponderosa Pine and Spruce-Fir habitats as we initiated funder-approved efforts to begin to conduct transects in individual habitats in biennially, rather than annually as we have in the past. We did not make it to several transects due to the, seemingly unavoidable, access problems that occur every season. Despite missing these transects, the habitat-stratified transects provided excellent data on 95 breeding species and sufficient data on an additional seven species (total of 102).

We also collected data on 56 limited-range and/or patchily-distributed species for which habitat-stratified, randomly placed transects do not produce sufficient detections. We have been able to collect excellent data on 23 of these species. We gathered data to track the remaining 29 species in varying degrees; several of these could move into the monitored category in the near future. *Monitoring Colorado's Birds* should continue to monitor or track at least 154 of Colorado's roughly 240 (65%) regular 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 sixth year of this project in 2003 and this report presents the results of that effort. This report also constitutes fulfillment of the requirements in Item 1.F. in our contract with CDOW (PSC-1049-2003) 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 censusing) 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 ten habitats (Alpine Tundra, Aspen, Grassland, Mixed

Conifer, Montane Shrubland, Pinyon-Juniper, Ponderosa Pine, Sage Shrubland, Semi-desert Shrubland, and Spruce-Fir). However, in 2003, we did not conduct the transects in Ponderosa Pine and Spruce-Fir, due to previous agreement with funders to initiate biennial efforts, rather than annual, in every habitat. 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 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.

High-elevation Riparian, Low-elevation Riparian, and Wetland transects – 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. We conduct High-elevation Riparian transects by walking a 1 kilometer line in or near the river or stream. For Wetland transects, we established a 300-meter line transect at each location for which we allocate 30 minutes to complete. In 2003, we added another 15 transect locations for a current total of 45 transects in this habitat. We analyze the data from all three transect types as we do for the point transects described above.

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.

Secretive marshbird surveys – We conducted surveys for secretive marshbirds at three study sites: Alamosa NWR, Monte Vista NWR, and in the Ft. Lyon area. These surveys focused on Pied-billed Grebe, American Bittern, Black Rail, 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. The surveys consist 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 interspersed with 30-second listening periods. Data were submitted to the national database maintained by that committee.

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 marshbirds surveys.

American Bittern—We obtained data on year 2003 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 2003 locations for this species from *North American Birds* regional editors and other contacts. We also surveyed selected sites of confirmed breeding as reported in Kingery (1998) and by local observers. We counted individuals detected through the survey of lakes and ponds.

Osprey—Data were gathered from established monitoring efforts. Volunteers, and staff visited a majority of the remaining 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 sites reported by local experts. We obtained data on year 2003 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 monitoring of this species if it is federally delisted.

Ferruginous Hawk—We surveyed all known recent nest sites in BCR 16, including the CDOW Northwest Region and the San Luis Valley for active nests.

Black Rail—We designed and conducted a 15-point secretive marshbird survey in the Ft. Lyon area. This study is designed to provide an index to this species' only know population in Colorado.

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. We surveyed all reservoirs of Bent, Kiowa, and Prowers counties. We collected observations from the MCB lake counts. We surveyed all sites where nesting had been documented in the past two years.

Willet—We conducted a census of breeding sites located during the 1998 field season. 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 from *North American Birds* regional editors, and we began cataloging information on nesting locations.

Eurasian Collared-Dove—We continued efforts initiated in 2001 to track the invasion of this species by cataloging all observations reported on the listserv, COBIRDS, and by field workers. In addition, field workers conducted an extensive survey for the species in towns on the eastern plains.

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 censuses at selected previously-documented breeding sites. We surveyed additional sites for evidence of breeding and suitability for occupation by Black Swifts. Each site was evaluated according to criteria developed by USFS Region 2.

Chimney Swift—We catalogued general sites reported in Kingery (1998) and by MCB field workers. We recruited volunteers to 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 listserv COBIRDS. We began design of a monitoring protocol, which we plan to test as a pilot in 2004.

Black Phoebe—We conducted a count of individuals on the San Miguel River where the river is accessible by road, and at all of the 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 listserv COBIRDS, and in Kingery (1998).

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 two of the 13 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 most of the cavities identified in 2001 and 2002 and determined whether they were active in 2003.

American Redstart—We obtained data on this species from *North American Birds* regional editors and other contacts.

Ovenbird—We continued cataloguing historical nest sites. We recorded observations reported by field workers, and by observers posting to the listserv COBIRDS. Field workers surveyed 14 of 40 sites in the database. We obtained data on year 2003 locations for this species from *North American Birds* regional editors and other contacts.

Northern Waterthrush—We conducted a tape playback survey at four sites along the Michigan River in Jackson County where this species was detected during the *Breeding Bird Atlas* project (Kingery 1998).

Northern Cardinal— We obtained data on for this species from *North American Birds* regional editors.

Bobolink—We surveyed all of the 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 Larimer, Morgan, Douglas, and Elbert counties, and also obtained incidental records from field work.

Scott's Oriole— We visited all known breeding sites and determined occupancy of each; we also obtained incidental records from field work.

Early winter Barrow's Goldeneye and Waterfowl Counts—In a four day period in late November and early December, we conducted counts of all waterfowl at most of the state's lakes and ponds with open water. Observers noted the numbers of each species and specified individuals by sex when possible. Barrow's Goldeneyes were also specified by age when possible.



We used Program DISTANCE, which uses the distance estimates from our transects 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, just will require more years of data to detect population trends.

Results

We conducted 297 transects in 11 habitats (average 27 per habitat; Table 1). Of these, 83 were conducted in High-elevation Riparian, Low-elevation Riparian, and Wetland habitats, in which we conduct line transects. In the point-transect habitats (all other habitats conducted in 2003), we conducted 3,166 point counts and delineate in Table 2 average numbers of species and individuals per point in each of these habitats. We obtained data on 221 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.

Table 1. Bird sampling periods and effort in each habitat for *MCB* project, summer 2003.

Habitat	Dates sampled	# point transects	# point counts
Alpine Tundra	26 June – 17 July	25	374
Aspen	11 June – 11 July	26	388
Grassland	16 May – 18 June	27	400
High-elevation Riparian	12 June – 10 July	25	*
Low-elevation Riparian	22 May – 9 July	24	*
Mixed Conifer	5 June – 11 July	24	345
Montane Shrubland	24 May – 17 June	26	380
Piñon-Juniper	16 May – 20 June	29	435
Sage Shrubland	20 May – 20 June	28	420
Semi-desert Shrubland	15 May – 23 June	29	424
Wetland	22 May – 2 July	34	*
All habitats	15 May – 17 July	297	3166

* High-elevation Riparian, Low-elevation Riparian, and Wetland transects are line transects

Table 2. Numbers of species and individuals recorded on *MCB* transects, and the associated species-per-point and individuals-per-point averages, conducted in summer 2003.

Habitat	# of species	# of individuals	# of species per point	# of individuals per point
Alpine Tundra	52	1709	2.42	4.57
Aspen	78	3066	5.32	7.90
Grassland	66	3909	4.18	9.77
High-elevation Riparian	73	1819	*	*
Low-elevation Riparian	95	2684	*	*
Mixed Conifer	82	2304	5.04	6.68
Montane Shrubland	104	3391	6.03	8.92
Piñon-Juniper	98	2964	5.10	6.81
Sage Shrubland	109	3170	4.30	7.55
Semi-desert Shrubland	96	2542	3.38	6.00
Wetland	98	2015	*	*
All habitats	221	29573	n/a	n/a

* High-elevation Riparian, Low-elevation Riparian, and Wetland transects are line transects

Alpine Tundra – We surveyed 25 point transects in Alpine Tundra between 26 June and 17 July (Table 1), recording 1,709 birds of 52 species. The average number of individuals and species detected at each count station were 4.45 and 2.42, respectively (Table 2).

We were able to provide robust density estimates for six species in this habitat (CV<50%; Table 3). These six species, which represent 12% 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, Horned Lark, Lincoln’s Sparrow, and Broad-tailed Hummingbird.

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 Pipit this season to provide a density estimate. We also detected sufficient numbers of Brown-capped Rosy-Finches this season (n=25), however, important data were missing so we could not estimate a density for this species. We detected only eight White-tailed Ptarmigan this season, which is 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 for six species of breeding birds on 25 transects in Alpine Tundra in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Broad-tailed Hummingbird	0.048	0.026	0.090	32.1%	29	13
Horned Lark	0.168	0.136	0.208	10.9%	168	19
American Robin	0.036	0.021	0.061	27.7%	31	13
American Pipit	0.707	0.618	0.809	6.9%	541	24
Lincoln's Sparrow	0.054	0.037	0.078	18.8%	82	16
White-crowned Sparrow	0.541	0.461	0.634	8.1%	529	23

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 26 point transects in Aspen between 11 June and 11 July (Table 1), recording 3,066 birds of 78 species. The average number of individuals and species detected at each count station were 7.62 and 5.32, respectively (Table 2).

We provide robust density estimates for 26 species in this habitat (Table 4), which is 34% of all species recorded in Aspen. The most abundant species in this habitat this season included Dark-eyed Junco, Broad-tailed Hummingbird, Warbling Vireo, House Wren, and Yellow-rumped Warbler.

We detected all four species listed by Colorado Partners in Flight (CO-PIF) as priority species of concern 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 12 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). Purple Martin is also listed as a sensitive species by the Forest Service Region 2.

Table 4. Estimated densities of 26 species of breeding birds on 26 transects in Aspen in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Broad-tailed Hummingbird	1.162	0.522	2.587	41.9%	62	19
Red-naped Sapsucker	0.110	0.046	0.263	45.6%	29	16
Northern Flicker	0.023	0.012	0.043	32.0%	27	16
Western Wood-Pewee	0.125	0.096	0.162	13.3%	119	20
Dusky Flycatcher	0.144	0.090	0.232	24.2%	44	15
Warbling Vireo	1.115	0.969	1.283	7.2%	443	26
Steller's Jay	0.021	0.013	0.034	25.4%	27	10
Tree Swallow	0.112	0.056	0.226	36.4%	32	8
Violet-green Swallow	0.265	0.181	0.389	19.7%	90	18
Mountain Chickadee	0.178	0.131	0.244	16.0%	98	21
Red-breasted Nuthatch	0.030	0.016	0.056	32.2%	31	13
House Wren	0.904	0.710	1.153	12.4%	240	22
Ruby-crowned Kinglet	0.151	0.122	0.186	10.9%	128	20
Hermit Thrush	0.048	0.037	0.064	14.2%	130	22
American Robin	0.306	0.231	0.404	14.2%	176	24
Orange-crowned Warbler	0.090	0.055	0.147	25.1%	32	13
Yellow-rumped Warbler	0.723	0.579	0.902	11.3%	216	25
MacGillivray's Warbler	0.356	0.164	0.775	40.4%	42	14
Western Tanager	0.177	0.091	0.343	34.2%	57	18
Green-tailed Towhee	0.104	0.054	0.200	34.0%	30	11
Chipping Sparrow	0.091	0.050	0.167	31.1%	31	13
Lincoln's Sparrow	0.532	0.391	0.722	15.7%	160	21
White-crowned Sparrow	0.105	0.073	0.151	18.7%	78	12
Dark-eyed Junco	1.344	1.053	1.717	12.5%	245	26
Red Crossbill	0.035	0.019	0.066	32.4%	27	9
Pine Siskin	0.241	0.144	0.405	26.7%	54	13

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 27 point transects in Grassland between 16 May and 18 June (Table 1), recording 3,909 birds of 66 species. The average number of individuals and species detected at each count station were 9.73 and 4.18, respectively (Table 2).

We provide robust density estimates for 14 species (Table 5), representing 22% of all species recorded in this habitat in 2003. The most abundant species in Grassland this season were Horned Lark, Lark Bunting, Western Meadowlark, Grasshopper Sparrow, and Mourning Dove.

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. We detected four of these 11 in sufficient numbers to provide density estimates. We also detected 10 of the 34 species listed as species of management concern by the Forest Service Region 2 on Grassland transects. We are providing density estimates for four of these ten species. 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, which are Burrowing Owl (State Threatened), Ferruginous Hawk (Special Concern), Mountain Plover (Special Concern), and Long-billed Curlew (Special Concern).

Table 5. Estimated densities of 14 species of breeding birds on 27 transects in Grassland in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Killdeer	0.027	0.016	0.047	28.0%	45	16
Mourning Dove	0.215	0.122	0.379	29.3%	166	23
Western Kingbird	0.042	0.024	0.071	27.6%	72	20
Horned Lark	1.024	0.921	1.139	5.4%	886	26
Northern Mockingbird	0.006	0.004	0.009	22.8%	42	9
Cassin's Sparrow	0.200	0.161	0.248	11.1%	236	13
Brewer's Sparrow	0.040	0.024	0.067	25.8%	48	6
Lark Sparrow	0.069	0.044	0.109	23.5%	54	13
Lark Bunting	0.618	0.544	0.702	6.5%	943	26
Grasshopper Sparrow	0.286	0.220	0.371	13.3%	155	15
McCown's Longspur	0.087	0.056	0.134	22.4%	104	3
Red-winged Blackbird	0.038	0.010	0.137	71.6%	31	5
Western Meadowlark	0.392	0.354	0.435	5.3%	797	27
Brown-headed Cowbird	0.031	0.020	0.049	22.8%	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



High-elevation Riparian – We surveyed 25 transects in High-elevation Riparian habitat between 12 June and 10 July (Table 1), recording 1,819 birds of 73 species.

Data from 25 point transects provided robust density estimates for 15 species and moderately robust estimates (CV=50-100%) for two species (Table 6). The most abundant species in this habitat this season were Lincoln’s Sparrow, White-crowned Sparrow, Wilson’s Warbler, Broad-tailed Hummingbird, and Yellow Warbler.

We detected all four species listed by CO-PIF as priority species in this habitat this season. We did not detect sufficient numbers of Cordilleran Flycatcher (n=7), American Dipper (n=3), or MacGillivray’s Warbler (n=12) to provide density estimates; however, we did detect sufficient numbers of Wilson’s Warblers to provide a density estimate.

Table 6. Estimated densities of 17 species of breeding birds on 25 transects in High-elevation Riparian habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Spotted Sandpiper	0.245	0.097	0.621	48.2%	49	9
Broad-tailed Hummingbird	0.561	0.312	1.008	29.5%	70	16
Dusky Flycatcher	0.195	0.110	0.345	28.7%	44	13
Warbling Vireo	0.123	0.068	0.223	29.8%	44	15
Tree Swallow	0.173	0.061	0.487	54.0%	44	7
Violet-green Swallow	0.074	0.037	0.146	34.5%	35	9
Mountain Chickadee	0.166	0.061	0.448	52.7%	26	10
Ruby-crowned Kinglet	0.152	0.093	0.248	24.4%	52	15
American Robin	0.496	0.359	0.685	15.9%	154	22
Yellow Warbler	0.511	0.193	1.349	50.3%	42	6
Yellow-rumped Warbler	0.115	0.064	0.206	29.7%	40	14
Wilson's Warbler	0.847	0.588	1.220	18.1%	162	21
Song Sparrow	0.490	0.172	1.399	55.0%	38	8
Lincoln's Sparrow	2.603	1.798	3.768	18.2%	376	24
White-crowned Sparrow	1.114	0.667	1.862	25.8%	175	18
Dark-eyed Junco	0.082	0.049	0.136	25.4%	34	14
Pine Siskin	0.157	0.083	0.296	31.9%	45	13

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 22 May and 9 July (Table 1) recording 2,684 birds of 95 species.

Data from the 24 transects in Low-elevation Riparian habitat 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 Cliff Swallow, Northern Rough-winged Swallow, Bank Swallow, House Wren, and Spotted Sandpiper.

We recorded two species that are listed by CO-PIF as priority species in Low-elevation Riparian habitat on transects this season. These two species are Western Kingbird and Lazuli Bunting. We detected sufficient numbers of Western Kingbirds (n=53) to record a density estimate this season, but recorded only nine Lazuli Buntings.

Table 7. Estimated densities of 31 species of breeding birds on 24 transects in Low-elevation Riparian habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Great Blue Heron	0.216	0.113	0.416	33.0%	51	15
Mallard	0.028	0.010	0.077	52.4%	27	4
Northern Bobwhite	0.042	0.018	0.095	41.9%	41	14
Killdeer	0.264	0.118	0.590	41.7%	44	11
Spotted Sandpiper	0.449	0.243	0.830	31.7%	77	20
Mourning Dove	0.257	0.183	0.361	16.9%	160	22
Northern Flicker	0.050	0.033	0.075	20.1%	43	17
Western Wood-Pewee	0.050	0.029	0.084	26.3%	38	15
Western Kingbird	0.097	0.050	0.187	33.3%	53	15
Eastern Kingbird	0.193	0.101	0.368	32.5%	79	14
Blue Jay	0.065	0.031	0.138	37.9%	37	7
Black-billed Magpie	0.047	0.026	0.084	28.6%	42	12
N. Rough-winged Swallow	0.779	0.210	2.889	73.6%	67	16
Bank Swallow	0.503	0.232	1.090	39.0%	107	8
Cliff Swallow	1.105	0.551	2.215	35.0%	152	13
House Wren	0.450	0.227	0.891	34.0%	202	16
American Robin	0.188	0.105	0.338	29.2%	98	19
European Starling	0.095	0.058	0.155	24.5%	76	19
Yellow Warbler	0.144	0.105	0.199	15.6%	99	23
Common Yellowthroat	0.116	0.062	0.219	31.6%	47	15
Yellow-breasted Chat	0.054	0.027	0.111	35.8%	36	11
Spotted Towhee	0.041	0.015	0.110	52.0%	26	7
Song Sparrow	0.116	0.072	0.189	24.0%	62	16
Black-headed Grosbeak	0.061	0.038	0.098	23.6%	46	14
Red-winged Blackbird	0.322	0.188	0.550	26.7%	131	16
Western Meadowlark	0.021	0.010	0.044	37.2%	34	12
Common Grackle	0.172	0.074	0.402	43.3%	39	8
Brown-headed Cowbird	0.231	0.164	0.324	16.7%	121	24
Orchard Oriole	0.115	0.043	0.310	50.7%	43	7
Bullock's Oriole	0.118	0.075	0.186	22.7%	73	18
American Goldfinch	0.088	0.046	0.168	32.2%	36	10

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 24 point transects in Mixed Conifer between 5 June and 11 July (Table 1), recording 2,304 birds of 82 species. The average number of individuals and species detected at each count station were 6.32 and 5.04, respectively (Table 2).

Data from the 24 transects in Mixed Conifer habitat provided robust density estimates for 21 species of birds (Table 8). The most abundant species in this habitat this season were Dark-eyed Junco, Yellow-rumped Warbler, Pine Siskin, Chipping Sparrow, and Mountain Chickadee.

We detected two species listed by CO-PIF as priority species for this habitat in the Southern Rocky Mountain Mountains (Physiographic Region 62): Blue Grouse (eight individuals) and Williamson’s Sapsucker (five individuals).

Table 8. Estimated densities of 21 species of breeding birds on 24 transects in Mixed Conifer habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Broad-tailed Hummingbird	0.188	0.121	0.292	22.7%	29	10
Western Wood-Pewee	0.025	0.016	0.038	21.9%	27	8
Hammond’s Flycatcher	0.112	0.070	0.178	23.7%	40	17
Cordilleran Flycatcher	0.070	0.043	0.113	25.0%	25	13
Warbling Vireo	0.404	0.300	0.544	15.2%	166	23
Steller’s Jay	0.070	0.034	0.143	37.0%	46	19
Violet-green Swallow	0.287	0.140	0.589	37.3%	54	15
Mountain Chickadee	0.419	0.251	0.700	26.4%	93	20
Red-breasted Nuthatch	0.094	0.053	0.166	29.2%	62	22
House Wren	0.153	0.075	0.311	36.6%	35	13
Ruby-crowned Kinglet	0.227	0.177	0.291	12.6%	183	22
Townsend’s Solitaire	0.031	0.019	0.053	26.4%	27	10
Hermit Thrush	0.073	0.050	0.105	18.8%	119	18
American Robin	0.191	0.126	0.289	21.3%	113	23
Orange-crowned Warbler	0.170	0.077	0.376	40.9%	27	11
Yellow-rumped Warbler	0.563	0.437	0.724	12.9%	200	23
Western Tanager	0.249	0.191	0.325	13.6%	187	24
Green-tailed Towhee	0.120	0.072	0.199	26.0%	54	16
Chipping Sparrow	0.496	0.262	0.941	33.2%	75	21
Dark-eyed Junco	0.676	0.501	0.912	15.3%	144	21
Pine Siskin	0.506	0.301	0.852	26.8%	62	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



Montane Shrubland – We surveyed 26 point transects in Montane Shrubland between 24 May and 17 June (Table 1), recording 3,391 birds of 104 species. The average number of individuals and species detected at each point were 8.59 and 6.03, respectively (Table 2).

Data from the 26 point-transects in Montane Shrubland provided robust density estimates for 24 species (Table 9). Broad-tailed Hummingbird, Warbling Vireo, Green-tailed Towhee, Spotted Towhee and Blue-gray Gnatcatcher were the most abundant species in this habitat this year.

We detected sufficient numbers of 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). 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 only detected once on Montane Shrubland transects this season. Four species were detected on Montane Shrubland transects that are listed as priority species by the Forest Service Region 2: Northern Harrier (n=2), Olive-sided Flycatcher (n=4), Purple Martin (n=6), and Brewer’s Sparrow (n=23).

Table 9. Estimated densities of 24 species of breeding birds on 26 transects in Montane Shrubland habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.008	0.005	0.013	25.6%	35	13
Broad-tailed Hummingbird	2.843	1.403	5.760	36.7%	77	19
Western Wood-Pewee	0.027	0.013	0.056	38.0%	27	13
Dusky Flycatcher	0.587	0.476	0.724	10.7%	197	25
Warbling Vireo	0.964	0.715	1.298	15.3%	295	22
Black-billed Magpie	0.018	0.008	0.039	40.8%	26	9
Violet-green Swallow	0.065	0.044	0.095	20.0%	90	18
Black-capped Chickadee	0.098	0.058	0.168	27.5%	39	16
House Wren	0.309	0.214	0.447	18.9%	118	22
Blue-gray Gnatcatcher	0.617	0.322	1.182	33.6%	46	18
Mountain Bluebird	0.100	0.056	0.176	29.3%	32	12
Hermit Thrush	0.014	0.009	0.023	24.8%	33	11
American Robin	0.378	0.297	0.481	12.3%	242	25
Orange-crowned Warbler	0.458	0.319	0.659	18.6%	112	18
Virginia's Warbler	0.558	0.371	0.838	20.9%	155	21
Yellow Warbler	0.286	0.194	0.421	19.8%	89	9
MacGillivray's Warbler	0.295	0.164	0.533	30.3%	59	16
Western Tanager	0.069	0.048	0.099	18.4%	59	19
Green-tailed Towhee	0.957	0.780	1.175	10.5%	321	23
Spotted Towhee	0.811	0.638	1.030	12.3%	300	20
Chipping Sparrow	0.155	0.099	0.242	23.0%	64	17
Black-headed Grosbeak	0.268	0.208	0.346	13.0%	187	23
Western Meadowlark	0.006	0.003	0.012	32.8%	33	7
Brown-headed Cowbird	0.175	0.123	0.248	17.9%	82	19

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 29 transects in Piñon-Juniper between 16 May and 20 June (Table 1), recording 2,964 birds of 98 species. The average number of individuals and species detected at each count station were 6.52 and 5.10, respectively (Table 2).

Data collected from the 29 transects in Piñon-Juniper habitat provided density estimates for 27 species (Table 10). Western Tanager, Blue-gray Gnatcatcher, Brewer’s Sparrow, Gray Flycatcher, and Broad-tailed Hummingbird 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 detected four in sufficient numbers to estimate densities: Gray Flycatcher (n=189), Pinyon Jay (n=121), Juniper Titmouse (n=67), and Black-throated Gray Warbler (n=181). We lacked important data on a number of Gray Vireo detections, so could not estimate a density. Black-chinned Hummingbird was recorded only 24 times, just missing the analysis threshold. Scott’s Oriole is being watched closely by the special-species program. We provide a density estimate for Brewer’s Sparrow which is a priority species for Forest Service Region 2 in Piñon-Juniper.

Table 10. Estimated densities of 27 species of breeding birds on 29 transects in Piñon-Juniper habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.113	0.077	0.164	19.3%	116	26
Broad-tailed Hummingbird	0.291	0.137	0.618	39.0%	37	13
Dusky Flycatcher	0.040	0.022	0.071	30.2%	26	8
Gray Flycatcher	0.446	0.355	0.559	11.6%	189	26
Ash-throated Flycatcher	0.140	0.112	0.175	11.5%	127	22
lumbaceous Vireo	0.159	0.107	0.237	20.3%	93	25
Western Scrub-Jay	0.078	0.045	0.133	27.7%	50	19
Pinyon Jay	0.027	0.018	0.041	21.6%	95	15
Black-billed Magpie	0.009	0.004	0.019	40.7%	26	12
Common Raven	0.006	0.005	0.009	15.0%	76	23
Violet-green Swallow	0.067	0.042	0.108	24.6%	61	15
Mountain Chickadee	0.064	0.030	0.138	39.8%	34	10
Juniper Titmouse	0.163	0.101	0.264	24.7%	63	22
Rock Wren	0.042	0.031	0.057	15.8%	79	20
Bewick's Wren	0.267	0.213	0.333	11.4%	164	21
Blue-gray Gnatcatcher	0.601	0.441	0.817	15.8%	102	26
Mountain Bluebird	0.250	0.190	0.330	14.2%	153	22
Virginia's Warbler	0.055	0.035	0.086	23.0%	56	12
Black-throated Gray Warbler	0.124	0.068	0.226	30.8%	47	12
Western Tanager	0.711	0.520	0.971	16.0%	178	26
Green-tailed Towhee	0.030	0.018	0.049	25.7%	34	9
Spotted Towhee	0.064	0.039	0.106	26.0%	35	9
Chipping Sparrow	0.205	0.128	0.328	24.1%	90	19
Brewer's Sparrow	0.474	0.349	0.644	15.7%	201	28
Vesper Sparrow	0.053	0.035	0.082	21.9%	43	11
Lark Sparrow	0.029	0.018	0.046	23.5%	50	13
Western Meadowlark	0.031	0.018	0.054	28.0%	34	9
House Finch	0.009	0.006	0.013	19.4%	56	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

Sage Shrubland – We surveyed 28 point transects in Sage Shrubland between 20 May and 20 June (Table 1), recording 3,170 birds of 109 species. The average number of individuals and species detected at each count station were 7.40 and 4.30, respectively (Table 2).

Data gathered from these 28 point-transects provided robust density estimates for 21 species, and moderately robust estimates for another species (Table 11). The most abundant species in this habitat this year were Brewer’s Sparrow, Horned Lark, Vesper Sparrow, Mourning Dove, and Western Meadowlark.

Two species, Brewer’s Sparrow and Sage Sparrow, which we detected in sufficient numbers to provide a density estimate, are listed by CO-PIF (in Physiographic Regions 62 and 87) and Forest Service Region 2 as priority species 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.

Table 11. Estimated densities of 22 species of breeding birds on 28 transects in Sage Shrubland habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.148	0.071	0.311	38.8%	90	17
Black-billed Magpie	0.005	0.003	0.009	29.3%	36	10
Common Raven	0.003	0.002	0.005	23.6%	48	12
Horned Lark	0.321	0.265	0.389	9.8%	277	18
Cliff Swallow	0.005	0.001	0.019	79.2%	25	5
Rock Wren	0.010	0.006	0.017	28.3%	29	11
Mountain Bluebird	0.017	0.010	0.027	25.7%	41	15
American Robin	0.020	0.011	0.035	29.9%	36	13
Sage Thrasher	0.054	0.043	0.070	12.6%	173	16
Green-tailed Towhee	0.105	0.076	0.145	16.4%	120	13
Spotted Towhee	0.055	0.023	0.130	45.5%	27	3
Cassin's Sparrow	0.083	0.059	0.116	17.1%	151	7
Brewer's Sparrow	0.627	0.526	0.747	9.0%	515	24
Vesper Sparrow	0.260	0.186	0.362	17.1%	196	20
Lark Sparrow	0.066	0.046	0.095	18.8%	63	9
Sage Sparrow	0.068	0.045	0.102	21.1%	63	6
Lark Bunting	0.095	0.066	0.138	18.9%	165	6
Grasshopper Sparrow	0.077	0.050	0.119	22.2%	51	4
Red-winged Blackbird	0.010	0.005	0.018	30.3%	47	9
Western Meadowlark	0.114	0.093	0.139	10.2%	407	22
Brewer's Blackbird	0.037	0.021	0.063	27.9%	41	12
Brown-headed Cowbird	0.040	0.025	0.062	23.1%	53	15

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 29 point transects in Semi-desert Shrubland between 15 May and 23 June (Table 1), recording 2,542 birds of 96 species. The average number of individuals and species detected at each count station were 6.01 and 3.38, respectively (Table 2).

Data from the 29 point-transects in Semi-desert Shrubland habitat provided robust density estimates (Table 12) for 19 species. The most abundant species in this habitat this season were Horned Lark, Brewer’s Sparrow, Lark Sparrow, Western Meadowlark, and Bullock’s Oriole.

We detected sufficient numbers of Horned Lark, which is listed as a priority species by CO-PIF in the Colorado Plateau and Basin and Range area (Physiographic Region 87), to estimate a density this season. We also detected sufficient numbers of Cassin’s Sparrow, Sage Sparrow, and Brewer’s Sparrow, which are listed by Forest Service Region 2 as priority species, to estimate densities this season. We do not provide a density estimate for Sage Sparrow because important data are missing and we are unable to do so. We recorded 19 Loggerhead Shrikes (listed as a priority species by CO-PIF Physiographic Region 87 and Forest Service Region 2) on Semi-desert Shrubland transects in the summer of 2003.

Table 12. Estimated densities of 19 species of breeding birds on 29 transects in Semi-desert Shrubland habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Mourning Dove	0.026	0.020	0.034	13.9%	148	22
Western Kingbird	0.031	0.021	0.045	19.9%	49	10
Black-billed Magpie	0.011	0.008	0.016	18.2%	79	15
Common Raven	0.001	0.001	0.002	30.8%	37	16
Horned Lark	0.587	0.472	0.732	11.2%	425	22
Rock Wren	0.011	0.007	0.018	22.6%	43	13
Northern Mockingbird	0.030	0.020	0.045	20.9%	103	15
Sage Thrasher	0.015	0.007	0.035	42.3%	28	4
Green-tailed Towhee	0.036	0.021	0.063	28.2%	32	3
Cassin's Sparrow	0.023	0.015	0.035	21.0%	100	5
Brewer's Sparrow	0.304	0.229	0.404	14.6%	213	19
Vesper Sparrow	0.026	0.017	0.040	22.4%	73	8
Lark Sparrow	0.161	0.120	0.216	15.1%	166	22
Lark Bunting	0.021	0.013	0.036	26.6%	77	5
Blue Grosbeak	0.014	0.009	0.022	24.1%	37	9
Red-winged Blackbird	0.025	0.015	0.043	27.1%	64	9
Western Meadowlark	0.073	0.061	0.088	9.2%	435	25
Brown-headed Cowbird	0.016	0.010	0.027	26.3%	26	9
Bullock's Oriole	0.059	0.023	0.151	49.5%	26	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

Wetland – We surveyed 34 transects in Wetland between 22 May and 2 July (Table 1), recording 2,015 birds of 98 species.

Data from the 34 line transects provided robust density estimates for 16 species, and moderately robust estimates for three additional species (Table 13). The most abundant species recorded on Wetland transects this season were Red-winged Blackbird, Yellow-headed Blackbird, Marsh Wren, Common Yellowthroat, and Wilson’s Phalarope.

We did not detect enough of any listed species, American Bittern, Northern Harrier, Willet, and Short-eared Owl, to provide density estimates. The special-species program, however, monitors Willet numbers in Colorado quite closely.

Table 13. Estimated densities of 19 species of breeding birds on 34 transects in Wetland habitat in Colorado, summer 2003.

Species	D	LCL	UCL	CV	n	K
Gadwall	0.256	0.137	0.479	31.6%	38	13
Mallard	0.217	0.102	0.460	39.0%	32	12
Cinnamon Teal	0.156	0.086	0.282	30.0%	29	11
Ruddy Duck	0.126	0.060	0.265	38.3%	26	8
American Coot	0.476	0.259	0.877	30.8%	79	15
Killdeer	0.331	0.151	0.727	40.7%	28	13
American Avocet	0.293	0.097	0.881	58.6%	30	5
Wilson's Phalarope	0.518	0.186	1.445	54.0%	38	5
Mourning Dove	0.329	0.159	0.685	37.6%	48	14
Marsh Wren	2.935	1.390	6.198	38.7%	122	15
Yellow Warbler	0.255	0.116	0.559	40.4%	28	8
Common Yellowthroat	0.948	0.581	1.549	24.6%	126	23
Savannah Sparrow	0.215	0.111	0.416	33.9%	33	11
Red-winged Blackbird	4.611	3.035	7.005	20.9%	496	29
Western Meadowlark	0.154	0.095	0.252	24.6%	50	17
Yellow-headed Blackbird	3.226	1.345	7.738	45.1%	269	19
Brown-headed Cowbird	0.293	0.166	0.518	28.6%	41	19

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 one exception (Empire Reservoir, for which we were denied access), we visited and censused all nesting sites that are known to have been occupied within the past three years. The data collected are summarized in Table 14. Individuals requiring specific site data should contact the authors.

Table 14. Summary of colonial waterbird counts in Colorado, summer 2003.

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	61	56	19	1261	11	44	345*
Western Grebe	60	43	13	279	5	9	22*
Clark's Grebe	35	21	9	168	2	7	5*
Am. White Pelican	3	3	2	2350	2	930*	nc
Double-crested Cormorant	35	31	13	12	1395	12	914*
Great Blue Heron	193	152	87	1664	87	126	1418*
Great Egret	6	6	1	11	1	0	11*
Snowy Egret	22	22	6	609	5	4	513*
Cattle Egret	12	12	3	78	1	0	75*
Black-crowned Night-Heron	45	44	17	647	16	17	437*
White-faced Ibis	23	23	6	1773	5	0	1073*
California Gull	9	9	4	4273	2	110*	nc
Franklin's Gull	2	2	1	48*	1	0	24
Forster's Tern	7	6	3	78*	2	0	32
Black Tern	14	5	2	17*	1	0	1
Total	527	435	186	13,268	1536	1259	5754

* 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).

Secretive marshbird surveys. We conducted surveys at three study sites and designed surveys for another three study sites. We plan to conduct survey at all six sites in 2004. In addition we conducted single point surveys in association with 21 of the wetland transects. The data collected is summarized in Table 15.

Table 15. Summary of three secretive marshbird counts in Colorado, summer 2003.

	Monte Vista NWR	Alamosa NWR	Ft. Lyon Study Area	WE transect counts*	Total detections
# of points	16	14	15	21	66
# of point counts	71	36	15	21	143
Pied-billed Grebe	2	6	0	1	9
American Bittern	18	6	4	3	31
Least Bittern	0	0	2**	2**	4
Black Rail	0	0	14	3	17
Virginia Rail	0	2	21	8	31
Sora	17	16	3	7	43

* WE transect counts are single point counts conducted at the end of many of the Wetland line transects with call playback (see methods).

** The Least Bitterns detected on the secretive marshbird count conducted in association with a wetland transect at Ft. Lyon SWA were almost certainly the same birds detected on the Ft. Lyon study area survey.

Surveys of other localized species. We counted individuals of twenty limited-distribution and/or peripheral species and catalogued site-location information on another four. The data

collected is summarized in Table 16. Individuals requiring specific site data should contact the authors.

Early-winter Barrow's Goldeneye Counts—We counted all Barrow's Goldeneyes on the 21 bodies of water, of the 254 in 35 counties that we surveyed, on which the species was present (Table 17). More detailed data for Barrow's Goldeneyes are included in the Discussion section for that species.

Table 16. Summary of counts of special monitoring projects.

Species	# of sites in database	# of sites surveyed	# sites w/ adults present	# of adults	# sites w/ confirmed breeding	# of total juveniles	# of active nests
Barrow's Goldeneye ¹			21	245	2	14	na
Hooded Merganser	1	1	1	2	0	0	0
Pied-billed Grebe	91	29	17	44	10	25	28
Green Heron	23	2	2	2	0	0	0
Osprey	76	76	60	119	58	52	58
Mississippi Kite	47	39	9	91	2	2	4
Ferruginous Hawk	17	14	9	10	8	0	8
Snowy Plover	23	23	14	135	12	33	44
Black-necked Stilt	30	18	7	44	7	5	12
Willet	19	15	8	27	1	2	1
Upland Sandpiper	8	4	4	20	0	0	0
Eurasian Collared-Dove	126	98	75	1059	4	6	1
Black Swift ²	417	153	27	120	16	37	44
Chimney Swift	54	9	7	28	1	0	1
White-throated Swift	34	18	18	192	3	0	15
Lewis's Woodpecker	92	15	13	51	4	14	3
Eastern Phoebe	36	5	4	12	3	2	2
Black Phoebe	64	17	17	26	5	1	4
Scissor-tailed Flycatcher	4	2	2	3	0	0	0
Bell's Vireo	13	2	2	4	1	1	0
Purple Martin	179	117	90	510	62	84	130
American Redstart	4	3	3	5	0	0	0
Ovenbird	40	15	14	35	0	0	0
Northern Waterthrush	3	3	0	0	0	0	0
Northern Cardinal	5	3	3	9	0	0	0
Bobolink	80	34	29	130	0	0	0
Scott's Oriole	34	28	8	18	0	0	0

¹ The figure for Barrow's Goldeneye adults includes only (and all) birds counted on the winter survey. The figure for juvenile birds includes only birds detected on the summer survey.

² The figure for Black Swift sites in database includes waterfalls that have not yet been surveyed for occupancy, as well as confirmed and possible nest sites.

Discussion

We completed 297 of a possible 345 transects this season, despite our efforts to complete every transect. As in 2002, it was impossible to access some transects because of weather-related factors. Whereas last year we were denied access to some areas due to fire closures, this summer we were kept from completing some transects because of muddy roads. However, the primary cause of our inability to complete all transects in a given year is the incredible work load at the beginning of the season. It is very difficult to have enough

personnel on board to do the 195 early-season transects (those in Grassland, Low-elevation Riparian, Piñon-Juniper, Sage Shrubland, Semi-desert Shrubland, and Wetland) in the four weeks (28 days) available to conduct them. Because we always wind up pushing many of these earlier transects back, the timing of transects in all subsequent habitats is negatively impacted, such that we run out of time at the back end of the season to complete the late-season transects. Thus, Alpine Tundra, Aspen, High-elevation Riparian, and Spruce-Fir are the habitats in which we typically do the fewest transects. Additionally, in 2003 we were unable to conduct a number of the Low-elevation Riparian transects as we had pushed them back into the season due to workload and by the time we got to them, water levels in the eastern plains rivers were too low to support floating transects.

The bright side is that the 297 completed transects provided sufficient data to have large sample sizes and many low-density species were detected in reasonable numbers (e.g., Hammond's Flycatcher in Mixed Conifer). Although we did not complete all transects in any of the habitats, we completed at least 24 (80%) in all habitats. We were also able to establish an additional seven Wetland transects this year, putting us closer to the goal of having 45 established.

Analysis of the data collected on the transects conducted in 2003 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 2003 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 254 bodies of water on the weekend of 29 November – 1 December and counted 245 Barrow's Goldeneyes at 21 sites. Over five years of counts, this species has been counted at 33 sites, but a dozen 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 period 22-24 July, RMBO, CDOW, and USFS personnel searched more than 300 small lakes on the Flat Tops Wilderness for Barrow's Goldeneye broods. Two broods (one of 6 and one of 8 ducklings) were located, and a combined total of 48 non-breeding adults were found on Twin and Wall lakes.

Table 17. Summary of early-winter Barrow's Goldeneye (BAGO) counts in Colorado, 1999-2003.

	1999	2000	2001	2002	2003
# sites surveyed	NA	NA	268	231	254
# sites with BAGO present	8	16	21	16	21
Total # of BAGO	229	109	216	189	245
% at top 5 sites	83%	40%	69%	69%	63%
% at top 10 sites	86%	75%	86%	89%	83%
% at top 12 sites	86%	82%	93%	93%	89%

Hooded Merganser – Evidence of nesting was noted when a female and three young were found on 26 July at Marston Reservoir in Denver County. Non-breeding summering birds were noted from four other eastern plains locations.

Pied-billed Grebe – We recorded nine detections of this species on 143 point counts in our secretive marshbird surveys. Incidental reports of probable or confirmed breeding were submitted by volunteers and field workers for 29 sites, including nine that had not previously been documented. Twenty four of the sites were occupied by Pied-billed Grebes, and breeding was confirmed at ten sites. The developing catalogue of confirmed and probable nesting sites now includes 91 locations. In addition, the secretive marshbird surveys detected nine individuals.

Eared Grebe – MCB staff surveyed 56 of 61 sites that have a history of confirmed nesting or are deemed to have suitable conditions for nesting, including all major historical sites (Table 18). None of the four unvisited sites have hosted breeding colonies within the past four years, and none has ever hosted more than 10 pairs. For the first year since we began surveying, no new breeding sites were discovered. Nesting was confirmed at only 11 sites as drought conditions in the state continued, especially in the southern half of the state. Several of the historical sites were dry or had extremely low water levels. In North Park, where water conditions were much improved, late arrival of water at some of the colony sites resulted in loss of nests to flooding. Little re-nesting was observed. The total nest count of 345 was the lowest since we began surveys in 1998, and it is likely that a high proportion of those nests were not successful. Big Lake in Saguache County hosted this year's largest colony, 133 nests; notably this is one of only two colonies that occur at natural lakes. Distribution has remained fairly constant since 1998; approximately 65% of the population summers in North Park (Walden Reservoir is the only site at which we have confirmed breeding each of the six years of surveys), 25% in the San Luis Valley, and the remaining 10% scattered widely. The precipitous drop in Colorado's Eared Grebe population was undoubtedly an effect of drought. Conservation action seems unlikely to succeed until adequate water supplies are once again available.

Table 18. Summary of breeding-season Eared Grebe counts in Colorado, 1998-2003. (Counts for 1999 have been omitted from this table as limited coverage produced numbers not representative of the actual population. The monitoring parameter is the estimated number of active nests, which equals the total of nests counted plus 1/2 of juveniles counted.)

Year	# of adults	# of colony sites	# of active nests
1998	2611	14	1194
2000	2447	21	713
2001	2373	23	495
2002	2096	10	555
2003	1261	11	345

Western Grebe – We surveyed 43 of 60 sites with a history of confirmed or possible nesting, including all sites where nesting had previously been recently confirmed. Nesting was confirmed at only five sites as low water levels continued to eliminate nesting opportunities at many reservoirs; only 22 active nests were counted (Table 19). Adults were present at 13 sites; the total number of adults – mostly non-breeding birds – at these sites was 279, by far the lowest count since we began surveys, except for 1999 when we surveyed fewer than 20 sites. We confirmed breeding at five sites and calculated a total of 22 active nests. Since 1998, we have recorded nesting at 18 different sites; most of these sites (12), however have been used only once during the period, and no sites have been active in all six years. The most productive site has been Sullenberger Reservoir in Archuleta County (58 active nests in four years). This site has been inactive in the past two years, probably due to an “improvement project” at the reservoir which reduced emergent vegetation. Other leading sites include Elevenmile Reservoir in Park County (48 nests in two years), Fruitgrowers Reservoir in Delta County (43 nests in five years), and Smith Reservoir in Costilla County (34 nests in three years).

Table 19. Summary of breeding-season Western Grebe counts in Colorado, 1998-2003. (Counts for 1999 have been omitted from this table as limited coverage produced numbers not representative of the actual population. The monitoring parameter is the estimated number of active nests, which equals the total of nests counted plus 1/2 of juveniles counted.)

Year	# of adults	# of colony sites	# of active nests
1998	850	11	58
2000	1006	7	59
2001	979	6	42
2002	1140	2	43
2003	279	5	22

Clark’s Grebe – We surveyed 21 of 35 historical and possible nesting sites listed in our database. We found 168 adults – primarily non-breeding birds at Arkansas Valley reservoirs (Table 20). Several other reservoirs in this valley were not surveyed and are a cause of the much lower numbers than we have historically counted. We confirmed nesting at only two sites: Davey Lake in Saguache County (estimated four nests) and Fruitgrowers Reservoir in Delta County (one nest among the Western Grebe colony). 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. No other site has been active more than once in the period.

Table 20. Summary of breeding-season counts Clark’s Grebe counts in Colorado, 1998-2003. (Counts for 1999 have been omitted from this table as limited coverage produced numbers not representative of the actual population. The monitoring parameter is the estimated number of active nests, which equals the total of nests counted plus ½ of juveniles counted.)

Year	# of adults	# of colony sites	# of active nests
1998	1678	6	37
2000	1836	5	40
2001	1083	4	12
2002	90*	3	6
2003	168*	2	5

* In 2002 and 2003, we did not survey most of the large reservoirs in the Arkansas River valley that typically account for the lion’s share of non-breeding Clark’s Grebes.

American White Pelican (BLM-SS) – RMBO field workers surveyed the colonies at Antero and MacFarlane reservoirs. CDOW biologists banded pelicans at Riverside Reservoir and estimated the total number of juveniles present. At Antero Reservoir, low water levels due to drought and construction precluded any breeding as the colony-site island was connected to the mainland throughout the season. On 18 June, 350 adults, many apparently brooding, and 35 very young chicks were counted at MacFarlane. On 19 July, we counted 130 juveniles; only 20 adults were present. This figure is much lower than those of the previous two years (see table). At Riverside Reservoir, the number of juveniles present on 10 July was estimated at 800, very similar to last years estimated 850 (Table 21).

Table 21. Summary of the numbers of American White Pelican juveniles counted at Colorado colonies, 1999-2003 (nc=no count).

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

Double-crested Cormorant – We surveyed 31 of 35 sites with a history of confirmed or possible nesting, including all sites at which breeding has been confirmed within the past three years. Adults were present at 13 sites, and breeding was confirmed at 12 sites; 1395 adults and 914 active nests were counted (Table 22). The total number of active nests has remained relatively stable for the past four years (see Table 5), with the apparent increase in 2001 probably due entirely to more complete survey coverage.

Table 22. Summary of breeding Double-crested Cormorant counts in Colorado, 2000-2003.

Year	# of adults	# of colony sites	# of active nests
2000	794	11	710
2001	2241	17	971
2002	2210	14	1090
2003	1395	12	914

American Bittern (FS-SS) – Six American Bitterns were detected on wetland transects and 31 were detected on secretive marshbird surveys. In addition to data from sites where we conducted transects or surveys, we visited or received incidental reports of 19

birds at 15 sites. We continued compiling historical nesting sites for surveying in the future; the database now contains 42 sites where breeding in the past five years by this species has been suspected or confirmed.

Least Bittern – We detected this species at Ft. Lyon SWA in May, June, and July. At least two birds, one male and one female, were present. These birds were detected on the Ft. Lyon secretive marshbird survey and on a secretive marshbird point-count associated with a wetland transect conducted at Ft. Lyon SWA. Numerous birders reported hearing these birds at this site. We did not confirm breeding, but suspect that the birds did nest.

Great Blue Heron – We surveyed 152 of 193 sites in the database. With one exception, the unvisited sites have not been active for more than three years. We were denied access to Empire Reservoir, the only unvisited site with any likelihood of having more than five nests. Of those visited, adults were present at 85 sites, and 81 sites had at least one active nest; these sites contained a total of 1418 active nests (Table 23). Drought conditions seemed to have little effect on this species as the three-year average number of active nests remained essentially unchanged.

Table 23. Summary of breeding Great Blue Heron counts in Colorado, 1999-2003.

	Counts					3-year Averages ¹		
	1999	2000	2001	2002	2003	99-01	00-02	01-03
# of active sites	38	57	73	72	81	56	67	75
# of active nests	886	1247	1205	1198	1418	1295	1265	1309

¹Multi-year averages are computed by summing the average count at each colony for that period.

Great Egret – The occupants of the Boulder Creek colony, which has historically been the only significant colony in the state, completed their move to a new site near Longmont in 2002. In 2003 all 11 nests in Colorado were at this site, which is now included in the new St. Vrain State Park. The ColonyWatch volunteer at Milton Reservoir reported no active nests at that site, which had a single nest in 2002. Additionally, at least two birds summered in the vicinity of the Barr Lake heronry, but we did not note them breeding.

Snowy Egret – We surveyed all of the 22 historical and potential breeding sites in the database. We found nests and/or juveniles at five sites and counted 609 adults at these sites. Based on flight-line and nest counts, we estimate that there were 513 active nests in 2003 (Table 24). All but 13 nests were in the San Luis Valley, those at the colony at Lake Sangraco in Adams County. Adults and juveniles were seen at Barr Lake in July, but were not known to have nested. A single pair nested in the Great Blue Heron colony at Milton Reservoir in Weld County. The number of breeding Snowy Egrets in Colorado has fluctuated greatly in the past five years. Most of that fluctuation is a result of greatly fluctuating water availability; some may be due to the inherent difficulties in accurately counting marsh-nesting colonial waterbirds. The 1999 survey was incomplete, but the surveys since then have been complete.

Table 24. Summary of the estimated number of active Snowy Egret nests in Colorado, 1999-2003.

	1999	2000	2001	2002	2003
# of active nests	1	5	6	5	3
Estimated # of active nests	125	225	232	91	513

Cattle Egret – All 12 of the historical and/or potential breeding sites in the database were surveyed. We counted 78 adults. Based on flight-line counts and nest count, we estimate that there were 75 active nests in 2003 (Table 25). The Bowen Pond colony at Monte Vista NWR accounted for all of the known production for this year. A pair was present at the Riverside Reservoir colony site on May 1, but logistics difficulties prevented a survey to confirm breeding.

Table 25. Summary of the estimated number of active Cattle Egret nests in Colorado, 1999-2003.

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

Green Heron – Green Herons were reported from at least three locations this past summer, including one at Cottonwood Hollow in Fort Collins, two in Cañon City, and one at Columbine Lakes in Arapahoe County. No evidence of nesting was reported.

Black-crowned Night-Heron – We surveyed 44 of 45 historical and potential sites in the database and counted nests and/or juveniles at 16. The only site not visited was Empire Reservoir, a private site where access was denied. Based on nest counts and flight-line counts, we estimate approximately 437 active nests (Table 26). After a drought-related decline in 2002, the population appeared to bounce back in 2003. Because marsh-nesting colonies are difficult to count without undue disturbance of nesting activities, these estimates have a fairly wide margin of error.

Table 26. Summary of the estimated number of active Black-crowned Night-Heron nests in Colorado, 1999-2003.

	1999	2000	2001	2002	2003
# of sites	7	9	11	10	16
Estimated # of active nests	320	155 *	428	336	437

* The 2000 total probably does not reflect a major decline, as the colony at Denver City Park, the state's largest, was not surveyed that year.

White-faced Ibis (BLM-SS) – MCB staff, volunteers, and U.S. Fish & Wildlife Service employees surveyed all of the 23 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. Bowen Pond at Monte Vista NWR again hosted the largest colony, an estimated 850 active nests, and accounted for the lion's share of the 1073 nests in 2003 (Table 27). Alamosa NWR hosted a colony and Russell Lakes SWA had three small colonies. This species was negatively affected by drought conditions, but bounced back partially in 2003 as a little more water was available than in 2002. The large colony of previous years at Adams Lake failed again due to inadequate water. Because this species is very difficult to monitor without undue disturbance of nesting activities, these estimates have a fairly wide margin of error.

Table 27. Summary of the estimated number of active White-faced Ibis nests in Colorado, 1999-2003.

	2000	2001	2002	2003
# of sites	3	5	3	5
Estimated # of active nests	3000	3525	202	1073

Osprey (FS-MIS) – We surveyed or solicited reports from volunteers and agency biologists on 76 of 104 nest sites in our database. 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 any active nests in 2003. Fifty nests were found to be active (Table 28), 28 of those in Grand County. Surveys conducted since 2000 indicate a continuing expansion of this species’ range in Colorado and a steady increase in numbers.

Table 28 . Summary of breeding Osprey counts in Colorado, 2000-2003.

Year of survey	# of sites surveyed	# of nest starts documented	# of nests w/ outcome determined	# nests successful	# of young produced	# of young per nest start	# young per successful nest
2000	56	42	35	21	40	1.14	1.90
2001	76	50	38	21	37	0.97	1.76
2002	62	46	42	24	42	1.00	1.75
2003	76	50	43	34	52	1.20	1.53

Mississippi Kite (FS-MIS) – Incidental reports from local observers confirmed occupation of all three of the sites that were surveyed. Additionally, we instigated more intensive efforts at counting the large population breeding in the Arkansas River valley. The 55 counted in Lamar suggest the magnitude of that population. Field workers discovered an adults feeding two nestlings at a nest in Holyoke, Phillips County, the first breeding confirmation in northeastern Colorado since the years of the Breeding Bird Atlas (Kingery 1998). Field staff surveying Sterling, Logan County, discovered at least two, possibly three, adults in suitable habitat, which provided the first county record of which we are aware. The timing (in late July) was at least suggestive of local breeding, but we could not confirm that. Finally, for the second year in a row, at least one bird was present in Greeley, Weld County.

Bald Eagle (CO ETSC; US ETSC, FS-MIS) – We catalogued 36 active and/or historical nests and received reports on 28. Breeding was confirmed at 26 of the nests surveyed. Of the 17 nests for which the outcome was determined, 13 were successful, producing 27 young.

Northern Harrier (FS-SS; CO-PIF) – MCB detected 15 individuals on ten transects in four habitats.

Sharp-shinned Hawk – MCB field workers detected six on six transects in five habitats.

Northern Goshawk (FS-SS, FS-MIS, BLM-SS) – Several USFS units have done extensive surveying for this species, and MCB has not collected data. The data collected by USFS surveys has not been compiled into a statewide or region-wide database. We detected no goshawks on transects in 2003.

Swainson’s Hawk (CO-PIF) – MCB field workers detected 22 on 18 transects in six habitats.

Ferruginous Hawk (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – We surveyed historical nesting sites in western Colorado and found two active nests. We also surveyed the San Luis Valley and found six active nests and a seventh nest that was probably active but we could not confirm that. Although not a complete survey, there are not likely to be many more Ferruginous nesting in the Southern Rocky Mountain/Colorado Plateau Bird Conservation Region. We detected five individuals on five transects in two habitats.

Golden Eagle (CO-ABC) – MCB staff detected 24 individuals on 18 transects in five habitats.

Peregrine Falcon (CO ETSC, FS-SS, FS-MIS, CO-PIF) – MCB has gathered no data on this species and recorded none on the 2003 transects. CDOW responsibility for monitoring this species extends through five years following de-listing.

Prairie Falcon (CO-PIF) – MCB biologists detected ten individuals on ten transects in five habitats.

Greater Sage-Grouse (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – 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.

White-tailed Ptarmigan (FS-SS, FS-MIS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program. However, we recorded eight 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 22 on 19 transects in four habitats.

Columbian Sharp-tailed Grouse (FS-SS, FS-MIS, BLM-SS) – Gallinaceous gamebirds are not within the purview of the program.

Plains Sharp-tailed Grouse (CO ETSC, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program.

Greater Prairie Chicken (FS-SS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program.

Lesser Prairie Chicken (US ETSC, CO ETSC; FS-SS, FS-MIS, CO-PIF) – Gallinaceous gamebirds are not within the purview of the program.

Scaled Quail – (FS-MIS) – Gallinaceous gamebirds are not within the purview of the program. However, we obtained detections of 21 individuals on six transects in two habitats.

Northern Bobwhite (FS-MIS) – Gallinaceous gamebirds are not within the purview of the program. However, we obtained sufficient sample size to analyze Northern Bobwhite density in Low-elevation Riparian (0.028/ha, CV of 52%).

Wild Turkey (FS-MIS) – Gallinaceous gamebirds are not within the purview of the program.

Black Rail – On the secretive marshbird survey conducted at the Ft. Lyon study area, 14 Black Rails were detected. In addition, wetland transects conducted at John Martin Reservoir and Ft. Lyon SWA each detected a single Black Rail. Single point counts conducted in conjunction with each of the MCB wetland transects used the secretive marshbird protocol and detected a total of three Black Rails. These transects were conducted in the same marshes as the secretive marshbird survey. No other Black Rail reports were received. Our counts suggest that the Arkansas Valley hosts one of the largest inland populations of this species.

Virginia Rail – We detected 31 Virginia Rails on secretive marshbird surveys, 21 of those on the Ft. Lyon study area. Another five were found on MCB Wetland transects.

Sora – We detected 43 Soras on secretive marshbird surveys and another nine on MCB Wetland transects, eight of those on a single transect at Alamosa NWR.

Greater Sandhill Crane (CO ETSC, FS-MIS) – USFS personnel reported approximately 20 pairs nesting in California Park. State Park personnel reported approximately six pairs nesting at Steamboat Lake State Park. MCB field staff reported four pairs along the Williams Fork. No birds were found at historical sites in Mesa County; the

site at Unaweep Divide was surveyed several times by volunteers. An *MCB* field worker found a pair with a chick near Nucla in Western Montrose County, the southernmost breeding locale yet found in Colorado. Finally, a previously occupied site in western Larimer County was again occupied in 2003.

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) – The monitoring effort for this species covered all of the known breeding sites in the state (except for the South Park sites), though there are, undoubtedly, numerous sites on private lands of which we are unaware. A total of 168 birds (135 adults, 33 juveniles) was counted at 14 playas and reservoirs. Blanca Wetlands in Alamosa County remains the center of abundance, with 80 adults and 33 juveniles counted this season. The remaining birds were found at reservoirs in the lower Arkansas Valley.

Piping Plover (US ETSC, CO ETSC, CO-PIF) – CDOW contract personnel report that Piping Plover populations continue to increase in the Arkansas River drainage of Colorado. This past summer 25 birds were counted, five more than in any year since 1990. Sex ratios in the state this past year were heavily skewed toward males, with only six females being observed. However, all six successfully nested, fledging 20 young, a high count for the state.

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

American Avocet (CO-ABC) – *MCB* detected 32 birds on Wetland transects; analysis yielded a density estimate of 0.29278/ha, with a CV of 59%. The addition of more wetland transects in 2004 (along with eventual relief from drought) should enable us to monitor this species.

Black-necked Stilt – We surveyed 18 of 30 historical nesting sites in the database and counted 44 birds occupying seven of these sites; 12 nests were located. Anecdotal evidence suggests that the number of this species nesting in Colorado in 2003 was down due to low water levels, especially in the San Luis Valley and Arkansas Valley. Unfortunately, there are no baseline data with which to compare.

Willet (CO-PIF) – Again in 2003, nesting Willets were negatively affected by low and unreliable water levels, resulting in low nesting success (Table 29). Volunteers and *MCB* staff surveyed all major historical nesting locations in North Park and counted only 25 birds. One pair of Willets successfully nested at Fruitgrowers Reservoir, Delta Co., producing two young. No evidence of nesting was discerned at the Yampa River wetlands in Moffat County.

Table 29. Summary of breeding-season Willet counts in Colorado, 1998-2003.

Year	1998	1999	2000	2001	2002	2003
# of active stes	10	8	12	12	5	8
# of individuals	116	81	87	109	28	27

Upland Sandpiper (CO-PIF) – Two reports of this species, which is a leading candidate for more intensive surveys, were submitted. *MCB* tentatively plans to conduct a pilot project in 2004 to determine whether a suite of road-based surveys would be feasible for monitoring this species in Colorado.

Long-billed Curlew (CO ETSC, FS-SS, FS-MIS, BLM-SS, CO-PIF) – *MCB* detected six birds on Grassland transects.

Wilson's Snipe (CO-ABC) – MCB detected 43 individuals on 14 transects in three habitats with a resulting density of 0.000003/ha and CV of 69.9%.

Wilson's Phalarope (CO-ABC) – MCB detected 32 birds on Wetland transects and analysis yielded a density estimate of 0.52/ha, with a CV of 53% in that habitat. The addition of more wetland transects in 2004 (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. No birds were present at Walden Reservoir on either date. On 16 June, 48 adults at Lake John Annex responded aggressively to an observer approaching the bulrush islands at the north end of the lake. These birds were clearly nesting at this site. Rising water in late June, however, flooded the islands and nesting failed. In July, only two adults were present and they did not appear to be territorial. No juveniles were found at either site on either survey.

California Gull – RMBO field workers and volunteers visited eight of the nine historical nesting sites. Breeding was confirmed at three sites: MacFarlane and Walden reservoirs in North Park and Riverside Reservoir in Weld County. Due to logistic difficulties, a count of juveniles was completed only at Walden Reservoir, at which, production was reduced. The colony at Antero Reservoir was inactive as the lake was nearly dry. This species was again discouraged from nesting at the Arkansas Valley sites to protect nesting Least Terns and Piping Plovers from predation. None of the intermittent sites were active.

Forster's Tern – We surveyed all six historical nesting sites in the San Luis Valley and North Park. Nesting was initiated at Walden Reservoir and Lake John Annex in Jackson County, where, on 15 and 16 June, we counted 64 adult birds and estimated 32 active nests. Rising water levels in late June apparently flooded all nests, however. In July, there were few adults and no young present. No nesting occurred in the San Luis Valley.

Least Tern (US ETSC, CO ETSC, CO-PIF) – CDOW contract personnel noted the first increase of this species in the state since 1998, estimating a total of 33 birds along the Arkansas drainage system lakes during the 2003 summer period. An RMBO field worker noted two birds at Lake Cheraw, Otero County, on 21 June, a location the species does not regularly inhabit. Field workers also sighted Least Terns at Fruitgrowers Reservoir, Delta County, on 6 June and at Walden Reservoir, Jackson County, on 15 June; these birds did not exhibit any breeding behaviors and were most likely migrants.

Black Tern (FS-SS, BLM-SS, CO-ABC) – All recently occupied sites in North Park and the San Luis Valley were surveyed. Small flocks of birds visited San Luis Lakes SWA and Alamosa NWR in late May and early June, but no evidence of nesting was recorded in the San Luis Valley. One pair was territorial in the Forster's Tern colony at Walden Reservoir on June 18, but rising water apparently flooded all of the tern nests there and nesting failed entirely. In the first half of the 20th century, significant colonies of these terns nested in North Park, San Luis Valley, and 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 nine detections on four transects in three habitats. This species is a gamebird and thus falls outside the purview of the program.

Eurasian Collared-Dove – Field workers and volunteers canvassed most towns on Colorado’s eastern plains, greatly expanding the number of sites in which the species has been recorded. These efforts, added to those focused in western Colorado, produced a count of 1059 individual Eurasian Collared-Doves. By the end of 2003, this invader, which was first reported in the state in 1997, had been recorded in at least 103 towns and cities in 44 counties.

White-winged Dove - This species continues to expand in numbers throughout the state. Through the nesting season in 2003, 21 birds had been reported. The most significant observations included 11 in Rocky Ford, Otero County, between 18 and 22 June, and four in Springfield, Baca County, on 12 July. The Springfield observation reported three adults and one juvenile, providing evidence of breeding of this species in the state.

Mourning Dove (FS-MIS) – This species is well-monitored in six habitats (Grassland, Low-elevation Riparian, Montane Shrubland, Piñon-Juniper, Sage Shrubland, and Semi-desert Shrubland), with CVs ranging from 13% to 37%. It is fairly well monitored in Wetland with a CV of 68%.

Inca Dove – This species continues to expand its population in the state. Two Inca Doves were observed this past summer at the traditional location in Rocky Ford, Otero County, on 18 June and the 2+ birds present in Lamar, Prowers Co., continued through the summer from the previous winter.

Yellow-billed Cuckoo – (BLM-SS; FS-SS) – *MCB* transects yielded a single detection. No other attempts to obtain data on this species in the eastern part of the state were made in 2003.

“Western” Yellow-billed Cuckoo (US ETSC) – One was reported near Hotchkiss, Delta County, on 6 June, which might have been a migrant. A BLM survey team reported a pair nesting near LaJara, Conejos County, which probably provides the first breeding record for the San Luis Valley. No other cuckoo reports originated in the range of this subspecies.

Flammulated Owl (FS-SS, FS-MIS, CO-PIF) – *MCB* collected no data on this species in 2003. 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 collected and correlated. Nocturnal transects targeting this species conducted mid-May though early June might provide a useful index.

Great Horned Owl (FS-MIS) – *MCB* had a total of four detections on transects.

Burrowing Owl (CO T&E-T; FS-SS). On the Western Slope, we followed up last year’s inventory with a survey of all sites where nesting attempts occurred in 2002. We detected Burrowing Owls at eight of the 15 locations active last year and documented 14 nest attempts producing a minimum of 36 young. The intensive search of all known historical nest sites in 2002 detected 20 nest attempts; eight of these produced 35 young. This species appears to have declined sharply in western Colorado during the past decade. Incidental reports from field workers and volunteers on the eastern plains totaled 33 adults at seven sites. In addition, we recorded nine individuals on five transects in two habitats.

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 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) – *MCB* collected no data on this species in 2003. 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 collected and correlated. Nocturnal transects conducted in September may provide a useful index.

Common Poorwill (CO-PIF) – MCB collected no data on this species in 2003. 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 153 waterfalls this season (Table 30), surveying 38 of the 90 previously known nest sites and searching for evidence of nesting at 115 others. They observed adults, active nests, or juveniles at 27 sites and discovered 9 new breeding colonies. They counted 120 adults, 44 nests that showed evidence of use in 2002, and 37 juvenile birds. Since 1998, this effort has now evaluated 350 waterfalls and discovered 65 new colonies. The database contains 63 waterfalls that have not yet been evaluated. A number of waterfalls that have received an initial evaluation need further study.

Table 30. Summary of efforts at inventorying breeding Black Swifts in Colorado, 1998-2003.

Year	# of sites in database	# of sites surveyed	# historic sites surveyed	# sites w/ adults present	# sites w/ confirmed breeding	# active nests found	# of 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	153	38	27	16	44	120	9

Chimney Swift – We received reports of 28 adults from seven towns on the eastern plains. The database contains records from 54 towns on the eastern plains.

White-throated Swift (CO-PIF) – To date, we have catalogued 103 colonies for future tracking efforts. Of those, we have specific location information on 34. The others are Breeding Bird Atlas reports, which provide only general location information. Incidental reports were received on 18 colonies in 2003, reporting a total of 192 adults. Additionally, we detected 30 individuals on 14 transects in six habitats.

Black-chinned Hummingbird (CO-PIF) – MCB had a total of 42 detections on 25 transects in five habitats. Unfortunately, we could not use this sample to determine a density estimate due to problems obtaining sufficient data on enough individuals.

Lewis’s Woodpecker (FS-SS, FS-MIS, CO-PIF) – In 2003, the catalogue of known and suspected nesting sites increased to 194, of which 92 are specific locations. The remaining sites are general locations from the Breeding Bird Atlas project. Volunteers and field workers visited 15 sites, counting 51 adults and confirming breeding at four sites. MCB tentatively plans to conduct a pilot project in 2004 to determine whether a suite of road surveys would be feasible for monitoring this species.

Red-headed Woodpecker (FS-MIS) – MCB had a total of nine detections on five transects in three habitats.

Acorn Woodpecker – Acorn Woodpeckers resided throughout the year at the traditional spot in Wildcat Canyon near Durango in La Plata County. Up to three were present during the period; nesting was suspected, but not confirmed.

Williamson's Sapsucker (CO-PIF) – MCB had a total of 26 detections on 17 transects in four habitats.

Red-naped Sapsucker (FS-MIS, CO-PIF) – MCB had a total of 95 detections on transects in all habitats. Analysis of the Aspen transect data yielded an estimated density of 0.11/ha with a CV of 46%, indicating that the species is well monitored.

Hairy Woodpecker (FS-SS, FS-MIS) – MCB had a total of 57 detections on 36 transects in six habitats. The analysis of all transects resulted in a density estimate of 0.000008/ha and a CV of 28%.

American Three-toed Woodpecker (FS-SS, FS-MIS) – As we did not run the Spruce-Fir transects in 2003, MCB recorded only four detections this year on transects.

Olive-sided Flycatcher (FS-SS) – MCB had a total of 25 detections on 16 transects in four habitats.

Western Wood-Pewee (CO-ABC) – MCB field workers recorded 242 detections on transects. This species is well-monitored in four habitats (Aspen, Low-elevation Riparian, Montane Shrubland, and Mixed Conifer), with CVs ranging from 13% to 38%.

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

Hammond's Flycatcher (CO-PIF) – We recorded 109 detections on transects and analysis yielded an estimated density of 0.11/ha in Mixed Conifer with a CV of 24%, indicating that the species is well monitored.

Gray Flycatcher (CO-PIF) – MCB had a total of 197 detections on transects and analysis yielded an estimated density of 0.45/ha in Piñon-Juniper with a CV of 12%; the species is well monitored.

Dusky Flycatcher (CO-ABC) – MCB field staff detected 371 Dusky Flycatchers on transects. This species is well monitored in four habitats (Aspen, High-elevation Riparian, Montane Shrubland, and Piñon-Juniper), with CVs ranging from 10% to 30%.

Cordilleran Flycatcher (CO-PIF) – MCB had a total of 60 detections on transects. Analysis yielded an estimated density of 0.07/ha in Mixed Conifer with a CV of 25%; the species is well monitored.

Black Phoebe – Incidental observations of 24 Black Phoebes were reported during summer. Although low water levels again precluded surveying the San Miguel River in Montrose county by boat, RMBO field technicians counted 20 birds in the area. Five birds, including a juvenile at Cañon City, were reported from sites in the Arkansas Valley. A pair nested along McElmo Creek west of Cortez in Montezuma County. No reports were received from Archuleta or La Plata counties, where birds were found last year.

Eastern Phoebe – The catalogue of historical nesting sites increased to 36. Incidental reports, of 12 at seven sites, were received.

Say's Phoebe (CO-ABC) – MCB had a total of 47 detections on 25 transects in six habitats.

Cassin's Kingbird (CO-PIF) – We recorded 16 detections on three transects in two habitats.

Western Kingbird (CO-PIF) – MCB field staff recorded 230 detections on transects in 2003. This species is well monitored in three habitats (Grassland, Low-elevation Riparian, and Semi-desert Shrubland), with CVs ranging from 19% to 33%.

Scissor-tailed Flycatcher – One bird was present in northern El Paso County as late as 9 June; no evidence of nesting was reported. The pair from summer 2002 returned to their location south of Lamar in Prowers County and successfully nested, fledging three young. Another was present south of Limon in Lincoln County through the period.

Loggerhead Shrike (FS-SS) – We recorded 33 detections on 16 transects in three habitats. The analysis of all transects resulted in a density estimate of 0.000002/ha and an associated CV of 31%.

Bell's Vireo (CO-PIF) – Four singing males were reported, three at Bonny Reservoir and one at Sand Draw SWA. The other 12 known sites in northeastern Colorado were not surveyed.

Gray Vireo (CO-PIF) – MCB had a total of 30 detections on transects in all habitats. Unfortunately, not enough of these detections had all important data associated with them, so we could not determine a density estimate.

Plumbeous Vireo (CO-ABC) – MCB had a total of 121 detections on transects. This species is well monitored in Piñon-Juniper with a 2003 density of 0.16/ha and a CV of 20%.

Pinyon Jay (CO-PIF) – We detected 176 individuals on transects and the resultant density of 0.03/ha and CV of 22% in Piñon-Juniper indicate that the species is well monitored.

Horned Lark (CO-PIF) – MCB field workers recorded 1782 detections on transects, a figure that is second only to Western Meadowlark as far as total detections on the 2003 transects. This species is extremely well monitored in four habitats (Alpine Tundra, Grassland, Semi-desert Shrubland, and Sage Shrubland) with CVs ranging from 5% to 11%.

Purple Martin (FS-SS) – RMBO field staff and volunteers surveyed 116 of the 180 sites with a history of confirmed or probable nesting by this species (Table 31). They observed adults at 89 of those sites and located 130 nests in 56 colonies, including 21 previously undocumented sites.

Table 31. Summary of MCB Purple Martin surveys in Colorado, 1999-2003.

Year	# sites in database	# of sites visited	# sites with adults	# of adults observed	# sites with confirmed breeding	# 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

Violet-green Swallow (CO-PIF) – We obtained 366 detections on transects. This species is well monitored in five habitats (Aspen, High-elevation Riparian, Montane Shrubland, Mixed Conifer, and Piñon-Juniper), with CVs ranging from 20% to 37%.

Cliff Swallow (FS-MIS) – MCB had 279 detections on transects. This species is well monitored in Low-elevation Riparian habitat, with an estimated density of 1.10/ha and a CV of 35%.

Juniper Titmouse (FS-MIS, CO-PIF) – MCB staff recorded 71 detections on transects. This species is well monitored in Piñon-Juniper, with an estimated density of 0.16/ha and a CV of 25%.

Pygmy Nuthatch (FS-MIS) – As MCB did not conduct transects in Ponderosa Pine in 2003, we did not collect data on this species, which is nearly a Ponderosa obligate. However, our Ponderosa Pine transects monitor this species well.

Brown Creeper (FS-MIS) – MCB had 36 detections on 16 transects in four habitats. As MCB did not conduct transects in Ponderosa Pine or Spruce-Fir in 2003, the two habitats in which the species is typically most abundant, we did not obtain sufficient data for analysis

in any habitat in 2003. However, the analysis of all transects (remember, minus two critical Brown Creeper habitats) resulted in a density estimate of 0.000009/ha with a CV of 42.6%.

Bewick's Wren (FS-MIS) – MCB had 202 detections on transects. This species is well monitored in Piñon-Juniper with an estimated density of 0.27/ha and a CV of 11%.

American Dipper (CO-PIF) – We began a catalogue of potential nest sites – primarily bridges – from data collected by field workers incidental to other assignments. We collected data on 61 sites, 37 of which were determined to have hosted active nests in 2003. In addition, we recorded the presence of Dippers and Dipper nests in conjunction with visits to waterfalls for Black Swift surveys. We visited 155 waterfalls and recorded 55 Dippers at 37 sites. We recorded 25 nests at 22 of these sites. The data do not indicate whether nests were active. In 2004, we will initiate efforts to conduct a general bridge survey through which we expect to greatly increase the number of American Dipper sites in our database.

Ruby-crowned Kinglet (FS-MIS) – MCB recorded 414 detections on transects. This species is well monitored in Aspen, High-elevation Riparian, and Mixed Conifer in 2003. It is even better monitored in Spruce-Fir, but we did not conduct those transects in 2003. For 2003 analyses, CVs ranged from 11% to 24%.

Blue-gray Gnatcatcher (FS-MIS) – MCB had a total of 371 detections on transects. This species is well monitored in two habitats, Montane Shrubland and Piñon-Juniper, with CVs of 34% and 16%, respectively.

Western Bluebird (CO-PIF) – Since MCB did not conduct transects in Ponderosa Pine in 2003, we collected few data on this species (nine detections). Adequate data are collected from Ponderosa Pine transects to monitor this species.

Mountain Bluebird (FS-MIS) – We obtained 302 detections on transects. This species is well monitored in three habitats, Montane Shrubland, Piñon-Juniper, and Sage Shrubland, with CVs ranging from 14% to 29%.

Brown Thrasher (FS-MIS) – MCB recorded 21 detections on 13 transects in four habitats.

American Pipit (FS-MIS, CO-PIF) – We obtained 546 detections on transects. This species is extremely well monitored in Alpine Tundra habitat, with an estimated density of 0.71/ha and a CV of 7%.

Cedar Waxwing (FS-MIS) – MCB field workers recorded 20 detections on seven transects in four habitats.

Virginia's Warbler (FS-MIS, CO-PIF) – MCB recorded 242 detections on transects in 2003. This species is well monitored in Montane Shrubland and Piñon-Juniper, with CVs of 31% and 21%, respectively.

Yellow Warbler (FS-MIS) – MCB had 282 detections on transects. This species is well monitored in four habitats (High-elevation Riparian, Low-elevation Riparian, Montane Shrubland, and Wetland), with CVs ranging from 16% to 50%.

Black-throated Gray Warbler (FS-MIS, CO-PIF) – MCB staff recorded 195 detections on transects. This species is well monitored in Piñon-Juniper, with an estimated density of 0.71/ha and a CV of 16%.

Grace's Warbler (FS-MIS, CO-PIF) – Since MCB did not conduct transects in Ponderosa Pine in 2003, we collected no data on this species this year. Adequate data to monitor this species are collected from the Ponderosa Pine transects.

American Redstart – Incidental reports of two singing males at two sites were received, along with a report of an adult female.

Ovenbird – The catalogue of confirmed and probable nesting sites was expanded to 40, as staff and volunteers detected 32 singing males at the 14 sites surveyed.

Northern Waterthrush – A survey using tape playback was conducted at the historical nest sites in North Park and obtained no detections.

MacGillivray's Warbler (CO-PIF) – We detected 167 individuals on transects. The 2003 data provided sufficient data to obtain densities in two habitats (Aspen and Montane Shrubland) with CVs of 40.4% and 30.3%, respectively.

Wilson's Warbler (FS-MIS, CO-PIF) – Field staff recorded 192 detections on transects from which we obtained a density estimate of 0.85/ha (with a CV of 18.1%) in High-elevation Riparian.

Green-tailed Towhee (FS-MIS, CO-PIF) – MCB field workers obtained 610 detections on transects. From those data, we determined density estimates in six habitats (Aspen, Mixed Conifer, Montane Shrubland, Piñon-Juniper, Sage Shrubland, and Semi-desert Shrubland) with CVs ranging from 10.5% to 34.0%.

Spotted Towhee (CO-ABC) – We detected 480 individuals on transects. We obtained density estimates in four habitats (Low-elevation Riparian, Montane Shrubland, Piñon-Juniper, and Sage Shrubland) with CVs ranging from 12.3% to 52.0%.

Cassin's Sparrow (FS-SS, FS-MIS, CO-PIF) – MCB had a total of 491 detections on transects. This species is well monitored in three habitats (Grasslands, Semi-desert Shrubland, and Sage Shrubland), with CVs ranging from 11% to 21%.

Brewer's Sparrow (FS-SS, FS-MIS, CO-PIF) – MCB recorded 877 detections on transects and obtained density estimates in four habitats (Grassland, Semi-desert Shrubland, Piñon-Juniper, and Sage Shrubland), with CVs ranging from 9% to 26%.

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), with CVs ranging from 17% to 23%.

Lark Sparrow (CO-ABC) – We recorded 331 detections on transects. This species is well monitored in four habitats (Grassland, Piñon-Juniper, Sage Shrubland, and Semi-desert Shrubland), with CVs ranging from 15% to 28%.

Sage Sparrow (FS-SS, CO-PIF) – MCB had 101 detections on transects. This species is well monitored in Sage Shrubland, with an estimated density of 0.07/ha and a CV of 22%.

Lark Bunting (FS-SS, FS-MIS, CO-PIF) – MCB staff obtained 1237 detections on transects. This species is well monitored in Grassland and Sage Shrubland, with CVs of 6% and 19%, respectively.

Grasshopper Sparrow (FS-SS, CO-PIF) – MCB had 211 detections on transects. This species is well monitored in Grassland and Sage Shrubland, with CVs of 13% and 34%, respectively.

Lincoln's Sparrow (FS-MIS) – We obtained 649 detections on transects, with those data providing density estimates in three habitats (Alpine Tundra, Aspen, and High-elevation Riparian), with CVs ranging from 15% to 19%.

McCown's Longspur (FS-SS, FS-MIS, CO-PIF) – MCB had 107 detections on three Grassland transects. We regularly detect the species on only three Grassland transects, transects on which McCown's Longspur is abundant. Thus, the density estimate of 0.087/ha (with a CV of 22%) is the result of spreading a very high density from three transects over the remainder of the transects on which we recorded zero individuals.

Chestnut-collared Longspur (FS-SS) – We recorded no detections of this species on transects in 2003. The species is peripheral to the state and would require focused effort to monitor unless the Section Survey project (also run out of RMBO) can monitor the species' population in Colorado.

Northern Cardinal – We received two reports, seven in Wray, Yuma County, in May and two at Tamarack Ranch SWA, Logan County, on 27 July.

Lazuli Bunting (CO-PIF) – MCB recorded 61 detections on transects and the analysis of all transects resulted in a density estimate of 0.000006/ha and a CV of 67.7%. We will probably never obtain strong monitoring data on this species until we initiate transects in Mid-elevation Riparian.

Dickcissel (CO-ABC) – MCB had a single detection on transects in 2003. As this species is, in Colorado, typically associated with agriculture (particularly alfalfa), we do not expect the transects to provide monitoring data on it. In its efforts in agricultural habitats, the Section Survey program may, in the future, be able to obtain monitoring data on Dickcissel.

Bobolink – RMBO field staff and volunteers surveyed 34 sites in the database, found 29 of those occupied, and counted 130 adults, 102 of those singing males. Boulder Open Space has not reported its counts at the time that this report was prepared. We also received no reports of the species from the South Platte River valley. The small population of Bobolinks returned to their Fremont County location where up to three birds were seen between 1 June and 1 July.

Bullock's Oriole (FS-MIS) – We obtained 149 detections on transects and those data provided density estimates in two habitats (Grassland and Semi-desert Shrubland) with CVs of 22.7% and 49.5%, respectively. The occupation of Semi-desert Shrubland (SE) by Bullock's Orioles may seem anomalous to those aware of its predilection for occupying broad-leaved woodland, particularly riparian habitats, in Colorado. However, this situation is easily explained. In eastern Colorado, greasewood (which is the identifying vegetation of Semi-desert Shrubland on the Colorado plains) grows in low areas, usually adjacent to stringers of Low-elevation Riparian (LR) habitat. So, many of the orioles that we detect on SE transects are actually in the adjacent LR habitat, though some do forage in the shrubs comprising the SE habitat.

Scott's Oriole (CO-PIF) – We surveyed 28 of 34 historical territories and counted 18 adults, including 12 males defending territories. The population appears to be stable.

Brown-capped Rosy-Finch (FS-MIS, CO-PIF) – We recorded 20 individuals on seven Alpine Tundra transects.

Pine Grosbeak (FS-MIS) – We detected 16 individuals on ten transects in four habitats in 2003. However, this species is primarily an inhabitant of Spruce-Fir and, as we did not conduct the transects in that habitat in 2003, we recorded few Pine Grosbeaks.

Cassin's Finch (FS-MIS) – MCB staff obtained 35 detections of Cassin's Finch on 16 transects in six habitats. Had we conducted the Ponderosa Pine and Spruce-Fir transects in 2003, we would have obtained many more detections.

Red Crossbill (FS-MIS) – We recorded 54 detections on 14 transects in three habitats and obtained a density estimate of 0.04/ha in Aspen with a CV of 32.4%. The species does not actually occupy Aspen habitat, but Aspen is often found interdigitated with various coniferous habitats that these birds do use.

White-winged Crossbill – A number of White-winged Crossbills spent the summer in the south-central mountains during 2003. Two were seen at Shaw Lake in Mineral County, the first record for the Rio Grande NF and San Luis Valley area. Birds were also reported at Spruce Hole, in Conejos County, at Moon Pass, in Saguache County, at Uncompahgre Peak in Hinsdale County, at Black Mountain in Mineral County, and on Grand Mesa in Delta County. Much of the Englemann Spruce forest in the state experienced heavy production of cones in 2003.

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Appendix A. MCB year 2001 results of DISTANCE analysis for species with sample sizes >24 in individual habitats or in all habitats combined (except for Sage Sparrow with sample of 24). *= target habitat for species indicated; m=number of parameters required to fit detection-curve function to data in selected model; ESW=Effective Strip Width (distance inside which at least 50% of birds present are detected); D=density estimate, individuals per hectare (from program DISTANCE); D LCL and D UCL=Lower and upper, respectively, 95% confidence intervals of density estimate; D CV=coefficient of variation of the density estimate; P=probability of detection; Total n=untruncated sample size; Model n=sample size used in selected model; Proportion of total n used=proportion of Total n used in the selected model.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Gadwall	WE	0.256	0.137	0.479	31.6%	0.55	13	40	38	95.0%
Mallard	LR	0.216	0.113	0.416	33.0%	0.30	15	51	51	100.0%
Mallard	WE	0.217	0.102	0.460	39.0%	0.42	12	32	32	100.0%
Cinnamon Teal	WE	0.156	0.086	0.282	30.0%	0.58	11	29	29	100.0%
Ruddy Duck	WE	0.126	0.060	0.265	38.3%	0.72	8	27	26	96.3%
Northern Bobwhite	LR	0.028	0.010	0.077	52.4%	0.77	4	27	27	100.0%
Great Blue Heron	LR	0.042	0.018	0.095	41.9%	0.37	14	41	41	100.0%
Red-tailed Hawk	All	0.000002	0.000001	0.000005	47.1%	0.31	45	61	61	100.0%
American Coot	WE	0.476	0.259	0.877	30.8%	0.58	15	80	79	98.8%
Killdeer	GR	0.027	0.016	0.047	28.0%	0.14	16	45	45	100.0%
Killdeer	LR	0.264	0.118	0.590	41.7%	0.28	11	44	44	100.0%
Killdeer	WE	0.331	0.151	0.727	40.7%	0.37	13	28	28	100.0%
American Avocet	WE	0.293	0.097	0.881	58.6%	0.33	5	30	30	100.0%
Spotted Sandpiper	HR	0.245	0.097	0.621	48.2%	0.26	9	49	49	100.0%
Spotted Sandpiper	LR	0.449	0.243	0.830	31.7%	0.26	20	77	77	100.0%
Wilson's Snipe	All	0.000003	0.000001	0.000009	67.3%	0.70	14	31	25	80.6%
Wilson's Phalarope	WE	0.518	0.186	1.445	54.0%	0.69	5	39	38	97.4%
Mourning Dove	GR	0.215	0.122	0.379	29.3%	0.07	23	179	166	92.7%
Mourning Dove	LR	0.257	0.183	0.361	16.9%	0.17	22	160	160	100.0%
Mourning Dove	MS	0.008	0.005	0.013	25.6%	0.49	13	39	35	89.7%
Mourning Dove	PJ	0.113	0.077	0.164	19.3%	0.16	26	154	116	75.3%
Mourning Dove	SA	0.148	0.071	0.311	38.8%	0.02	17	95	90	94.7%
Mourning Dove	SE	0.026	0.020	0.034	13.9%	0.17	22	159	148	93.1%
Mourning Dove	WE	0.329	0.159	0.685	37.6%	0.37	14	48	48	100.0%
Common Nighthawk	All	0.000003	0.000001	0.000009	64.0%	0.25	23	26	26	100.0%
Broad-tailed Hummingbird	AS	1.162	0.522	2.587	41.9%	0.05	19	62	62	100.0%
Broad-tailed Hummingbird	AT	0.048	0.026	0.090	32.1%	0.39	13	29	29	100.0%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Broad-tailed Hummingbird	HR	0.561	0.312	1.008	29.5%	0.27	16	70	70	100.0%
Broad-tailed Hummingbird	MC	0.188	0.121	0.292	22.7%	0.37	10	36	29	80.6%
Broad-tailed Hummingbird	MS	2.843	1.403	5.760	36.7%	0.02	19	77	77	100.0%
Broad-tailed Hummingbird	PJ	0.291	0.137	0.618	39.0%	0.02	13	37	37	100.0%
Red-naped Sapsucker	AS	0.110	0.046	0.263	45.6%	0.15	16	29	29	100.0%
Hairy Woodpecker	All	0.000008	0.000004	0.000013	28.0%	0.25	36	46	46	100.0%
Northern Flicker	AS	0.023	0.012	0.043	32.0%	0.26	16	29	27	93.1%
Northern Flicker	LR	0.050	0.033	0.075	20.1%	0.57	17	43	43	100.0%
Western Wood-Pewee	AS	0.125	0.096	0.162	13.3%	0.35	20	121	119	98.3%
Western Wood-Pewee	LR	0.050	0.029	0.084	26.3%	0.71	15	38	38	100.0%
Western Wood-Pewee	MC	0.025	0.016	0.038	21.9%	0.33	8	27	27	100.0%
Western Wood-Pewee	MS	0.027	0.013	0.056	38.0%	0.21	13	28	27	96.4%
Hammond's Flycatcher	MC	0.112	0.070	0.178	23.7%	0.32	17	40	40	100.0%
Dusky Flycatcher	AS	0.144	0.090	0.232	24.2%	0.24	15	44	44	100.0%
Dusky Flycatcher	HR	0.195	0.110	0.345	28.7%	0.57	13	44	44	100.0%
Hammond's Flycatcher	MS	0.587	0.476	0.724	10.7%	0.06	25	197	197	100.0%
Dusky Flycatcher	PJ	0.040	0.022	0.071	30.2%	0.43	8	26	26	100.0%
Gray Flycatcher	PJ	0.446	0.355	0.559	11.6%	0.08	26	189	189	100.0%
Cordilleran Flycatcher	All	0.000005	0.000002	0.000009	33.7%	0.64	30	33	33	100.0%
Cordilleran Flycatcher	MC	0.070	0.043	0.113	25.0%	0.38	13	25	25	100.0%
Say's Phoebe	All	0.000002	0.000001	0.000005	33.2%	0.61	25	30	30	100.0%
Ash-throated Flycatcher	PJ	0.140	0.112	0.175	11.5%	0.18	22	130	127	97.7%
Western Kingbird	GR	0.042	0.024	0.071	27.6%	0.13	20	72	72	100.0%
Western Kingbird	LR	0.097	0.050	0.187	33.3%	0.66	15	53	53	100.0%
Western Kingbird	SE	0.031	0.021	0.045	19.9%	0.34	10	52	49	94.2%
Eastern Kingbird	LR	0.193	0.101	0.368	32.5%	0.37	14	79	79	100.0%
Loggerhead Shrike	All	0.000002	0.000001	0.000003	31.0%	0.54	16	30	30	100.0%
Plumbeous Vireo	PJ	0.159	0.107	0.237	20.3%	0.11	25	93	93	100.0%
Warbling Vireo	AS	1.115	0.969	1.283	7.2%	0.07	26	443	443	100.0%
Warbling Vireo	HR	0.123	0.068	0.223	29.8%	0.45	15	44	44	100.0%
Warbling Vireo	MC	0.404	0.300	0.544	15.2%	0.08	23	166	166	100.0%
Warbling Vireo	MS	0.964	0.715	1.298	15.3%	0.15	22	310	295	95.2%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Steller's Jay	AS	0.021	0.013	0.034	25.4%	0.36	10	27	27	100.0%
Steller's Jay	MC	0.070	0.034	0.143	37.0%	0.11	19	49	46	93.9%
Blue Jay	LR	0.065	0.031	0.138	37.9%	0.55	7	37	37	100.0%
Western Scrub-Jay	PJ	0.078	0.045	0.133	27.7%	0.16	19	55	50	90.9%
Pinyon Jay	PJ	0.027	0.018	0.041	21.6%	0.15	15	99	95	96.0%
Black-billed Magpie	LR	0.047	0.026	0.084	28.6%	0.55	12	42	42	100.0%
Black-billed Magpie	MS	0.018	0.008	0.039	40.8%	0.14	9	29	26	89.7%
Black-billed Magpie	PJ	0.009	0.004	0.019	40.7%	0.22	12	27	26	96.3%
Black-billed Magpie	SA	0.005	0.003	0.009	29.3%	0.33	10	37	36	97.3%
Black-billed Magpie	SE	0.011	0.008	0.016	18.2%	0.30	15	83	79	95.2%
Common Raven	All	0.000007	0.000005	0.000009	12.2%	0.29	107	261	261	100.0%
Common Raven	PJ	0.006	0.005	0.009	15.0%	0.15	23	79	76	96.2%
Common Raven	SA	0.003	0.002	0.005	23.6%	0.20	12	51	48	94.1%
Common Raven	SE	0.001	0.001	0.002	30.8%	0.26	16	42	37	88.1%
Horned Lark	AT	0.168	0.136	0.208	10.9%	0.30	19	169	168	99.4%
Horned Lark	GR	1.024	0.921	1.139	5.4%	0.11	26	909	886	97.5%
Horned Lark	SA	0.321	0.265	0.389	9.8%	0.04	18	277	277	100.0%
Horned Lark	SE	0.587	0.472	0.732	11.2%	0.08	22	425	425	100.0%
Tree Swallow	All	0.000019	0.000008	0.000045	45.7%	0.18	35	108	108	100.0%
Tree Swallow	AS	0.112	0.056	0.226	36.4%	0.12	8	33	32	97.0%
Tree Swallow	HR	0.173	0.061	0.487	54.0%	0.22	7	44	44	100.0%
Violet-green Swallow	AS	0.265	0.181	0.389	19.7%	0.11	18	90	90	100.0%
Violet-green Swallow	HR	0.074	0.037	0.146	34.5%	0.79	9	35	35	100.0%
Violet-green Swallow	MC	0.287	0.140	0.589	37.3%	0.03	15	54	54	100.0%
Violet-green Swallow	MS	0.065	0.044	0.095	20.0%	0.04	18	90	90	100.0%
Violet-green Swallow	PJ	0.067	0.042	0.108	24.6%	0.10	15	61	61	100.0%
Northern Rough-winged Swallow	LR	0.779	0.210	2.889	73.6%	0.09	16	67	67	100.0%
Bank Swallow	LR	0.503	0.232	1.090	39.0%	0.32	8	112	107	95.5%
Cliff Swallow	LR	1.105	0.551	2.215	35.0%	0.42	13	199	152	76.4%
Cliff Swallow	SA	0.005	0.001	0.019	79.2%	0.40	5	26	25	96.2%
Black-capped Chickadee	MS	0.098	0.058	0.168	27.5%	0.25	16	44	39	88.6%
Mountain Chickadee	AS	0.178	0.131	0.244	16.0%	0.28	21	100	98	98.0%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Mountain Chickadee	HR	0.166	0.061	0.448	52.7%	0.30	10	26	26	100.0%
Mountain Chickadee	MC	0.419	0.251	0.700	26.4%	0.04	20	93	93	100.0%
Mountain Chickadee	PJ	0.064	0.030	0.138	39.8%	0.21	10	34	34	100.0%
Juniper Titmouse	PJ	0.163	0.101	0.264	24.7%	0.20	22	67	63	94.0%
Red-breasted Nuthatch	AS	0.030	0.016	0.056	32.2%	0.19	13	31	31	100.0%
Red-breasted Nuthatch	MC	0.094	0.053	0.166	29.2%	0.11	22	62	62	100.0%
White-breasted Nuthatch	All	0.000004	0.000002	0.000009	41.0%	0.28	29	42	42	100.0%
Brown Creeper	All	0.000009	0.000004	0.000019	42.6%	0.34	16	25	25	100.0%
Rock Wren	All	0.000008	0.000006	0.000012	18.3%	0.43	65	154	154	100.0%
Rock Wren	PJ	0.042	0.031	0.057	15.8%	0.18	20	80	79	98.8%
Rock Wren	SA	0.010	0.006	0.017	28.3%	0.23	11	30	29	96.7%
Rock Wren	SE	0.011	0.007	0.018	22.6%	0.19	13	43	43	100.0%
Bewick's Wren	PJ	0.267	0.213	0.333	11.4%	0.14	21	165	164	99.4%
House Wren	AS	0.904	0.710	1.153	12.4%	0.10	22	240	240	100.0%
House Wren	LR	0.450	0.227	0.891	34.0%	0.40	16	202	202	100.0%
House Wren	MC	0.153	0.075	0.311	36.6%	0.11	13	35	35	100.0%
House Wren	MS	0.309	0.214	0.447	18.9%	0.10	22	118	118	100.0%
Marsh Wren	WE	2.935	1.390	6.198	38.7%	0.17	15	122	122	100.0%
Ruby-crowned Kinglet	AS	0.151	0.122	0.186	10.9%	0.18	20	128	128	100.0%
Ruby-crowned Kinglet	HR	0.152	0.093	0.248	24.4%	0.61	15	52	52	100.0%
Ruby-crowned Kinglet	MC	0.227	0.177	0.291	12.6%	0.12	22	183	183	100.0%
Blue-gray Gnatcatcher	MS	0.617	0.322	1.182	33.6%	0.11	18	53	46	86.8%
Blue-gray Gnatcatcher	PJ	0.601	0.441	0.817	15.8%	0.05	26	102	102	100.0%
Mountain Bluebird	MS	0.100	0.056	0.176	29.3%	0.24	12	34	32	94.1%
Mountain Bluebird	PJ	0.250	0.190	0.330	14.2%	0.10	22	155	153	98.7%
Mountain Bluebird	SA	0.017	0.010	0.027	25.7%	0.14	15	41	41	100.0%
Townsend's Solitaire	MC	0.031	0.019	0.053	26.4%	0.20	10	27	27	100.0%
Hermit Thrush	AS	0.048	0.037	0.064	14.2%	0.28	22	131	130	99.2%
Hermit Thrush	MC	0.073	0.050	0.105	18.8%	0.17	18	119	119	100.0%
Hermit Thrush	MS	0.014	0.009	0.023	24.8%	0.18	11	33	33	100.0%
American Robin	AS	0.306	0.231	0.404	14.2%	0.09	24	176	176	100.0%
American Robin	AT	0.036	0.021	0.061	27.7%	0.24	13	35	31	88.6%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
American Robin	HR	0.496	0.359	0.685	15.9%	0.24	22	154	154	100.0%
American Robin	LR	0.188	0.105	0.338	29.2%	0.46	19	98	98	100.0%
American Robin	MC	0.191	0.126	0.289	21.3%	0.05	23	113	113	100.0%
American Robin	MS	0.378	0.297	0.481	12.3%	0.05	25	242	242	100.0%
American Robin	PJ	0.055	0.035	0.086	23.0%	0.22	12	58	56	96.6%
American Robin	SA	0.020	0.011	0.035	29.9%	0.13	13	37	36	97.3%
Northern Mockingbird	GR	0.006	0.004	0.009	22.8%	0.16	9	42	42	100.0%
Northern Mockingbird	SE	0.030	0.020	0.045	20.9%	0.16	15	103	103	100.0%
Sage Thrasher	SA	0.054	0.043	0.070	12.6%	0.15	16	173	173	100.0%
Sage Thrasher	SE	0.015	0.007	0.035	42.3%	0.16	4	37	28	75.7%
American Pipit	AT	0.707	0.618	0.809	6.9%	0.14	24	541	541	100.0%
European Starling	LR	0.095	0.058	0.155	24.5%	0.61	19	76	76	100.0%
Orange-crowned Warbler	AS	0.090	0.055	0.147	25.1%	0.35	13	32	32	100.0%
Orange-crowned Warbler	MC	0.170	0.077	0.376	40.9%	0.34	11	27	27	100.0%
Orange-crowned Warbler	MS	0.458	0.319	0.659	18.6%	0.04	18	112	112	100.0%
Virginia's Warbler	MS	0.558	0.371	0.838	20.9%	0.16	21	157	155	98.7%
Virginia's Warbler	PJ	0.124	0.068	0.226	30.8%	0.23	12	47	47	100.0%
Yellow Warbler	HR	0.511	0.193	1.349	50.3%	0.30	6	43	42	97.7%
Yellow Warbler	LR	0.144	0.105	0.199	15.6%	0.71	23	99	99	100.0%
Yellow Warbler	MS	0.286	0.194	0.421	19.8%	0.11	9	89	89	100.0%
Yellow Warbler	WE	0.255	0.116	0.559	40.4%	0.61	8	29	28	96.6%
Yellow-rumped Warbler	AS	0.723	0.579	0.902	11.3%	0.09	25	216	216	100.0%
Yellow-rumped Warbler	HR	0.115	0.064	0.206	29.7%	0.39	14	40	40	100.0%
Yellow-rumped Warbler	MC	0.563	0.437	0.724	12.9%	0.09	23	203	200	98.5%
Black-throated Gray Warbler	PJ	0.711	0.520	0.971	16.0%	0.13	26	181	178	98.3%
MacGillivray's Warbler	AS	0.356	0.164	0.775	40.4%	0.04	14	42	42	100.0%
MacGillivray's Warbler	MS	0.295	0.164	0.533	30.3%	0.11	16	59	59	100.0%
Common Yellowthroat	LR	0.116	0.062	0.219	31.6%	0.49	15	47	47	100.0%
Common Yellowthroat	WE	0.948	0.581	1.549	24.6%	0.63	23	130	126	96.9%
Wilson's Warbler	HR	0.847	0.588	1.220	18.1%	0.52	21	162	162	100.0%
Yellow-breasted Chat	LR	0.054	0.027	0.111	35.8%	0.84	11	37	36	97.3%
Western Tanager	AS	0.177	0.091	0.343	34.2%	0.20	18	58	57	98.3%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Western Tanager	MC	0.249	0.191	0.325	13.6%	0.05	24	187	187	100.0%
Western Tanager	MS	0.069	0.048	0.099	18.4%	0.19	19	60	59	98.3%
Western Tanager	PJ	0.030	0.018	0.049	25.7%	0.19	9	34	34	100.0%
Green-tailed Towhee	AS	0.104	0.054	0.200	34.0%	0.27	11	33	30	90.9%
Green-tailed Towhee	MC	0.120	0.072	0.199	26.0%	0.10	16	54	54	100.0%
Green-tailed Towhee	MS	0.957	0.780	1.175	10.5%	0.03	23	321	321	100.0%
Green-tailed Towhee	PJ	0.064	0.039	0.106	26.0%	0.19	9	35	35	100.0%
Green-tailed Towhee	SA	0.105	0.076	0.145	16.4%	0.20	13	120	120	100.0%
Green-tailed Towhee	SE	0.036	0.021	0.063	28.2%	0.08	3	34	32	94.1%
Spotted Towhee	LR	0.041	0.015	0.110	52.0%	0.35	7	26	26	100.0%
Spotted Towhee	MS	0.811	0.638	1.030	12.3%	0.14	20	309	300	97.1%
Spotted Towhee	PJ	0.205	0.128	0.328	24.1%	0.12	19	91	90	98.9%
Spotted Towhee	SA	0.055	0.023	0.130	45.5%	0.05	3	27	27	100.0%
Cassin's Sparrow	GR	0.200	0.161	0.248	11.1%	0.18	13	236	236	100.0%
Cassin's Sparrow	SA	0.083	0.059	0.116	17.1%	0.24	7	151	151	100.0%
Cassin's Sparrow	SE	0.023	0.015	0.035	21.0%	0.80	5	103	100	97.1%
Chipping Sparrow	AS	0.091	0.050	0.167	31.1%	0.11	13	31	31	100.0%
Chipping Sparrow	MC	0.496	0.262	0.941	33.2%	0.04	21	76	75	98.7%
Chipping Sparrow	MS	0.155	0.099	0.242	23.0%	0.05	17	64	64	100.0%
Chipping Sparrow	PJ	0.474	0.349	0.644	15.7%	0.17	28	204	201	98.5%
Brewer's Sparrow	GR	0.040	0.024	0.067	25.8%	0.42	6	48	48	100.0%
Brewer's Sparrow	PJ	0.053	0.035	0.082	21.9%	0.12	11	43	43	100.0%
Brewer's Sparrow	SA	0.627	0.526	0.747	9.0%	0.24	24	524	515	98.3%
Brewer's Sparrow	SE	0.304	0.229	0.404	14.6%	0.13	19	213	213	100.0%
Vesper Sparrow	PJ	0.029	0.018	0.046	23.5%	0.28	13	50	50	100.0%
Vesper Sparrow	SA	0.260	0.186	0.362	17.1%	0.15	20	199	196	98.5%
Vesper Sparrow	SE	0.026	0.017	0.040	22.4%	0.21	8	73	73	100.0%
Lark Sparrow	GR	0.069	0.044	0.109	23.5%	0.09	13	54	54	100.0%
Lark Sparrow	PJ	0.031	0.018	0.054	28.0%	0.18	9	36	34	94.4%
Lark Sparrow	SA	0.066	0.046	0.095	18.8%	0.17	9	63	63	100.0%
Lark Sparrow	SE	0.161	0.120	0.216	15.1%	0.10	22	166	166	100.0%
Sage Sparrow	SA	0.068	0.045	0.102	21.1%	0.24	6	63	63	100.0%
Lark Bunting	GR	0.618	0.544	0.702	6.5%	0.21	26	984	943	95.8%
Lark Bunting	SA	0.095	0.066	0.138	18.9%	0.25	6	176	165	93.8%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Lark Bunting	SE	0.021	0.013	0.036	26.6%	0.17	5	77	77	100.0%
Savannah Sparrow	WE	0.215	0.111	0.416	33.9%	0.72	11	33	33	100.0%
Grasshopper Sparrow	GR	0.286	0.220	0.371	13.3%	0.20	15	155	155	100.0%
Grasshopper Sparrow	SA	0.077	0.050	0.119	22.2%	0.26	4	51	51	100.0%
Song Sparrow	HR	0.490	0.172	1.399	55.0%	0.37	8	40	38	95.0%
Song Sparrow	LR	0.116	0.072	0.189	24.0%	0.65	16	62	62	100.0%
Lincoln's Sparrow	AS	0.532	0.391	0.722	15.7%	0.13	21	160	160	100.0%
Lincoln's Sparrow	AT	0.054	0.037	0.078	18.8%	0.30	16	82	82	100.0%
Lincoln's Sparrow	HR	2.603	1.798	3.768	18.2%	0.30	24	376	376	100.0%
White-crowned Sparrow	AS	0.105	0.073	0.151	18.7%	0.18	12	79	78	98.7%
White-crowned Sparrow	AT	0.541	0.461	0.634	8.1%	0.08	23	531	529	99.6%
White-crowned Sparrow	HR	1.114	0.667	1.862	25.8%	0.27	18	175	175	100.0%
Dark-eyed Junco	AS	1.344	1.053	1.717	12.5%	0.15	26	254	245	96.5%
Dark-eyed Junco	HR	0.082	0.049	0.136	25.4%	0.57	14	34	34	100.0%
Dark-eyed Junco	MC	0.676	0.501	0.912	15.3%	0.06	21	144	144	100.0%
McCown's Longspur	GR	0.087	0.056	0.134	22.4%	0.18	3	107	104	97.2%
Black-headed Grosbeak	LR	0.061	0.038	0.098	23.6%	0.69	14	46	46	100.0%
Black-headed Grosbeak	MS	0.268	0.208	0.346	13.0%	0.07	23	187	187	100.0%
Blue Grosbeak	SE	0.014	0.009	0.022	24.1%	0.32	9	37	37	100.0%
Lazuli Bunting	All	0.000006	0.000002	0.000021	67.7%	0.33	17	36	36	100.0%
Red-winged Blackbird	GR	0.038	0.010	0.137	71.6%	0.07	5	31	31	100.0%
Red-winged Blackbird	LR	0.322	0.188	0.550	26.7%	0.29	16	131	131	100.0%
Red-winged Blackbird	SA	0.010	0.005	0.018	30.3%	0.23	9	47	47	100.0%
Red-winged Blackbird	SE	0.025	0.015	0.043	27.1%	0.13	9	64	64	100.0%
Red-winged Blackbird	WE	4.611	3.035	7.005	20.9%	0.48	29	547	496	90.7%
Western Meadowlark	GR	0.392	0.354	0.435	5.3%	0.21	27	848	797	94.0%
Western Meadowlark	LR	0.021	0.010	0.044	37.2%	0.45	12	34	34	100.0%
Western Meadowlark	MS	0.006	0.003	0.012	32.8%	0.55	7	34	33	97.1%
Western Meadowlark	PJ	0.009	0.006	0.013	19.4%	0.19	14	56	56	100.0%
Western Meadowlark	SA	0.114	0.093	0.139	10.2%	0.28	22	429	407	94.9%
Western Meadowlark	SE	0.073	0.061	0.088	9.2%	0.05	25	435	435	100.0%
Western Meadowlark	WE	0.154	0.095	0.252	24.6%	0.85	17	50	50	100.0%
Yellow-headed Blackbird	WE	3.226	1.345	7.738	45.1%	0.30	19	269	269	100.0%
Brewer's Blackbird	SA	0.037	0.021	0.063	27.9%	0.39	12	43	41	95.3%

Appendix A. Continued.

Species	Habitat	D	D LCL	D UCL	D CV	P	K	Total n	Sample n	Total n used
Common Grackle	LR	0.172	0.074	0.402	43.3%	0.47	8	39	39	100.0%
Brown-headed Cowbird	GR	0.031	0.020	0.049	22.8%	0.18	14	45	45	100.0%
Brown-headed Cowbird	LR	0.231	0.164	0.324	16.7%	0.53	24	121	121	100.0%
Brown-headed Cowbird	MS	0.175	0.123	0.248	17.9%	0.18	19	82	82	100.0%
Brown-headed Cowbird	SA	0.040	0.025	0.062	23.1%	0.21	15	53	53	100.0%
Brown-headed Cowbird	SE	0.016	0.010	0.027	26.3%	0.35	9	28	26	92.9%
Brown-headed Cowbird	WE	0.293	0.166	0.518	28.6%	0.55	19	45	41	91.1%
Orchard Oriole	LR	0.115	0.043	0.310	50.7%	0.52	7	43	43	100.0%
Bullock's Oriole	LR	0.118	0.075	0.186	22.7%	0.41	18	73	73	100.0%
Bullock's Oriole	SE	0.059	0.023	0.151	49.5%	0.23	7	33	26	78.8%
House Finch	PJ	0.071	0.048	0.104	19.7%	0.21	9	59	59	100.0%
Red Crossbill	AS	0.035	0.019	0.066	32.4%	0.48	9	27	27	100.0%
Pine Siskin	AS	0.241	0.144	0.405	26.7%	0.06	13	56	54	96.4%
Pine Siskin	HR	0.157	0.083	0.296	31.9%	0.62	13	45	45	100.0%
Pine Siskin	MC	0.506	0.301	0.852	26.8%	0.02	16	62	62	100.0%
American Goldfinch	LR	0.088	0.046	0.168	32.2%	0.59	10	36	36	100.0%

Appendix B. Continued.

Species	Scientific name	AS	AT	GR	HR	LR	MC	MS	PJ	SA	SE	WE	Total
Killdeer	<i>Charadrius vociferus</i>	0	0	47	1	44	0	0	0	12	22	28	154
Mountain Plover	<i>Charadrius montanus</i>	0	0	3	0	0	0	0	0	0	0	0	3
Black-necked Stilt	<i>Himantopus mexicanus</i>	0	0	0	0	0	0	0	0	0	0	1	1
American Avocet	<i>Recurvirostra americana</i>	0	0	0	0	0	0	0	0	0	0	30	30
Willet	<i>Catoptrophorus semipalmatus</i>	0	0	0	0	0	0	0	0	0	0	1	1
Spotted Sandpiper	<i>Actitis macularia</i>	0	0	0	49	77	0	0	0	6	1	2	135
Upland Sandpiper	<i>Bartramia longicauda</i>	0	0	3	0	0	0	0	0	1	0	1	5
Long-billed Curlew	<i>Numenius americanus</i>	0	0	6	0	0	0	0	0	0	2	0	8
Wilson's Snipe	<i>Gallinago delicata</i>	0	0	3	13	0	0	0	1	9	4	13	43
Wilson's Phalarope	<i>Phalaropus tricolor</i>	0	0	0	0	0	0	0	0	0	0	39	39
Franklin's Gull	<i>Larus pipixcan</i>	--	--	--	--	--	--	--	--	--	--	--	--
California Gull	<i>Larus californicus</i>	0	0	0	0	0	0	0	0	2	0	0	2
Forster's Tern	<i>Sterna forsteri</i>	--	--	--	--	--	--	--	--	--	--	--	--
Least Tern	<i>Sterna antillarum</i>	--	--	--	--	--	--	--	--	--	--	--	--
Black Tern	<i>Chlidonias niger</i>	--	--	--	--	--	--	--	--	--	--	--	--
Rock Pigeon	<i>Columba livia</i>	0	0	0	0	5	0	0	0	2	3	2	12
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	3	0	0	0	0	5	0	0	0	0	0	8
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	--	--	--	--	--	--	--	--	--	--	--	--
White-winged Dove	<i>Zenaida asiatica</i>	--	--	--	--	--	--	--	--	--	--	--	--
Mourning Dove	<i>Zenaida macroura</i>	0	0	171	1	160	15	38	152	93	158	49	837
Inca Dove	<i>Columbina inca</i>	--	--	--	--	--	--	--	--	--	--	--	--
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	0	0	0	0	0	0	0	0	0	0	1	1
Flammulated Owl	<i>Otus flammeolus</i>	--	--	--	--	--	--	--	--	--	--	--	--
Great Horned Owl	<i>Bubo virginianus</i>	1	0	0	0	2	0	0	0	0	1	0	4
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	1	0	0	0	0	0	0	0	0	0	0	1
Burrowing Owl	<i>Athene cunicularia</i>	0	0	8	0	0	0	0	0	0	1	0	9
Spotted Owl	<i>Strix occidentalis</i>	--	--	--	--	--	--	--	--	--	--	--	--
Short-eared Owl	<i>Asio flammeus</i>	--	--	--	--	--	--	--	--	--	--	--	--
Boreal Owl	<i>Aegolius funereus</i>	--	--	--	--	--	--	--	--	--	--	--	--
Common Nighthawk	<i>Chordeiles minor</i>	0	0	9	0	2	3	1	10	3	9	0	37
Common Poorwill	<i>Phaenoptilus nuttallii</i>	0	0	0	0	0	0	1	0	0	0	0	1
Black Swift	<i>Cypseloides niger</i>	0	3	0	0	0	1	0	0	0	0	0	4
Chimney Swift	<i>Chaetura pelagica</i>	0	0	1	0	2	0	0	0	0	0	1	4
White-throated Swift	<i>Aeronantes saxatalis</i>	0	0	0	0	3	2	2	17	1	2	0	27
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	0	0	0	0	11	0	2	24	0	4	1	42

Appendix B. Continued.

Species	Scientific name	AS	AT	GR	HR	LR	MC	MS	PJ	SA	SE	WE	Total
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	62	29	0	70	0	36	77	37	13	9	0	333
Rufous Hummingbird	<i>Selasphorus rufus</i>	1	0	0	0	0	0	0	0	0	0	0	1
Belted Kingfisher	<i>Ceryle alcyon</i>	1	0	0	1	16	1	2	0	0	1	3	25
Lewis's Woodpecker	<i>Melanerpes lewis</i>	0	0	0	0	0	0	0	0	0	6	0	6
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	0	0	1	0	6	0	0	0	0	2	0	9
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	--	--	--	--	--	--	--	--	--	--	--	--
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	0	0	0	0	3	0	0	0	0	0	0	3
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	5	0	0	3	0	17	0	1	0	0	0	26
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	44	1	0	22	0	9	18	0	1	0	0	95
Ladder-backed Woodpecker	<i>Picooides scalaris</i>	0	0	0	0	0	0	0	0	0	2	0	2
Downy Woodpecker	<i>Picooides pubescens</i>	6	0	0	0	7	4	3	1	0	0	1	22
Hairy Woodpecker	<i>Picooides villosus</i>	20	0	0	5	2	18	3	9	0	0	0	57
American Three-toed Woodpecker	<i>Picooides dorsalis</i>	3	0	0	0	0	1	0	0	0	0	0	4
Northern Flicker	<i>Colaptes auratus</i>	29	4	0	8	43	21	22	6	18	1	1	153
Olive-sided Flycatcher	<i>Contopus cooperi</i>	10	1	0	0	0	10	4	0	0	0	0	25
Western Wood-Pewee	<i>Contopus sordidulus</i>	121	0	0	12	38	27	29	9	5	0	1	242
Willow Flycatcher	<i>Empidonax traillii</i>	1	0	0	10	1	0	0	0	0	1	0	13
Hammond's Flycatcher	<i>Empidonax hammondi</i>	29	6	0	11	0	58	4	1	0	0	0	109
Dusky Flycatcher	<i>Empidonax oberholseri</i>	51	8	0	44	0	11	202	26	24	3	2	371
Gray Flycatcher	<i>Empidonax wrightii</i>	1	0	0	0	0	1	4	189	1	1	0	197
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	9	1	0	7	0	37	5	1	0	0	0	60
Black Phoebe	<i>Sayornis nigricans</i>	0	0	0	0	3	0	0	0	0	0	0	3
Eastern Phoebe	<i>Sayornis phoebe</i>	--	--	--	--	--	--	--	--	--	--	--	--
Say's Phoebe	<i>Sayornis saya</i>	0	0	6	0	3	1	0	14	6	16	0	46
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>	0	0	1	0	9	1	4	130	3	12	0	160
Cassin's Kingbird	<i>Tyrannus vociferans</i>	0	0	1	0	0	0	0	0	0	15	0	16
Western Kingbird	<i>Tyrannus verticalis</i>	0	0	72	0	53	0	3	3	24	51	18	224
Eastern Kingbird	<i>Tyrannus tyrannus</i>	0	0	8	0	79	0	0	0	4	3	5	99
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>	--	--	--	--	--	--	--	--	--	--	--	--
Loggerhead Shrike	<i>Lanius ludovicianus</i>	0	0	7	0	0	0	0	0	7	19	0	33
White-eyed Vireo	<i>Vireo griseus</i>	0	0	0	0	0	1	0	0	0	0	0	1
Bell's Vireo	<i>Vireo belli</i>	--	--	--	--	--	--	--	--	--	--	--	--
Gray Vireo	<i>Vireo vicinior</i>	0	0	0	0	0	0	0	30	0	0	0	30
Plumbeous Vireo	<i>Vireo plumbeus</i>	0	0	0	0	5	5	16	93	2	0	0	121
Warbling Vireo	<i>Vireo gilvus</i>	443	6	0	44	22	166	310	20	9	0	1	1021

Appendix B. Continued.

Species	Scientific name	AS	AT	GR	HR	LR	MC	MS	PJ	SA	SE	WE	Total
Gray Jay	<i>Perisoreus canadensis</i>	2	1	0	8	0	0	0	0	0	0	0	11
Steller's Jay	<i>Cyanocitta stelleri</i>	27	6	0	7	0	49	8	13	0	0	0	110
Blue Jay	<i>Cyanocitta cristata</i>	0	0	0	0	37	0	0	0	3	2	0	42
Western Scrub-Jay	<i>Abelocoma coerulescens</i>	0	0	0	0	0	1	13	54	3	5	0	76
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	0	0	0	0	1	2	4	121	16	24	0	168
Clark's Nutcracker	<i>Nucifraga columbiana</i>	17	9	0	3	0	20	4	14	3	0	0	70
Black-billed Magpie	<i>Pica hudsonia</i>	1	0	3	4	42	1	29	27	37	81	3	228
American Crow	<i>Corvus brachyrhynchos</i>	2	0	3	3	16	6	27	6	16	3	0	82
Chihuahuan Raven	<i>Corvus cryptoleucus</i>	0	0	4	0	0	0	0	0	0	4	0	8
Common Raven	<i>Corvus corax</i>	16	20	1	9	3	27	30	90	61	51	2	310
Horned Lark	<i>Eremophila alpestris</i>	0	169	888	0	0	0	0	1	275	424	1	1758
Purple Martin	<i>Progne subis</i>	12	0	0	0	0	0	6	3	0	0	0	21
Tree Swallow	<i>Tachycineta bicolor</i>	34	0	0	44	4	2	32	10	3	0	11	140
Violet-green Swallow	<i>Tachycineta thalassina</i>	90	9	0	35	4	54	88	58	15	2	5	360
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	0	0	1	1	67	0	6	1	4	8	6	94
Bank Swallow	<i>Riparia riparia</i>	0	0	0	0	112	0	0	0	0	0	12	124
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	0	0	9	1	197	0	0	2	26	21	14	270
Barn Swallow	<i>Hirundo rustica</i>	0	0	12	0	21	0	4	1	6	13	13	70
Black-capped Chickadee	<i>Poecile atricapillus</i>	17	0	0	0	19	7	47	2	1	0	2	95
Mountain Chickadee	<i>Poecile gambeli</i>	99	1	0	26	0	93	2	34	2	0	0	257
Juniper Titmouse	<i>Baeolophus griseus</i>	0	0	0	0	3	0	0	67	0	1	0	71
Bushtit	<i>Psaltriparus minimus</i>	0	0	0	0	7	0	8	20	0	2	0	37
Red-breasted Nuthatch	<i>Sitta canadensis</i>	38	0	0	8	0	68	4	0	0	0	0	118
White-breasted Nuthatch	<i>Sitta carolinensis</i>	5	0	0	1	8	14	3	15	0	0	0	46
Pygmy Nuthatch	<i>Sitta pygmaea</i>	--	--	--	--	--	--	--	--	--	--	--	--
Brown Creeper	<i>Certhia americana</i>	10	0	0	3	0	21	2	0	0	0	0	36
Rock Wren	<i>Salpinctes obsoletus</i>	4	24	7	0	5	3	4	97	33	52	0	229
Canyon Wren	<i>Catherpes mexicanus</i>	0	0	0	0	0	0	7	9	0	1	0	17
Bewick's Wren	<i>Thryomanes bewickii</i>	0	0	0	0	15	0	5	165	4	13	0	202
House Wren	<i>Troglodytes aedon</i>	240	2	0	9	202	35	118	9	7	0	14	636
Marsh Wren	<i>Cistothorus palustris</i>	0	0	0	0	0	0	0	0	0	0	122	122
American Dipper	<i>Cinclus mexicanus</i>	0	0	0	3	0	0	5	0	0	0	0	8
Golden-crowned Kinglet	<i>Regulus satrapa</i>	4	0	0	6	0	7	0	0	0	0	0	17
Ruby-crowned Kinglet	<i>Regulus calendula</i>	128	24	0	52	0	183	13	6	8	0	0	414
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>	0	0	0	1	1	5	69	103	19	1	0	199

Appendix B. Continued.

Species	Scientific name	AS	AT	GR	HR	LR	MC	MS	PJ	SA	SE	WE	Total
Eastern Bluebird	<i>Sialia sialis</i>	0	0	0	0	4	0	0	0	0	0	1	5
Western Bluebird	<i>Sialia mexicana</i>	0	0	0	0	0	0	8	0	0	0	0	8
Mountain Bluebird	<i>Sialia currucoides</i>	18	18	0	4	0	19	34	153	41	12	0	299
Townsend's Solitaire	<i>Myadestes townsendi</i>	23	0	0	1	0	27	2	5	0	0	0	58
Veery	<i>Catharus fuscescens</i>	0	0	0	1	0	0	0	0	0	0	0	1
Swainson's Thrush	<i>Catharus ustulatus</i>	11	1	0	6	2	4	21	0	0	0	0	45
Hermit Thrush	<i>Catharus guttatus</i>	131	19	0	24	0	119	33	21	0	0	0	347
American Robin	<i>Turdus migratorius</i>	176	35	2	154	98	113	242	58	37	1	5	921
Gray Catbird	<i>Dumetella carolinensis</i>	0	0	0	0	3	0	11	0	0	0	6	20
Northern Mockingbird	<i>Mimus polyglottos</i>	0	0	42	0	1	0	0	2	5	103	4	157
Sage Thrasher	<i>Oreoscoptes montanus</i>	0	3	0	0	0	0	0	1	173	37	2	216
Brown Thrasher	<i>Toxostoma rufum</i>	0	0	1	0	15	0	0	0	2	0	3	21
American Pipit	<i>Anthus rubescens</i>	0	541	0	0	0	0	0	0	0	0	0	541
Cedar Waxwing	<i>Bombycilla cedrorum</i>	0	0	0	3	7	0	3	0	0	0	6	19
European Starling	<i>Sturnus vulgaris</i>	0	0	4	0	76	0	1	0	2	21	1	105
Orange-crowned Warbler	<i>Vermivora celata</i>	36	3	0	3	0	44	112	15	1	0	0	214
Virginia's Warbler	<i>Vermivora virginiae</i>	0	0	0	0	0	18	161	59	3	0	0	241
Yellow Warbler	<i>Dendroica petechia</i>	15	0	2	43	99	0	89	2	2	1	29	282
Yellow-rumped Warbler	<i>Dendroica coronata</i>	216	9	0	40	0	203	12	4	3	0	0	487
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	0	0	0	0	1	2	7	181	4	0	0	195
Grace's Warbler	<i>Dendroica graciae</i>	0	0	0	0	0	0	0	1	0	0	0	1
American Redstart	<i>Setophaga ruticilla</i>	--	--	--	--	--	--	--	--	--	--	--	--
Ovenbird	<i>Seiurus auricapillus</i>	--	--	--	--	--	--	--	--	--	--	--	--
Northern Waterthrush	<i>Seiurus noveboracensis</i>	--	--	--	--	--	--	--	--	--	--	--	--
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	56	0	0	12	0	22	63	11	3	0	0	167
Common Yellowthroat	<i>Geothlypis trichas</i>	0	0	2	1	47	0	0	0	4	0	130	184
Wilson's Warbler	<i>Wilsonia pusilla</i>	5	21	0	162	0	1	0	0	3	0	0	192
Yellow-breasted Chat	<i>Icteria virens</i>	0	0	0	0	37	0	9	0	0	5	3	54
Western Tanager	<i>Piranga ludoviciana</i>	58	1	0	14	0	187	60	34	1	0	0	355
Green-tailed Towhee	<i>Pipilo chlorurus</i>	33	4	0	8	1	54	321	35	120	34	0	610
Spotted Towhee	<i>Pipilo maculatus</i>	2	0	0	0	26	21	309	91	27	4	0	480
Canyon Towhee	<i>Pipilo fuscus</i>	0	0	0	0	0	0	0	0	0	3	0	3
Cassin's Sparrow	<i>Aimophila cassinii</i>	0	0	236	0	0	0	0	0	151	103	1	491
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	0	0	0	0	0	0	0	0	0	3	0	3
Chipping Sparrow	<i>Spizella passerina</i>	31	7	2	14	0	76	64	204	8	2	0	408

Appendix B. Continued.

Species	Scientific name	AS	AT	GR	HR	LR	MC	MS	PJ	SA	SE	WE	Total
Pine Grosbeak	<i>Pinicola enucleator</i>	7	6	0	2	0	1	0	0	0	0	0	16
Cassin's Finch	<i>Carpodacus cassinii</i>	9	5	0	1	0	5	0	12	3	0	0	35
House Finch	<i>Carpodacus mexicanus</i>	0	0	1	0	19	0	0	58	0	13	1	92
Red Crossbill	<i>Loxia curvirostra</i>	29	2	0	0	0	18	0	0	0	0	0	49
White-winged Crossbill	<i>Loxia leucoptera</i>	--	--	--	--	--	--	--	--	--	--	--	--
Pine Siskin	<i>Carduelis pinus</i>	55	10	0	45	0	62	17	15	0	2	0	206
Lesser Goldfinch	<i>Carduelis psaltria</i>	0	0	0	0	5	1	6	2	0	0	0	14
American Goldfinch	<i>Carduelis tristis</i>	1	0	0	0	36	0	4	4	1	2	13	61
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	4	0	0	0	0	18	1	0	0	0	0	23
House Sparrow	<i>Passer domesticus</i>	0	0	2	0	2	0	0	0	0	2	0	6
Totals		3058	1696	3913	1816	2685	2297	3390	2966	3176	2647	2017	29661

