Monitoring the Birds of Carson National Forest

Final Report
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Executive Summary

In 2004, Rocky Mountain Bird Observatory in cooperation with its funding partner, the U.S.D.A. Forest Service, conducted the second season of a bird-monitoring project on the Carson National Forest in the southern Rocky Mountains of New Mexico. Because of recent severe drought, Piñon Pines (*Pinus edulis*) can no longer produce sufficient sap to defend themselves against an outbreak of Ips beetle (*Ips confusus*). This beetle has killed a large proportion of the Piñons in the Carson National Forest. The objectives of this project are to monitor population trends, particularly in Piñon-Juniper habitat, and distributions of all breeding bird species at the scale of the National Forest. With this information, land-management decisions can be directed in a more effective manner to conserve birds of the Carson National Forest.

Using habitat-based point-count transects that we placed randomly through the Forest, we surveyed nine habitats on the Carson National Forest. The habitat-stratified transects provided excellent data on 39 breeding species, of which three are listed as Management Indicator Species for the Carson National Forest and 13 are classified as Species of Management Concern by the New Mexico Working Group of Partners In Flight. We also recorded detections of Red Squirrel (*Tamiasciurus hudsonicus*), which is listed as a Management Indicator Species on the Carson National Forest. In addition, we recorded general habitat characteristics at each point: structural stage and canopy cover of the overstory, abundance of each tree species present in the overstory, dominant species and volume thereof present in the sub-canopy, shrub layer volume and mean height, abundance of each shrub layer species present, abundance of four classifications of ground cover (woody, herbaceous, grass, or bare), presence of other habitats within the area of the point count, the Universal Transverse Mercator coordinate, and the presence or absence of a road within 100 m.

Introduction

In 2004, Rocky Mountain Bird Observatory (RMBO), in cooperation with Carson National Forest (CNF), conducted the second year of a habitat-based, bird-monitoring program designed to provide population-trend data on most diurnal, regularly occurring breeding bird species in the southern Rocky Mountain region. This program is modeled after, and is complementary to, *Monitoring Colorado's Birds* (Leukering et al. 2000) and *Monitoring Wyoming's Birds* (Leukering et al. 2001) and is consistent with goals emphasized in the Partners In Flight National Landbird Monitoring Strategy (Bart et al. 2001). In addition to monitoring bird populations, the program will generate a wealth of information useful in managing bird populations (e.g., habitat associations and spatial distribution). This report details the findings from the second year of what is intended to be a long-term, cooperative effort to monitor bird populations on the CNF and in the southern Rocky Mountains.

Methods

We used habitat-based point transects to obtain population data for the breeding birds of the CNF. We conducted 66 transects of 15 point counts each in randomly-selected stands in nine habitats (Alpine Tundra, Aspen, Grassland, Mid-elevation Riparian, Mixed Conifer, Piñon-Juniper, Ponderosa Pine, Sage Shrubland, and Spruce-Fir; Fig. 1). For all birds detected on points, we recorded the radial distance from the point to each individual bird. For individuals of target species of low density (determined a priori; Appendix A) detected on points, we also recorded the bearing (in degrees) from the observer to the bird. In order to increase our sample size for species of low density, we recorded the bearing and distance from the observer to each individual of target species detected while

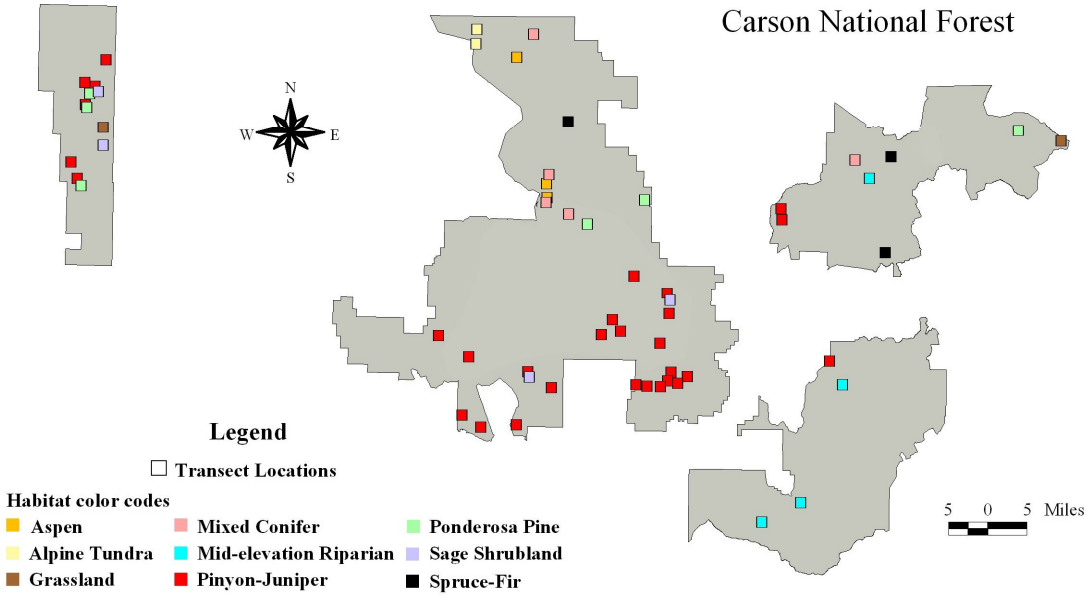


Figure 1. Locations of transects conducted in Carson National Forest, Summer 2004.

traversing between points and, when necessary for sample size constraints, pooled these detections with the point detections. This year we also recorded all Red Squirrel (*Tamiasciurus hudsonicus*) detections using the same protocol used to record birds.

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

Mid-elevation Riparian transects – In 2004 we conducted surveys in riparian habitats using the same protocol used in other habitats. After analyzing data collected from the 2003 season, when line transects were used in this habitat, we decided to return to point-count transects in riparian habitats. The line-transect method failed to provide more useful data in this habitat as we hoped that it would. This year we established point-count transects in 2003's line-transect locations.

We used program DISTANCE to determine density estimates for species for which we obtained at least 23 detections on the CNF. 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 in Buckland et al. (1993) and Buckland et al. (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., detectability among 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 obtained sample sizes of ≥ 23 individuals. In this analysis we examined the data histograms and the detection-function curve fit and then truncated as needed to eliminate outliers.

Species that are considered well-sampled via transects are those with a sufficient number of detections (≥ 23) and coefficients of variation of the density estimates (CV in the tables; hereafter CV) of less than 50%. In individual habitats, we were able to meet these criteria for 39 species. Species with CVs of >50% will require a longer period in which to detect trends with statistical significance.

We consulted the New Mexico Partners In Flight (NMPIF; 2003) for information regarding bird species that are considered priorities for land managers and conservation organizations (Appendix B); NMPIF classifies species of management concern into four categories: Highest Priority, Priority, High Responsibility, and Representative. This information has been compiled through cooperation between several organizations and individuals that are very familiar with the status of New Mexico's birds.

1) Species that NMPIF believes are in need of immediate action are classified Highest Priority management species. These species scored 21 or higher using eight criteria which were determined by NMPIF.

2) Priority management species also scored 21 or higher. However, NMPIF believes that these species are not in need of immediate action in New Mexico or conservation measures are being implemented in other locations where a greater portion of their populations exist.

3) Species classified as High Responsibility for management are listed as such because a significant percentage of the total population for the given species exists in that area.

4) Representative species are those that should also be taken into consideration when making land management decisions but their situation is not as urgent as Highest Priority and Priority species.

Results and Discussion

We experienced few logistical problems in the second season of this project. Of the 72 transects that we scheduled to conduct, we surveyed 66 this season. We obtained sufficient sample sizes for many species for which to run analyses and even detected some low-density target species in reasonable numbers (e.g., 27 Brewer's Sparrows [scientific names of birds can be found in Appendix C] in Sage Shrubland). As in 2003, we detected some species in large numbers (e.g., 119 Juniper Titmouse in Piñon-Juniper). We obtained sufficient data for two species in Alpine Tundra habitat where we ran only two transects, which well demonstrates the effectiveness of our monitoring protocol.

Transects – We conducted 66 transects in nine habitats in summer 2004 (Table 1) obtaining data on 121 species. We provide summary data in the habitat sections for those species for which we obtained sufficient sample size (46 species; Appendix C). Though we provide results for species with low sample sizes because any data are better than no data, we urge caution when interpreting density estimates derived from low sample sizes.

Table 1. Number of transects conducted in each habitat with totals of species and individuals detected (excluding flyovers) on the Carson National Forest, Summers 2003 and 2004.

Habitat	Year	No. of transects	No. of point counts	No. of species detected	No. of individuals
Alpine Tundra*	2004	2	30	18	138
Aspen	2003	3	45	36	397
	2004	3	45	45	595
Grassland	2003	2	30	24	117
	2004	6	90	40	561
Mixed Conifer	2003	5	75	48	576
	2004	6	90	63	887
Mid-elevation Riparian	2003	4	**	34	192
	2004	4	60	45	493
Piñon-Juniper	2003	30	450	81	2724
	2004	26	390	82	2638
Ponderosa Pine	2003	6	90	64	665
	2004	9	135	71	1458
Sage	2003	4	57	49	460
	2004	4	60	40	413
Spruce-Fir	2003	3	45	47	401
	2004	6	90	40	812
Totals	2003	59	822	112	5739
	2004	66	960	118	7995

* Alpine Tundra was run not run in 2003. **Mid-elevation Riparian transects were conducted as line transects in 2003.

Alpine Tundra (AT): This habitat is defined as open areas above treeline, generally composed of grasses and forbs. In 2004, we established two transects in areas above timberline that truly represent this habitat. We incorporated the transects labeled as Alpine Tundra conducted in 2003 into the set of Grassland transects in 2004 as the species recorded on those transects were grassland species, not Alpine Tundra species. We detected ≥ 23 individuals of two species in Alpine Tundra this season (Table 2).

Table 2. Estimated densities of breeding birds on two transects in Alpine Tundra in the Carson National Forest, Summer 2004.

Species	Year	D	LCL	UCL	CV	n	K
American Pipit	2004	1.011	0.009	108.574	50%	58	2
White-crowned Sparrow	2004	0.601	0.001	622.218	69%	44	2

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 the species was detected.

Aspen (AS): The Aspen transects traverse stands of a wide range of age classes and seral stages of Quaking Aspen (*Populus tremuloides*). Aspen is seldom a climax vegetation type, and the transects contain significant incursions of Spruce-Fir and other conifers. As a result, these transects provide detections of a number of species generally associated with conifers. We conducted three Aspen transects in 2004, the same number conducted in 2003. We established one new Aspen transect this season because one of the previous

year's transects was located in habitat more referable to Spruce-Fir. We detected ≥ 23 individuals of seven of the 45 species that were detected in Aspen this season (Table 3).

Table 3. Estimated densities of breeding birds on three transects in Aspen in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Warbling Vireo	2003	0.221	0.120	0.407	31%	31	3
	2004	0.592	0.215	1.629	28%	65	3
Mountain Chickadee	2003	0.299	0.160	0.560	32%	31	3
	2004	1.224	0.217	6.900	46%	54	3
Hermit Thrush	2003	0.117	0.058	0.234	36%	31	3
	2004	0.062	0.016	0.235	46%	26	3
American Robin	2003	ID	--	--	--	11	3
	2004	0.200	0.068	0.585	45%	30	3
Yellow-rumped Warbler	2003	0.331	0.191	0.576	28%	44	3
	2004	0.425	0.049	3.683	71%	34	3
Western Tanager	2003	0.200	0.108	0.370	31%	31	3
	2004	0.157	0.026	0.948	47%	36	3
Dark-eyed Junco	2003	ID	--	--	--	21	3
	2004	0.513	0.127	2.070	39%	47	3

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 the species was detected; **ID** = insufficient data.

Grassland (GR): This habitat is composed of high-elevation, open areas with various grass species dominant. We established four new transects in this habitat this season. Two transects established as Alpine Tundra transects last year were this year included in Grassland. Therefore, a total of six GR transects were conducted in 2004. The two transects conducted last year were dropped because too many birds in nearby forested areas were detected. The grassland transects conducted this year hosted species expected in this habitat; however, we still detected many species typically found in forests. During the 2004 field season we detected ≥ 23 individuals of four species that are good representatives of grassland habitat (Table 4).

Table 4. Estimated densities of breeding birds on six transects in Grassland in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Horned Lark	2003	ID	--	--	--	0	0
	2004	0.153	0.078	0.299	32%	43	6
Vesper Sparrow	2003	0.069	0.035	0.137	34%	23	2
	2004	0.227	0.160	0.313	15%	116	6
Western Meadowlark	2003	ID	--	--	--	14	2
	2004	0.113	0.064	0.200	25%	97	6
Brewer's Blackbird	2003	ID	--	--	--	6	2
	2004	0.443	0.136	1.440	58%	23	3

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 the species was detected; **ID** = insufficient data.

Mixed Conifer (MC): This habitat designation describes stands of coniferous trees that contain a diversity of tree species, such as White Fir (*Abies concolor*), Douglas-fir (*Pseudotsuga menziesii*), and Ponderosa Pine (*Pinus ponderosa*). Mixed Conifer stands are found at elevations between those in which Ponderosa Pine and Spruce-Fir stands occur. We conducted six transects in this habitat this season and were able to estimate densities of nine species (Table 5).

Table 5. Estimated densities of breeding birds on six transects in Mixed Conifer in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Warbling Vireo	2003	0.991	0.644	1.523	22%	50	5
	2004	0.510	0.249	1.046	32%	59	6
Mountain Chickadee	2003	0.665	0.366	1.211	31%	24	5
	2004	0.930	0.630	1.374	18%	63	6
Pygmy Nuthatch	2003	ID	--	--	--	2	1
	2004	0.244	0.072	0.830	57%	23	3
Hermit Thrush	2003	0.089	0.047	0.169	33%	29	4
	2004	0.075	0.040	0.140	29%	46	5
American Robin	2003	0.287	0.192	0.429	20%	47	5
	2004	0.341	0.179	0.649	30%	54	5
Yellow-rumped Warbler	2003	0.806	0.556	1.169	19%	53	5
	2004	0.612	0.316	1.188	30%	54	6
Western Tanager	2003	0.428	0.300	0.611	18%	64	5
	2004	0.504	0.304	0.839	25%	71	6
Dark-eyed Junco	2003	ID	--	--	--	12	4
	2004	0.395	0.227	0.685	28%	47	6
Pine Siskin	2003	ID	--	--	--	16	5
	2004	0.467	0.212	1.029	38%	36	6

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 the species was detected; **ID** = insufficient data.

Mid-elevation Riparian (MR): This habitat can be described as forested habitat along a perennial stream or river. Dominant overstory tree species typically include Narrowleaf Cottonwood (*Populus angustifolia*) and willow (*Salix* sp.). Four transects were run in riparian areas in the CNF this season. Portions of Rio Santa Barbara, Rio Chiquito, Rio de los Trampas, and the Red River were surveyed. We changed the protocol for this habitat in 2004, being run as point-count transects rather than line transects. This proved to be effective as we detected more birds (192 in 2003 vs. 493 in 2004; Table 6) and provide density estimates for a greater number of species (three in 2003 vs. six in 2004).

Table 6. Estimated densities of breeding birds on four transects in Mid-elevation Riparian in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Cordilleran Flycatcher	2003	0.638	0.390	1.042	23%	25	4
	2004	1.212	0.715	2.054	23%	50	4
Warbling Vireo	2003	0.675	0.312	1.458	32%	25	4
	2004	0.921	0.385	2.207	31%	50	4
American Robin	2003	0.423	0.199	0.899	33%	29	4
	2004	0.633	0.354	1.132	26%	42	4
Yellow-rumped Warbler	2003	ID	--	--	--	8	3
	2004	0.577	0.119	2.792	60%	29	3
Western Tanager	2003	ID	--	--	--	8	2
	2004	0.245	0.123	0.487	31%	32	4
Dark-eyed Junco	2003	ID	--	--	--	2	2
	2004	0.560	0.194	1.614	41%	25	3

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 the species was detected; **ID** = insufficient data.

Piñon-Juniper (PJ): Arid forested areas dominated by Piñon Pine (*Pinus edulis*) and Juniper (*Juniperus* spp.) compose this habitat. We detected 82 species on these transects, which is one more than observed in 2003. We conducted 26 transects in PJ this year and were able to estimate densities of 29 species (two more than calculated in 2003; Table 7). Of these 29 species, nine received high priority scores in the NMPIF conservation plan (Appendix B). Two of the species for which we provide density estimates, Hairy Woodpecker and Juniper Titmouse, are listed as MIS in the CNF.

Table 7. Estimated densities of breeding birds on 26 transects in Piñon-Juniper in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Mourning Dove	2003	0.015	0.010	0.022	21%	49	17
	2004	0.034	0.022	0.052	21%	84	20
Broad-tailed Hummingbird	2003	ID	--	--	--	3	3
	2004	0.343	0.195	0.605	29%	38	17
Hairy Woodpecker	2003	ID	--	--	--	16	10
	2004	0.017	0.011	0.027	23%	27	17
Gray Flycatcher	2003	0.164	0.102	0.264	25%	164	26
	2004	0.376	0.278	0.509	15%	160	24
Ash-throated Flycatcher	2003	0.089	0.054	0.133	23%	165	27
	2004	0.240	0.168	0.343	18%	175	23
Plumbeous Vireo	2003	0.070	0.052	0.094	15%	79	22
	2004	0.165	0.108	0.253	21%	93	20
Western Scrub-Jay	2003	0.047	0.035	0.063	15%	93	27
	2004	0.032	0.020	0.053	25%	38	16
Pinyon Jay	2003	0.003	0.002	0.006	29%	36	12
	2004	0.009	0.004	0.020	40%	31	11
Common Raven	2003	0.005	0.004	0.007	17%	71	27
	2004	0.008	0.004	0.015	32%	40	22
Violet-green Swallow	2003	0.030	0.018	0.048	25%	38	15
	2004	0.070	0.039	0.126	30%	56	16
Mountain Chickadee	2003	0.047	0.029	0.078	26%	35	12
	2004	0.134	0.074	0.243	30%	51	15
Juniper Titmouse	2003	0.177	0.137	0.227	13%	138	21
	2004	0.258	0.168	0.396	21%	116	22
Bushtit	2003	0.186	0.111	0.311	27%	55	19
	2004	0.399	0.243	0.656	25%	68	23
White-breasted Nuthatch	2003	0.023	0.012	0.043	32%	27	11
	2004	0.041	0.018	0.090	41%	23	11
Rock Wren	2003	0.014	0.009	0.021	21%	39	11
	2004	0.014	0.006	0.034	45%	36	10
Bewick's Wren	2003	0.078	0.058	0.106	15%	111	21
	2004	0.065	0.037	0.115	29%	49	16
Blue-gray Gnatcatcher	2003	0.123	0.074	0.205	26%	41	17
	2004	0.311	0.142	0.682	41%	41	15
Western Bluebird	2003	ID	--	--	--	21	11
	2004	0.033	0.014	0.076	43%	23	12
Mountain Bluebird	2003	ID	--	--	--	20	6
	2004	0.016	0.007	0.034	39%	24	12
American Robin	2003	ID	--	--	--	11	8
	2004	0.011	0.005	0.023	37%	25	10
Virginia's Warbler	2003	0.043	0.026	0.071	26%	44	11
	2004	0.172	0.079	0.375	40%	50	13
Yellow-rumped Warbler	2003	ID	--	--	--	8	3
	2004	0.078	0.035	0.175	41%	26	11
Black-throated Gray Warbler	2003	0.223	0.182	0.273	10%	232	21
	2004	0.576	0.345	0.961	25%	209	21
Western Tanager	2003	0.043	0.031	0.061	18%	95	21
	2004	0.046	0.027	0.079	27%	42	17
Green-tailed Towhee	2003	ID	--	--	--	10	7
	2004	0.043	0.015	0.120	54%	30	6
Spotted Towhee	2003	0.243	0.196	0.300	11%	257	29
	2004	0.213	0.144	0.316	19%	157	21
Chipping Sparrow	2003	0.161	0.126	0.206	13%	181	26
	2004	0.837	0.468	1.496	30%	140	26
Vesper Sparrow	2003	0.017	0.010	0.030	28%	52	9
	2004	0.011	0.004	0.029	53%	28	6
Black-headed Grosbeak	2003	0.058	0.043	0.078	15%	117	17
	2004	0.053	0.031	0.092	27%	76	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 the species was detected; **ID** = insufficient data.

Ponderosa Pine (PP): This habitat is composed of stands of conifer dominated by Ponderosa Pine (*Pinus ponderosa*), which is found at elevations lower than Mixed Conifer stands and quite arid. It incorporates natural variations in the landscape, such as stands of Gambel Oak (*Quercus gambelli*), Piñon-Juniper, or Quaking Aspen. We conducted nine transects in PP, estimating densities of 18 species (Table 8). Of these 18, Grace's Warbler (Highest Priority), Pygmy Nuthatch (Priority), Western Bluebird (Priority), Western Wood-Pewee (High Responsibility), Plumbeous Vireo (High

Table 8. Estimated densities of breeding birds on nine transects in Ponderosa Pine in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Western Wood-Pewee	2003	0.082	0.045	0.150	31%	47	6
	2004	0.335	0.176	0.639	30%	92	9
Plumbeous Vireo	2003	0.125	0.071	0.221	29%	32	6
	2004	0.184	0.121	0.281	20%	40	9
Purple Martin	2003	ID	--	--	--	11	2
	2004	0.057	0.027	0.121	39%	25	3
Violet-green Swallow	2003	ID	--	--	--	20	6
	2004	0.689	0.320	1.484	39%	50	8
Mountain Chickadee	2003	ID	--	--	--	12	4
	2004	0.403	0.253	0.643	23%	50	9
White-breasted Nuthatch	2003	ID	--	--	--	22	5
	2004	0.196	0.072	0.533	52%	25	7
Pygmy Nuthatch	2003	ID	--	--	--	19	4
	2004	0.734	0.351	1.531	36%	55	9
Western Bluebird	2003	ID	--	--	--	19	4
	2004	0.387	0.207	0.723	29%	50	7
Hermit Thrush	2003	ID	--	--	--	7	2
	2004	0.011	0.004	0.028	47%	23	5
American Robin	2003	0.128	0.072	0.227	29%	38	6
	2004	0.234	0.095	0.578	46%	49	8
Yellow-rumped Warbler	2003	ID	--	--	--	22	5
	2004	0.188	0.090	0.390	33%	44	7
Grace's Warbler	2003	0.127	0.069	0.234	32%	33	5
	2004	0.350	0.129	0.950	51%	25	6
Western Tanager	2003	0.108	0.059	0.197	31%	30	6
	2004	0.224	0.142	0.352	21%	81	9
Spotted Towhee	2003	0.183	0.110	0.305	26%	51	4
	2004	0.501	0.193	1.298	44%	60	5
Chipping Sparrow	2003	0.052	0.024	0.111	39%	26	6
	2004	0.197	0.084	0.462	39%	35	9
Dark-eyed Junco	2003	ID	--	--	--	7	5
	2004	0.316	0.149	0.674	38%	38	8
Red Crossbill	2003	ID	--	--	--	3	1
	2004	0.428	0.079	2.319	86%	26	2
Pine Siskin	2003	ID	--	--	--	8	1
	2004	0.167	0.077	0.362	38%	32	6

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 the species was detected; **ID** = insufficient data.

Responsibility) and Dark-eyed Junco (High Responsibility) can be found on the NMPIF priority for management lists.

Sage Shrubland (SA): Open landscapes dominated by Big Sagebrush (*Artemisia tridentata*) make up this habitat. The stands of sage that we surveyed in the CNF are generally narrow "fingers" of pure sage and have forested areas nearby. Therefore, we detected many forest birds on the transects. We conducted four SA transects this season and obtained sufficient data on seven species (Table 9). Two new transects were established in areas with less influence from nearby forested areas and are much better representatives of this habitat. One species for which we provide density estimates, Brewer's Sparrow, is listed by the CNF as a MIS. We were also able to provide density estimates for Sage Sparrow (Highest Priority) and Green-tailed Towhee (Priority), which are on the NMPIF priority for management lists. Sage Thrasher, which is listed by the NMPIF as a Highest Priority management species in Sage Shrubland, was recorded eleven times this season. Sage Thrasher was not recorded in 2003.

Table 9. Estimated densities of breeding birds on four transects in Sage Shrubland in the Carson National Forest, Summers 2003 and 2004.

Species	Year	D	LCL	UCL	CV	n	K
Green-tailed Towhee	2003	0.134	0.067	0.266	35%	29	4
	2004	0.176	0.029	1.073	78%	23	2
Spotted Towhee	2003	0.167	0.095	0.295	29%	44	4
	2004	0.177	0.058	0.540	45%	34	3
Brewer's Sparrow	2003	0.094	0.052	0.167	30%	27	4
	2004	0.662	0.204	2.150	43%	44	3
Vesper Sparrow	2003	0.128	0.077	0.212	26%	45	4
	2004	0.543	0.159	1.851	45%	83	4
Sage Sparrow	2003	0.074	0.033	0.163	41%	23	1
	2004	0.772	0.148	4.032	68%	41	2

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 the species was detected.

Spruce-Fir (SF): This habitat is composed of coniferous tree species at higher elevations, such as Englemann Spruce (*Picea engelmanii*), Blue Spruce (*Picea pungens*), and Subalpine Fir (*Abies lasiocarpa*). We conducted six transects in SF this year and were able to estimate densities for seven bird species and one mammal species (Table 10). One of these species, Dark-eyed Junco, is listed on the NMPIF High Responsibility for management list. We also are able to provide a density estimate for Red Squirrel in Spruce-Fir, which is listed as a MIS in the CNF.

Table 10. Estimated densities of breeding birds on six transects in Spruce-Fir in the Carson National Forest, Summers 2003 and 2004.

Species	year	D	LCL	UCL	CV	n	K
Warbling Vireo	2003	ID	--	--	--	19	3
	2004	0.256	0.088	0.748	49%	32	5
Mountain Chickadee	2003	0.321	0.193	0.532	26%	36	3
	2004	1.040	0.715	1.513	17%	100	6
Ruby-crowned Kinglet	2003	0.151	0.075	0.306	36%	23	2
	2004	0.266	0.102	0.690	45%	32	6
Hermit Thrush	2003	0.065	0.030	0.140	39%	26	3
	2004	0.166	0.083	0.332	30%	83	6
Yellow-rumped Warbler	2003	0.370	0.229	0.599	25%	45	3
	2004	0.560	0.211	1.484	40%	56	6
Dark-eyed Junco	2003	0.279	0.149	0.523	32%	34	3
	2004	0.501	0.309	0.814	23%	62	6
Pine Siskin	2003	ID	--	--	--	21	2
	2004	0.715	0.479	1.069	19%	57	6
Red Squirrel	2004	0.350	0.171	0.714	31%	44	6

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 the species was detected; **ID** = insufficient data.

Overall, the estimated densities that we provide for the CNF are similar to those that are typical of the *Monitoring Colorado's Birds* project. We provide a comparison of estimated densities from the summer of 2004 for both areas at the conclusion of this report (Appendix D). We urge caution in using these data as the Colorado numbers are derived from data gathered from an entire state, including six national forests, and the variability inherent in such a wide array of areas.

Species Accounts

Here we present 69 brief bird-species accounts that delineate our results for species of which we detected at least 25 individuals in all habitats and also of species that are designated MIS in the CNF. We also include accounts for species of which we detected at least six individuals in all habitats combined and which are listed by NMPIF as a Species of Management Concern for the state of New Mexico. The final species account is for Red Squirrel which is listed as MIS in the CNF.

In this section, we have included maps that show locations at which we detected each species and which also indicate the locations of transects on which we did not detect the species in 2004. The circles or triangles marked on the maps indicate where our transects are located and are color coded for each type of habitat. A circle indicates that a species was detected on a specific transect, and a triangle indicates that a species was not detected. The location of the circle or triangle represents the mid-point (point number 8) of the 15-point transects. These maps indicate the locations of transects and are <u>not</u> meant to be interpreted as range maps for the bird or mammal species of CNF.

Blue Grouse

Blue Grouse is found in shrubby coniferous forests or in Aspen during the breeding season. We detected them in Mixed Conifer (n=12), Spruce-Fir (n=6), and Aspen (n=1) this year (Fig. 2). Blue Grouse is listed by NMPIF as a Highest Priority management species in Spruce-Fir and as a Priority management species in Mixed Conifer.

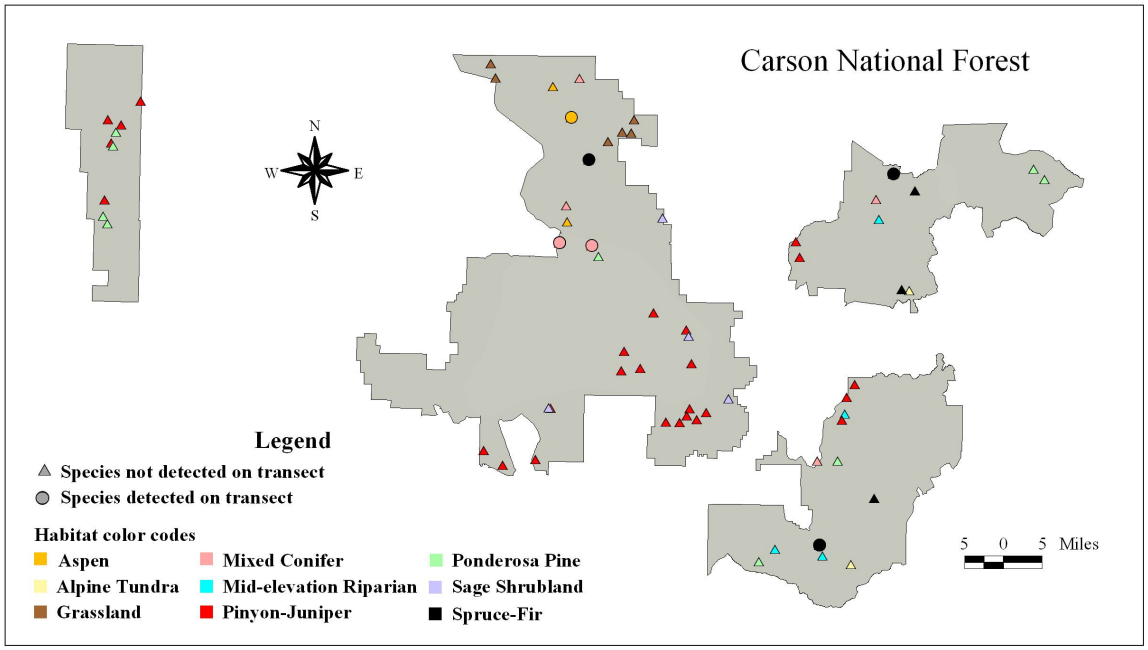


Figure 2. Distribution of transects on which Blue Grouse was detected in the Carson National Forest, Summer 2004.

Mourning Dove

Mourning Doves are common in open and forested habitats of lower elevation. We detected Mourning Doves in six habitats during the 2004 season and were able to calculate a density estimate for Piñon-Juniper habitat where we detected 89 individuals (Fig. 3; Table 11).

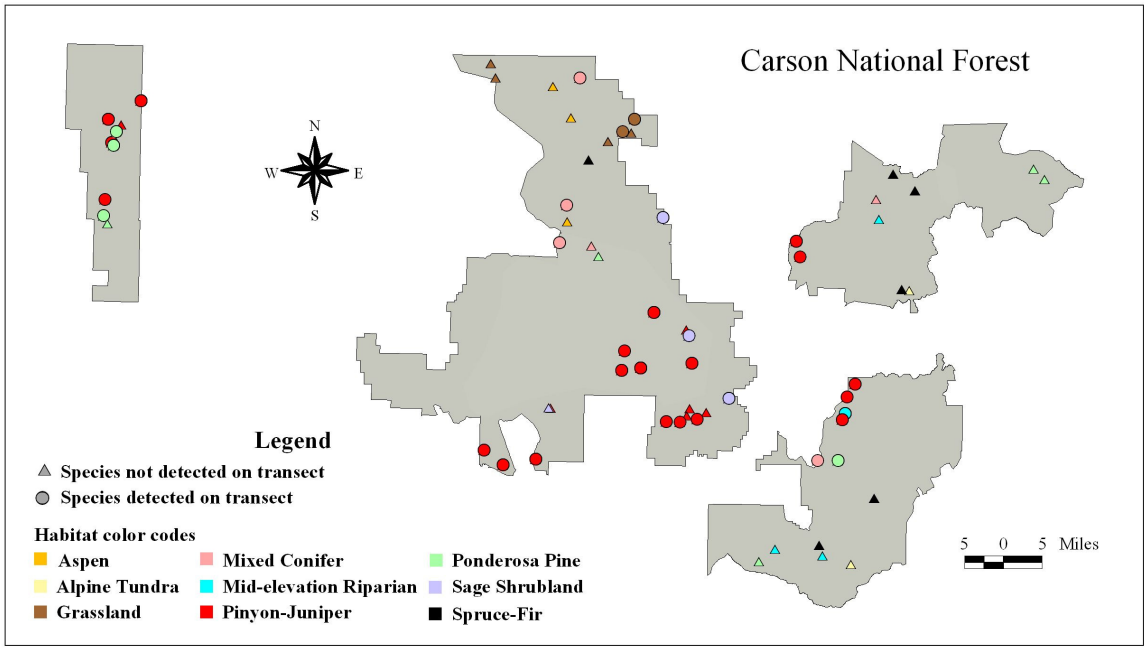


Figure 3. Distribution of transects on which Mourning Dove was detected in the Carson National Forest, Summer 2004.

Table 11. Habitat-specific density estimates for Mourning Dove in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
GR	ID	--	--	--	5
MC	ID	--	--	--	9
MR	ID	--	--	--	9
PJ	0.034	0.022	0.052	21.2%	84
PP	ID	--	--	--	20
SA	ID	--	--	--	15

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Broad-tailed Hummingbird

This species breeds in any forested habitat that has plants offering nectar and Figure 4 illustrates the transects on which we recorded the species. We detected sufficient numbers of this species on Piñon-Juniper transects to provide a density estimate (Table 12). We detected a total of 105 Broad-tailed Hummingbirds in all habitats combined. This species is listed by NMPIF as a High Responsibility management species in Ponderosa Pine, Mixed Conifer, and Spruce-Fir habitats.

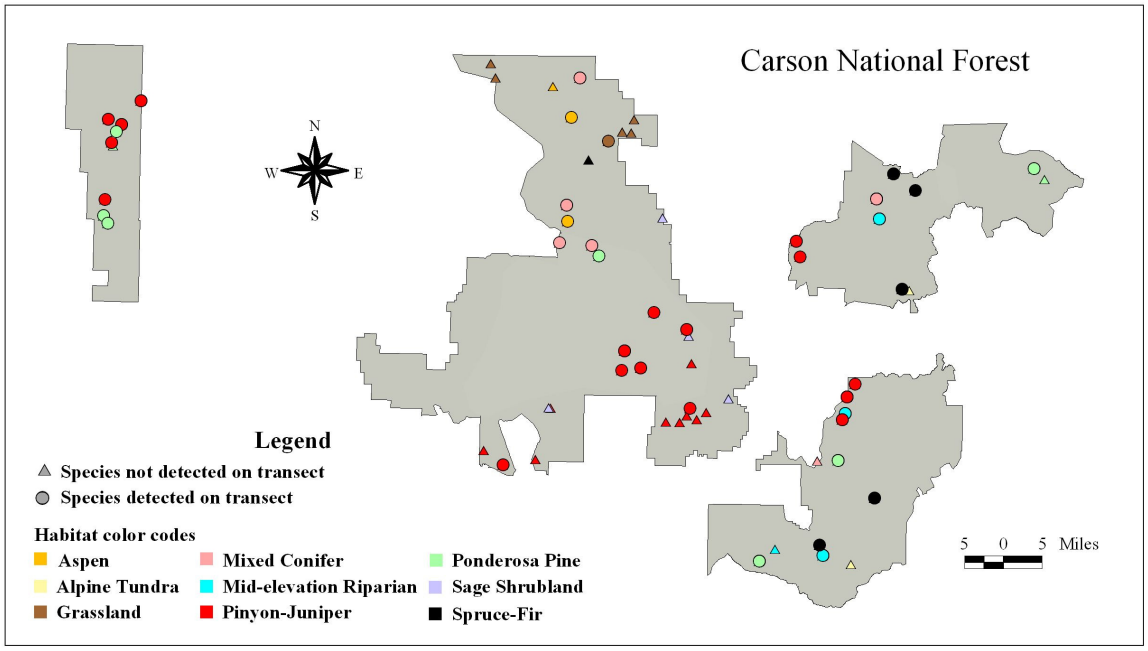


Figure 4. Distribution of transects on which Broad-tailed Hummingbird was detected in the Carson National Forest, Summer 2004.

Table 12. Habitat-specific density estimates for Broad-tailed Hummingbird in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	2
GR	ID	--	--	--	1
MC	ID	--	--	--	19
MR	ID	--	--	--	18
PJ	0.343	0.195	0.605	28.9%	38
PP	ID	--	--	--	18
SF	ID	--	--	--	8

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Red-naped Sapsucker

Red-naped Sapsuckers are most commonly found breeding in Aspen or forests with a mix of coniferous trees and Aspen. We detected 16 individuals in four habitats this season, being most common in Aspen (n=6), Mixed Conifer (n=5), and Ponderosa Pine (n=4)(Fig. 5). This species is listed as a Priority management species in both Mixed Conifer and Spruce-Fir habitats by NMPIF. Red-naped Sapsucker is listed as a Stewardship Species in the Intermountain West region as specified in the North American Landbird Conservation Plan.

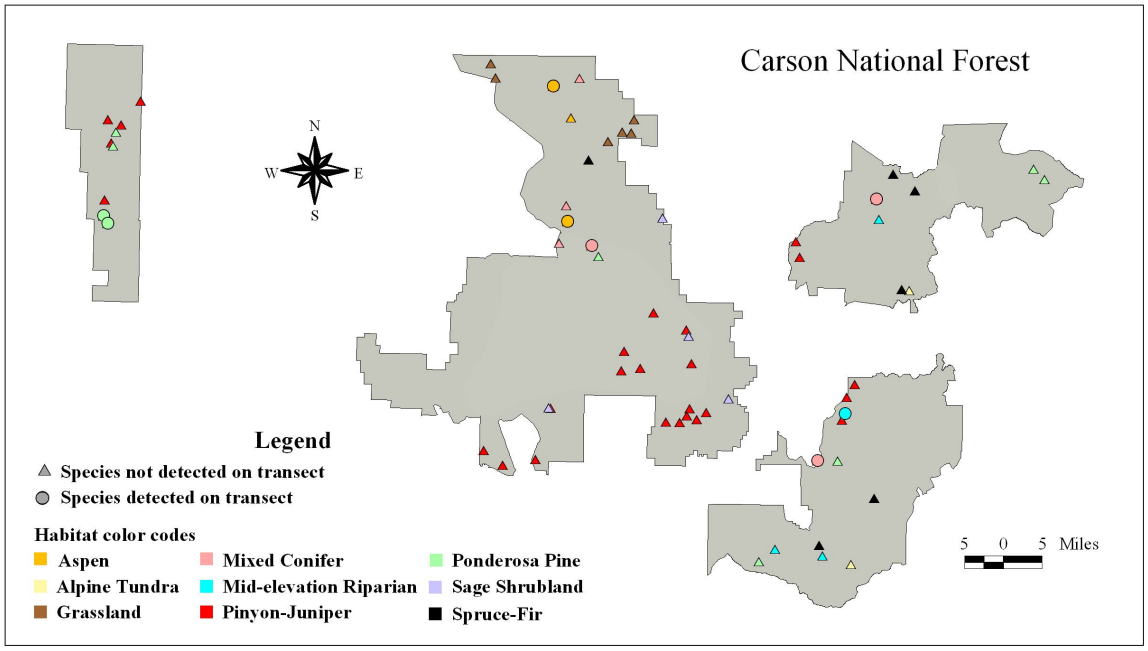
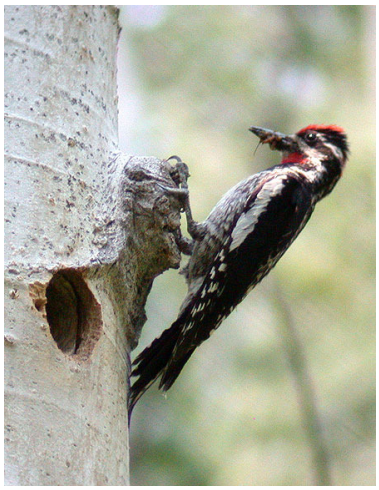


Figure 5. Distribution of transects on which Red-naped Sapsucker was detected in the Carson National Forest, Summer 2004.



Williamson's Sapsucker

Williamson's Sapsuckers are typically found in Ponderosa Pine or Mixed Conifer areas with a mix of coniferous tree species and Aspen. We recorded 23 Williamson's Sapsuckers in all habitats combined this season (Fig. 6). The species was most common on Aspen (n=9), Mixed Conifer (n=8), and Ponderosa Pine (n=5) transects. This species is listed as a Highest Priority management species in Mixed Conifer habitat and a Priority management species in Ponderosa Pine by the NMPIF. Williamson's Sapsucker is listed as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

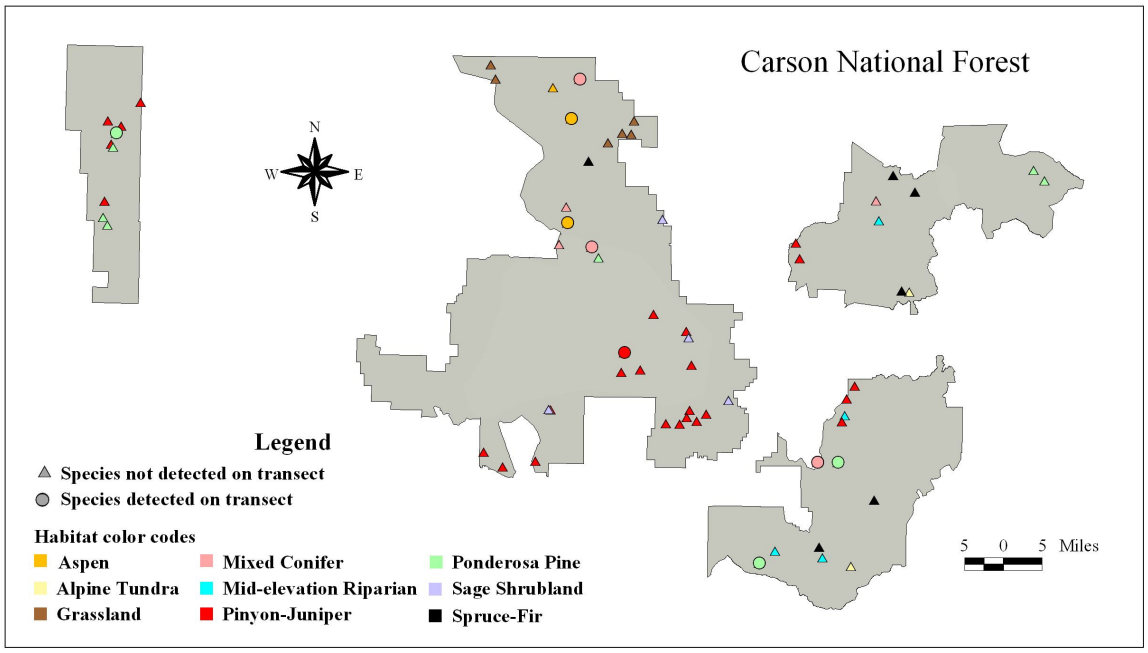


Figure 6. Distribution of transects on which Williamson's Sapsucker was detected in the Carson National Forest, Summer 2004.

Hairy Woodpecker

Hairy Woodpeckers can be found in all forested habitats (Fig. 7), and staff recorded 85 Hairy Woodpeckers in seven habitats during the 2004 season (Table 13). We detected 33 individuals in PJ and provide a density estimate in that habitat (Table 13). Beetle outbreaks typically stimulate an increase in woodpecker populations, and the monitoring efforts may detect this. The species is listed as a MIS in the CNF.

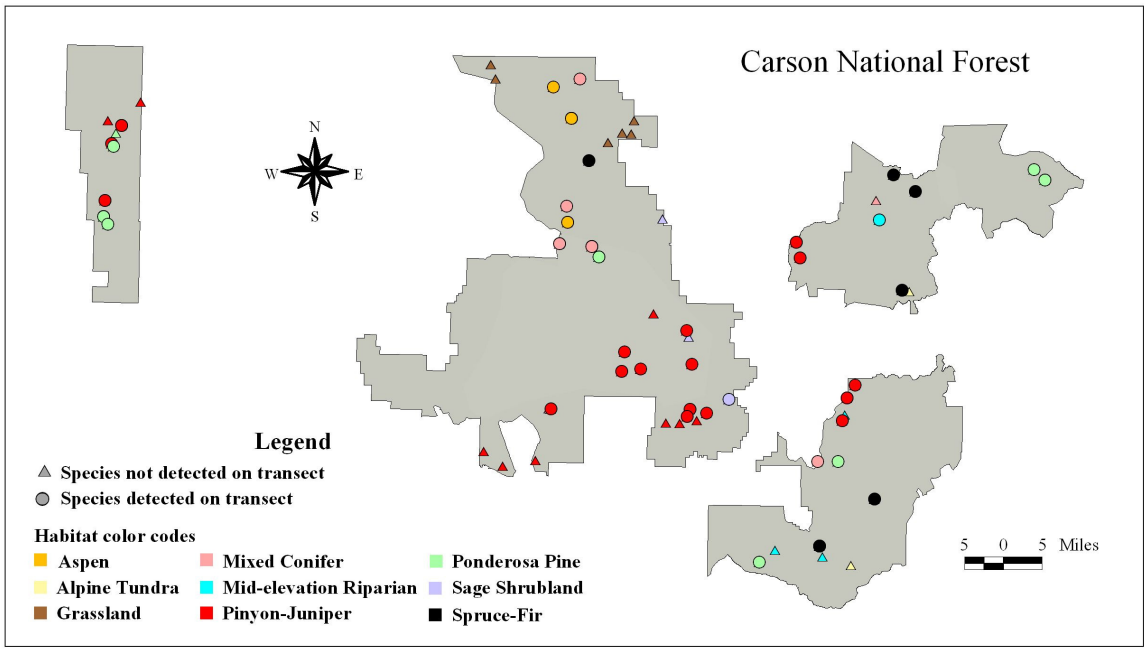


Figure 7. Distribution of transects on which Hairy Woodpecker was detected in the Carson National Forest, Summer 2004.

Table 13. Habitat-specific density estimates for Hairy Woodpecker in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	11
MC	ID	--	--	--	11
MR	ID	--	--	--	2
PJ	0.017	0.011	0.027	22.8%	27
PP	ID	--	--	--	14
SA	ID	--	--	--	1
SF	ID	--	--	--	13

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Northern Flicker

Northern Flickers can be found in all habitats with trees in the CNF (Fig. 9). This year, we did not detect sufficient numbers of Northern Flickers in any habitat to provide habitat-specific density estimates. The species was most common in Mixed Conifer (n=21), Spruce-Fir (n=20), and Ponderosa Pine (n=19). Northern Flickers are responsible for the construction of many cavities that are later used by other species, including small owls, such as Flammulated.

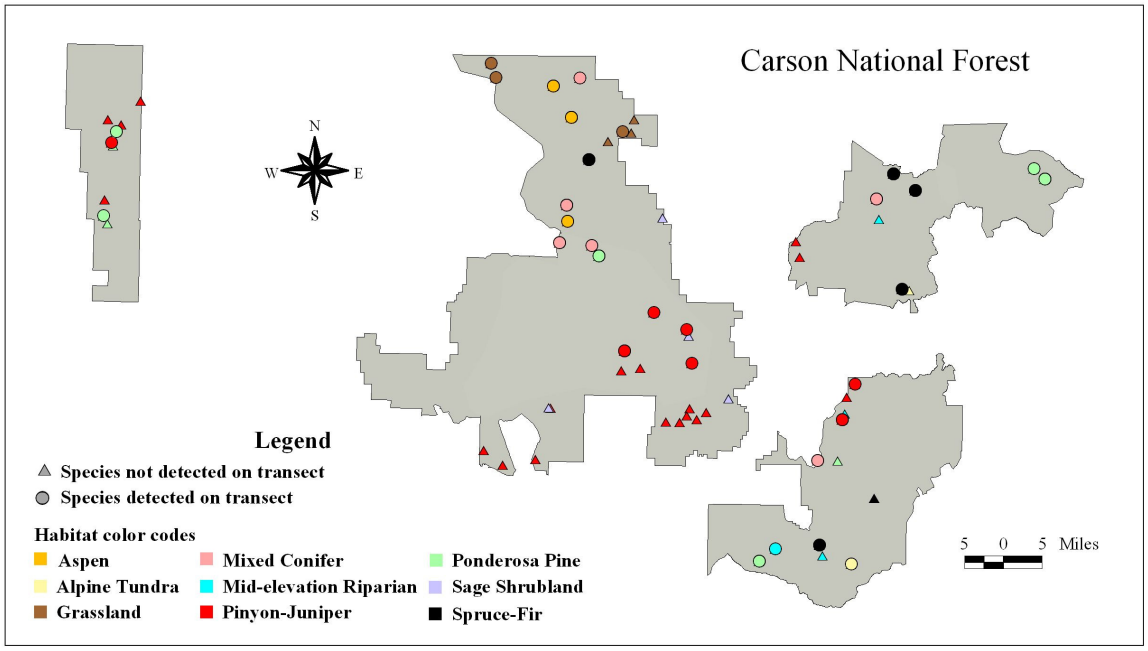


Figure 9. Distribution of transects on which Northern Flicker was detected in the Carson National Forest, Summer 2004.

Olive-sided Flycatcher

Olive-sided Flycatchers are habitat generalists, but structure specialists, requiring tall trees and open areas for foraging. This season, we detected 19 Olive-sided Flycatchers in a variety of habitats (Fig. 10), but were most common in Mixed Conifer (n=7), Ponderosa Pine (n=5), and Piñon-Juniper (n=4). This species does not typically breed in Piñon-Juniper, but does occur in stands of Ponderosa Pine in the drainages that some of our PJ transects traverse. Olive-sided Flycatchers are listed as a Highest Priority management species in Mixed Conifer habitat and a Priority management species in Ponderosa Pine and Spruce-Fir habitats. This is a Watch List Species in the North American Landbird Conservation Plan.

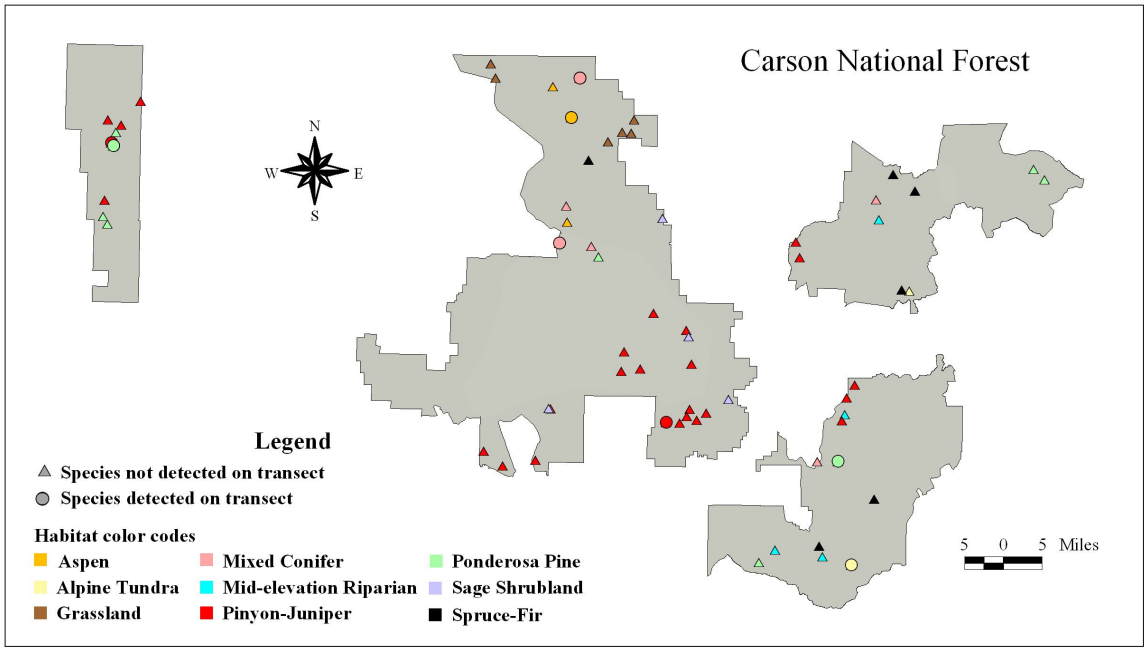


Figure 10. Distribution of transects on which Olive-sided Flycatcher was detected in the Carson National Forest, Summer 2004.

Western Wood-Pewee

Western Wood-Pewees breed in a variety of habitats with a deciduous tree component and staff detected individuals in all habitats except Alpine Tundra this season (Fig. 11; Table 14). Pewees were most common in Ponderosa Pine, where we detected 96 individuals. Unlike the 2003 season, we did not detect sufficient numbers to calculate a density estimate in Piñon-Juniper.

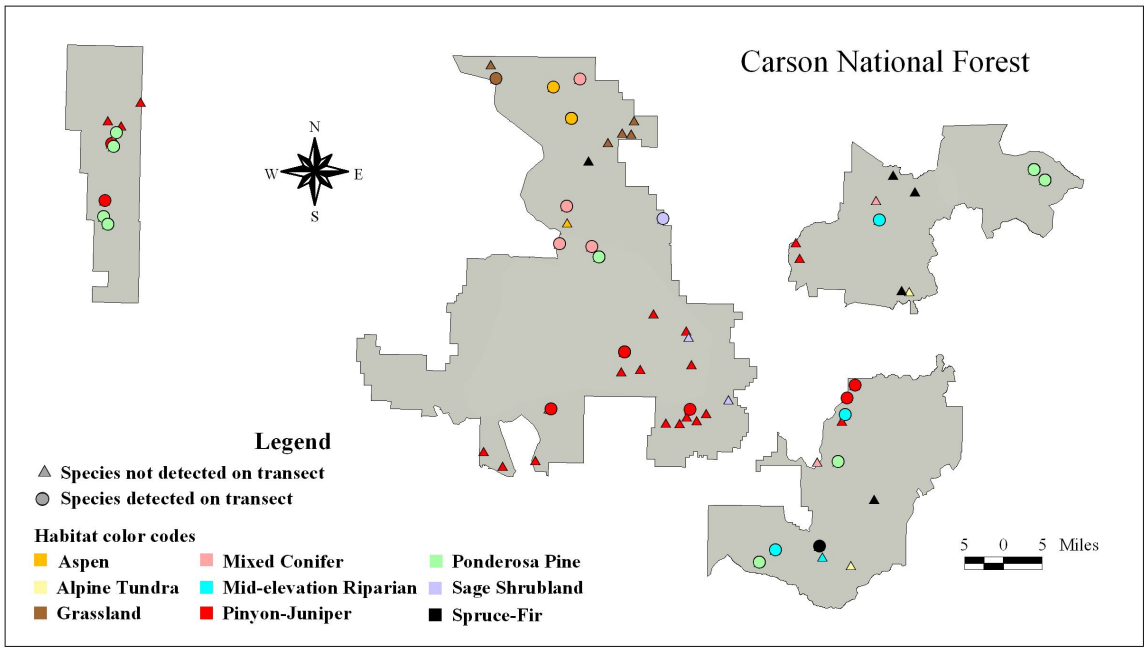


Figure 11. Distribution of transects on which Western Wood-Pewee was detected in the Carson National Forest, Summer 2004.

Table 14. Habitat-specific density estimates for Western Wood-Pewee in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	16
GR	ID	--	--	--	1
MC	ID	--	--	--	9
MR	ID	--	--	--	9
PJ	ID	--	--	--	12
PP	0.335	0.176	0.639	30%	92
SA	ID	--	--	--	1
SF	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Hammond's Flycatcher

Hammond's Flycatchers typically breed in closed-canopy, mature forests with limited understory. Ten individuals were detected in three habitats this season (Fig. 12). The detections occurred in Ponderosa Pine (n=5), Mixed Conifer (n=4), and Piñon-Juniper

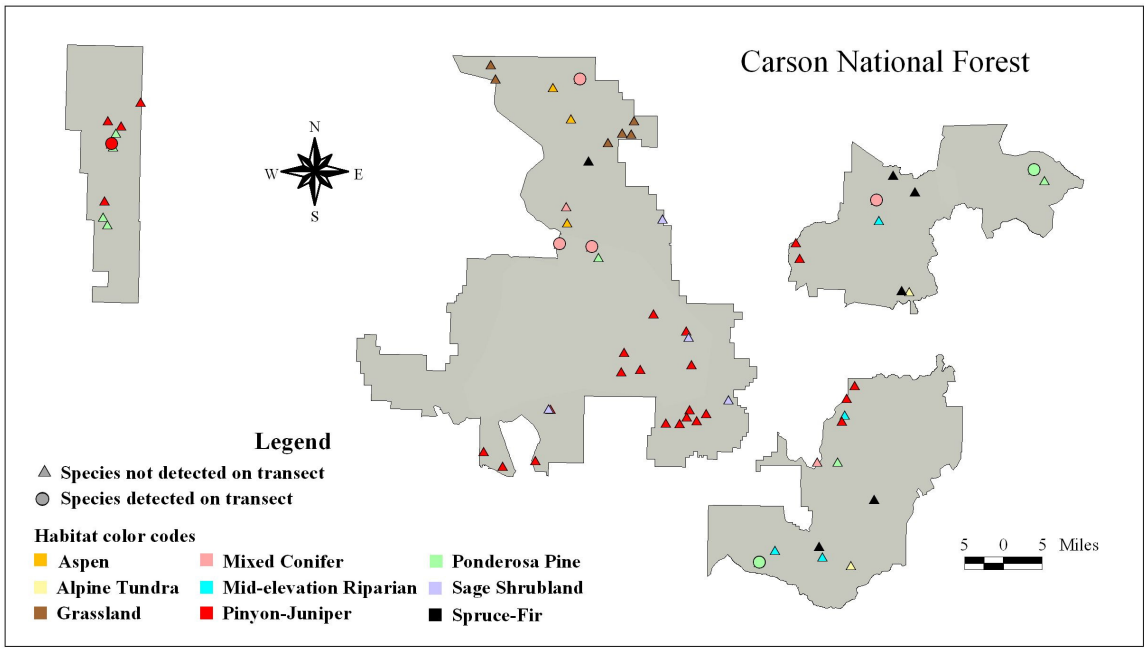


Figure 12. Distribution of transects on which Hammond's Flycatcher was detected in the Carson National Forest, Summer 2004.

(n=1). The PJ detection for this species was on a point located in a mature stand of Ponderosa Pine, not in Piñon-Juniper habitat. This species is listed as a Priority management species in Mixed Conifer habitat by the NMPIF.

Dusky Flycatcher

Dusky Flycatcher breeds in brushy habitats, including those dominated by Gambel Oak, Piñon Pine, and/or juniper, even occurring in krummholz areas with dense cover. Unlike in 2003, this year we detected insufficient numbers of this species to provide any habitat-specific density estimates. We detected only 17 individuals in Ponderosa Pine this year (Fig. 13), a habitat for which we generated a density estimate in 2003. Dusky Flycatcher is listed as a Priority management species in Ponderosa Pine by the NMPIF and is listed as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

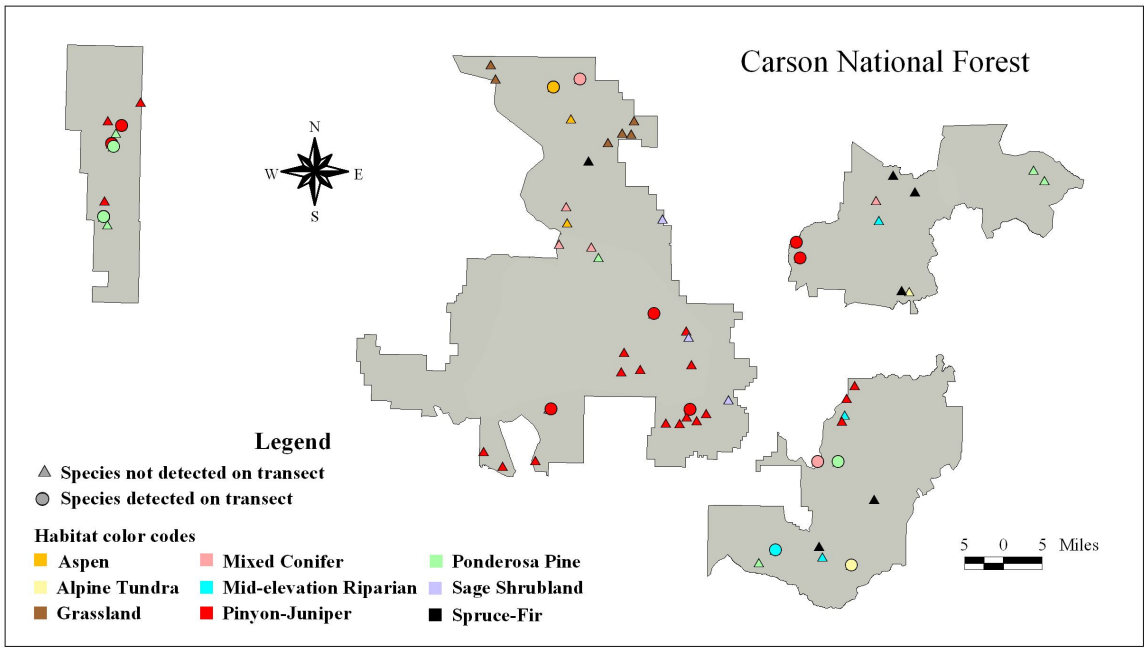


Figure 13. Distribution of transects on which Dusky Flycatcher was detected in the Carson National Forest, Summer 2004.

Gray Flycatcher

In the southern Rockies, this species is a Piñon-Juniper woodland specialist. In 2004, Gray Flycatcher was the third-most-commonly-detected species in PJ (n=163). We detected individuals in three other habitats: Ponderosa Pine (n=4), Sage Shrubland (n=4), and Mid-elevation Riparian (n=1) (Fig. 14; Table 15). Gray Flycatcher is a Highest Priority management species for Piñon-Juniper habitat as listed by the NMPIF and is listed as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

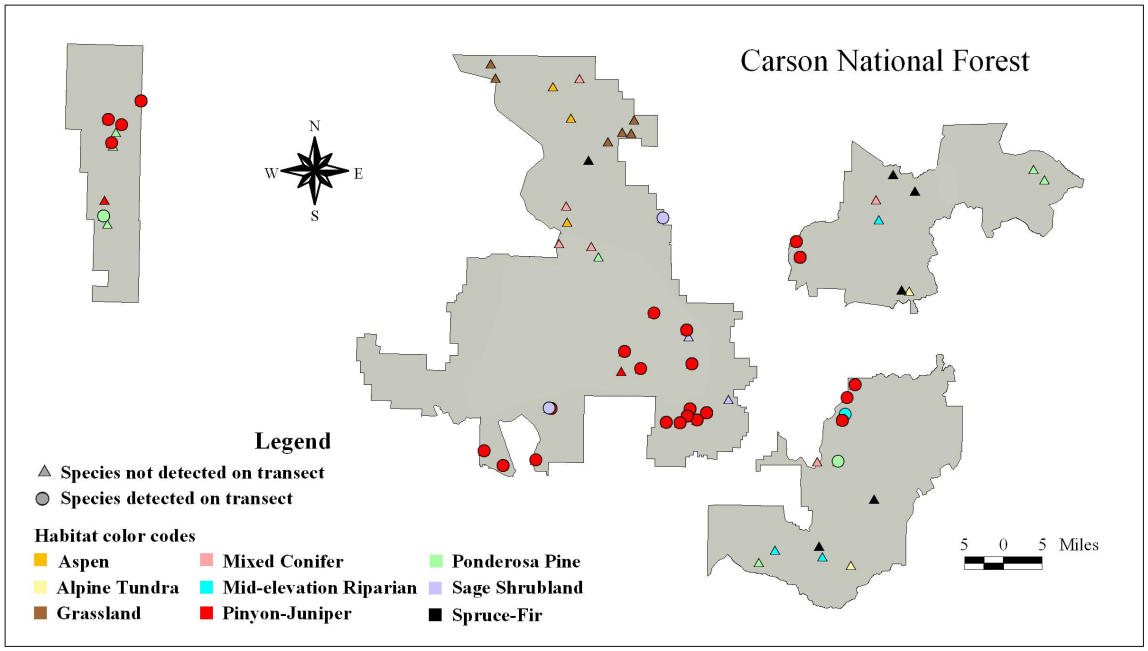


Figure 14. Distribution of transects on which Gray Flycatcher was detected in the Carson National Forest, Summer 2004.

Table 15. Habitat-specific density estimates for Gray Flycatcher in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MR	ID	--	--	--	1
PJ	0.376	0.278	0.509	14.9%	160
PP	ID	--	--	--	4
SA	ID	--	--	--	4

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Cordilleran Flycatcher

This species can typically be found in forested (both coniferous and deciduous) areas near streams or wet ravines that have cliffs nearby. We detected sufficient numbers of Cordilleran Flycatchers this season in Mid-elevation Riparian habitat (n=59) to provide a density estimate (Fig. 15; Table 16). We also detected Cordillerans on Mixed Conifer (n=17), Piñon-Juniper (n=7), Spruce-Fir (n=7), Ponderosa Pine (n=6), and Aspen (n=3) transects this year.

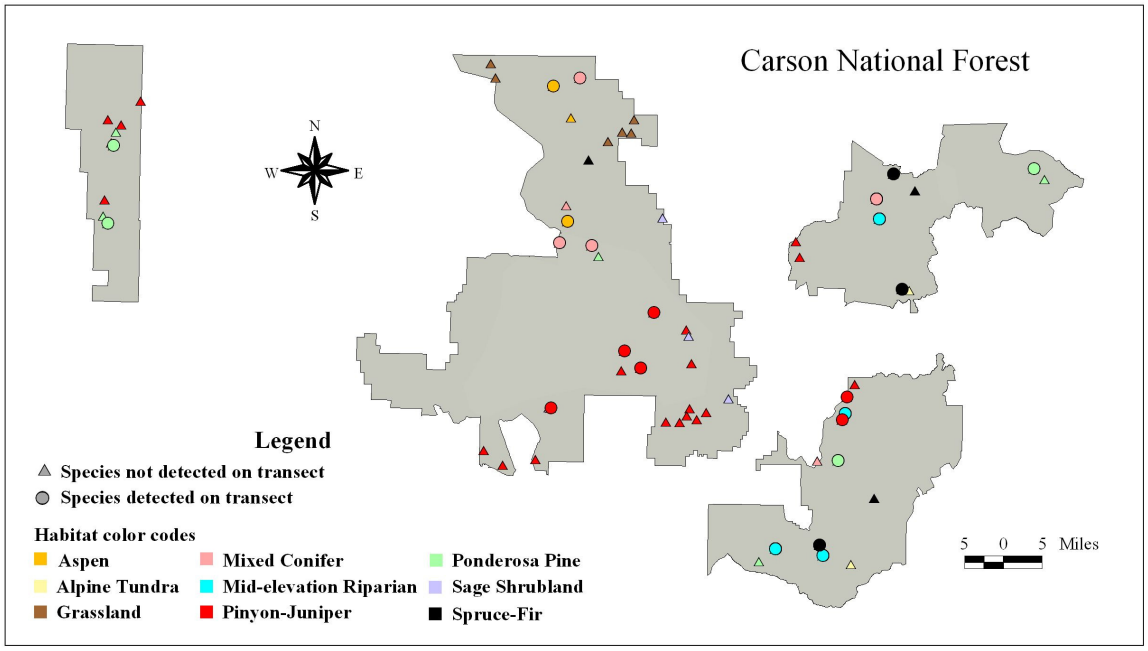


Figure 15. Distribution of transects on which Cordilleran Flycatcher was detected in the Carson National Forest, Summer 2004.

Table 16. Habitat-specific density estimates for Cordilleran Flycatcher in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	3
MC	ID	--	--	--	17
MR	1.212	0.715	2.054	23.2%	50
PJ	ID	--	--	--	7
PP	ID	--	--	--	6
SF	ID	--	--	--	7

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Say's Phoebe

This species can be found in all open habitats, including grasslands and shrublands. We did not detect sufficient numbers of Say's Phoebes to calculate a density estimate in any habitat, but included a map of our detections (Fig. 16) of this species because it is listed as High Responsibility management species in Piñon-Juniper and Plains and Mesa Grassland habitats.

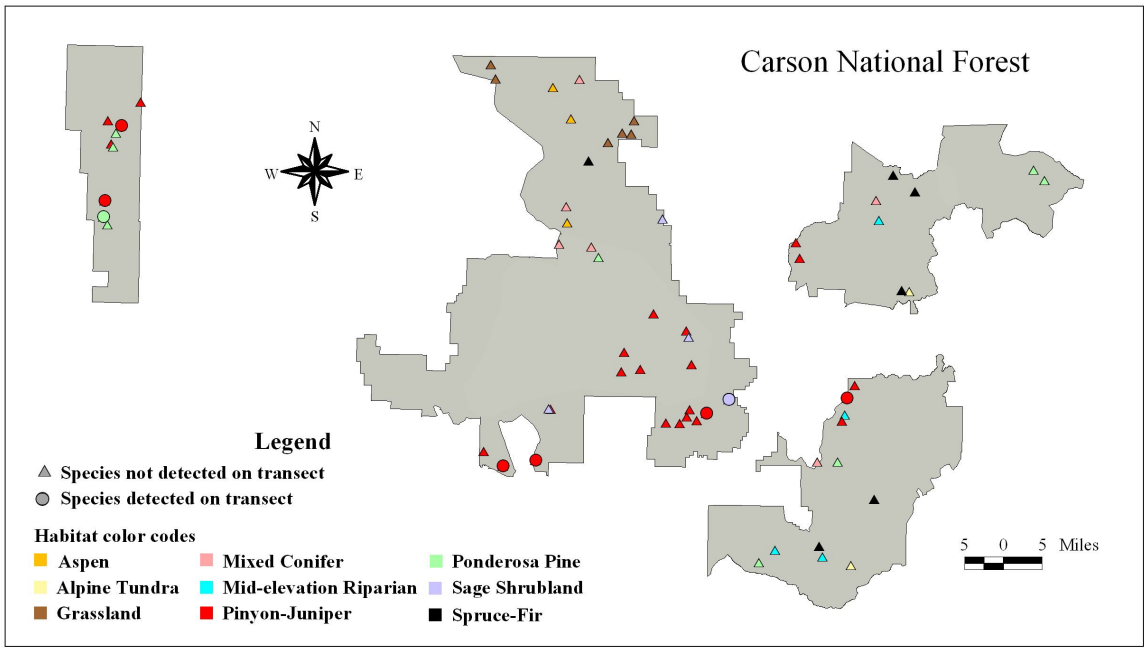


Figure 16. Distribution of transects on which Say's Phoebe was detected in the Carson National Forest, Summer 2004.

Ash-throated Flycatcher

This secondary cavity nesting species is another Piñon-Juniper woodland specialist. This year we detected sufficient numbers of this species in Piñon-Juniper only; last year we estimated densities in three habitats: Piñon-Juniper, Ponderosa Pine, and Sage Shrubland (Table 17; Fig. 17). This species is listed as a High Responsibility management species by the NMPIF in Piñon-Juniper, Montane Shrubland, and Great Basin Desert Shrubland (Sage Shrubland).

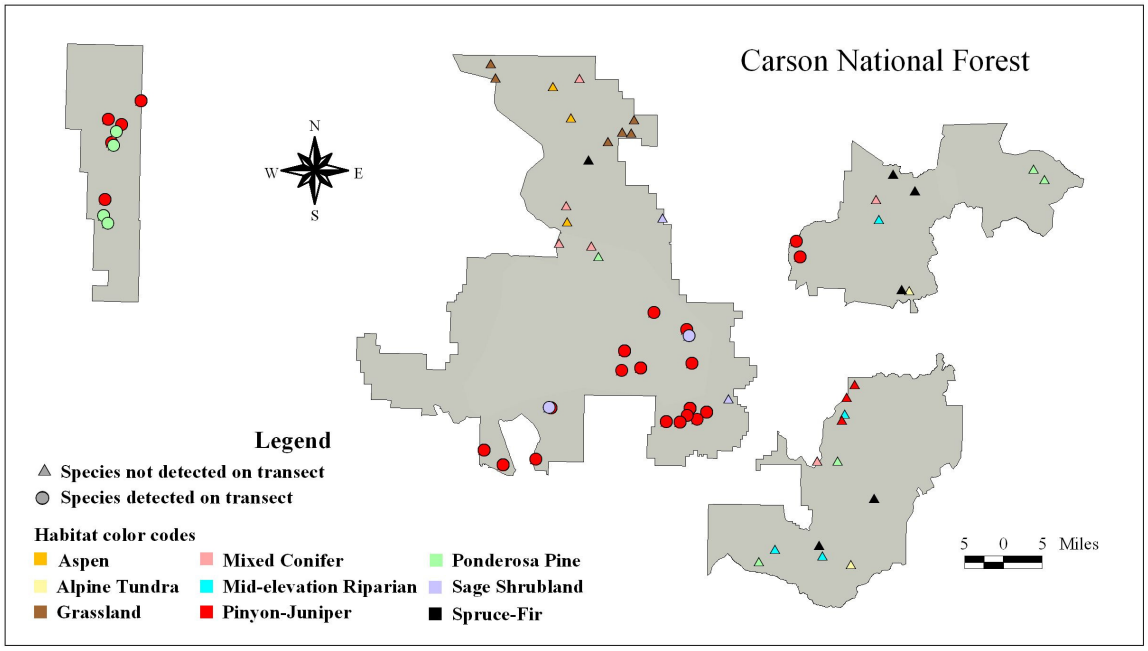


Figure 17. Distribution of transects on which Ash-throated Flycatcher was detected in the Carson National Forest, Summer 2004.

Table 17. Habitat-specific density estimates for Ash-throated Flycatcher in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
PJ	0.240	0.168	0.343	17.8%	175
PP	ID	--	--	--	11
SA	ID	--	--	--	4

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Cassin's Kingbird

This species nests in riparian areas or open Piñon-Juniper woodlands. Last year we recorded sufficient numbers of individuals in PJ; this year we recorded only 21 independent detections. We also detected seven Cassin's Kingbirds in SA and six in PP this year (Fig. 18). This species is listed as a High Responsibility management priority in Piñon-Juniper habitat.

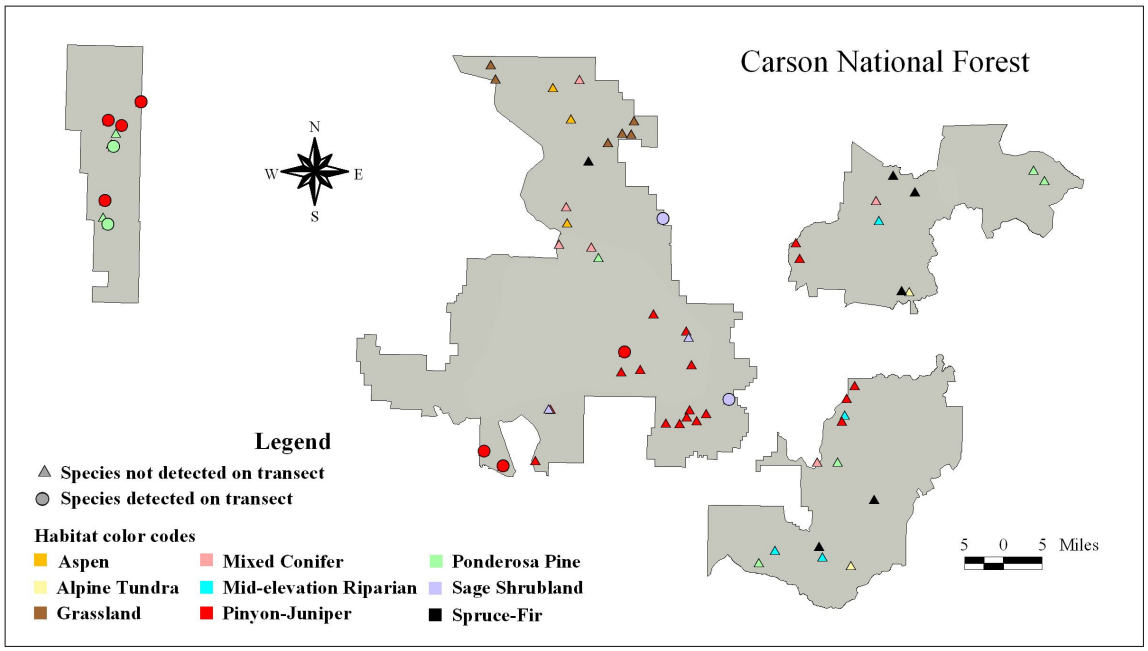


Figure 18. Distribution of transects on which Cassin's Kingbird was detected in the Carson National Forest, Summer 2004.

Plumbeous Vireo

Plumbeous Vireo is somewhat catholic in its choice of forested habitat, mostly at lower elevations, being found as a breeder in Ponderosa Pine, older stands of Piñon-Juniper, and gallery forest comprised of cottonwoods (*Populus* sp.). Detections were concentrated in southern and western sections of CNF (Fig. 19). Sufficient sample sizes in PJ (n=93) and PP (n=40) allowed us to generate density estimates in those habitats (Fig. 20; Table 18). This species is listed as a High Responsibility management species in Ponderosa Pine by the NMPIF.

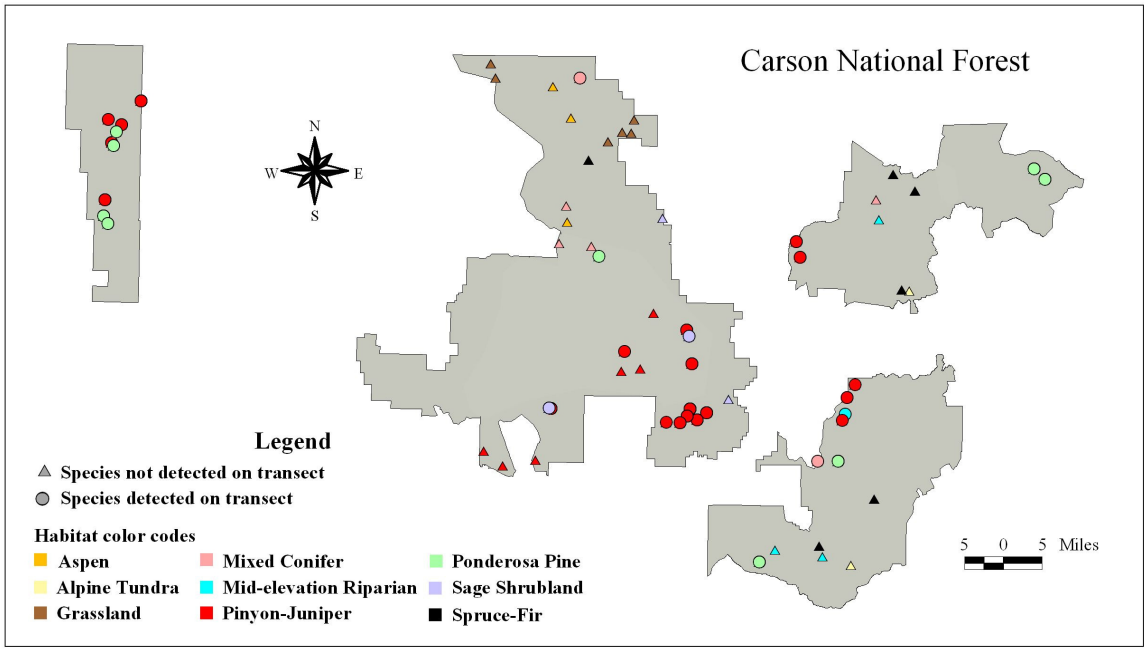


Figure 19. Distribution of transects on which Plumbeous Vireo was detected in the Carson National Forest, Summer 2004.

Table 18. Habitat-specific density estimates for Plumbeous Vireo in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MC	ID	--	--	--	4
MR	ID	--	--	--	2
PJ	0.1653	0.1081	0.2530	21.5%	93
PP	0.1844	0.1208	0.2813	20.1%	40
SA	ID	--	--	--	5

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

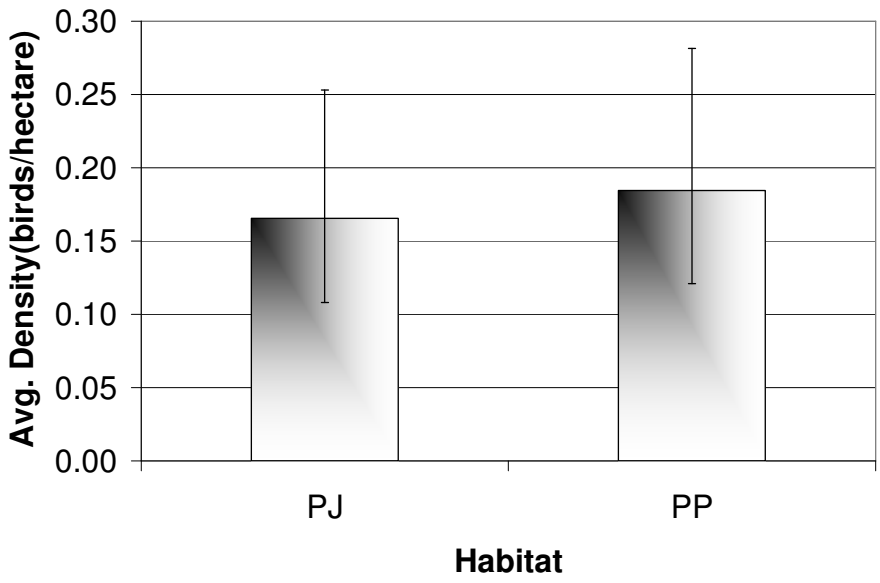


Figure 20. Relative densities (and 95% confidence lmits) of Plumbeous Vireo in Piñon-Juniper and Ponderosa Pine in the Carson National Forest, Summer 2004.

Warbling Vireo

This species is most frequently found in tall stands of deciduous trees, such as Aspen and cottonwood and staff detected the species throughout the CNF(Fig. 21). This year, we detected sufficient numbers of this species in Aspen (n=66), Mixed Conifer (n=59), Mid-elevation Riparian (n=50), and Spruce-Fir (32) to provide density estimates in those habitats (Table 19; Fig. 22).

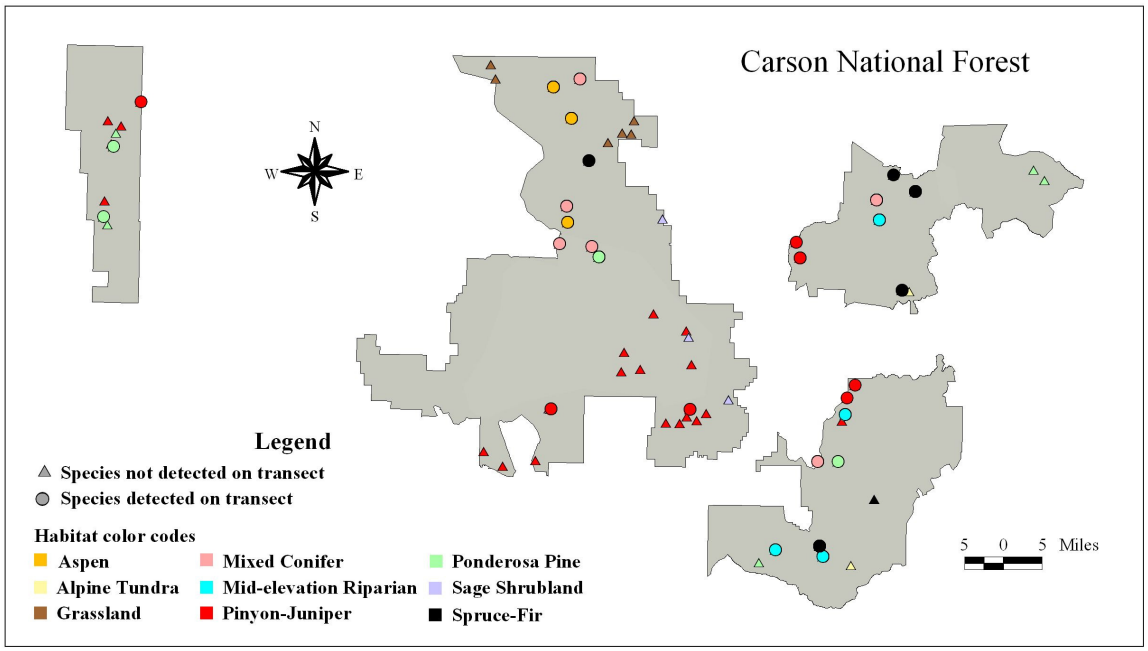


Figure 21. Distribution of transects on which Warbling Vireo was detected in the Carson National Forest, Summer 2004.

Table 19. Habitat-specific density estimates for Warbling Vireo in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	0.592	0.215	1.629	28.1%	65
MC	0.510	0.249	1.046	32.1%	59
MR	0.921	0.385	2.207	30.5%	50
PJ	ID	--	--	--	17
PP	ID	--	--	--	17
SF	0.256	0.088	0.748	49.3%	32

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

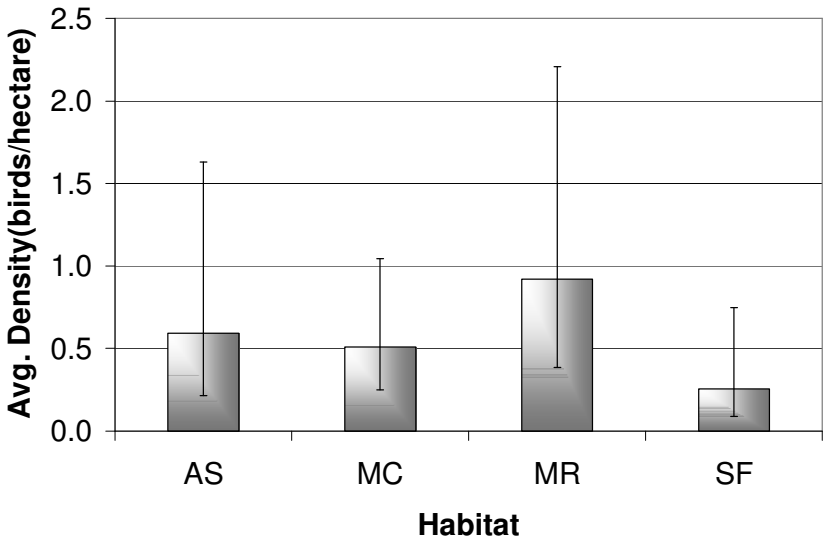


Figure 22. Relative densities (and 95% confidence lmits) of Warbling Vireo among habitats in the Carson National Forest, Summer 2004.

Steller's Jay

Steller's Jays are typically found in coniferous forests; field staff detected this species most commonly in Mixed Conifer (n=20), Ponderosa Pine (n=17), and Aspen (n=14). We recorded the species across the CNF (Fig. 23), but with few in the Jicarilla District where most of the transects are in PJ, a habitat not preferred by Steller's Jay.

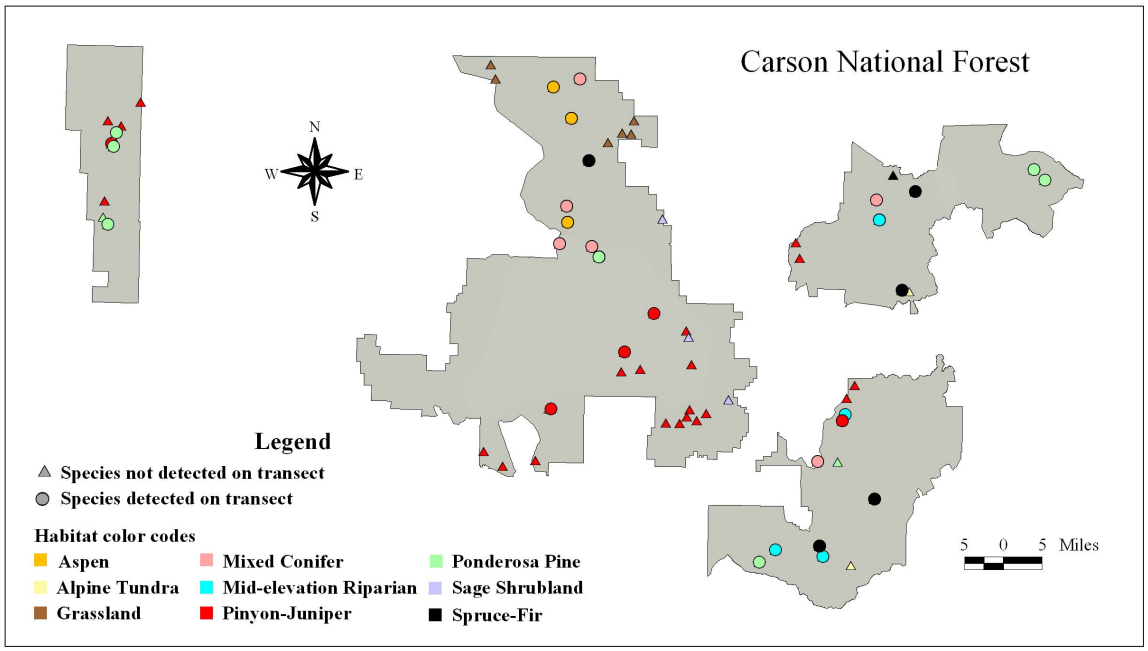


Figure 23. Distribution of transects on which Steller's Jay was detected in the Carson National Forest, Summer 2004.

Western Scrub-Jay

As the name implies, this species is typically found in scrub habitats, particularly Piñon-Juniper and Montane Shrubland, with or without an overstory. We obtained sample size in PJ this season (Table 20), though we recorded a decline in the number of detections this season (n=42, 26 transects), compared to 2003 (n=93, 30 transects). We detected a total of 53 Western Scrub-Jays in four habitats this season in the lower elevations of the CNF (Fig. 24).

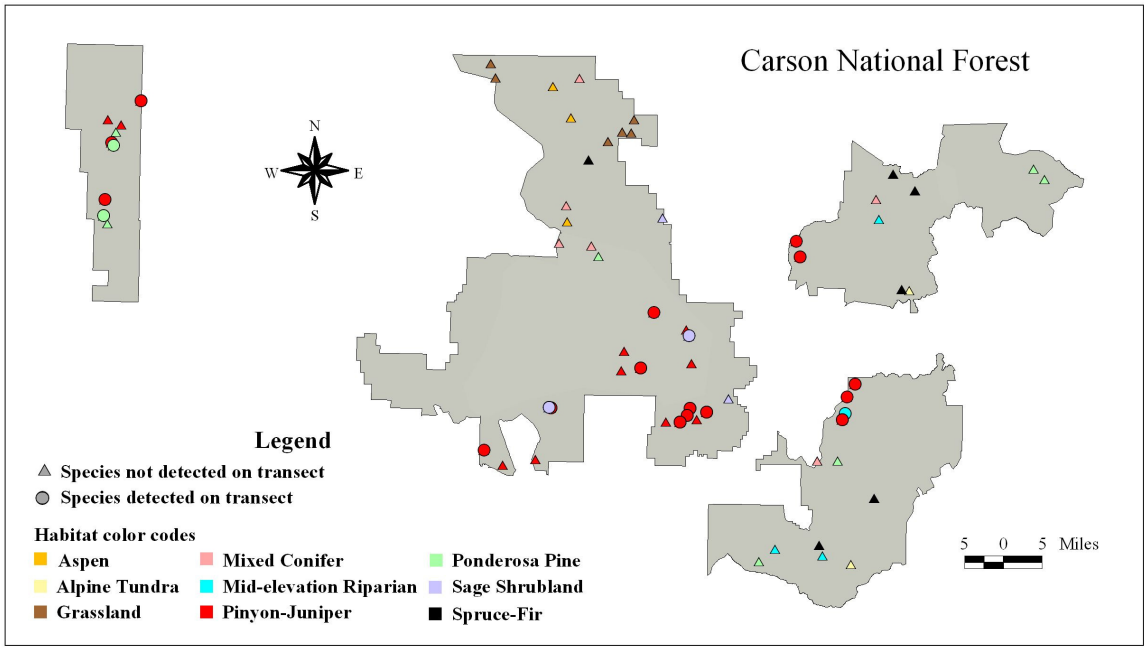


Figure 24. Distribution of transects on which Western Scrub-Jay was detected in the Carson National Forest, Summer 2004.

Table 20. Habitat-specific density estimates for Western Scrub-Jay in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MR	ID	--	--	--	4
PJ	0.0321	0.0195	0.0528	25.2%	38
PP	ID	--	--	--	3
SA	ID	--	--	--	4

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Pinyon Jay

This gregarious species is a Piñon-Juniper specialist that relies heavily on Piñon seeds for food. Though Pinyon Jays will also utilize other food resources (e.g., juniper berries), the die-off of Piñon Pines on the CNF and elsewhere will, undoubtedly, negatively affect this species' population. This year we counted 78 Pinyon Jays (31 independent detections) in Piñon-Juniper, 79 Pinyon Jays (12 independent detections) in Ponderosa Pine, and 23 individuals (12 independent detections) in Sage Shrubland (Fig. 25; Table 21). This species is listed as a High Responsibility management species by the NMPIF in Piñon-Juniper habitat and is a Watch List Species in the Intermountain West region in the North American Landbird Conservation Plan.

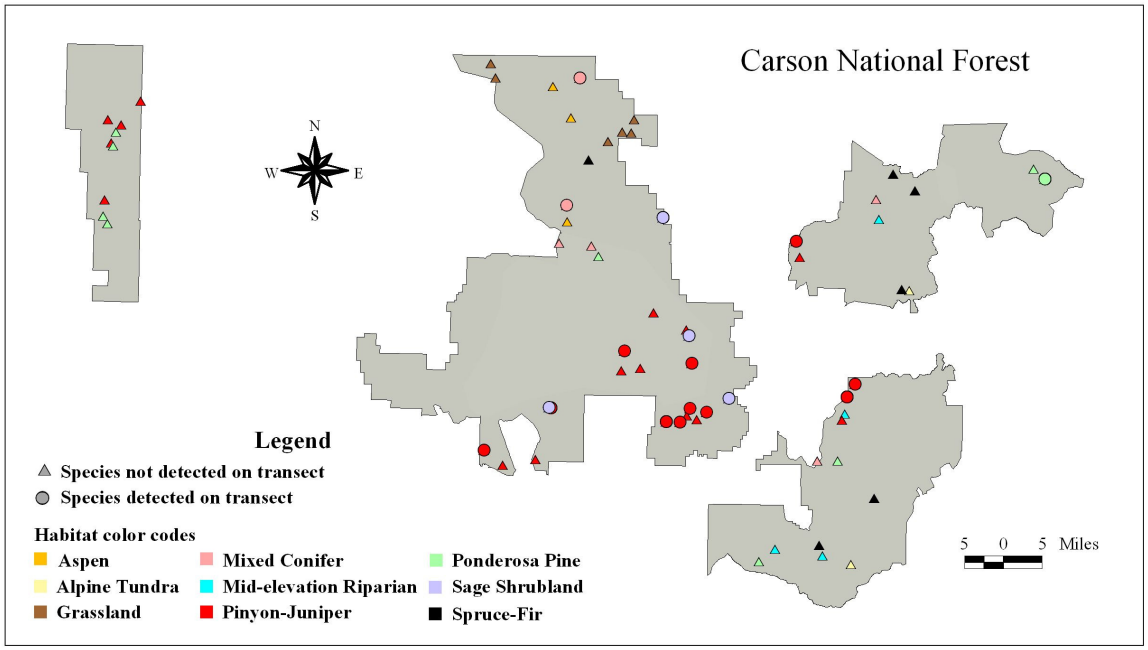


Figure 25. Distribution of transects on which Pinyon Jay was detected in the Carson National Forest, Summer 2004.

Table 21. Habitat-specific density estimates for Pinyon Jay in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MC	ID	--	--	--	4
PJ	0.009	0.004	0.020	40.1%	31
PP	ID	--	--	--	79
SA	ID	--	--	--	23

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Clark's Nutcracker

During the breeding season, this species typically prefers high-elevation conifer forest, though it also utilizes Piñon-Juniper (Fig. 26). Clark's Nutcracker can best be described as a wanderer searching for food wherever it can find it. It depends on masting conifers for food and, as it caches, and sometimes plants, seeds of all conifer tree species, it is critical for overall forest health. This season we recorded Nutcrackers on Aspen (n=7), Alpine Tundra (n=1), Grassland (n=4), Mixed Conifer (n=13), Piñon-Juniper (n=5), Ponderosa Pine (n=3), and Spruce-Fir (n=13) transects. The NMPIF lists this species as a Priority management species in Mixed Conifer and Spruce-Fir habitats and it is listed as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

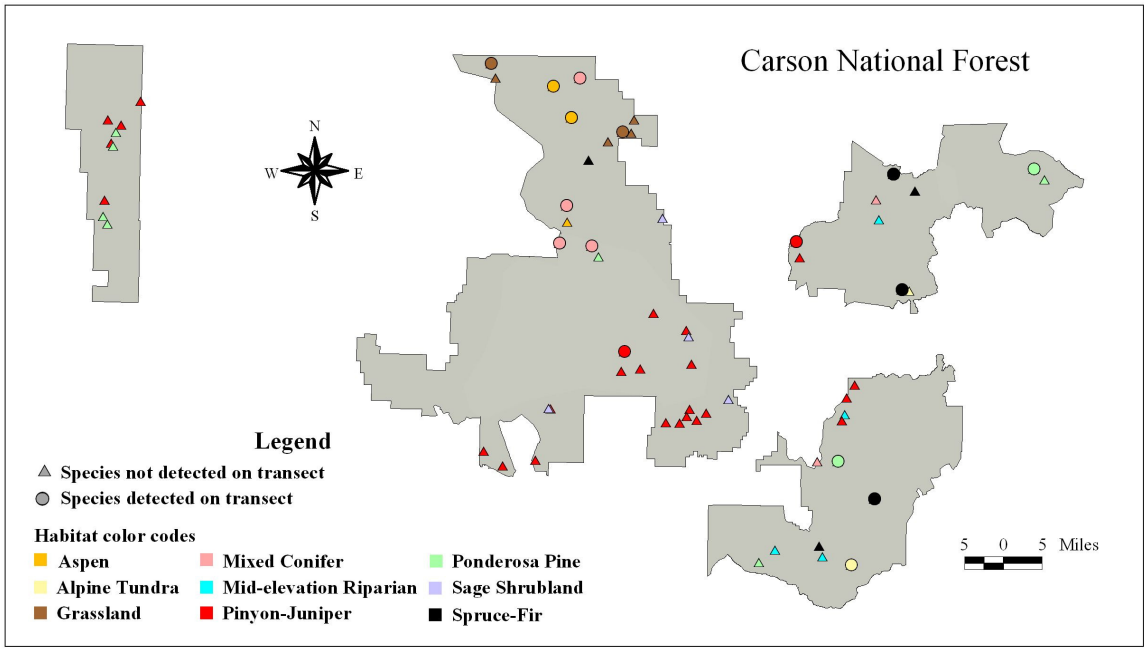


Figure 26. Distribution of transects on which Clark's Nutcracker was detected in the Carson National Forest, Summer 2004.

American Crow

As urban areas increase in number and size, so does the number of American Crows throughout the American west. We recorded this species on Aspen (n=5), Grassland (n=3), Mixed Conifer (n=9), Mid-elevation Riparian (3), Piñon-Juniper (n=2), Ponderosa Pine (n=4), and Spruce-Fir (n=6) this season (Fig. 27).

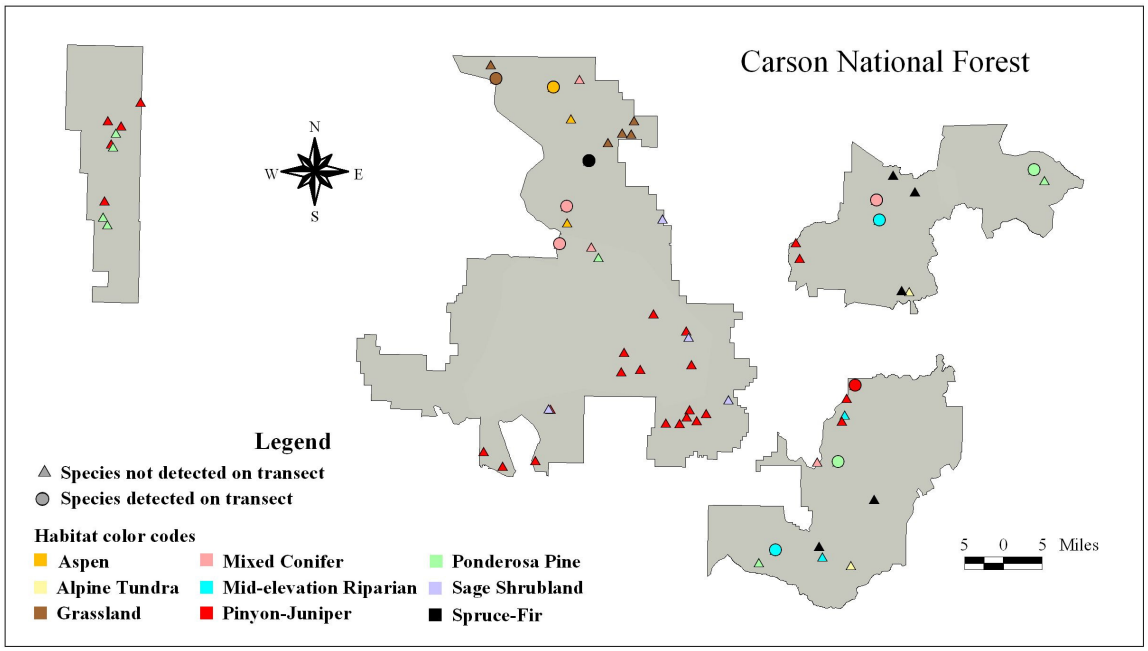


Figure 27. Distribution of transects on which American Crow was detected in the Carson National Forest, Summer 2004.

Common Raven

Common Ravens have adapted to virtually every habitat in its range and in 2004 RMBO recorded this species in every transect habitat (Fig. 28; Table 22) and, as in 2003, were able to provide a density estimate for PJ (Table 22). We recorded 78 (68 independent detections) in PJ and 32 (13 independent detections) in PP in 2004.

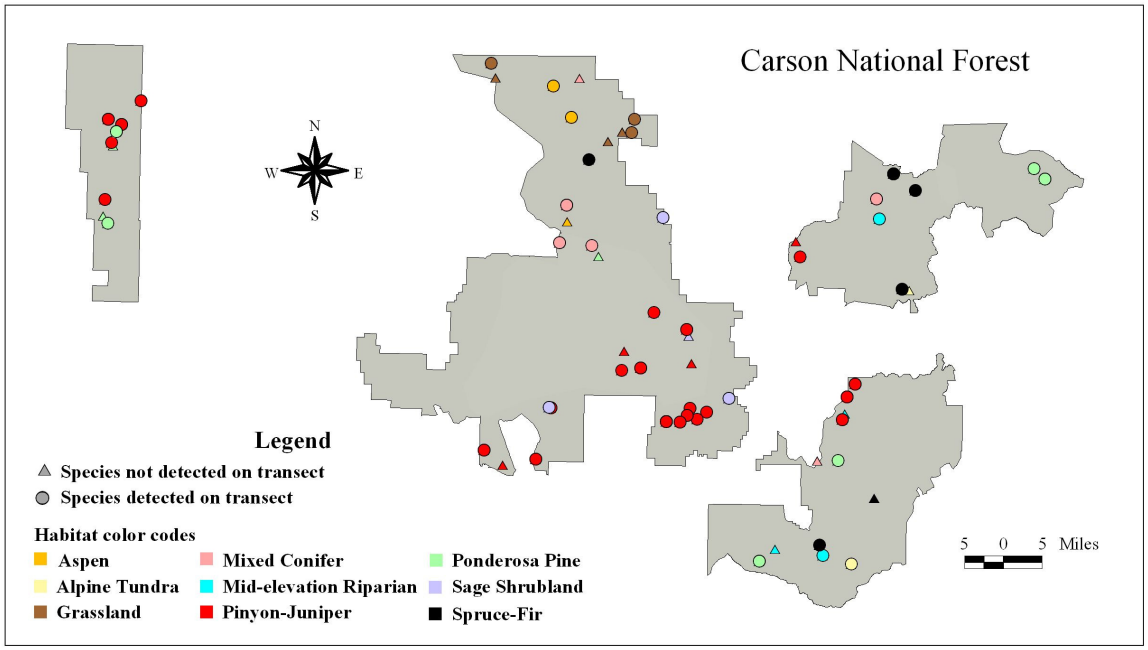


Figure 28. Distribution of transects on which Common Raven was detected in the Carson National Forest, Summer 2004.

Table 22. Habitat-specific density estimates for Common Raven in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	4
AT	ID	--	--	--	1
GR	ID	--	--	--	3
MC	ID	--	--	--	10
MR	ID	--	--	--	3
PJ	0.008	0.004	0.015	32.4%	40
PP	ID	--	--	--	32
SA	ID	--	--	--	7
SF	ID	--	--	--	12

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Horned Lark

In the CNF, this species breeds in barren grassy areas with minimal cover (Fig. 29). This year we are able to provide a density estimate in GR, where we detected 50 individuals (43 independent detections; Table 23). In 2003, we detected only one Horned Lark on a PJ transect.

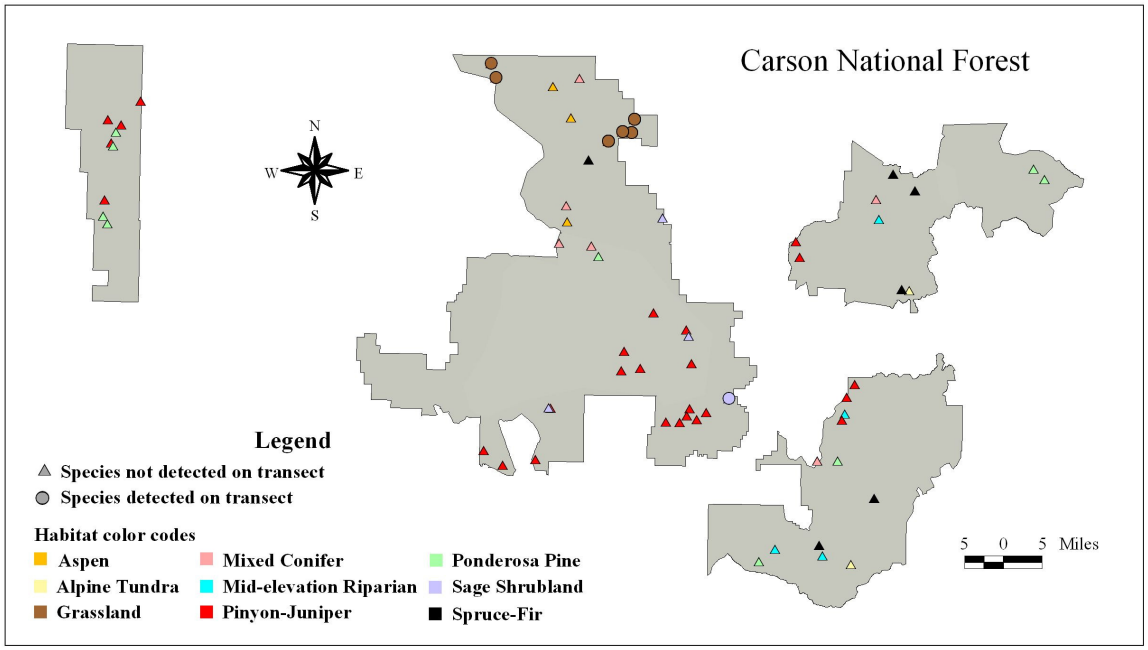


Figure 29. Distribution of transects on which Horned Lark was detected in the Carson National Forest, Summer 2004.

Table 23. Habitat-specific density estimates for Horned Lark in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
GR	0.153	0.078	0.299	31.6%	43
SA	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Purple Martin

In the CNF, this species is encountered almost exclusively in the Jicarilla district (Fig. 30). We detected Purple Martins entering nest cavities in the enormous Ponderosa Pine snags found in this region. Field staff recorded 66 Purple Martins on transects and we are able to provide a density estimate in Ponderosa Pine where we detected 55 individuals (25 independent detections; Table 24). We also recorded 10 individuals on Piñon-Juniper transects (all in the Jicarilla region) and a single individual on an Aspen transect near San Antonio Mountain.

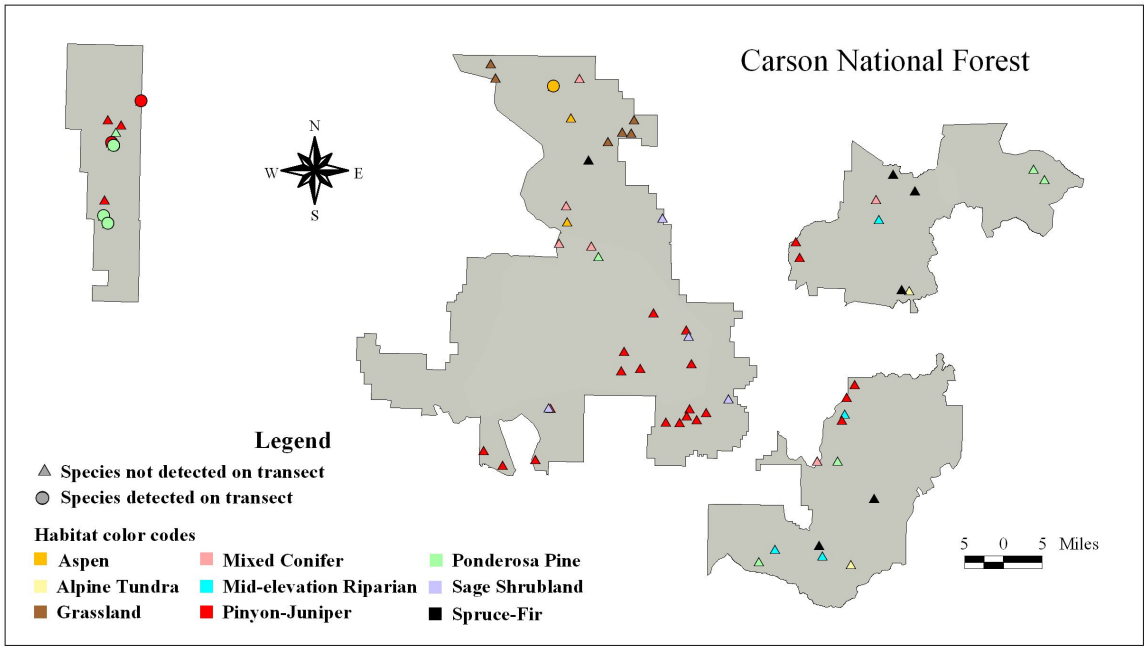


Figure 30. Distribution of transects on which Purple Martin was detected in the Carson National Forest, Summer 2004.

Table 24. Habitat-specific density estimates for Purple Martin in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	1
PJ	ID	--	--	--	10
PP	0.190	0.040	0.906	81%	25

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Violet-green Swallow

This swallow will nest in a variety of situations, most often in cliffs, but also in tree cavities, particularly Ponderosa Pine snags. This season, we are able to provide density estimates in PJ (n=110 individuals in 56 detections) and PP (107 individuals in 50 detections; Figs. 31 and 32; Table 25). We recorded 33 individuals and 17 independent detections in MC this season. This species is listed as a High Responsibility management species in Mixed Conifer habitat by the NMPIF.

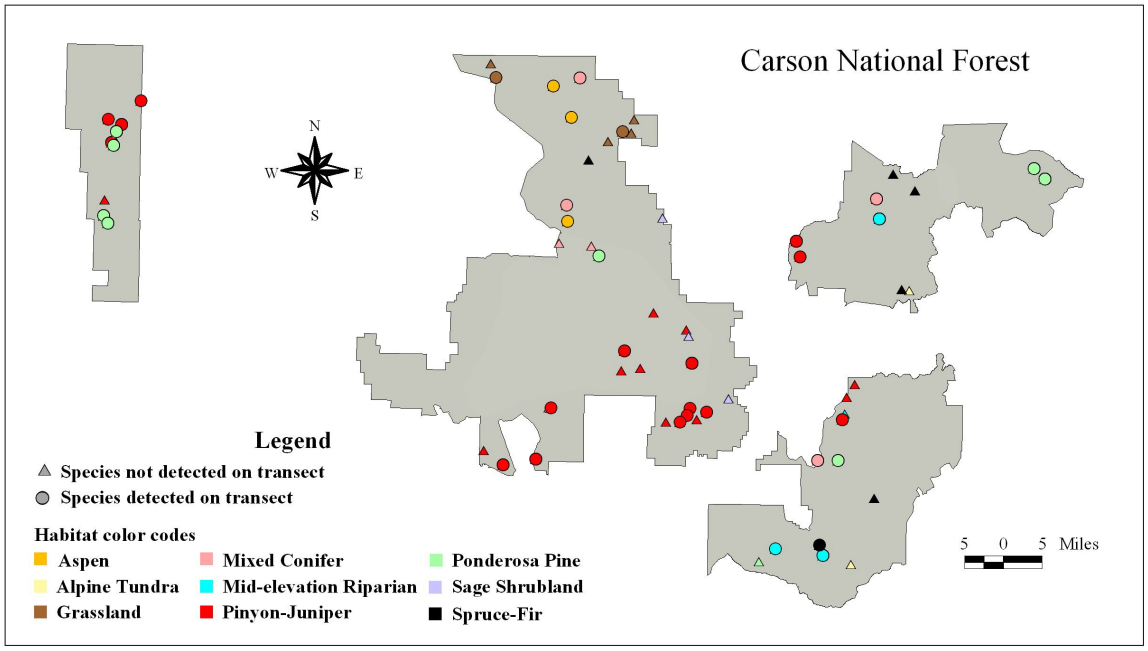


Figure 31. Distribution of transects on which Violet-green Swallow was detected in the Carson National Forest, Summer 2004.

Table 25. Habitat-specific density estimates for Violet-green Swallow in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	3
GR	ID	--	--	--	2
MC	ID	--	--	--	20
MR	ID	--	--	--	33
PJ	0.0700	0.0390	0.1259	29.8%	56
PP	0.6892	0.3202	1.4835	38.9%	50
SF	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

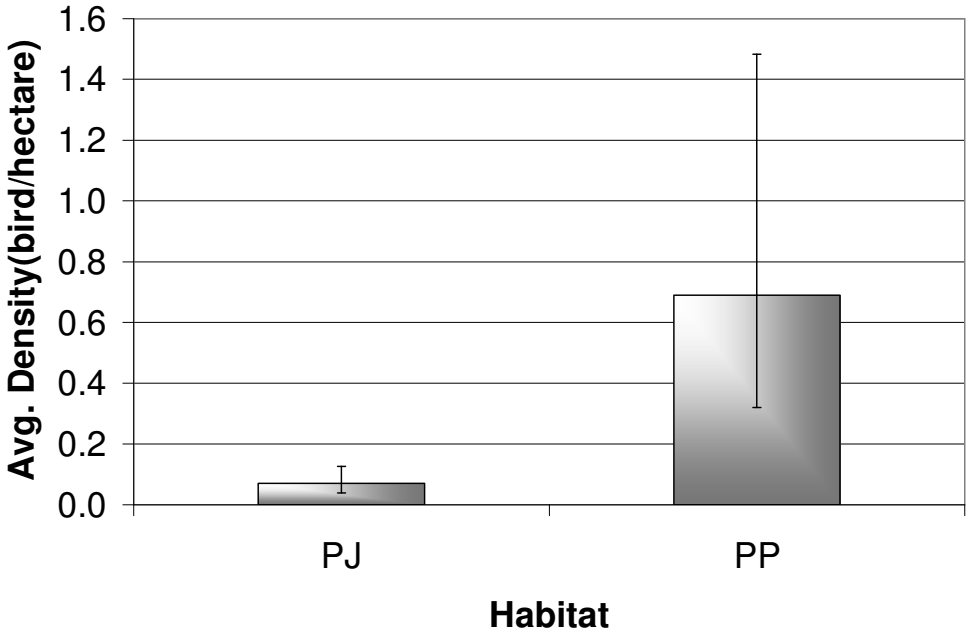


Figure 32. Relative densities (and 95% confidence lmits) of Violet-green Swallow among habitats in the Carson National Forest, Summer 2004.

Mountain Chickadee

Mountain Chickadee usually uses cavities for nesting that are constructed by other bird species, but can construct cavities of its own. As typical, we recorded this species in every transect habitat except Alpine Tundra (Fig. 33). Staff detected 351 Mountain Chickadees in all habitats this season, the highest total of any species recorded in the CNF in 2004. We are able to provide density estimates in AS, MC, PJ, PP, and SF this season, where 55, 70, 58, 59, and 109 individuals were recorded, respectively (Table 26; Fig. 34).

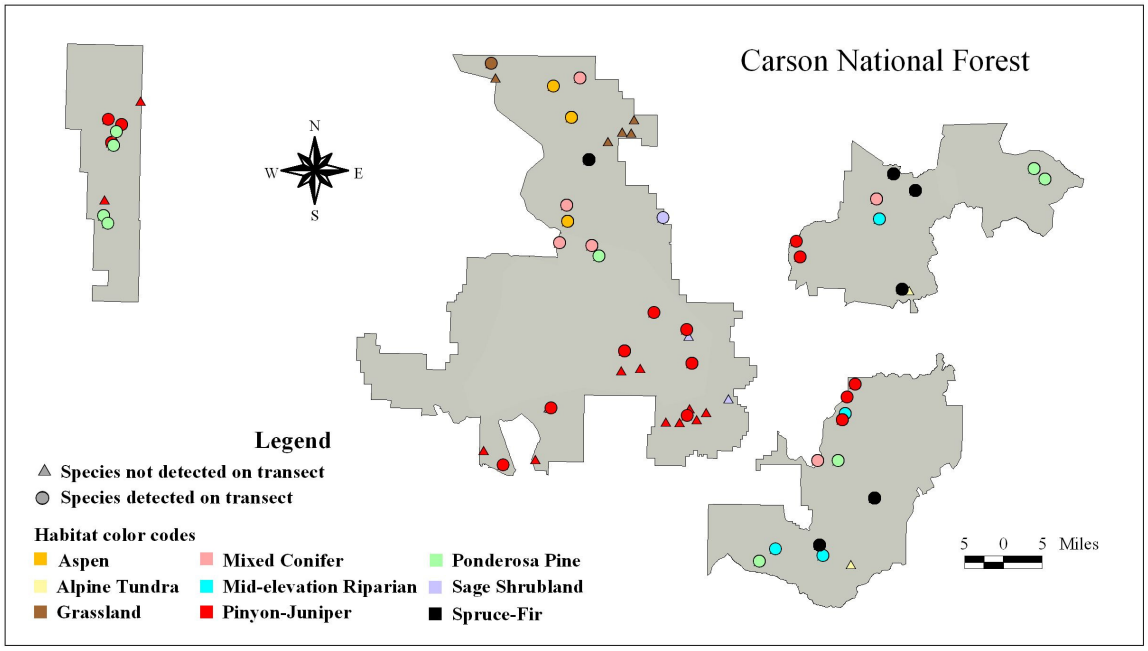


Figure 33. Distribution of transects on which Mountain Chickadee was detected in the Carson National Forest, Summer 2004.

Table 26. Habitat-specific density estimates for Mountain Chickadee in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	1.224	0.217	6.900	46.0%	54
GR	ID	--	--	--	2
MC	0.930	0.630	1.374	18.3%	63
MR	ID	--	--	--	19
PJ	0.134	0.074	0.243	30.2%	51
PP	0.403	0.253	0.643	23.1%	50
SA	ID	--	--	--	1
SF	1.040	0.715	1.513	17.3%	100

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

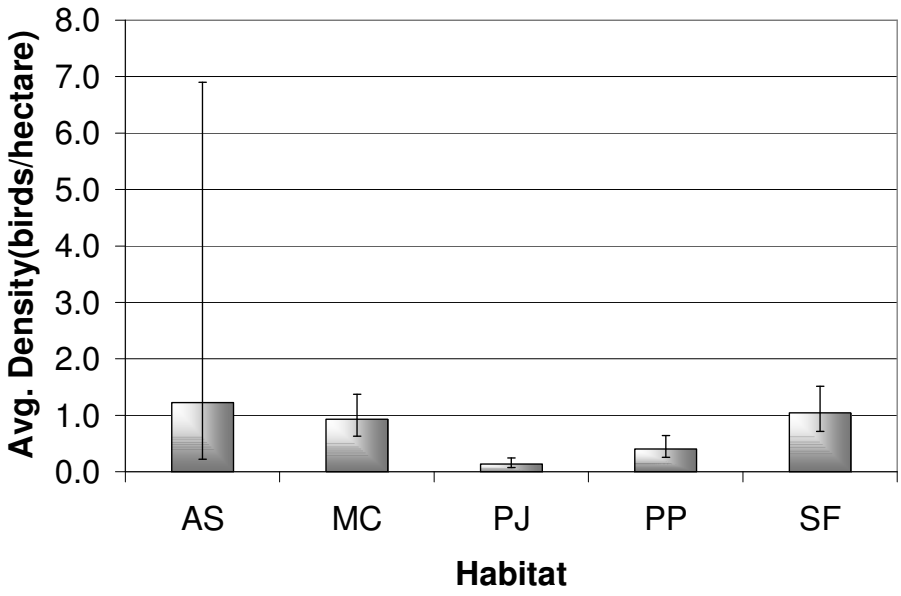


Figure 34. Relative densities (and 95% confidence lmits) of Mountain Chickadee among habitats in the Carson National Forest, Summer 2004.

Juniper Titmouse

Juniper Titmouse is another Piñon-Juniper woodland specialist and a secondary cavity-nester. This species prefers mature Piñon-Juniper woodland (Fig. 35; Table 32) and seems to be persisting despite the large die-off of piñons. We recorded 119 individuals in PJ this season and provide a density estimate for the habitat (Fig. 30; Table 33). Juniper Titmouse is listed as a MIS in the CNF and as a High Responsibility management species in Piñon-Juniper habitat by the NMPIF.

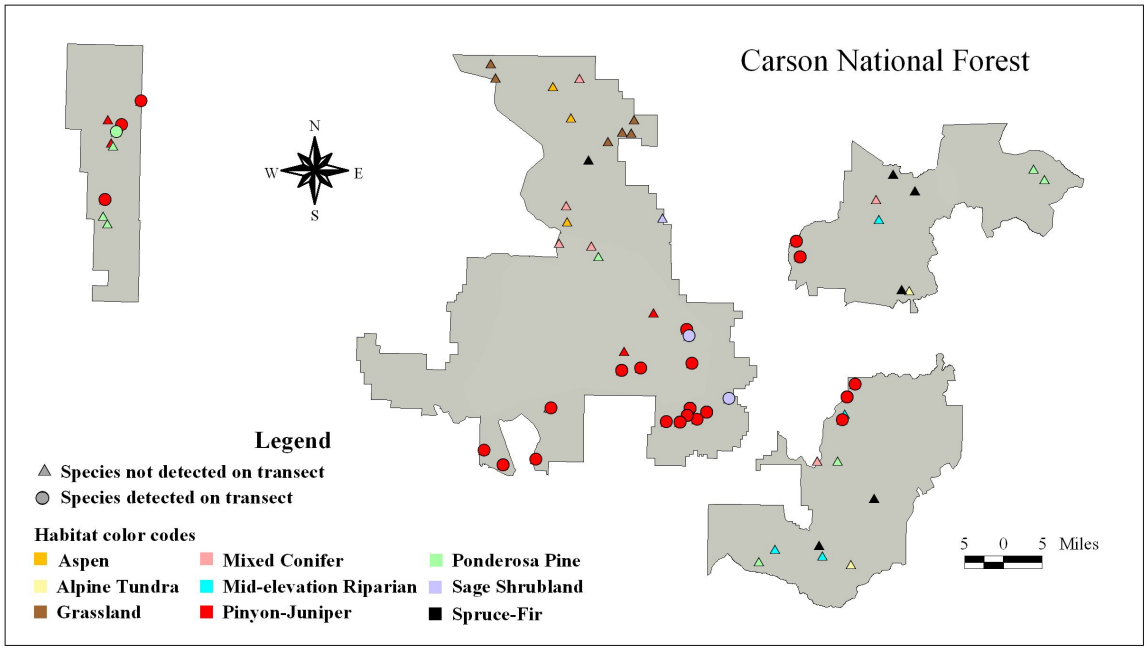


Figure 35. Distribution of transects on which Juniper Titmouse was detected in the Carson National Forest, Summer 2004.

Table 27. Habitat-specific density estimates for Juniper Titmouse in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
PJ	0.258	0.168	0.396	21.5%	116
PP	ID	--	--	--	1
SA	ID	--	--	--	3

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Bushtit

In the CNF, Bushtit is a Piñon-Juniper obligate that is typically found in flocks and builds large, elaborate nests that are shaped like bowling pins. We recorded 134 individual Bushtits (88 independent detections) this season in Piñon-Juniper and are able to provide a density estimate for the habitat (Fig. 37; Table 28). We also recorded 17 individuals (10 independent detections) on Mid-elevation Riparian transects this season.

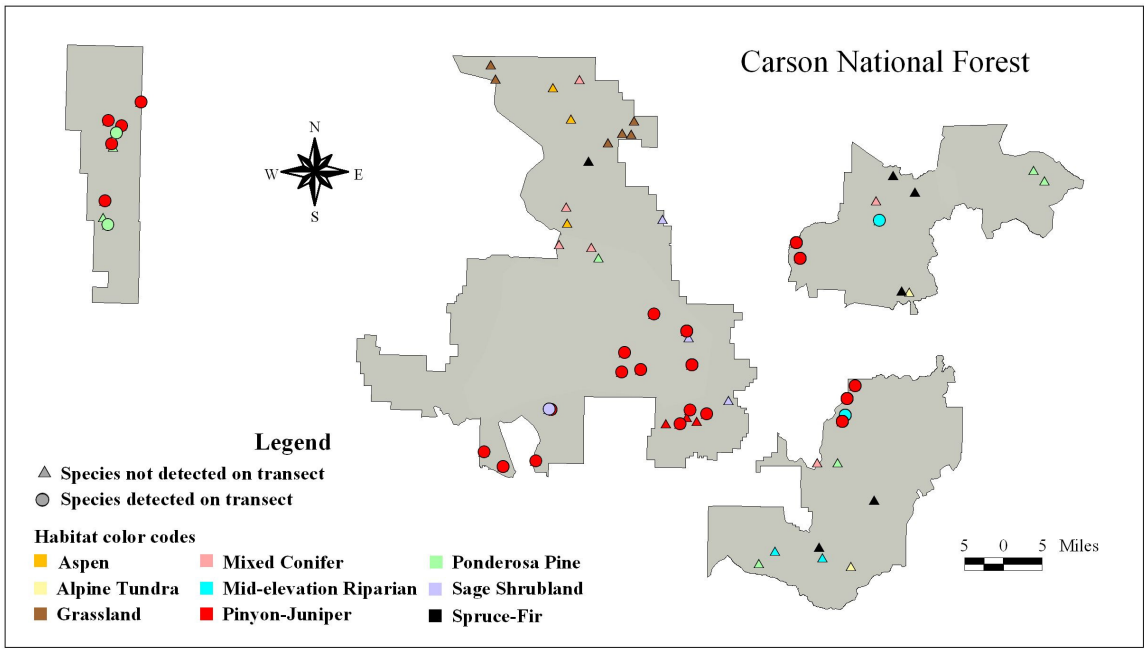


Figure 37. Distribution of transects on which Bushtit was detected in the Carson National Forest, Summer 2004.

Table 28. Habitat-specific density estimates for Bushtit in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MR	ID	--	--	--	17
PJ	0.399	0.243	0.656	24.9%	68
PP	ID	--	--	--	4
SA	ID	--	--	--	4

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Red-breasted Nuthatch

This species prefers conifer forests, typically at higher elevations than the following species, and RMBO detected 24 individuals in SF and 23 in MC this season (Fig. 38). However, our number of independent detections for these two habitats were less than the required total of 23, so are unable to provide density estimates. Red-breasted Nuthatch is listed as a Representative species for Spruce-Fir habitat by the NMPIF.

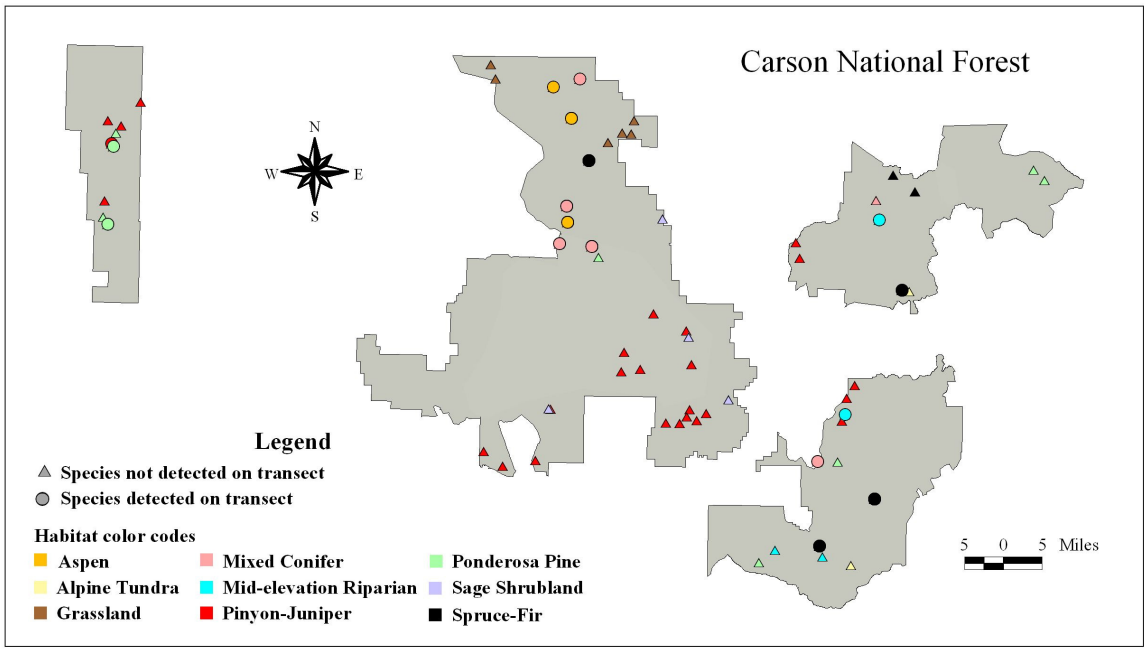


Figure 38. Distribution of transects on which Red-breasted Nuthatch was detected in the Carson National Forest, Summer 2004.

White-breasted Nuthatch

White-breasted Nuthatch is a forested-habitat generalist, but is typically more common in low-elevation forests (Fig. 39). We are able to provide density estimates in PJ (n=28) and PP (n=31) this season, and detected the species in all habitats this season except Alpine Tundra and Grassland (Table 29; Fig. 40).

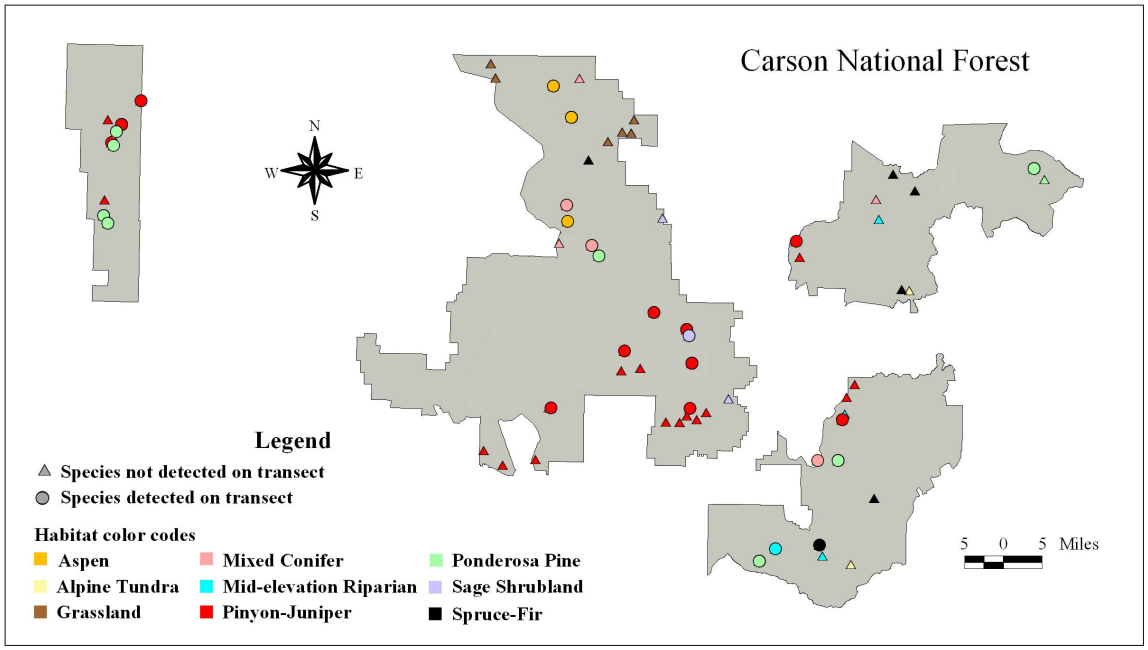


Figure 39. Distribution of transects on which White-breasted Nuthatch was detected in the Carson National Forest, Summer 2004.

Table 29. Habitat-specific density estimates for White-breasted Nuthatch in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	10
MC	ID	--	--	--	7
MR	ID	--	--	--	2
PJ	0.041	0.018	0.090	41.1%	23
PP	0.196	0.072	0.533	52.3%	25
SA	ID	--	--	--	3
SF	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

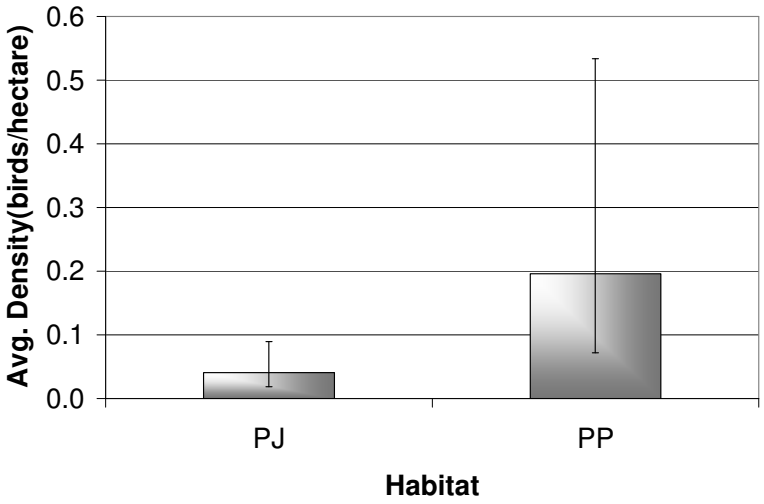


Table 40. Relative densities (and 95% confidence limits) of White-breasted Nuthatch among habitats in the Carson National Forest, Summer 2004.

Pygmy Nuthatch

This species is closely associated with Ponderosa Pines. It may be found in other habitats, but, if so, it is safe to say that there are Ponderosas nearby (Fig. 41). We recorded 86 individuals (55 independent detections) in Ponderosa Pine and 29 individuals (24 independent detections) in Mixed Conifer this season (Table 30; Fig. 42). This is a Priority management species in Ponderosa Pine, as listed by the NMPIF.

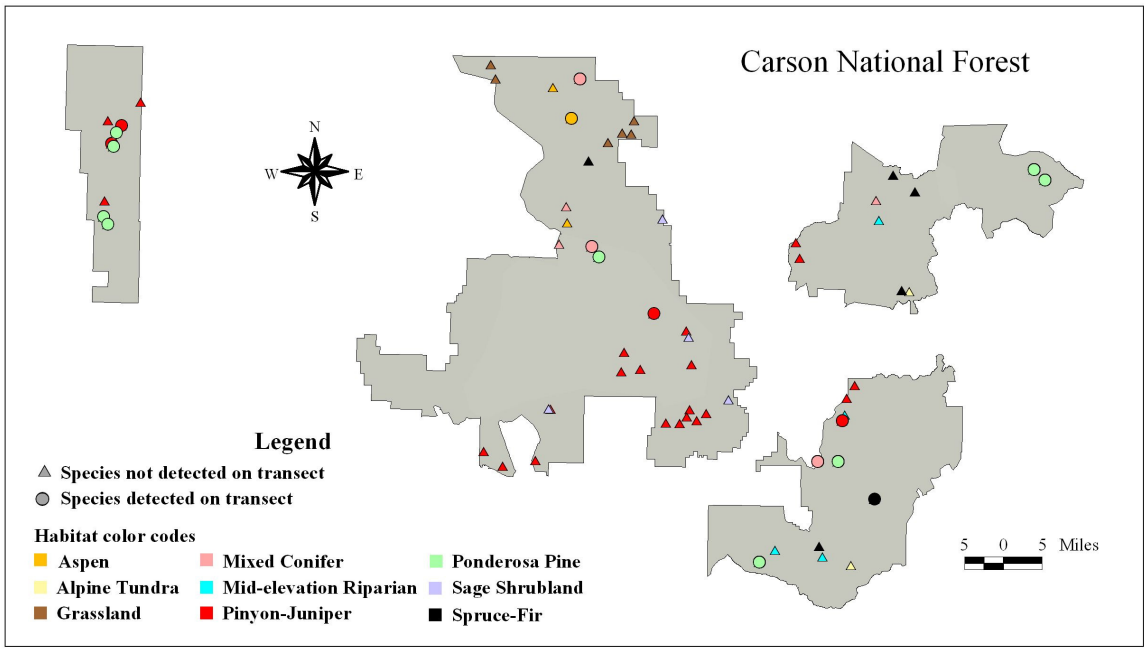


Figure 41. Distribution of transects on which Pygmy Nuthatch was detected in the Carson National Forest, Summer 2004

Table 30. Habitat-specific density estimates for Pygmy Nuthatch in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	4
MC	0.244	0.072	0.830	56.7%	23
PP	0.734	0.351	1.531	35.7%	55
PJ	ID	--	--	--	15
SF	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

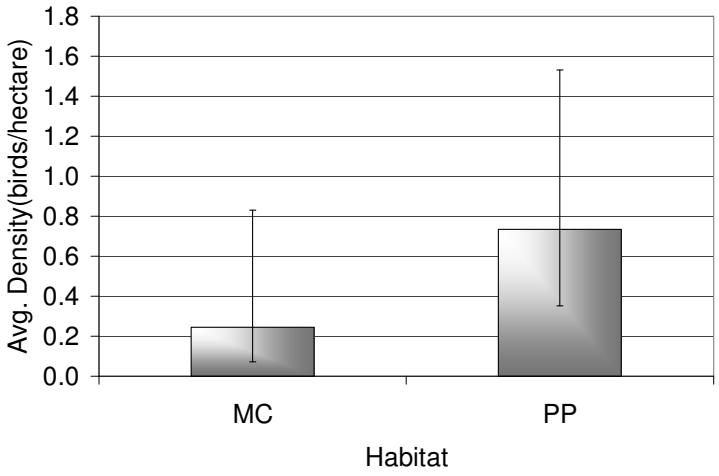


Figure 42. Relative densities (and 95% confidence limits) of Pygmy Nuthatch among habitats in the Carson National Forest, Summer 2004.

Brown Creeper

Brown Creepers breed most frequently in higher elevation conifer forests (Fig. 43). We detected 24 on SF transects this season; however, these represented only 22 independent detections. Brown Creeper is listed by NMPIF as a Representative management species for Spruce-Fir habitat.

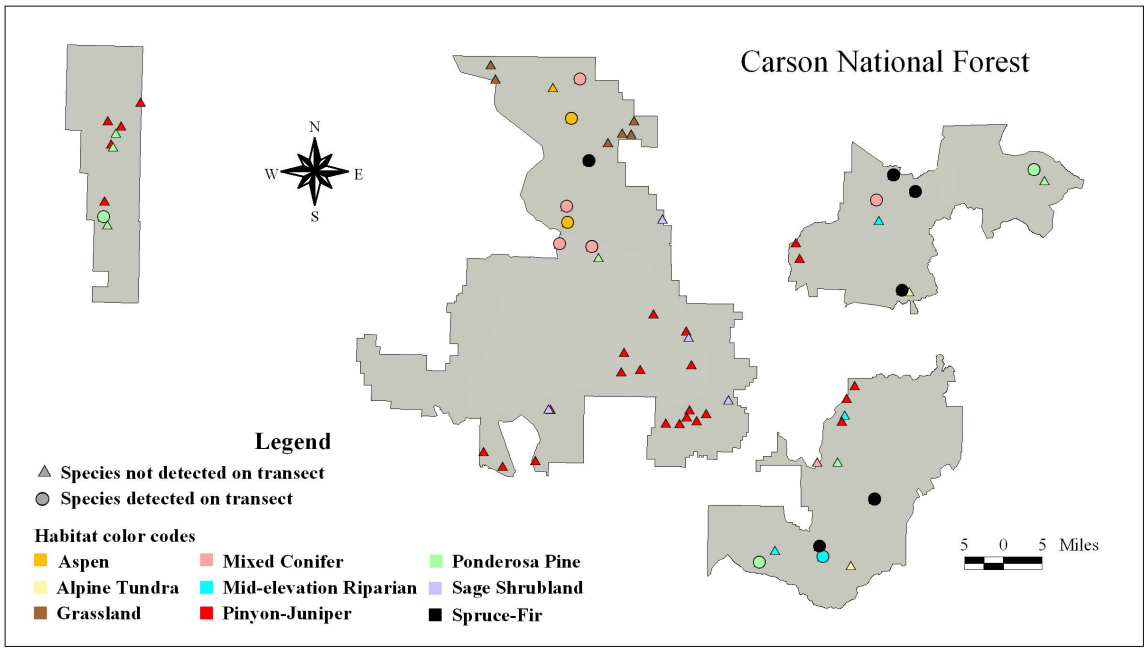


Figure 43. Distribution of transects on which Brown Creeper was detected in the Carson National Forest, Summer 2004.

Rock Wren

Rock Wrens inhabit rocky, open areas at all elevations. This season, we detected individuals on a wide variety of habitats (Fig. 44), though the only habitat in which we are able to provide a density estimate is PJ (n=39; Table 31). Rock Wren is listed by the NMPIF as a High Responsibility management species in Montane Shubland (Piñon-Juniper) and Great Basin Desert Shrub (Sage Shrubland) habitats.

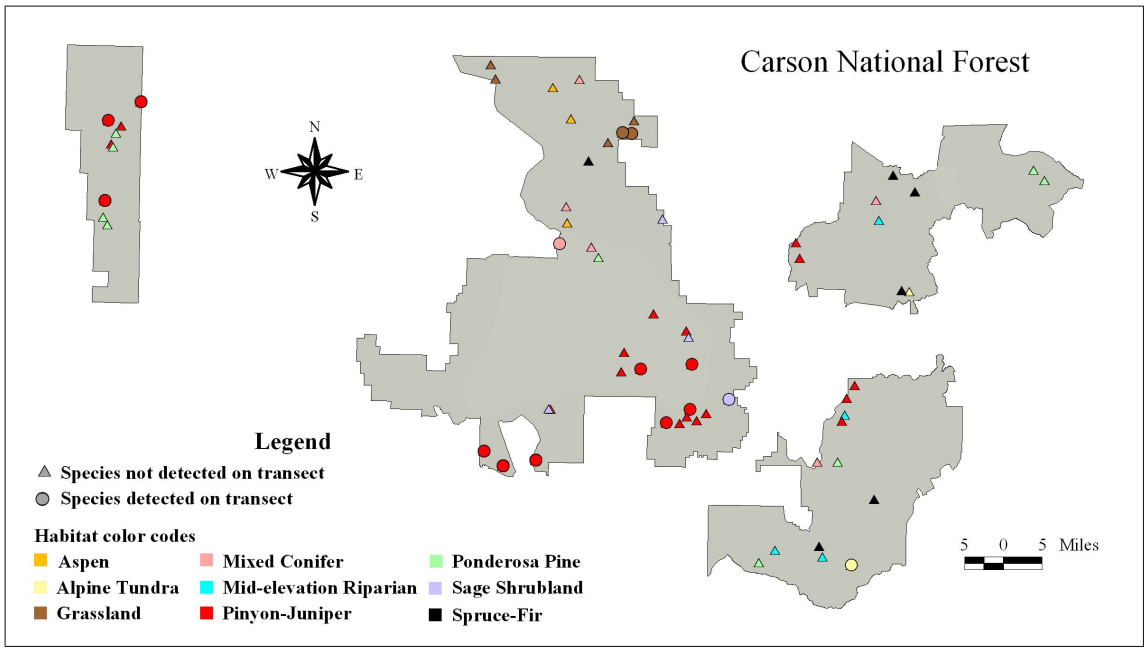


Figure 44. Distribution of transects on which Rock Wren was detected in the Carson National Forest, Summer 2004.

Table 31. Habitat-specific density estimates for Rock Wren in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AT	ID	--	--	--	1
GR	ID	--	--	--	6
MC	ID	--	--	--	3
PJ	0.014	0.006	0.034	44.7%	36
SA	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Bewick's Wren

This secondary cavity-nesting species breeds in Piñon-Juniper woodland in the CNF and we were able to provide a density estimate in Piñon-Juniper where we detected 50 individuals this summer (Fig. 45; Table 32).

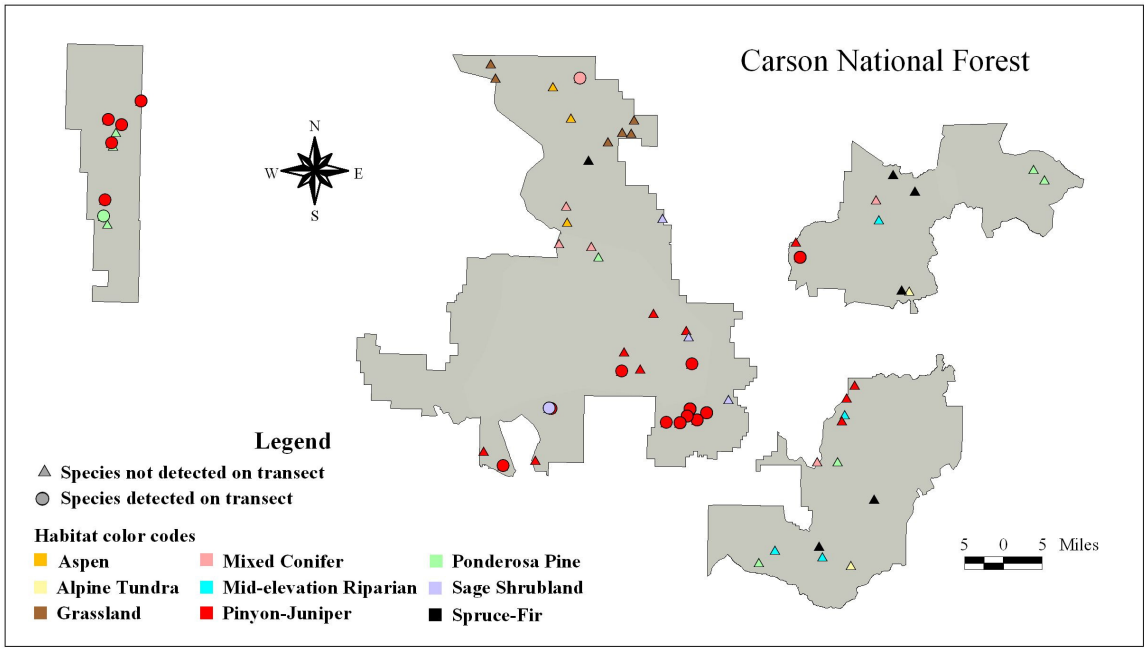


Figure 45. Distribution of transects on which Bewick's Wren was detected in the Carson National Forest, Summer 2004.

Table 32. Habitat-specific density estimates for Bewick's Wren in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MC	ID	--	--	--	1
PJ	0.065	0.037	0.115	28.9%	49
PP	ID	--	--	--	1
SA	ID	--	--	--	2

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

House Wren

In the CNF, this species is most commonly found in Aspen stands (Fig. 46), and in 2003 monitoring efforts provided a density estimate in that habitat. This year, however, staff detected only 20 individuals in AS. We also detected House Wrens on Grassland (n=1), Mixed Conifer (n=20), Mid-elevation Riparian (n=2), Piñon-Juniper (n=2), Ponderosa Pine (n=11), and Spruce-Fir (n=6) transects.

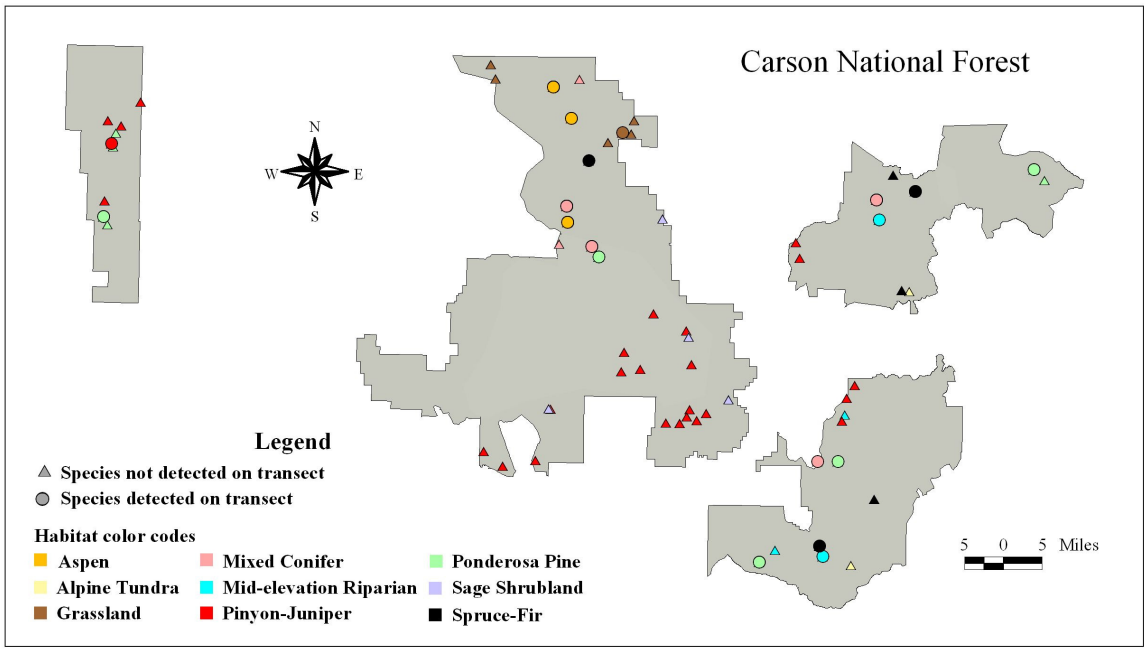


Figure 46. Distribution of transects on which House Wren was detected in the Carson National Forest, Summer 2004

Ruby-crowned Kinglet

Ruby-crowned Kinglet is a common breeding species of Spruce-Fir forests (Fig. 47). In 2003 we were able to provide density estimates for three habitats, but this season we provide a density estimate only for SF (Table 33).

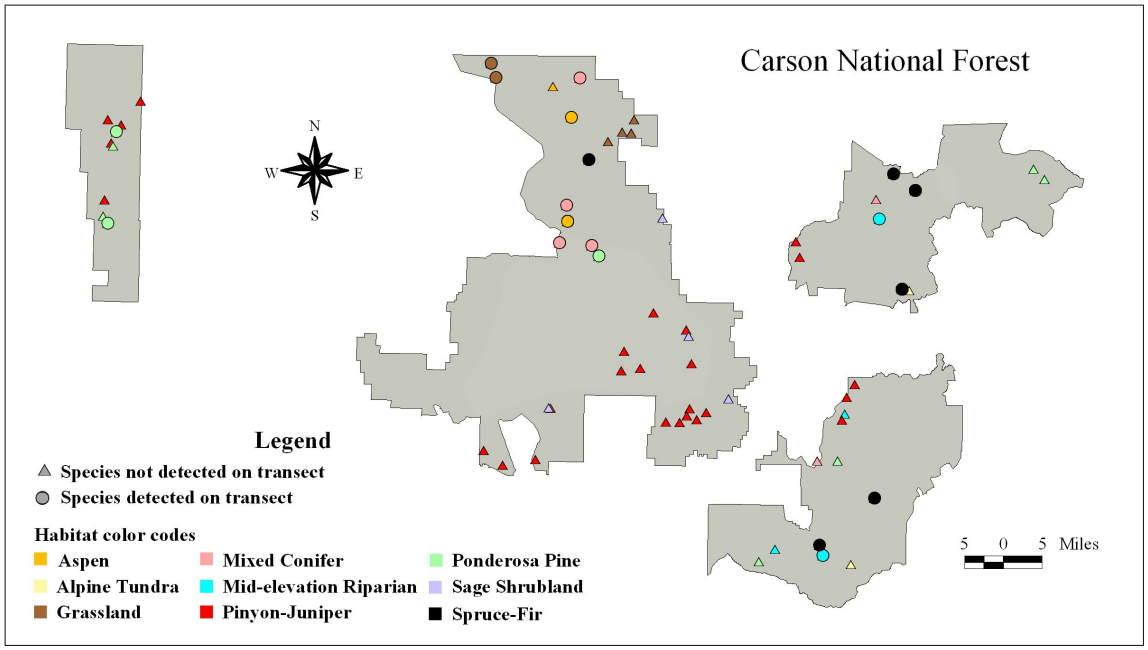


Figure 47. Distribution of transects on which Ruby-crowned Kinglet was detected in the Carson National Forest, Summer 2004.

Table 33. Habitat-specific density estimates for Ruby-crowned Kinglet in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	14
GR	ID	--	--	--	5
MC	ID	--	--	--	12
MR	ID	--	--	--	4
PP	ID	--	--	--	4
SF	0.266	0.102	0.690	44.6%	32

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Blue-gray Gnatcatcher

This species prefers areas with extensive shrub cover and is most common in the southern Rockies in Piñon-Juniper (Fig. 34). This year we are able to provide a density estimate in PJ, as we detected 46 individuals there this season (Table 42). This is a Representative species in Montane Shrubland habitat as listed by NMPIF.

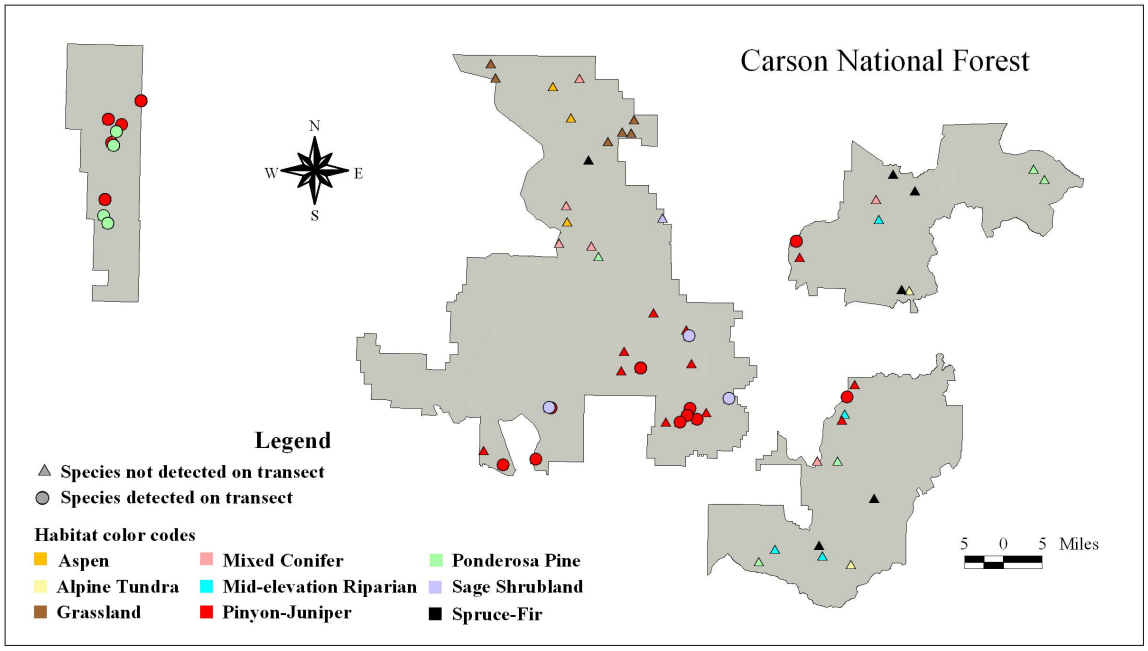


Figure 48. Distribution of transects on which Blue-gray Gnatcatcher was detected in the Carson National Forest, Summer 2004.

Table 34. Habitat-specific density estimates for Blue-gray Gnatcatcher in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
PJ	0.311	0.142	0.682	40.8%	41
PP	ID	--	--	--	20
SA	ID	--	--	--	3

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Western Bluebird

Western Bluebirds are most frequently found in Ponderosa Pine, but also occupy Piñon-Juniper (Fig. 49). We provide estimates of density in both habitats this year (Table 35; Fig. 50). Western Bluebird is listed as a Priority management species for both Piñon-Juniper and Ponderosa Pine.

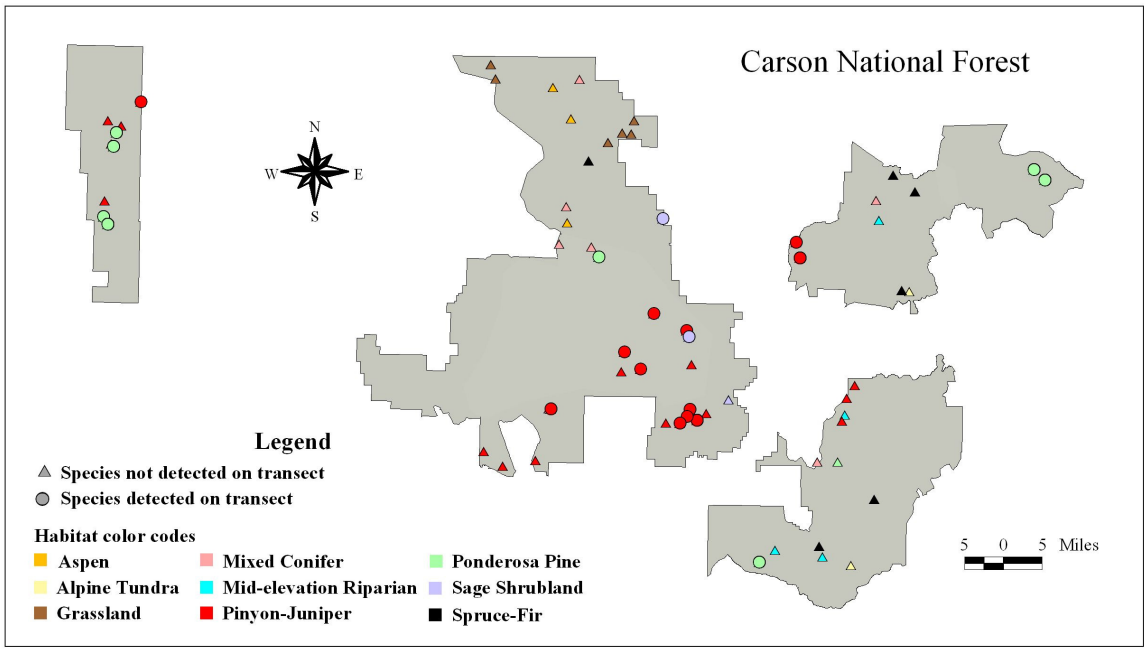


Figure 49. Distribution of transects on which Western Bluebird was detected in the Carson National Forest, Summer 2004.

Table 35. Habitat-specific density estimates for Western Bluebird in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
PJ	0.033	0.014	0.076	43.2%	23
PP	0.387	0.207	0.723	28.7%	50
SA	ID	--	--	--	4

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

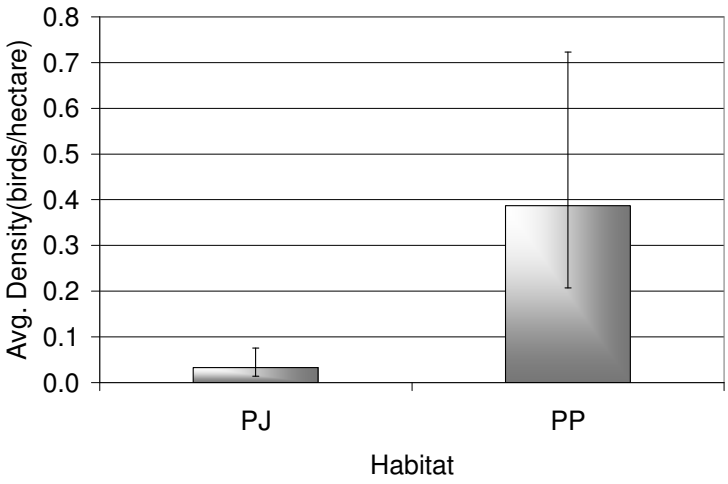


Figure 50. Relative densities (and 95% confidence limits) of Western Bluebird among habitats in the Carson National Forest, Summer 2004.

Mountain Bluebird

Mountain Bluebird can be described as a species that likes edges. It is most frequently found on edges of Piñon-Juniper and open grasslands or sage shrublands (Fig. 51). It can also be encountered where Aspen stands meet high-elevation meadows. We recorded Mountain Bluebirds on transects in five habitats in 2004, producing a density estimate in PJ (Table 36). This species is listed as a Priority management species in Piñon-Juniper

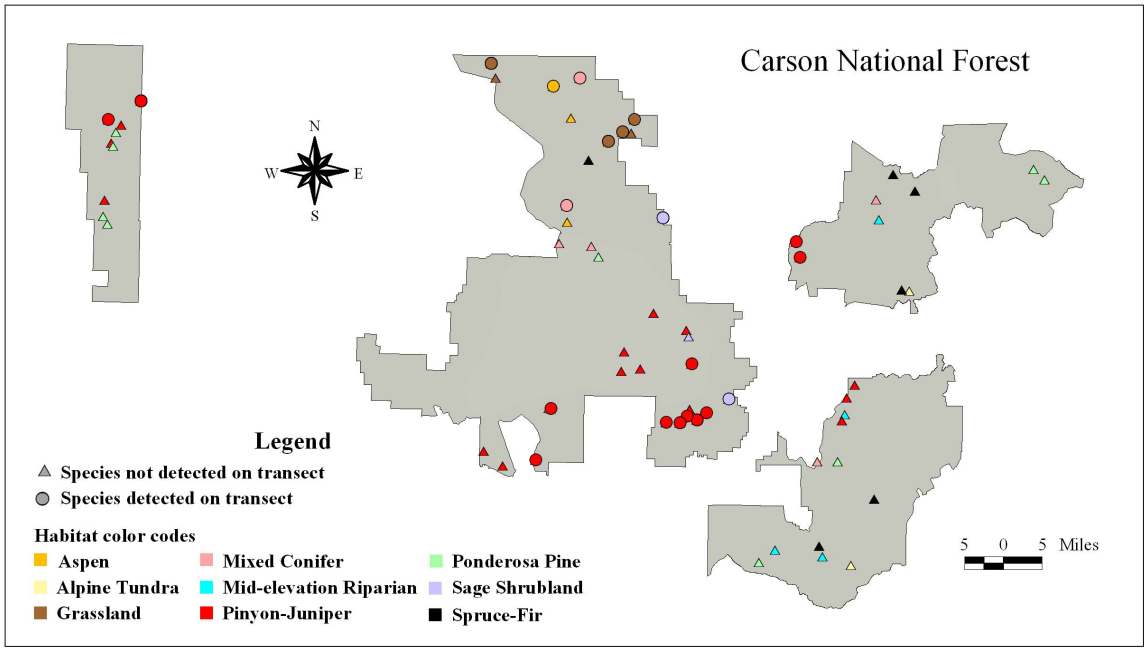


Figure 51. Distribution of transects on which Mountain Bluebird was detected in the Carson National Forest, Summer 2004

by NMPIF and as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

Table 36. Habitat-specific density estimates for Mountain Bluebird in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	1
GR	ID	--	--	--	25
MC	ID	--	--	--	5
PJ	0.016	0.007	0.034	39.4%	24
SA	ID	--	--	--	13

D=Density in birds/hectare; LCL=lower confidence limit on D; UCL=upper confidence limit on D; CV=coefficient of variation on D; n=number of observations; ID=insufficient data

Townsend's Solitaire

Townsend's Solitaire is forested-habitat generalist, provided its specific nesting requirements are met (Fig. 52). We detected 29 individuals this season of which 15 were in PP. This species is listed by NMPIF as a Priority management species in Mixed Conifer and Spruce-Fir.

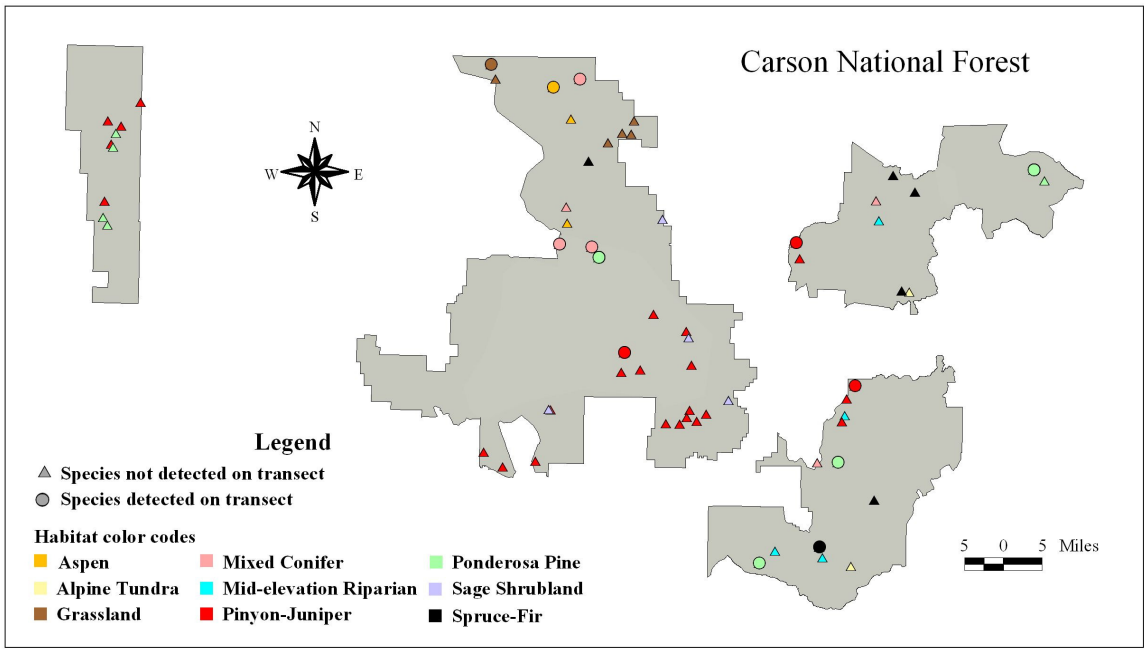


Figure 52. Distribution of transects on which Townsend's Solitaire was detected in the Carson National Forest, Summer 2004.

Hermit Thrush

In CNF, Hermit Thrushes breed most commonly in Spruce-Fir, but also inhabit other forested habitats (Fig. 53). We are able to provide density estimates from four habitats this season (Table 37; Fig 54).

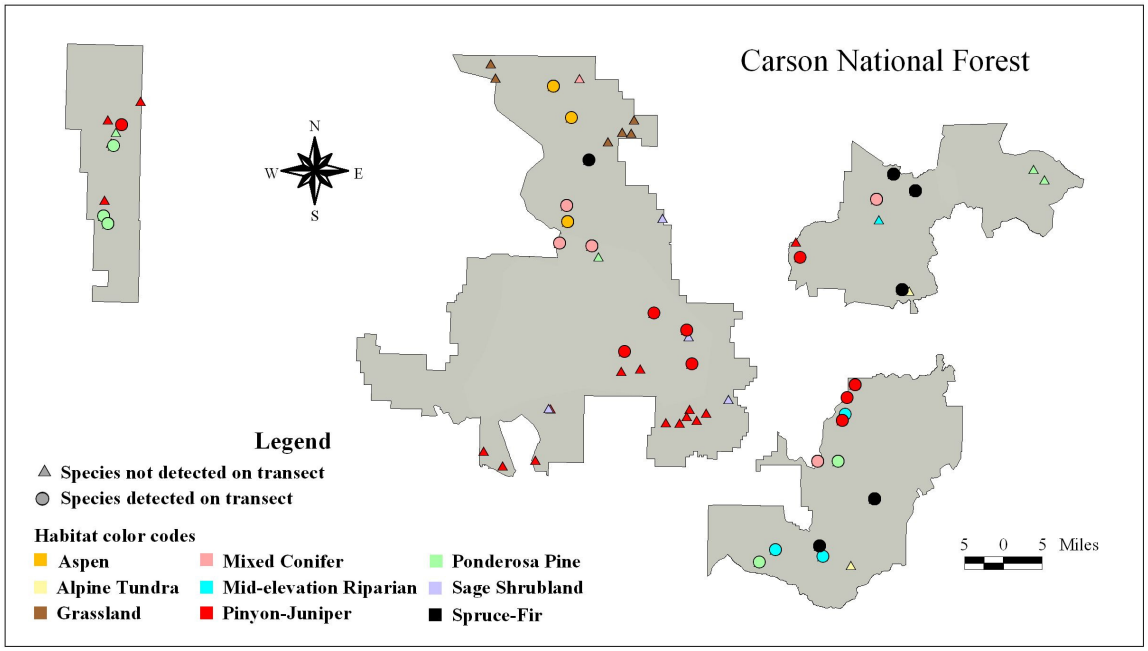


Figure 53. Distribution of transects on which Hermit Thrush was detected in the Carson National Forest, Summer 2004.

Table 37. Habitat-specific density estimates for Hermit Thrush in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	0.062	0.016	0.235	46.2%	26
MC	0.075	0.040	0.140	29.3%	46
MR	ID	--	--	--	6
PJ	ID	--	--	--	22
PP	0.011	0.004	0.028	47.1%	23
SF	0.166	0.083	0.332	29.7%	83

D=Density in birds/hectare; LCL=lower confidence limit on D; UCL=upper confidence limit on D; CV=coefficient of variation on D; n=number of observations; ID=insufficient data

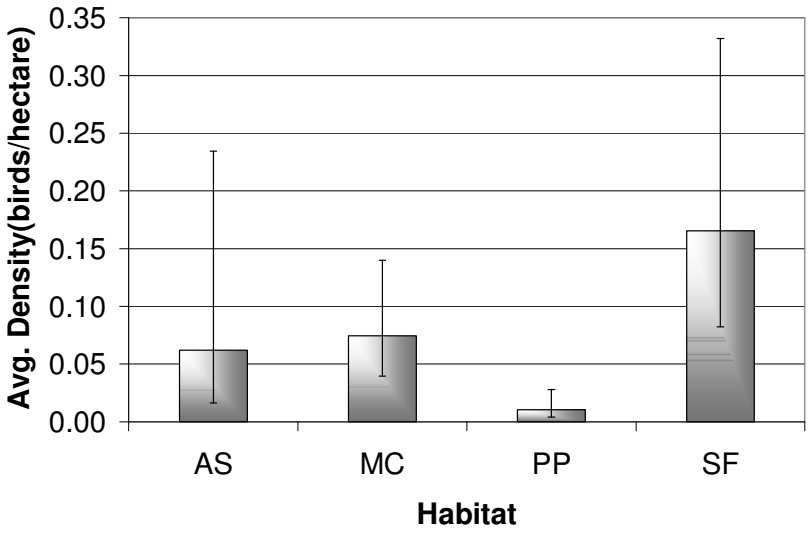


Table 54. Relative density of Hermit Thrush among habitats in the Carson National Forest, Summer 2004.

American Robin

A very adaptable species, American Robins were found in all habitats this season (Fig. 55), as is typical for Colorado transects. We were able to provide density estimates for five habitats this year (Table 38; Fig.56). This was the ninth most common species in all habitats combined this season.

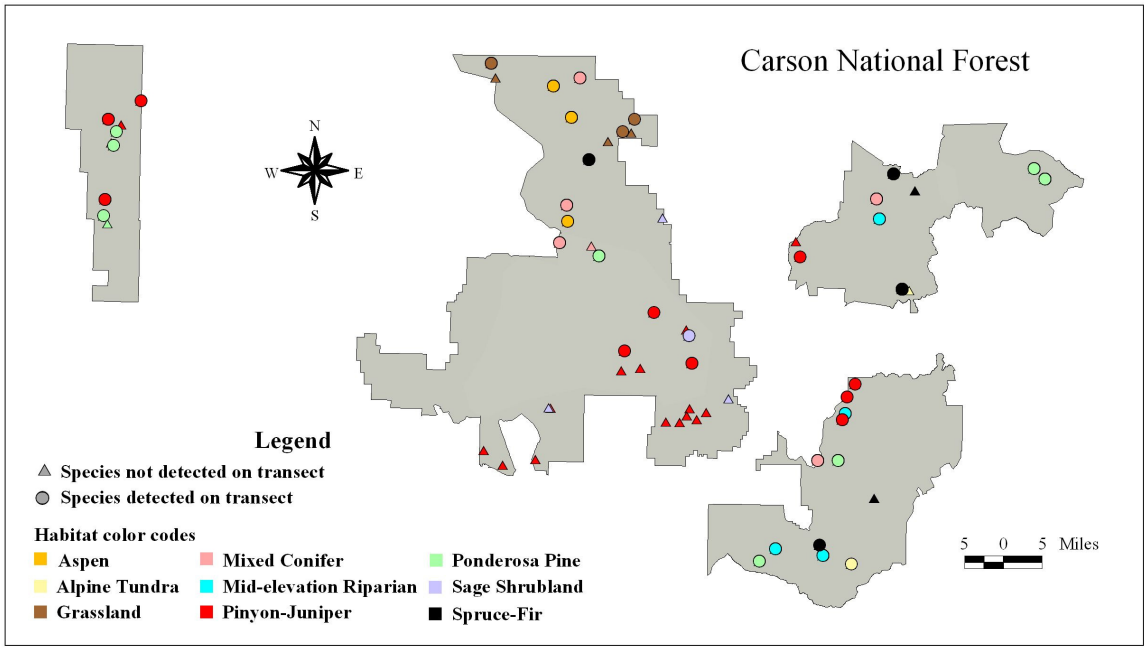


Figure 55. Distribution of transects on which American Robin was detected in the Carson National Forest, Summer 2004.

Table 38. Habitat-specific density estimates for American Robin in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	0.200	0.068	0.585	44.7%	30
AT	ID	--	--	--	1
GR	ID	--	--	--	8
MC	0.341	0.179	0.649	29.7%	54
MR	0.633	0.354	1.132	26.2%	42
PJ	0.011	0.005	0.023	37.1%	25
PP	0.234	0.095	0.578	45.9%	49
SA	ID	--	--	--	1
SF	ID	--	--	--	21

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

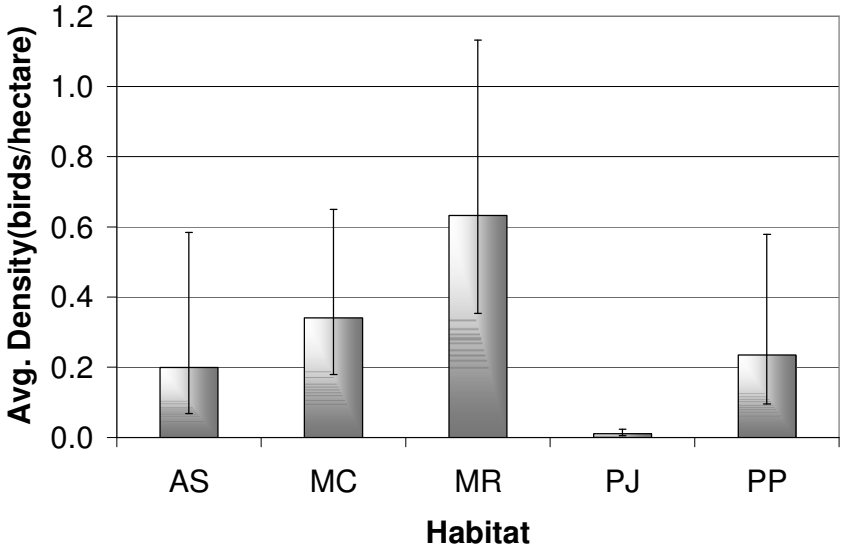


Table 56. Relative densities (and 95% confidence limits) of American Robin among habitats in the Carson National Forest, Summer 2004.

Northern Mockingbird

This species typically breeds in low-elevation open areas with few trees (Fig. 57). Last year, we were able to provide a density estimate in PJ, however, this year we detected only 14 individuals in the habitat.

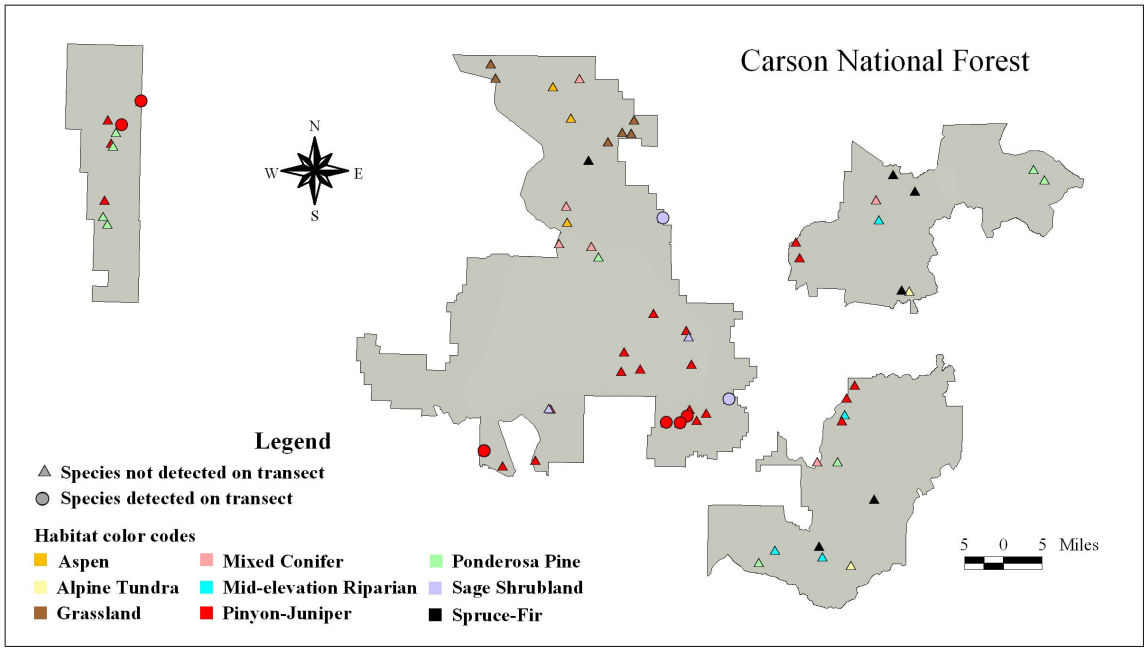


Figure 57. Distribution of transects on which Northern Mockingbird was detected in the Carson National Forest, Summer 2004.

Sage Thrasher

As the name suggests, this species is frequently encountered in Sage Shrubland (n=11 in 2004), but we also detected Sage Thrashers on GR (n=16) and PJ (n=1) transects (Fig. 58). The individuals detected on the GR transects were in areas with a significant sage component. NMPIF lists this species as a Highest Priority management species in Great Basin Desert Shrub (Sage Shrubland) habitat and the species is also listed as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

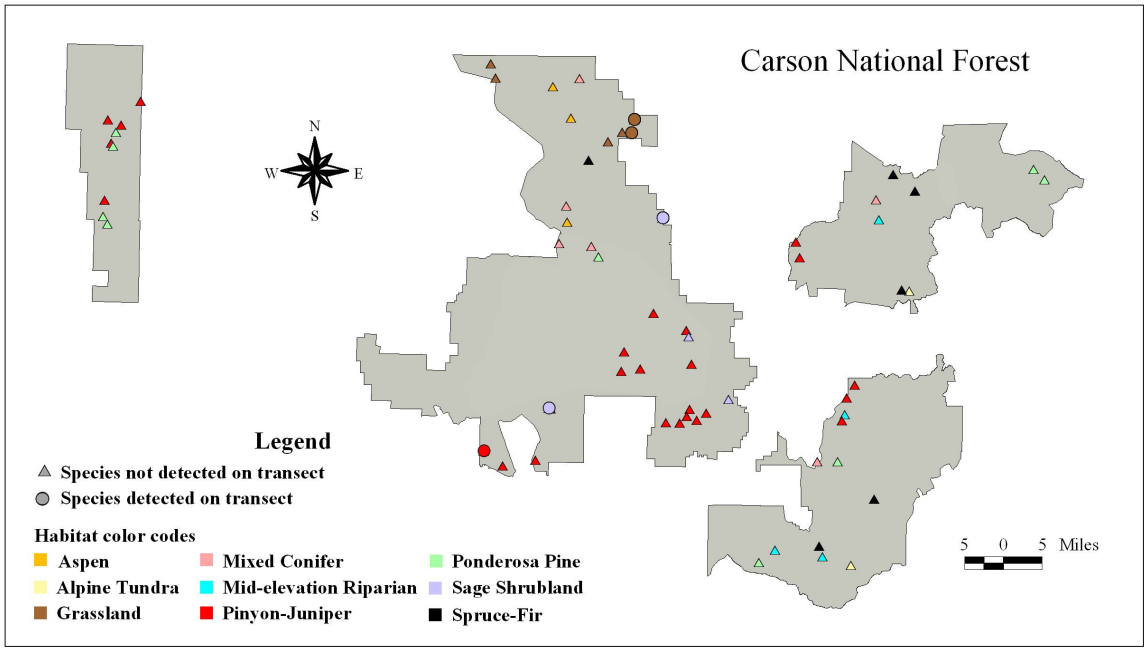


Figure 58. Distribution of transects on which Sage Thrasher was detected in the Carson National Forest, Summer 2004.

American Pipit

The Rocky Mountains host an endemic subspecies of American Pipit that breeds almost exclusively in open areas above timberline. This year we were able to provide an estimate of density for the species in Alpine Tundra in the CNF (Table 39; Fig 59), where it was the most common (n=61) species detected on the two transects in this habitat. NMPIF lists American Pipit as a Representative management species in Alpine Tundra.

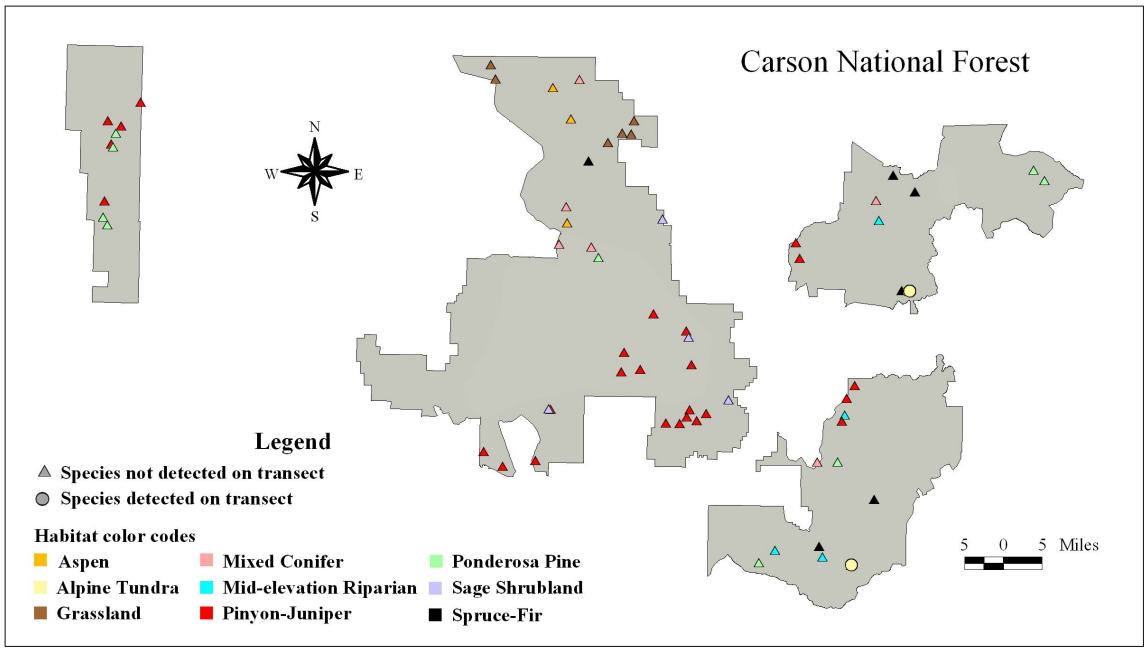


Figure 59. Distribution of transects on which American Pipit was detected in the Carson National Forest, Summer 2004.

Table 39. Habitat-specific density estimates for American Pipit in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AT	1.011	0.009	108.574	49.6%	58

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Virginia's Warbler

This species prefers areas with Gambel Oak, but can be found in some other shrub habitats. We detected 55 individuals on PJ transects and 13 on PP transects this summer (Table 40; Fig. 60). Analysis of vegetation data collected in PJ shows that this species is typically found in areas with Gambel Oak; that shrubby species being recorded as an understory species at 36 of the 50 (72%) points-count stations where this species was detected. Virginia's Warbler is listed as a Priority management species in Montane Shrubland and Piñon-Juniper habitats and a Highest Priority management species in Ponderosa Pine habitat and as a Watch List Species in the North American Landbird Conservation Plan.

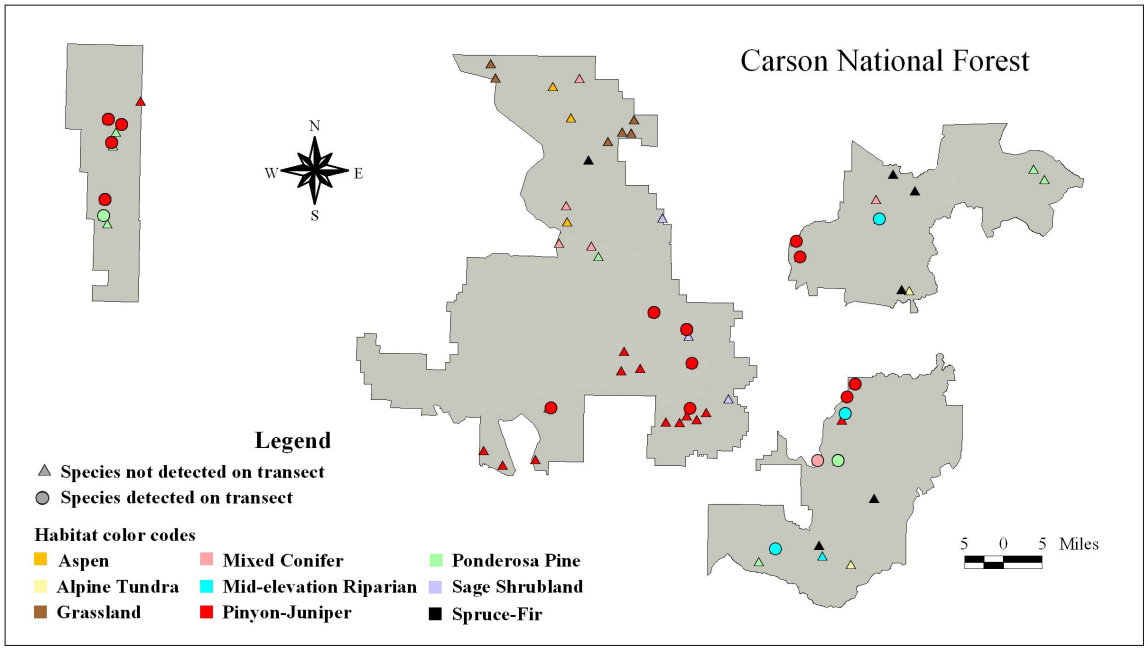


Figure 60. Distribution of transects on which Virginia's Warbler was detected in the Carson National Forest, Summer 2004.

Table 40. Habitat-specific density estimates for Virginia's Warbler in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MC	ID	--	--	--	2
MR	ID	--	--	--	7
PJ	0.172	0.079	0.375	40.5%	50
PP	ID	--	--	--	13

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Yellow-rumped Warbler

Yellow-rumped Warbler is a common forest generalist, a fact easily discernible in Figure 61. Thus it is not surprising that RMBO is able to provide density estimates for the species in six habitats (Table 41; Fig. 62). Individuals on PJ transects were most likely migrants, as Yellow-rumps do not typically breed in that habitat.

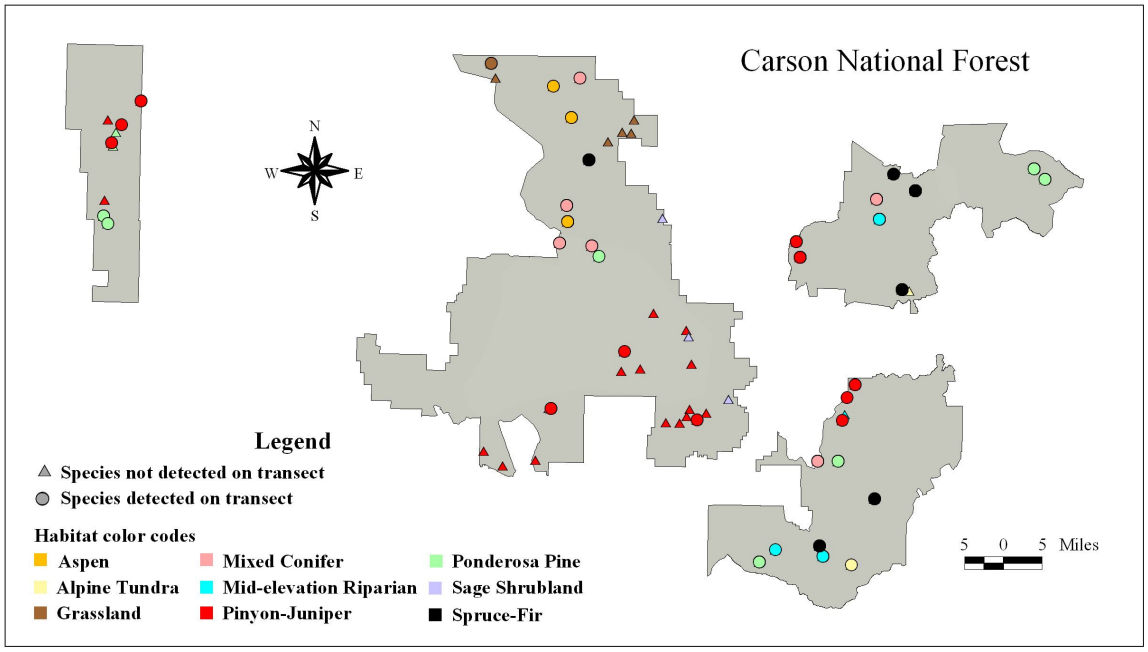


Figure 62. Distribution of transects on which Yellow-rumped Warbler was detected in the Carson National Forest, Summer 2004.

Table 41. Habitat-specific density estimates for Yellow-rumped Warbler in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	0.425	0.049	3.683	70.6%	34
AT	ID	--	--	--	1
GR	ID	--	--	--	4
MC	0.612	0.316	1.188	29.5%	54
MR	0.577	0.119	2.792	59.5%	29
PJ	0.078	0.035	0.175	41.3%	26
PP	0.188	0.090	0.390	33.1%	44
SF	0.560	0.211	1.484	40.0%	56

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

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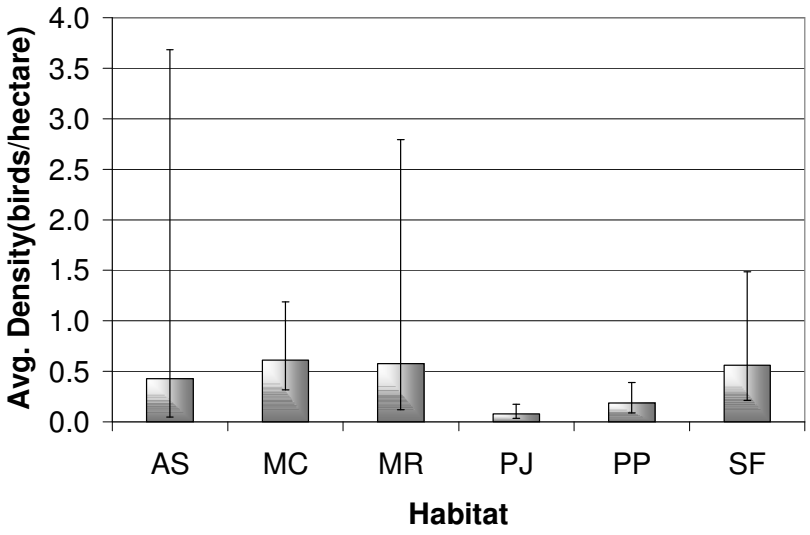

Figure 62. Relative densities (and 95% confidence limits) of Yellow-rumped Warbler among habitats in the Carson National Forest, Summer 2004.

Black-throated Gray Warbler

In the Rockies, this warbler is a Piñon-Juniper woodland specialist (Fig. 63). Black-throated Gray Warbler was the seventh-most common species in all habitats combined and the most common species in PJ this season. We also recorded this species on MR and PP transects this season (Table 42). NMPIF lists Black-throated Gray Warbler as a Highest Priority management species in Piñon-Juniper.

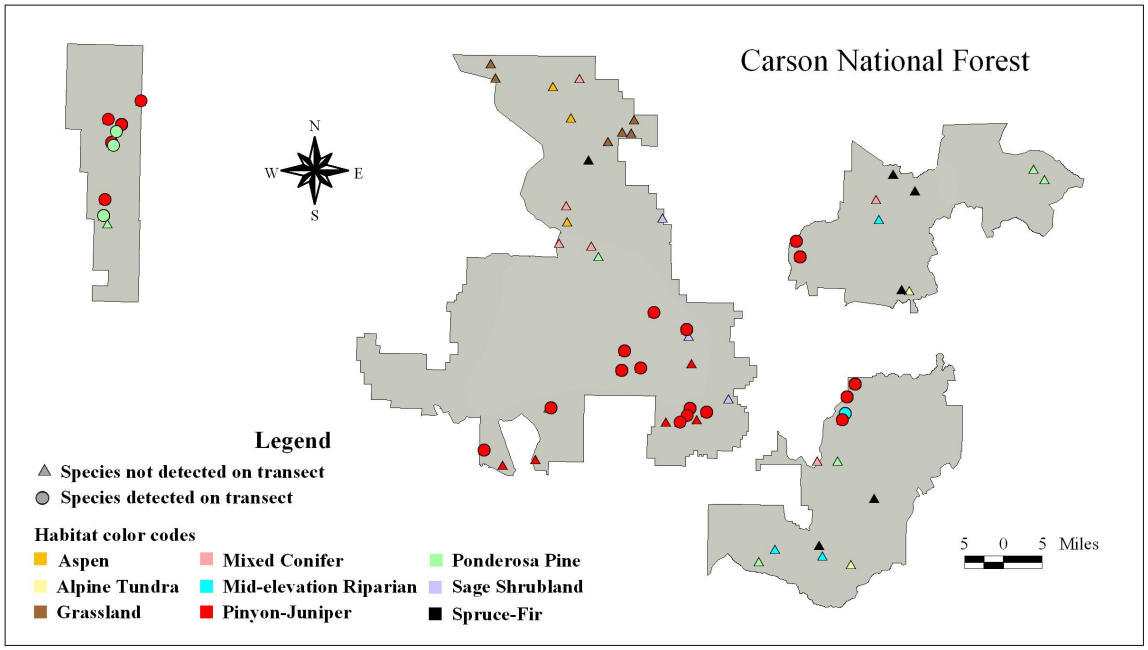

Figure 63. Distribution of transects on which Black-throated Gray Warbler was detected in the Carson National Forest, Summer 2004.

Table 42. Habitat-specific density estimates for Black-throated Gray Warbler in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MR	ID	--	--	--	13
PJ	0.576	0.345	0.961	25.5%	209
PP	ID	--	--	--	13

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Grace's Warbler

This species prefers mature Ponderosa Pine stands, often with an understory of Gambel Oak. As last year, we are able to provide a density estimate in PP, where we recorded 32 individuals (25 independent detections; Table 43; Fig. 64). We also encountered Grace's Warblers on MC and PJ transects. This species is listed by NMPIF as a Highest Priority management species in Ponderosa Pine and is listed as a Watch List Species in the North American Landbird Conservation Plan.

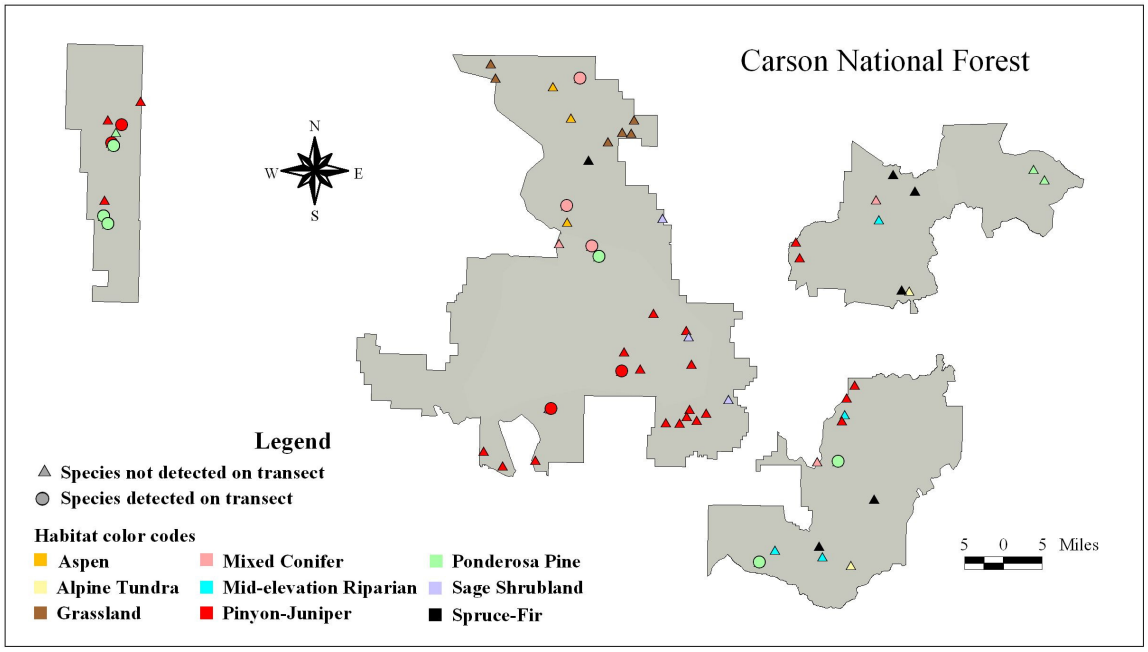

Figure 64. Distribution of transects on which Grace's Warbler was detected in the Carson National Forest, Summer 2004.

Table 43. Habitat-specific density estimates for Grace's Warbler in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MC	ID	--	--	--	5
PJ	ID	--	--	--	4
PP	0.350	0.129	0.950	51.3%	25

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

MacGillivray's Warbler

This species is a breeder in edge situations, particularly at the bases of slopes, where there is dense understory. We detected 15 MacGillivray's Warblers this season on MR transects (Fig. 65). It is listed as a Highest Priority management species in Montane Shrubland by NMPIF.

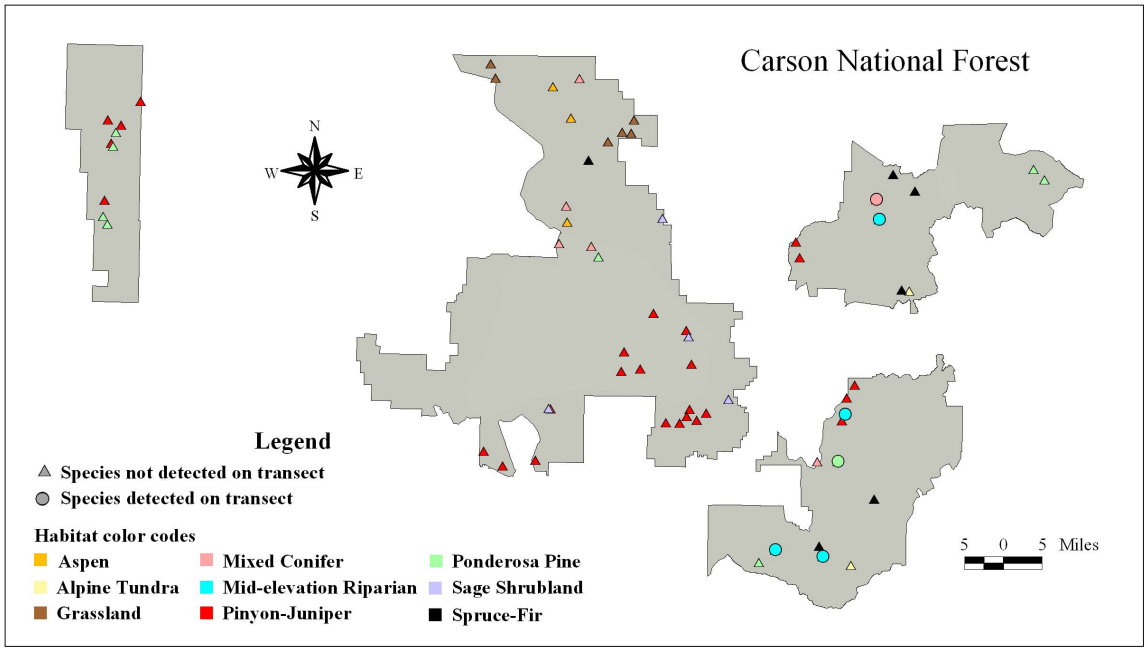

Figure 65. Distribution of transects on which MacGillivray's Warbler was detected in the Carson National Forest, Summer 2004.

Western Tanager

Western Tanager is a forest generalist and, this season, we detected individuals on transects in eight habitats (Figs. 66, 67; Table 44). This species was the second-most common in all habitats combined, with 294 recorded.

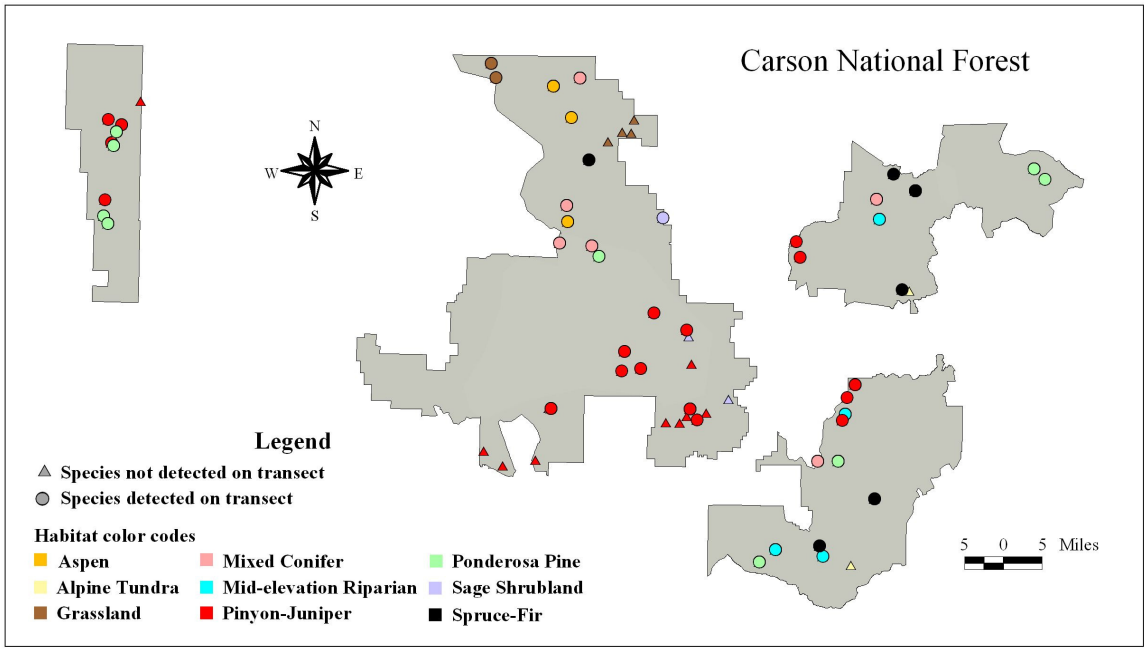

Figure 66. Distribution of transects on which Western Tanager was detected in the Carson National Forest, Summer 2004.

Table 44. Habitat-specific density estimates for Western Tanager in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	0.157	0.026	0.948	46.7%	36
GR	ID	--	--	--	7
MC	0.504	0.304	0.839	25.5%	71
MR	0.245	0.123	0.487	30.9%	32
PJ	0.046	0.027	0.079	27.1%	42
PP	0.224	0.142	0.352	21.5%	81
SA	ID	--	--	--	1
SF	ID	--	--	--	22

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

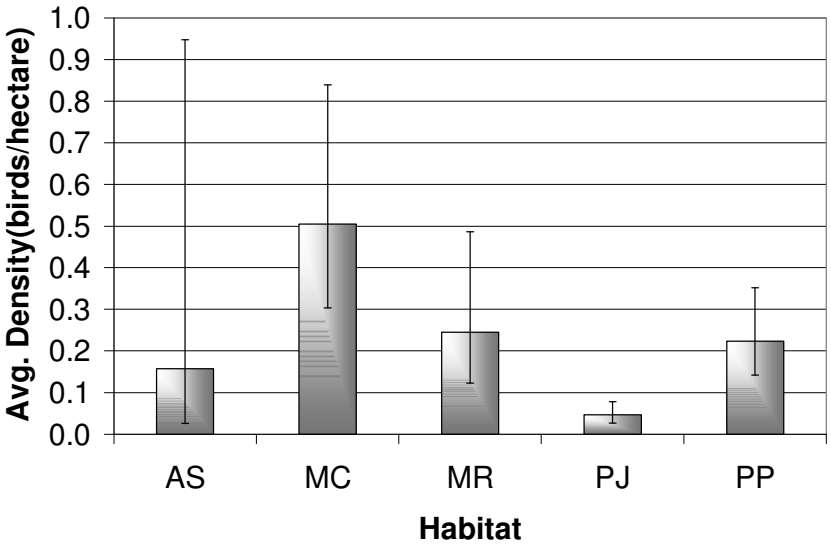

Figure 67. Relative densities (and 95% confidence limits) of Western Tanager among habitats in the Carson National Forest, Summer 2004

Green-tailed Towhee

Green-tailed Towhees are found in lower-elevation areas where shrubs dominate, particularly in areas with a variety of shrub species. We recorded this species in every habitat this season (Fig. 68) and are able to provide density estimates in PJ and SA (Table 45; Fig. 69). NMPIF lists Green-tailed Towhee as a Priority management species for Great Basin Desert Shrub (Sage Shrubland) and the species is also listed as a Stewardship Species in the Intermountain West and Southwest regions in the North American Landbird Conservation Plan.

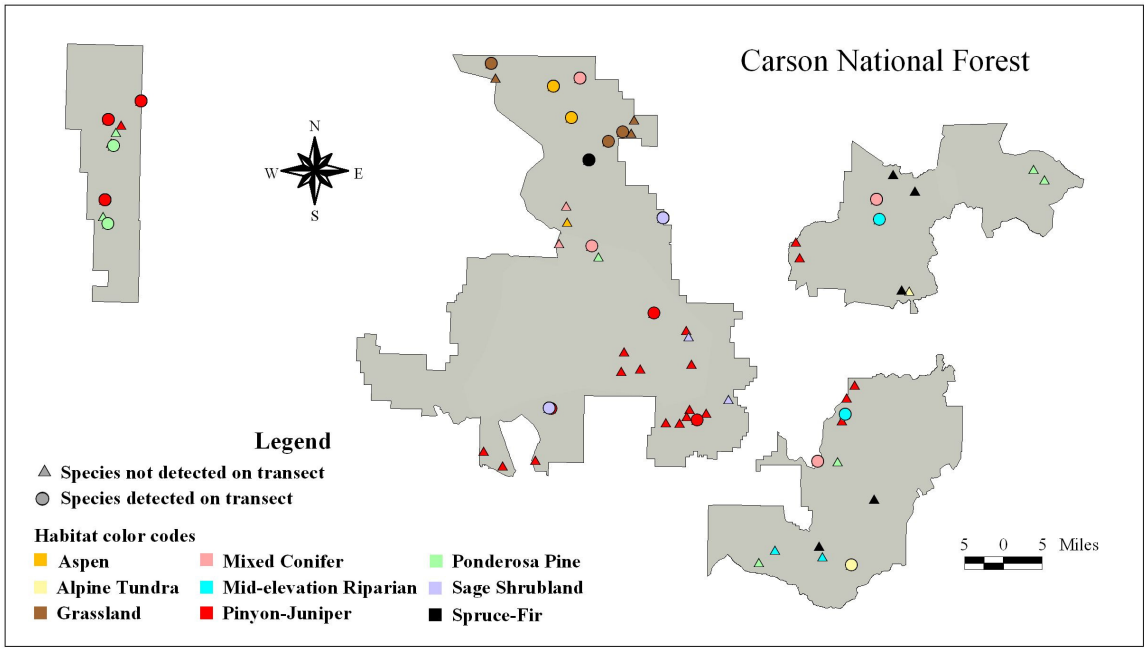

Figure 68. Distribution of transects on which Green-tailed Towhee was detected in the Carson National Forest, Summer 2004.

Table 45. Habitat-specific density estimates for Green-tailed Towhee in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	12
AT	ID	--	--	--	2
GR	ID	--	--	--	5
MC	ID	--	--	--	16
MR	ID	--	--	--	4
PJ	0.043	0.015	0.120	53.6%	30
PP	ID	--	--	--	3
SA	0.176	0.029	1.073	78.1%	23
SF	ID	--	--	--	4

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

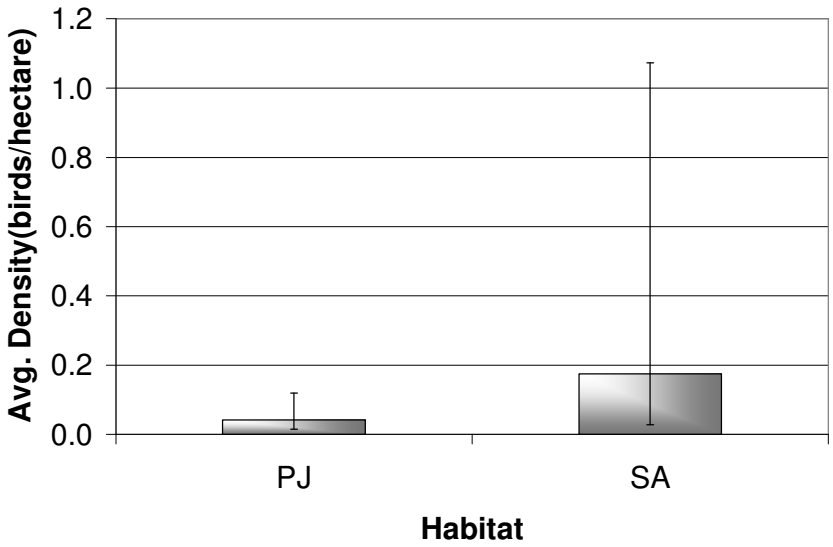

Figure 69. Relative densities (and 95% confidence limits) of Green-tailed Towhee among habitats in the Carson National Forest, Summer 2004.

Spotted Towhee

This species is a shrub obligate and in 2004, most of the 261 Spotted Towhees recorded were on transects in PJ, PP, and SA (Fig. 70) and we provide density estimates for these three habitats (Table 46; Fig. 71).

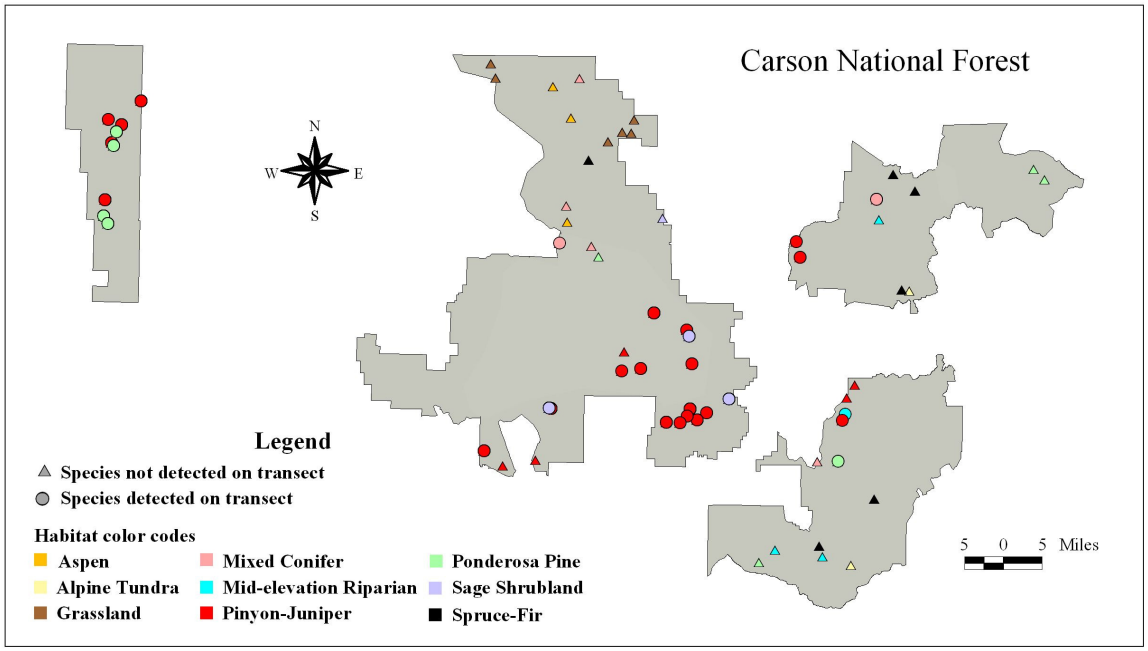

Figure 70. Distribution of transects on which Spotted Towhee was detected in the Carson National Forest, Summer 2004.

Table 46. Habitat-specific density estimates for Spotted Towhee in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
MC	ID	--	--	--	6
MR	ID	--	--	--	1
PJ	0.213	0.144	0.316	19.3%	157
PP	0.501	0.193	1.298	44.4%	60
SA	0.177	0.058	0.540	44.5%	34

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

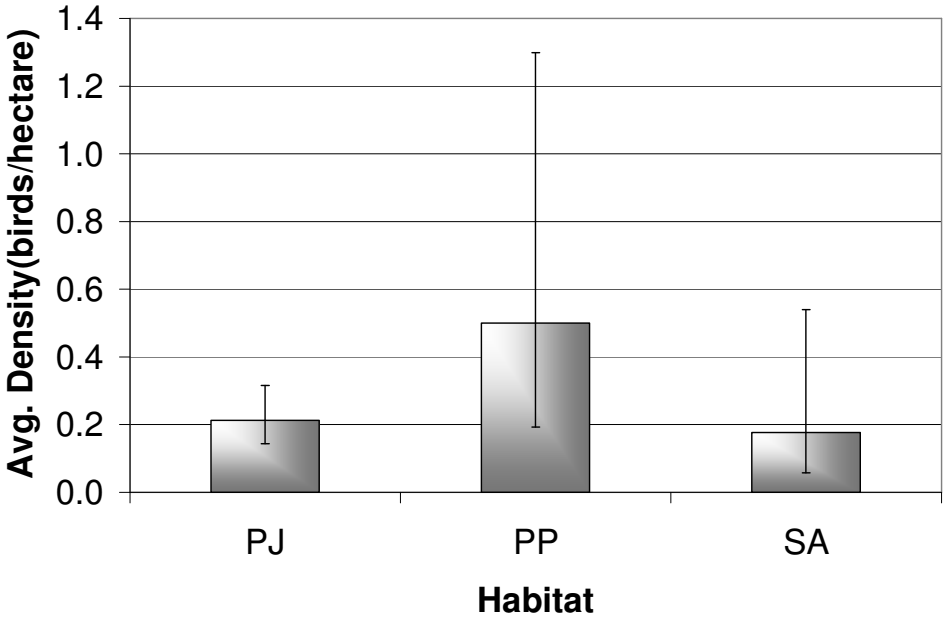

Table 71. Relative densities (and 95% confidence limits) of Spotted Towhee among habitats in the Carson National Forest, Summer 2004.

Chipping Sparrow

Chipping Sparrows are most common in lower-elevation wooded areas (Fig. 72) and the species was the third-most common in all habitats combined in 2004 (n=271). This season, we provide density estimates in Piñon-Juniper and Ponderosa Pine habitats (Table 47; Fig. 73).

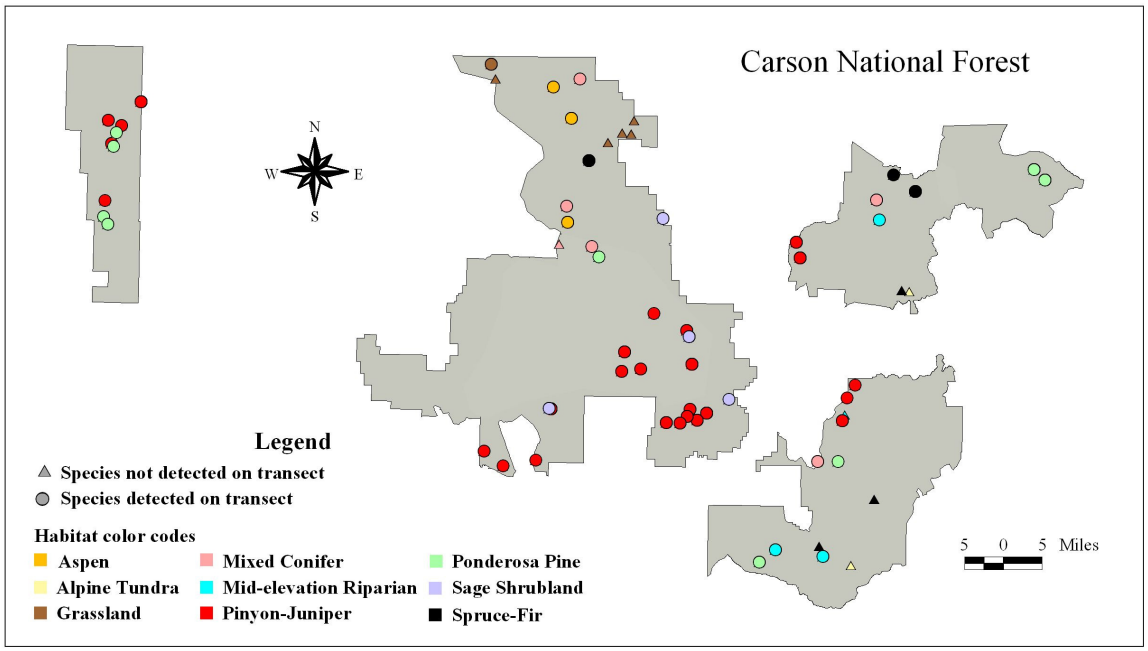

Figure 72. Distribution of transects on which Chipping Sparrow was detected in the Carson National Forest, Summer 2004

Table 47. Habitat-specific density estimates for Chipping Sparrow in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	19
GR	ID	--	--	--	7
MC	ID	--	--	--	13
MR	ID	--	--	--	10
PJ	0.837	0.468	1.496	30.0%	140
PP	0.197	0.084	0.462	38.7%	35
SA	ID	--	--	--	14
SF	ID	--	--	--	16

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

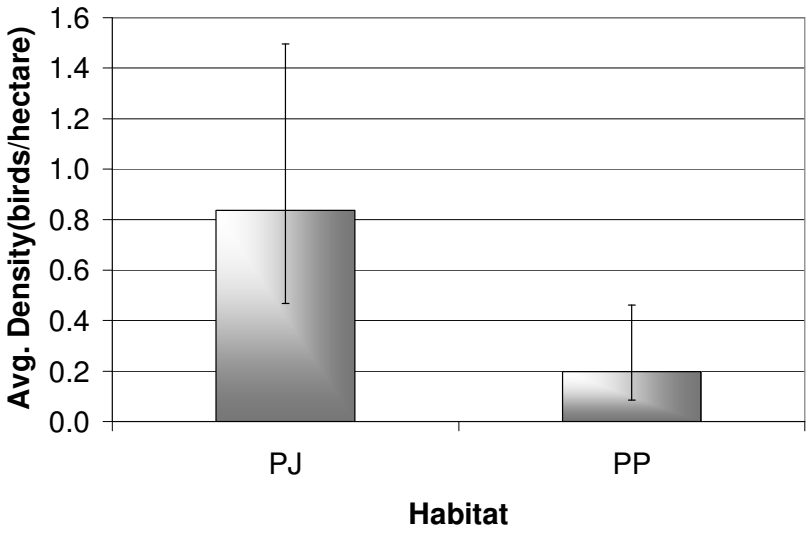

Table 73. Relative densities (and 95% confidence limits) of Chipping Sparrow among habitats in the Carson National Forest, Summer 2004.

Brewer's Sparrow

Brewer's Sparrows are typically associated with shrubsteppe habitats (Fig. 75). The species' predilection for sage is readily discerned in in Table 48. The 2004 CNF data suggest that Brewer's Sparrow uses areas with Rabbitbrush *(_____ nauseosus*) at higher rates than available and areas with trees at lower rates than available, but the differences are not significant (probably due to small sample sizes). The CNF lists this species as a MIS, NMPIF lists it as a Representative species for Great Basin Desert Shrub (Sage Shrubland), and the Intermountain West and Southwest regions in the North American Landbird Conservation Plan record it as a Watch List species.

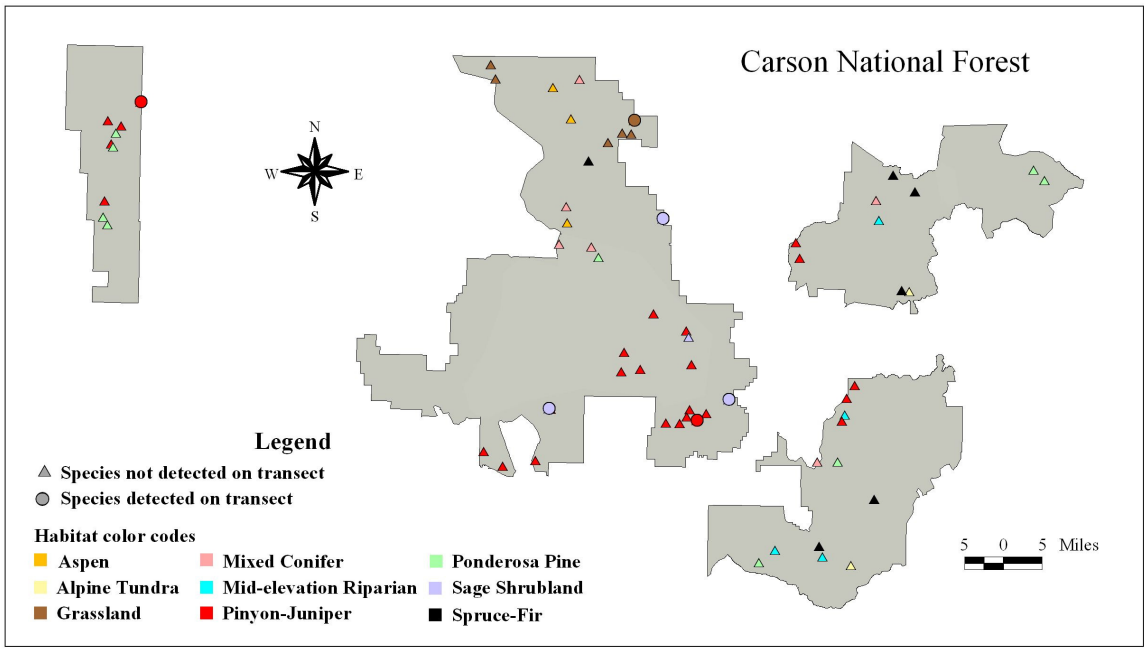

Figure 75. Distribution of transects on which Brewer's Sparrow was detected in the Carson National Forest, Summer 2004.

Table 48. Habitat-specific density estimates for Brewer's Sparrow in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
GR	ID	--	--	--	7
PJ	ID	--	--	--	18
SA	0.662	0.204	2.150	43.2%	44

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Vesper Sparrow

On the CNF, Vesper Sparrows prefer open brushy areas with a grass component (Fig. 76). We are able to provide density estimates in GR, SA, and PJ this season (Table 49; Fig. 77). This species was the most common on the six GR transects conducted this season and was the sixth-most common species in all habitats combined. Vesper Sparrow is a Representative Species for Plains and Mesa Grassland habitat as listed by NMPIF.

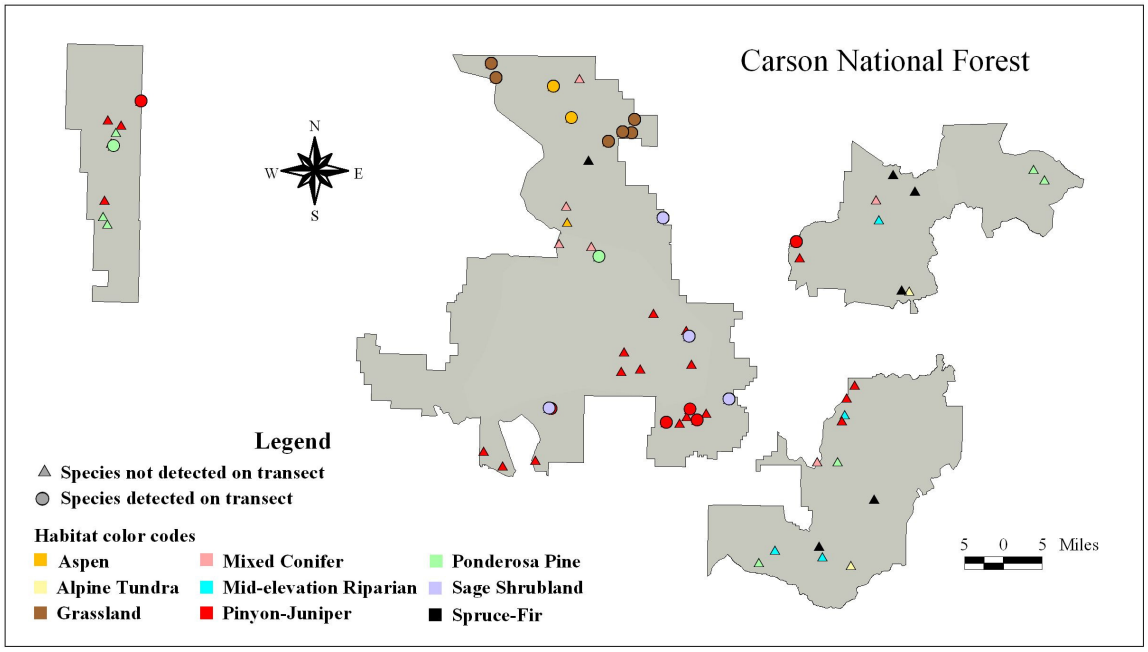

Figure 76. Distribution of transects on which Vesper Sparrow was detected in the Carson National Forest, Summer 2004

Table 49. Habitat-specific density estimates for Vesper Sparrow in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	11
GR	0.224	0.160	0.313	14.9%	116
PJ	0.011	0.004	0.029	52.8%	28
PP	ID	--	--	--	3
SA	0.543	0.159	1.851	45.4%	83

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

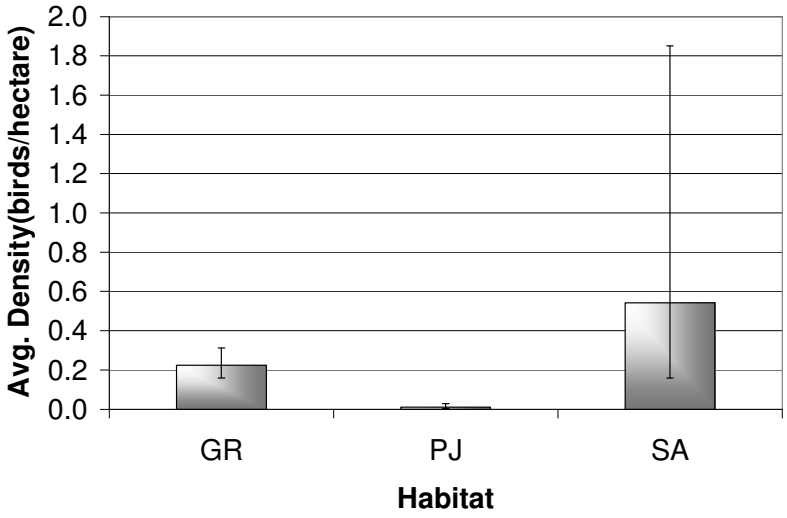

Figure 77. Relative densities (and 95% confidence limits) of Vesper Sparrow among habitats in the Carson National Forest, Summer 2004.

Lark Sparrow

Lark Sparrow prefers arid, open areas with some shrub component (Fig. 78). This year we are unable to provide a density estimate in any habitat. Last year, we detected 29 individuals on PJ transects; this year, we detected only 13.

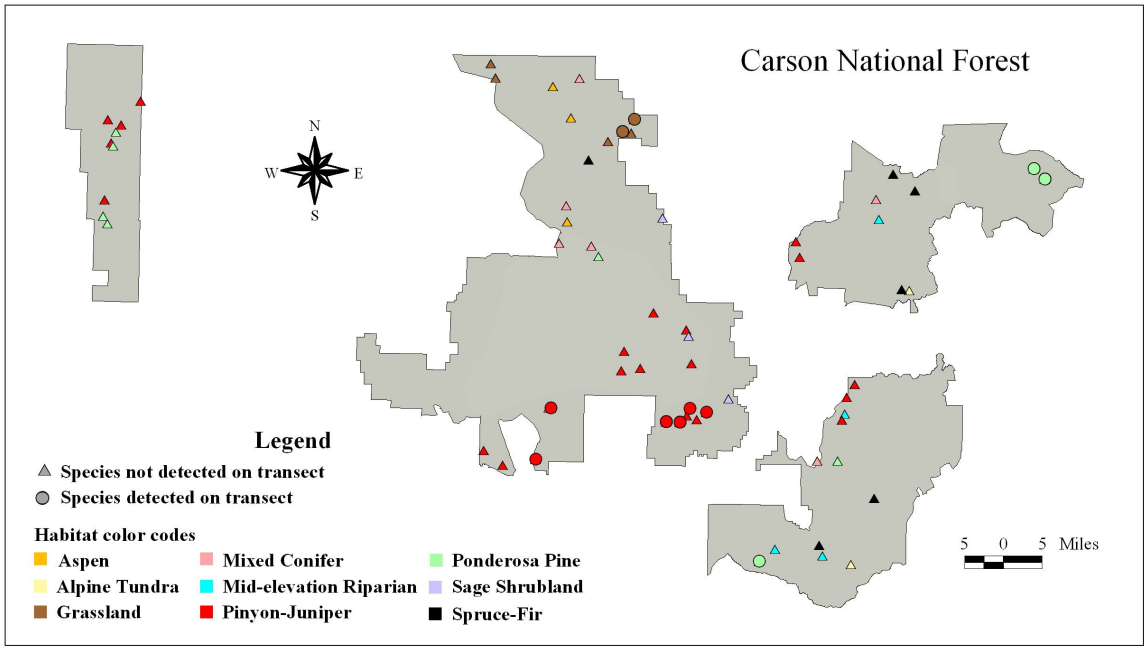

Figure 78. Distribution of transects on which Lark Sparrow was detected in the Carson National Forest, Summer 2004.

Black-throated Sparrow

This species prefers relatively dry desert with some shrub cover. We detected five on Piñon-Juniper transects and one on a Sage Shrubland transect this summer (Fig. 79). NMPIF lists this species as a High Responsibility management species in Great Basin Desert Shrub (Sage Shrubland) and the species is listed as a Stewardship Species in the Southwest region in the North American Landbird Conservation Plan.

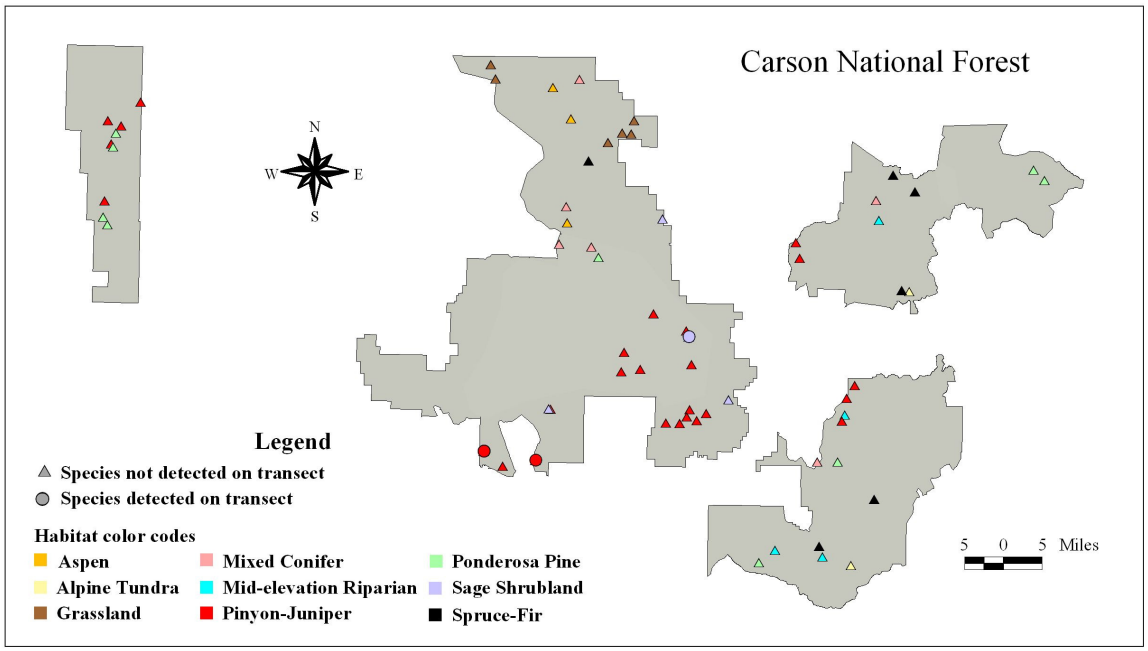

Figure 79. Distribution of transects on which Black-throated Sparrow was detected in the Carson National Forest, Summer 2004.

Sage Sparrow

Sage Sparrow, as its name suggests, is nearly a Sage Shrubland obligate, though can also be found in saltbush in places (Fig. 80). RMBO is again able to provide a density estimate SA, as field staff detected 42 on the SA transects (and additional five on PJ transects; Table 50). NMPIF lists Sage Sparrow as a Highest Priority management species in Great Basin Desert Shrub (Sage Shrubland) and the species is also listed as a Stewardship Species in the Intermountain West region in the North American Landbird Conservation Plan.

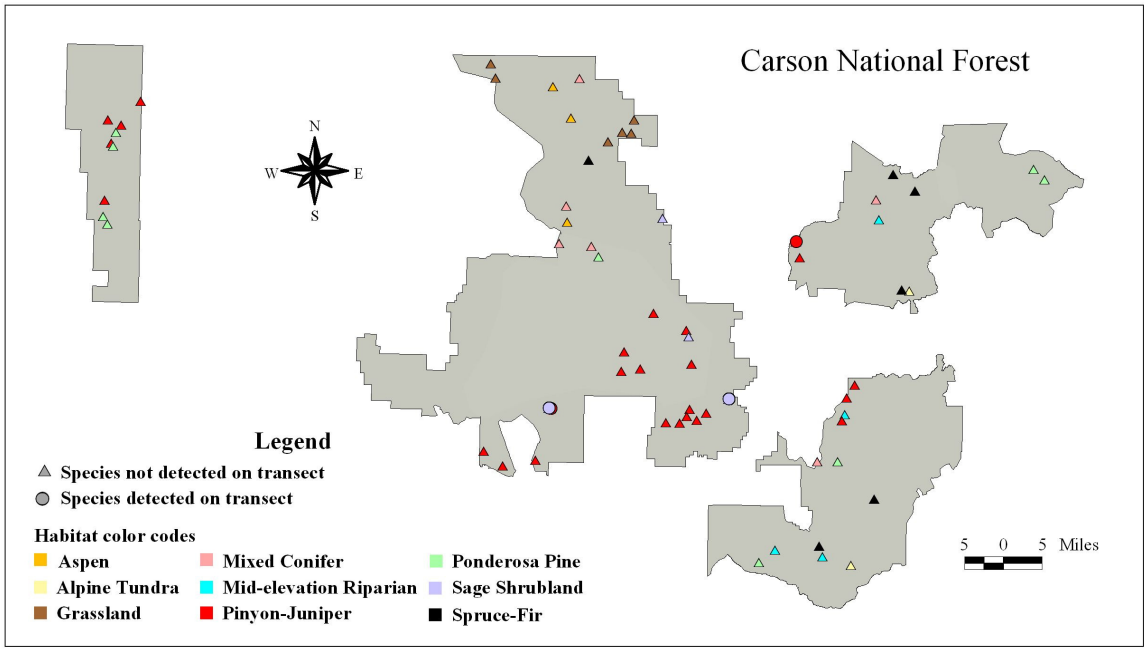

Figure 80. Distribution of transects on which Sage Sparrow was detected in the Carson National Forest, Summer 2004

Table 68. Habitat-specific density estimates for Sage Sparrow in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
PJ	ID	--	--	--	5
SA	0.772	0.148	4.032	68.0%	41

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

White-crowned Sparrow

In the Rockies, White-crowned Sparrows nest in high-elevation areas, particularly in willow meadows and in krummholz; the latter habitat is where the species probably achieves highest breeding densities. We detected the species on AT, GR, and SF transects this season (Fig. 81; Table 51).

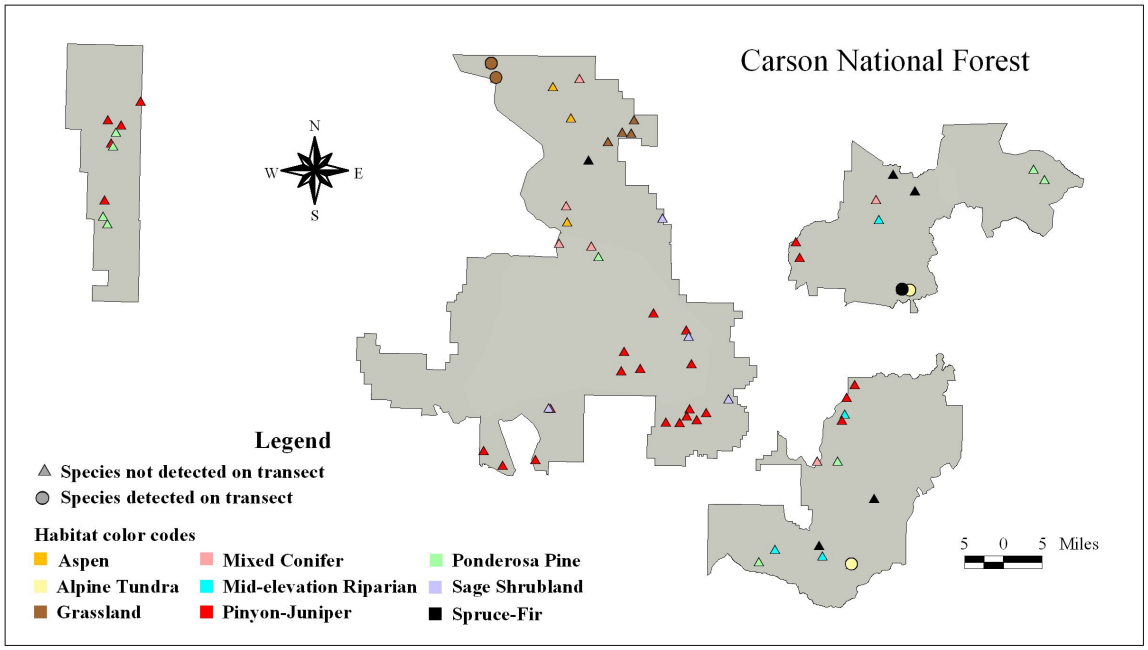

Figure 81. Distribution of transects on which White-crowned Sparrow was detected in the Carson National Forest, Summer 2004

Table 51. Habitat-specific density estimates for White-crowned Sparrow in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AT	0.601	0.001	622.218	69.2%	44
GR	ID	--	--	--	18
SF	ID	--	--	--	7

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Dark-eyed Junco

Gray-headed Junco, the southern Rockies representative of the widespread and polytypic Dark-eyed Junco, nests in all montane forested areas on the CNF (Fig 82) and we are able to provide density estimates from five habitats this season (Aspen, Mixed-Conifer, Mid-elevation Riparian, Ponderosa Pine, and Spruce-Fir; Table 52; Fig. 83). Last year, we provided a density estimate for the species from just one habitat (SF). NMPIF lists Dark-eyed Junco as a High Responsibility management species in Spruce-Fir.

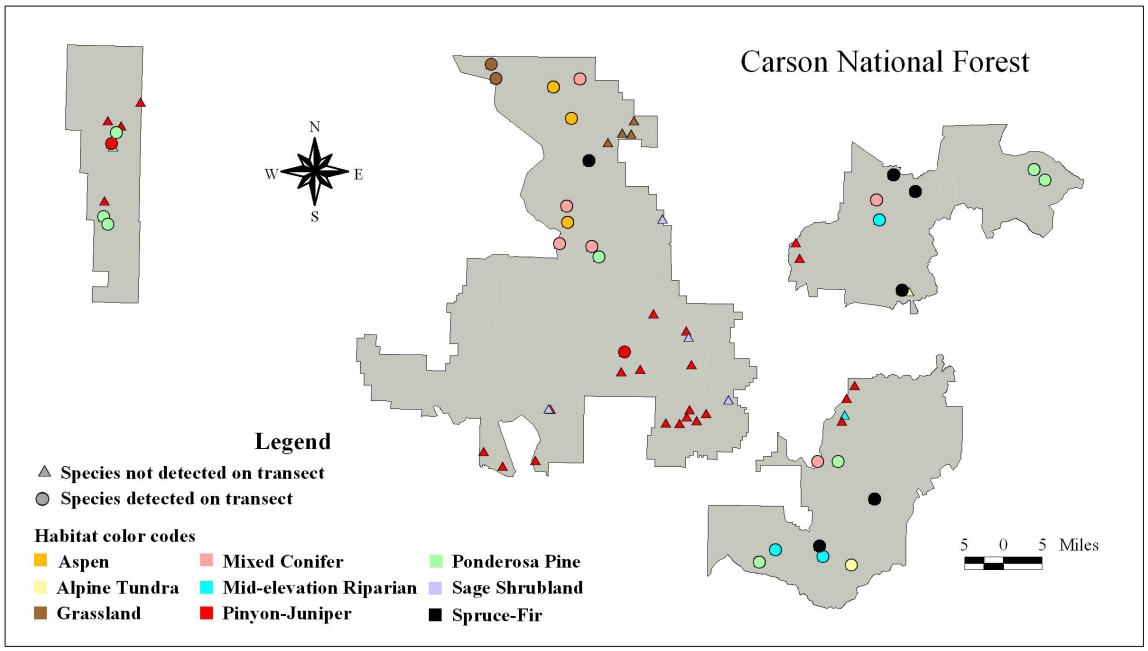

Figure 82. Distribution of transects on which Dark-eyed Junco was detected in the Carson National Forest, Summer 2004.

Table 52. Habitat-specific density estimates for Dark-eyed Junco in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	0.513	0.127	2.070	38.6%	47
AT	ID	--	--	--	3
GR	ID	--	--	--	3
MC	0.395	0.227	0.685	27.7%	47
MR	0.560	0.194	1.614	40.7%	25
PJ	ID	--	--	--	2
PP	0.316	0.149	0.674	38.2%	38
SF	0.501	0.309	0.814	22.8%	62

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

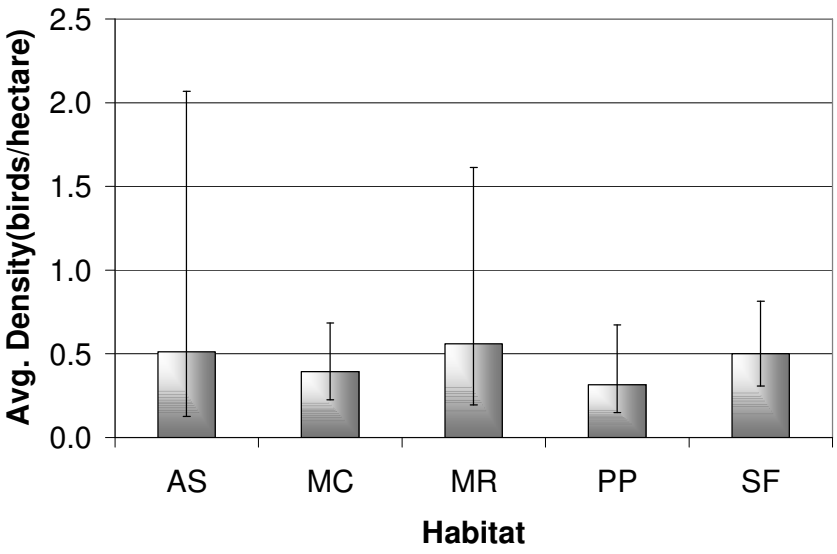

Table 83. Relative densities (and 95% confidence limits) of Dark-eyed Junco among habitats in the Carson National Forest, Summer 2004.

Black-headed Grosbeak

This species breeds in a variety of forested habitats, usually in areas with a strong understory component (Fig. 84). This season, we detected Black-headed Grosbeaks most frequently in PJ, PP, and MR (Table 53). Overall numbers of this species were lower than in 2003, when we detected 117 in PJ and 41 in PP.

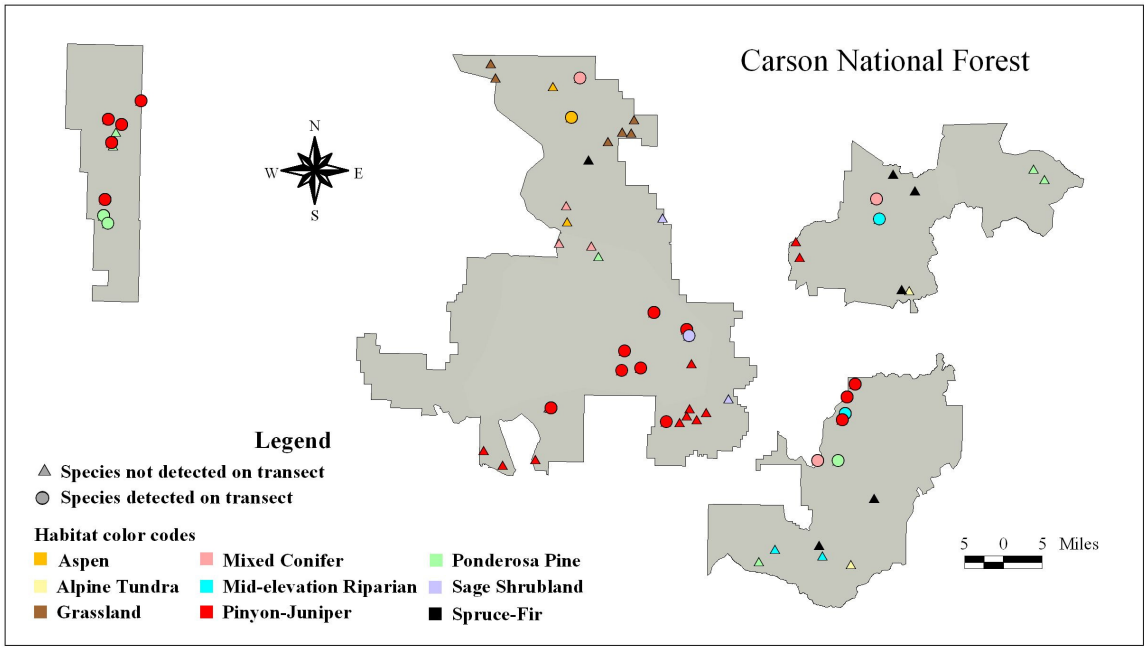

Figure 84. Distribution of transects on which Black-headed Grosbeak was detected in the Carson National Forest, Summer 2004.

Table 53. Habitat-specific density estimates for Black-headed Grosbeak in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	6
MC	ID	--	--	--	8
MR	ID	--	--	--	11
PJ	0.053	0.031	0.092	27.3%	76
PP	ID	--	--	--	16
SA	ID	--	--	--	1

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Western Meadowlark

This species is fairly catholic in its habitat tastes, as long as they are very open with low vegetative structure and, preferably, a strong grass component (Fig. 85). This season we detected 97 Western Meadowlarks on GR transects and additional individuals on transects in AS, PP, and SA (Table 54). Western Meadowlark is listed by NMPIF as a Representative species for Plains and Mesa Grassland habitat.

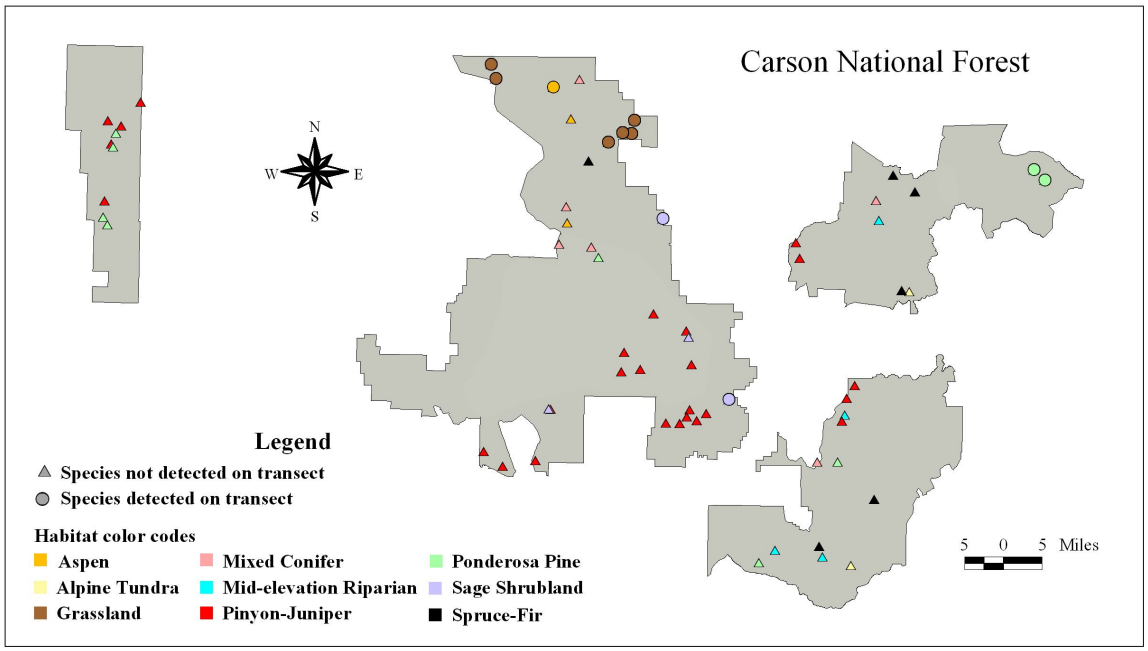

Figure 85. Distribution of transects on which Western Meadowlark was detected in the Carson National Forest, Summer 2004.

Table 54. Habitat-specific density estimates for Western Meadowlark in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	1
GR	0.113	0.064	0.200	25.3%	97
PP	ID	--	--	--	8
SA	ID	--	--	--	10

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Brewer's Blackbird

Brewer's Blackbirds nest in an esoteric variety of open habitats and tolerate, even nest in, shorter trees. This season we detected sufficient numbers of this species on three grassland transects to provide a density estimate (Fig. 86; Table 54).

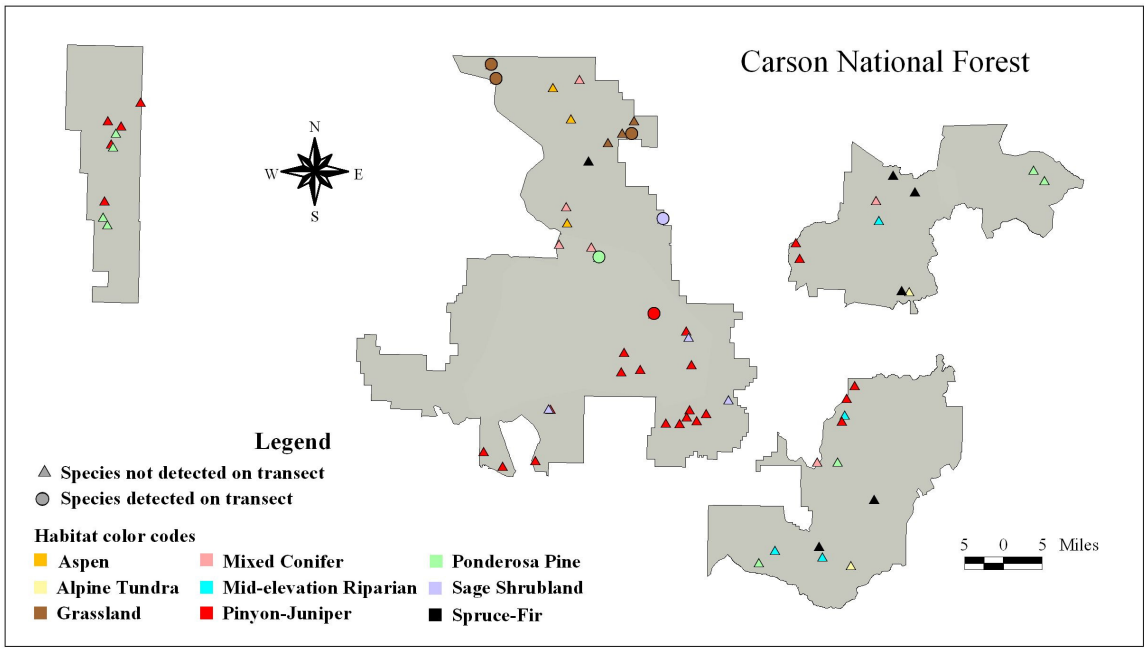

Figure 86. Distribution of transects on which Brewer's Blackbird was detected in the Carson National Forest, Summer 2004.

Table 54. Habitat-specific density estimates for Brewer's Blackbird in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
GR	0.443	0.136	1.440	57.7%	23
PJ	ID	--	--	--	6
PP	ID	--	--	--	2
SA	ID	--	--	--	5

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Brown-headed Cowbird

Brown-headed Cowbirds parasitize nests (does not build a nest or incubate its own eggs) of other species and is most frequently found in lower-elevation open and forested areas (Fig. 87). In 2003, we detected sufficient numbers of this species to provide an estimate of density in PJ, though detected only 20 in that habitat in 2004.

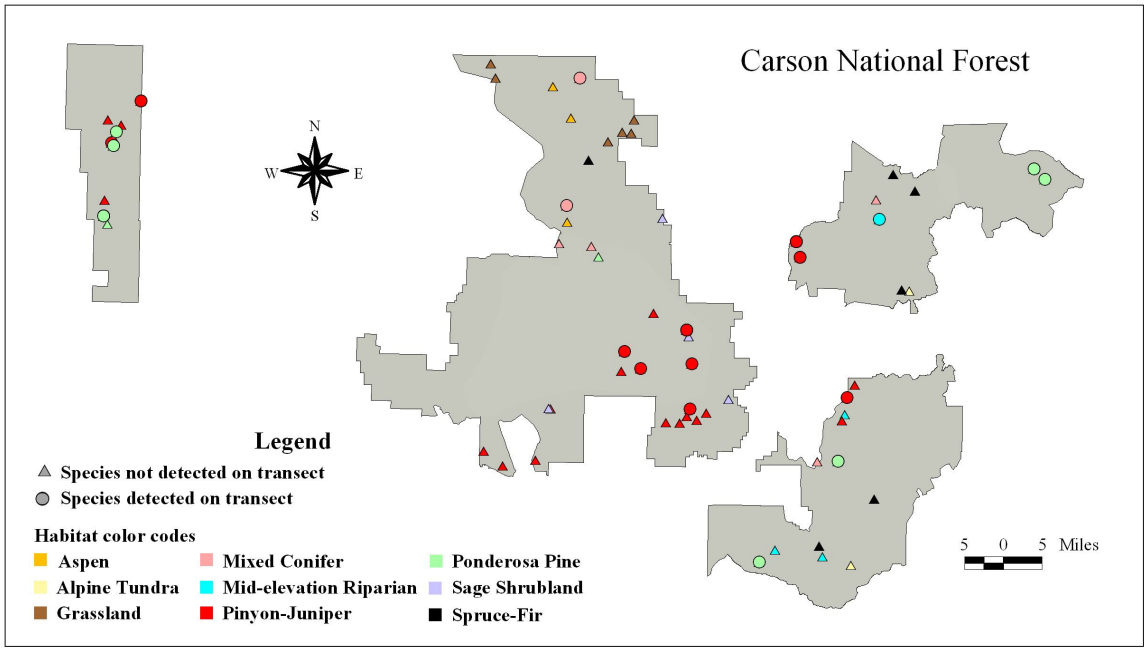

Figure 87. Distribution of transects on which Brown-headed Cowbird was detected in the Carson National Forest, Summer 2004

Red Crossbill

In the southern Rocky Mountains, Red Crossbills come in two "Types," a Ponderosa Pine specialist and a Lodgepole Pine specialist, with the latter also being common in Spruce-Fir; there is reasonable evidence to suggest that the two types are actually species in their own rights. Though Red Crossbills breed mostly in mid-winter to spring, individuals can breed at any time of year should food resources (conifer seeds) be in sufficient abundance. Individuals are nomadic, nesting whenever and wherever they find abundant conifer mast, thus can be abundant in an area one year and almost non-existent the next. This year, we detected sufficient numbers in PP to generate a density estimate in that habitat (Table 55). We detected 84 Red Crossbills in SF, but these represented only 15 independent detections. We also detected 28 in Aspen and 24 in Mixed Conifer, but these represent only 13 and four independent detections, respectively (Fig. 88).

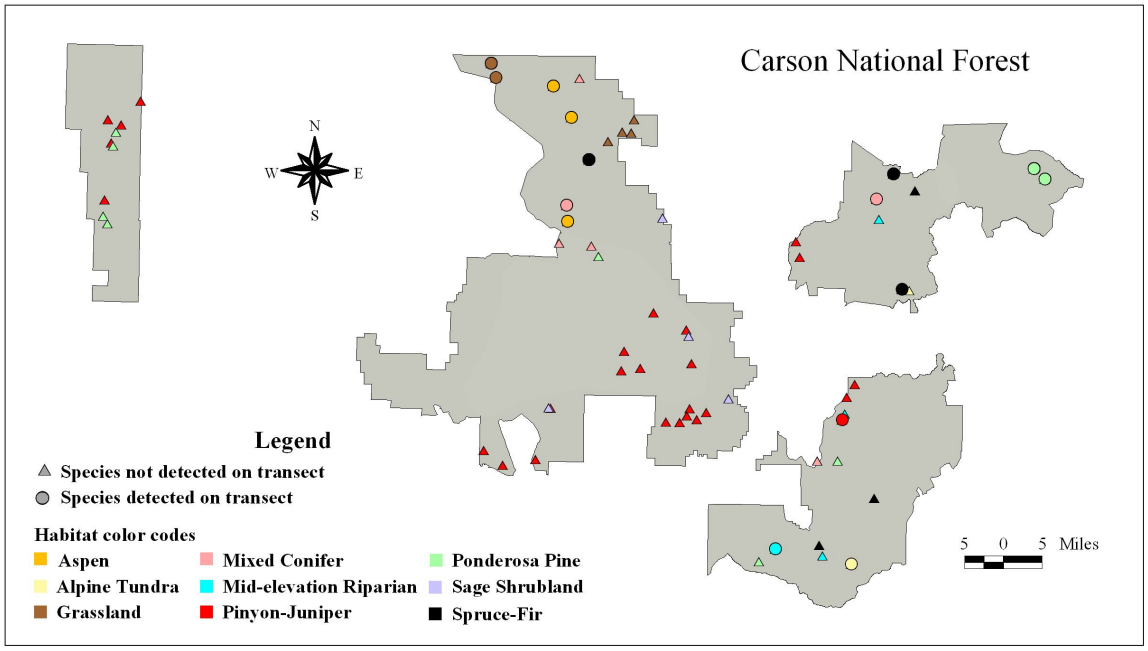

Figure 88. Distribution of transects on which Red Crossbill was detected in the Carson National Forest, Summer 2004

Table 55. Habitat-specific density estimates for Red Crossbill in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	28
AT	ID	--	--	--	2
GR	ID	--	--	--	13
MC	ID	--	--	--	24
MR	ID	--	--	--	3
PJ	ID	--	--	--	2
PP	0.4277	0.0789	2.3194	86.0%	26
SF	ID	--	--	--	84

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Pine Siskin

This species breeds most frequently in Spruce-Fir forests, but utilizes all montane forest types with a large enough component of fir or spruce (Fig. 89). Like Red Crossbills, Pine Siskins are nomadic and generally track conifer mast availability. This year we provide density estimates for MC (n=48), PP (n=35), and SF (n=69; Table 56; Fig. and 89). Last year we were unable to provide a density estimate for any habitat for this species.

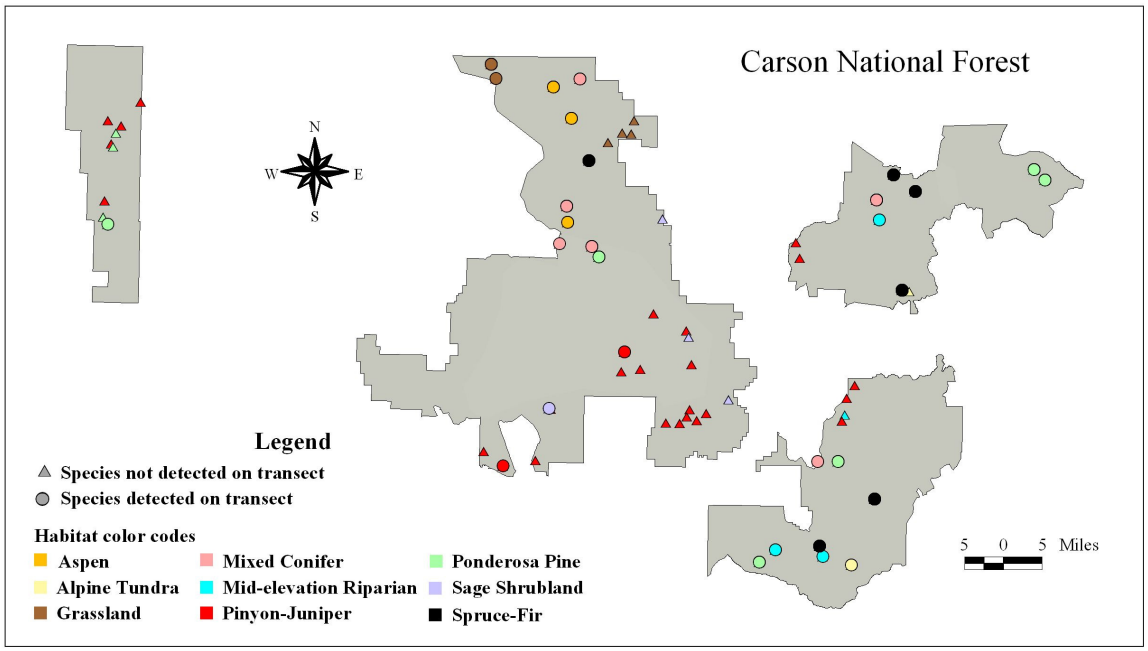

Figure 88. Distribution of transects on which Pine Siskin was detected in the Carson National Forest, Summer 2004.

Table 56. Habitat-specific density estimates for Pine Siskin in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	23
AT	ID	--	--	--	7
GR	ID	--	--	--	18
MC	0.467	0.212	1.029	37.6%	36
MR	ID	--	--	--	7
PJ	ID	--	--	--	4
PP	0.167	0.077	0.362	38.2%	32
SF	0.715	0.479	1.069	19.0%	57

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

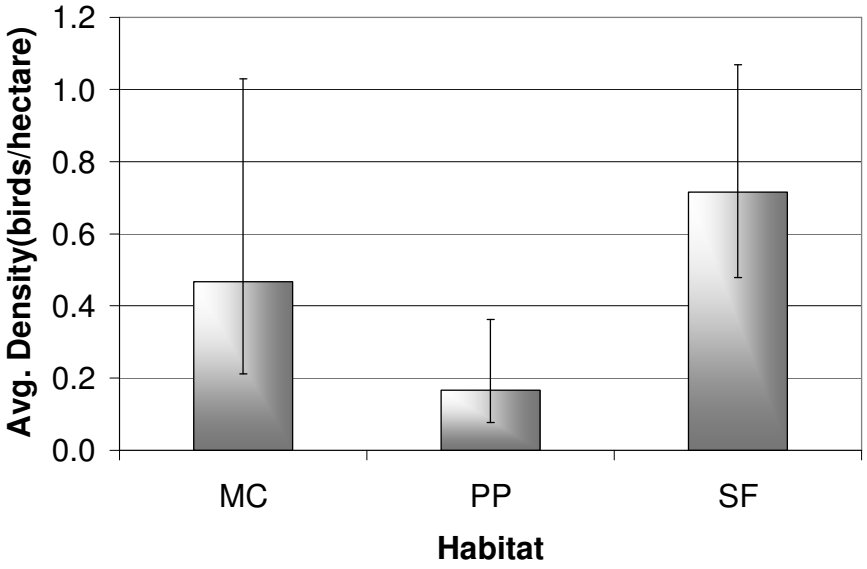

Table 89. Relative densities (and 95% confidence limits) of Pine Siskin among habitats in the Carson National Forest, Summer 2004.

Red Squirrel

Red Squirrel is a conifer generalist and RMBO staff detected the species on transects in five habitats (Fig. 90), particularly in SF (n=49), MC (n=23), and PP (n=1; Table 57) and we provide a density estimate for SF. This sciurid is listed as a MIS in the CNF.

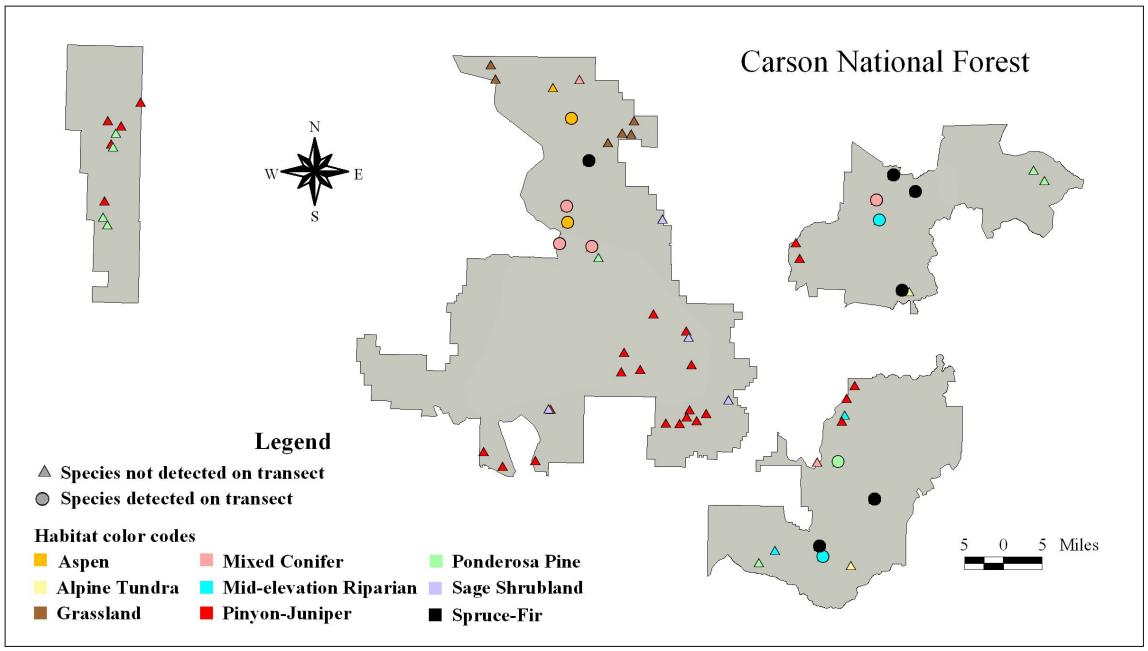

Figure 90. Distribution of transects on which Red Squirrel was detected in the Carson National Forest, Summer 2004

Table 57. Habitat-specific density estimates for Red Squirrel in the Carson National Forest, Summer 2004.

Habitat	D	LCL	UCL	CV	n
AS	ID	--	--	--	9
MC	ID	--	--	--	23
MR	ID	--	--	--	6
PP	ID	--	--	--	1
SF	0.350	0.171	0.714	31.1%	44

D=Density (birds/ha); LCL=lower confidence limit of D; UCL=upper confidence limit of D; CV=coefficient of variation of D; n=number of observations used in analysis; ID=insufficient data

Acknowledgments

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Literature Cited

Bart, J., M.A. Howe, and C.J. Ralph. 2001. *The Partners In Flight Landbird Monitoring Strategy*. Office of Migratory Bird Management, U.S. Fish and Wildlife Service, Washington, D.C.

Beason, J. and G. Giroir. 2004. *Monitoring the Birds of Carson National Forest*. Rocky Mountain Bird Observatory unpublished report. 73 pp.

Buckland, S.T., D.R. Anderson, K.P. Burnham, and J.L. Laake. 1993. *Distance Sampling: Estimating Abundance of Biological Populations*. Chapman and Hall, London, reprinted 1999 by RUWPA, University of St. Andrews, Scotland. 446 pp.

Buckland, S.T., D.R. Anderson, K.P. Burnham, J.L. Laake, D.L. Borchers, and L. Thomas. 2001. Introduction to Distance Sampling, Oxford Univ. Press, Oxford.

Leukering, T., M. Carter, A. Panjabi, D. Faulkner, and R. Levad. 2000. *Monitoring Colorado's Birds: The Plan for Count-based Monitoring*.

Leukering, T., M. Carter, A. Panjabi, D. Faulkner, and R. Levad. 2001. *Monitoring Wyoming's Birds: The Plan for Count-based Monitoring*.

Leukering, T., D. Faulkner, R. Levad, C. Wood, and J. Beason. 2002. *Monitoring Colorado's Birds: The 2001 Field Season*. Rocky Mountain Bird Observatory unpublished report. 27 pp.

New Mexico Partners in Flight. 2003. Draft Land Bird Conservation Plan for the State of New Mexico. Compiled by Scott Norris. Albuquerque, NM. 200 pp. (http://www.hawksaloft.org/pif/intro.html)

Rich, T.D., C.J. Beardmore, H. Berlanga, P.J. Blancher, M.S.W. Bradstreet, G.S. Butcher, D.W. Demarest, E.H. Dunn, W.C. Hunter, E.E. Iñigo-Elias, J.A. Kennedy, A.M. Martell, A.O. Panjabi, D.N. Pashley, K.V. Rosenberg, C.M. Rustay, J.S. Wendt, and T.C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Laboratory of Ornithology, Ithaca, NY.

Appendix A. Low-density target species by habitat.

Habitat	Low-density target species
ALL HABITATS	Turkey Vulture, ALL raptors, ALL galliforms, Band-tailed Pigeon, Greater Roadrunner, ALL owls, Common Nighthawk, ALL swifts, Belted Kingfisher, ALL woodpeckers (except NOFL), Olive-sided Flycatcher, Hammond's Flycatcher, Cordilleran Flycatcher, Say's Phoebe, Loggerhead Shrike, Gray Jay, Clark's Nutcracker, American Crow, ALL ravens, Tree Swallow, Northern Rough-winged Swallow, Bank Swallow, Black-capped Chickadee, Bushtit, Red-breasted Nuthatch, White-breasted Nuthatch, Brown Creeper, Rock Wren, Canyon Wren, American Dipper, Western Bluebird, Swainson's Thrush, Curve-billed Thrasher, Cedar Waxwing, MacGillivray's Warbler, Canyon Towhee, Black-throated Sparrow, Sage Sparrow, Lazuli Bunting, Pine Grosbeak, Cassin's Finch, Red Crossbill, Lesser Goldfinch, Evening Grosbeak
Aspen	Hammond's Flycatcher, Dusky Flycatcher, Orange-crowned Warbler
Alpine Tundra	White-tailed Ptarmigan, Brewer's Sparrow, Fox Sparrow, Brown-capped Rosy-Finch
Grassland	Mountain Plover, Upland Sandpiper, Long-billed Curlew, Burrowing Owl, McCown's Longspur, Chestnut-collared Longspur
Mixed Conifer	Orange-crowned Warbler
Piñon-Juniper	Black-chinned Hummingbird, Gray Vireo, Pinyon Jay, Virginia's Warbler
Ponderosa Pine	Blue-gray Gnatcatcher, Grace's Warbler
Sage Shrubland	currently, no others
Spruce-Fir	currently, no others

Appendix B. Species and the respective habitat that received priority scores by the New Mexico Working Group of Partners in Flight and for which we provide density estimates in the Carson National Forest, Summer 2004.

Highest Priority	Priority	High Responsibility
Gray Flycatcher - PJ	Pygmy Nuthatch - PP	Broad-tailed Hummingbird - PJ
Black-throated Gray Warbler - PJ	Western Bluebird - PJ, PP	Western Wood-Pewee - PP
Grace's Warbler - PP	Mountain Bluebird - PJ	Ash-throated Flycatcher - PJ/MS
Green-tailed Towhee - PJ/MS	Virginia's Warbler - PJ/MS	Plumbeous Vireo - PP
Sage Sparrow - SA	Green-tailed Towhee - SA	Pinyon Jay - PJ
		Juniper Titmouse - PJ
		Rock Wren - PJ/MS
		Dark-eyed Junco - PP, MC, SF

MC = Mixed Conifer, MS = Montane Shrubland, PJ = Piñon-Juniper, PP = Ponderosa Pine, SA = Sage Shrubland, SF = Spruce-Fir

APPENDIX C. List of all bird species observed per habitat in Carson National Forest with species totals, Summer 2004. Totals represent the total number of individuals detected, not the number of independent detections.

		Total number individuals observed per habitat									
Common Name	**Scientific Name**	**AS**	**AT**	**GR**	**MC**	**MR**	**PJ**	**PP**	**SA**	**SF**	**TOTAL**
Turkey Vulture	*Cathartes aura*	0	0	5	1	0	3	6	0	0	15
Cooper's Hawk	*Accipiter cooperii*	0	0	0	1	0	1	0	0	0	2
Swainson's Hawk	*Buteo swainsonii*	0	0	2	0	0	0	0	0	0	2
Red-tailed Hawk	*Buteo jamaicensis*	1	0	0	0	1	1	3	1	0	7
Golden Eagle	*Aquila chrysaetos*	0	1	0	0	0	0	0	0	0	1
American Kestrel	*Falco sparverius*	0	0	3	2	0	1	1	2	0	9
Prairie Falcon	*Falco mexicanus*	0	1	0	0	0	0	0	0	0	1
Peregrine Falcon	*Falco peregrinus*	0	0	0	0	1	0	0	0	0	1
Blue Grouse	*Dendragapus obscurus*	1	0	0	12	0	0	0	0	6	19
Scaled Quail	*Callipepla squamata*	0	0	0	0	0	0	0	2	0	2
Band-tailed Pigeon	*Patagioenas fasciata*	0	0	0	0	0	1	0	0	4	5
Mourning Dove	*Zenaida macroura*	0	0	5	9	9	89	20	15	0	147
Northern Pygmy-Owl	*Glaucidium gnoma*	0	0	0	1	0	0	0	0	0	1
Common Nighthawk	*Chordeiles minor*	1	0	1	1	0	1	1	0	0	5
White-throated Swift	*Aeronautes saxatalis*	0	0	0	1	0	15	0	0	0	16
Black-chinned Hummingbird	*Archilochus alexandri*	0	0	0	0	0	5	0	0	0	5
Broad-tailed Hummingbird	*Selasphorus platycercus*	2	0	1	19	18	39	18	0	8	105
Rufous Hummingbird	*Selasphorus rufus*	0	0	0	0	0	0	0	0	1	1
Belted Kingfisher	*Ceryle alcyon*	0	0	0	0	2	0	0	0	0	2
Lewis's Woodpecker	*Melanerpes lewis*	1	0	0	1	0	0	0	0	0	2
Acorn Woodpecker	*Melanerpes formicivorus*	0	0	0	0	0	0	1	0	0	1
Red-naped Sapsucker	*Sphyrapicus nuchalis*	6	0	0	5	1	0	4	0	0	16
Williamson's Sapsucker	*Sphyrapicus thyroideus*	9	0	0	8	0	1	5	0	0	23
Ladder-backed Woodpecker	*Picoides scalaris*	0	0	0	0	0	1	0	0	0	1
Downy Woodpecker	*Picoides pubescens*	4	0	0	3	0	2	1	0	0	10
Hairy Woodpecker	*Picoides villosus*	11	0	0	11	2	33	14	1	13	85
Three-toed Woodpecker	*Picoides dorsalis*	1	0	0	0	0	0	1	0	3	5
Northern Flicker	*Colaptes auratus*	17	2	3	21	1	14	19	0	20	97
Olive-sided Flycatcher	*Contopus cooperi*	2	1	0	7	0	4	5	0	0	19
Western Wood-Pewee	*Contopus sordidulus*	16	0	1	9	9	12	96	1	1	145
Hammond's Flycatcher	*Empidonax hammondii*	0	0	0	4	0	1	5	0	0	10
Dusky Flycatcher	*Empidonax oberholseri*	6	1	0	3	1	16	17	0	0	44
Gray Flycatcher	*Empidonax wrightii*	0	0	0	0	1	163	4	4	0	172
Cordilleran Flycatcher	*Empidonax occidentalis*	3	0	0	17	59	7	6	0	7	99
Say's Phoebe	*Sayornis saya*	0	0	0	0	0	7	1	5	0	13
Ash-throated Flycatcher	*Myiarchus cinerascens*	0	0	0	0	0	182	11	4	0	197
Cassin's Kingbird	*Tyrannus vociferans*	0	0	0	0	0	23	6	7	0	36
Gray Vireo	*Vireo vicinior*	0	0	0	0	0	2	0	0	0	2
Plumbeous Vireo	*Vireo plumbeus*	0	0	0	4	2	94	40	5	0	145
Warbling Vireo	*Vireo gilvus*	66	0	0	59	50	17	17	0	32	241
Gray Jay	*Perisoreus canadensis*	1	0	0	4	0	2	0	0	10	17
Steller's Jay	*Cyanocitta stelleri*	14	0	0	20	11	8	17	0	12	82
Western Scrub-Jay	*Aphelocoma californica*	0	0	0	0	4	42	3	4	0	53
Pinyon Jay	*Gymnorhinus cyanocephalus*	0	0	0	4	0	78	79	23	0	184

Appendix C. Continued.

		Total number individuals observed per habitat									
Common Name	***Scientific Name***	**AS**	**AT**	**GR**	**MC**	**MR**	**PJ**	**PP**	**SA**	**SF**	**TOTAL**
Black-billed Magpie	*Pica hudsonia*	0	0	0	1	0	4	0	4	0	9
American Crow	*Corvus brachyrhynchos*	5	0	3	9	3	2	4	0	6	32
Common Raven	*Corvus corax*	4	1	3	10	3	78	32	7	12	150
Horned Lark	*Eremophila alpestris*	0	0	50	0	0	0	0	1	0	51
Purple Martin	*Progne subis*	1	0	0	0	0	10	55	0	0	66
Violet-green Swallow	*Tachycineta thalassina*	3	0	2	20	33	110	107	0	1	276
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	0	0	0	0	0	2	4	0	0	6
Cliff Swallow	*Petrochelidon pyrrhonota*	0	0	25	0	0	13	0	12	0	50
Barn Swallow	*Hirundo rustica*	0	0	0	0	0	0	1	0	0	1
Black-capped Chickadee	*Poecile atricapillus*	4	0	0	0	0	0	0	0	0	4
Mountain Chickadee	*Poecile gambeli*	55	0	2	70	19	58	59	1	109	373
Juniper Titmouse	*Baeolophus ridgwayi*	0	0	0	0	0	119	1	3	0	123
Bushtit	*Psaltriparus minimus*	0	0	0	0	17	134	4	4	0	159
Red-breasted Nuthatch	*Sitta canadensis*	17	0	0	23	2	1	3	0	24	70
White-breasted Nuthatch	*Sitta carolinensis*	10	0	0	7	2	28	31	2	1	81
Pygmy Nuthatch	*Sitta pygmaea*	4	0	0	29	0	15	86	0	1	135
Brown Creeper	*Certhia americana*	6	0	0	9	2	0	8	0	24	49
Rock Wren	*Salpinctes obsoletus*	0	1	6	3	0	39	0	1	0	50
Canyon Wren	*Catherpes mexicanus*	0	0	0	0	0	6	0	0	0	6
Bewick's Wren	*Thryomanes bewickii*	0	0	0	1	0	50	1	2	0	54
House Wren	*Troglodytes aedon*	20	0	1	20	2	1	11	0	6	61
American Dipper	*Cinclus mexicanus*	0	0	0	1	2	0	0	0	0	3
Golden-crowned Kinglet	*Regulus satrapa*	1	0	0	8	2	0	0	0	14	25
Ruby-crowned Kinglet	*Regulus calendula*	14	0	5	12	4	0	4	0	32	71
Blue-gray Gnatcatcher	*Polioptila caerulea*	0	0	0	0	0	46	20	3	0	69
Western Bluebird	*Sialia mexicana*	0	0	0	0	0	36	74	4	0	114
Mountain Bluebird	*Sialia currucoides*	1	0	25	5	0	28	0	13	0	72
Townsend's Solitaire	*Myadestes townsendi*	1	0	1	4	0	6	15	0	2	29
Hermit Thrush	*Catharus guttatus*	26	0	0	46	6	22	23	0	84	207
American Robin	*Turdud migratorius*	30	1	8	54	45	25	50	1	21	235
Gray Catbird	*Dumetella carolinensis*	0	0	0	0	0	1	0	0	0	1
Northern Mockingbird	*Mimus polyglottos*	0	0	0	0	0	14	0	4	0	18
Sage Thrasher	*Oreoscoptes montanus*	0	0	16	0	0	1	0	11	0	28
American Pipit	*Anthus rubescens*	0	61	0	0	0	0	0	0	0	61
Orange-crowned Warbler	*Vermivora celata*	3	0	0	5	4	0	1	0	6	19
Virginia's Warbler	*Vermivora virginiae*	0	0	0	2	7	55	13	0	0	77
Yellow Warbler	*Dendroica petechia*	0	0	0	2	1	5	0	0	0	8
Yellow-rumped Warbler	*Dendroica coronata*	35	1	4	54	29	32	44	0	59	258
Black-throated Gray Warbler	*Dendroica nigrescens*	0	0	0	0	13	218	13	0	0	244
Grace's Warbler	*Dendroica graciae*	0	0	0	5	0	4	32	0	0	41
MacGillivray's Warbler	*Oporornis tolmiei*	0	0	0	3	15	0	1	0	0	19
Wilson's Warbler	*Wilsonia pusilla*	0	2	0	0	0	2	0	0	2	6
Yellow-breasted Chat	*Icteria virens*	0	0	0	0	0	1	0	0	0	1
Western Tanager	*Piranga ludoviciana*	36	0	7	71	32	45	83	1	22	297
Green-tailed Towhee	*Pipilo chlorurus*	12	2	5	16	4	30	3	23	4	99

Appendix C. Continued.

		Total number individuals observed per habitat									
Common Name	***Scientific Name***	**AS**	**AT**	**GR**	**MC**	**MR**	**PJ**	**PP**	**SA**	**SF**	**TOTAL**
Spotted Towhee	*Pipilo maculatus*	0	0	0	6	1	160	60	34	0	261
Canyon Towhee	*Pipilo fuscus*	0	0	0	0	0	0	0	1	0	1
Cassin's Sparrow	*Aimophila cassinii*	0	0	1	0	0	0	0	0	0	1
Chipping Sparrow	*Spizella passerina*	19	0	7	13	10	156	36	14	16	271
Brewer's Sparrow	*Spizella breweri*	0	0	7	0	0	18	0	48	0	73
Vesper Sparrow	*Pooecetes gramineus*	11	0	123	0	0	28	3	85	0	250
Lark Sparrow	*Chondestes grammacus*	0	0	8	0	0	13	10	0	0	31
Black-throated Sparrow	*Amphispiza bilineata*	0	0	0	0	0	5	0	1	0	6
Sage Sparrow	*Amphispiza belli*	0	0	0	0	0	5	0	42	0	47
Savannah Sparrow	*Passerculus sandwichensis*	0	0	15	0	0	0	0	0	0	15
Fox Sparrow	*Passerella iliaca*	0	3	0	0	0	0	0	0	0	3
Song Sparrow	*Melospiza melodia*	0	0	0	3	11	2	0	0	0	16
Lincoln's Sparrow	*Melospiza lincolnii*	0	2	1	0	4	0	0	0	1	8
White-crowned Sparrow	*Zonotrichia leucophrys*	0	45	18	0	0	0	0	0	7	70
Dark-eyed Junco	*Junco hyemalis*	49	3	3	47	26	2	40	0	63	233
Black-headed Grosbeak	*Pheucticus melanocephalus*	6	0	0	8	11	77	16	1	0	119
Blue Grosbeak	*Passerina caerulea*	0	0	0	2	0	0	0	0	0	2
Lazuli Bunting	*Passerina amoena*	0	0	0	0	0	0	1	0	0	1
Red-winged Blackbird	*Agelaius phoeniceus*	0	0	2	0	0	0	0	0	0	2
Western Meadowlark	*Sturnella neglecta*	1	0	97	0	0	0	8	10	0	116
Brewer's Blackbird	*Euphagus cyanocephalus*	0	0	57	0	0	6	2	5	0	70
Brown-headed Cowbird	*Molothrus ater*	0	0	0	2	1	20	14	0	0	37
Bullock's Oriole	*Icterus bullockii*	0	0	0	0	0	1	0	0	0	1
Pine Grosbeak	*Pinicola enucleator*	0	0	0	0	0	0	0	0	3	3
Cassin's Finch	*Carpodacus cassinii*	0	0	1	1	0	1	1	0	2	6
House Finch	*Carpodacus mexicanus*	0	0	0	1	0	16	0	0	0	17
Red Crossbill	*Loxia curvirostra*	28	2	13	24	3	2	38	0	84	194
White-winged Crossbill	*Loxia leucoptera*	0	0	2	0	0	0	0	0	0	2
Pine Siskin	*Carduelis pinus*	23	7	18	48	7	4	35	1	69	212
Lesser Goldfinch	*Carduelis psaltria*	1	0	0	0	0	8	0	0	0	9
Evening Grosbeak	*Coccothraustes vespertinus*	0	0	0	2	0	2	7	0	6	17
Red Squirrel	*Tamiasciurus hudsonicus*	9	0	0	23	6	0	1	0	49	88

Appendix D. Comparisons of estimated densities between Carson National Forest and Colorado, Summer 2004.

		Carson National Forest					Colorado				
Species	Habitat	D	LCL	UCL	CV%	n	D	LCL	UCL	CV	n
Mourning Dove	Piñon-Juniper	0.034	0.022	0.052	21%	84	0.163	0.103	0.257	23%	190
Broad-tailed Hummingbird	Piñon-Juniper	0.343	0.195	0.605	29%	38	0.521	0.253	1.073	37%	41
Western Wood-Pewee	Ponderosa Pine	0.335	0.176	0.639	30%	92	0.185	0.127	0.271	19%	177
Gray Flycatcher	Piñon-Juniper	0.376	0.278	0.509	15%	160	0.614	0.390	0.966	23%	173
Cordilleran Flycatcher	Mid-elevation Riparian	1.212	0.715	2.054	23%	50	0.064	0.037	0.111	28%	42
Ash-throated Flycatcher	Piñon-Juniper	0.240	0.168	0.343	18%	175	0.166	0.095	0.291	29%	91
Plumbeous Vireo	Piñon-Juniper	0.165	0.108	0.253	21%	93	0.219	0.148	0.324	20%	86
	Ponderosa Pine	0.184	0.121	0.281	20%	40	0.103	0.062	0.173	26%	46
Warbling Vireo	Aspen	0.592	0.215	1.629	28%	65	0.995	0.758	1.305	14%	371
	Mid-elevation Riparian	0.921	0.385	2.207	31%	50	0.131	0.072	0.237	30%	73
	Mixed Conifer	0.510	0.249	1.046	32%	59	0.361	0.228	0.572	23%	137
	Spruce-Fir	0.256	0.088	0.748	49%	32	0.045	0.020	0.106	44%	25
Pinyon Jay	Piñon-Juniper	0.009	0.004	0.020	40%	31	0.020	0.012	0.034	27%	53
Common Raven	Piñon-Juniper	0.008	0.004	0.015	32%	40	0.016	0.008	0.033	36%	41
Horned Lark	Grassland	0.153	0.078	0.299	32%	43	1.067	0.812	1.402	13%	846
Violet-green Swallow	Piñon-Juniper	0.070	0.039	0.126	30%	56	0.088	0.046	0.169	33%	28
	Ponderosa Pine	0.689	0.320	1.484	39%	50	0.475	0.283	0.798	26%	93
Mountain Chickadee	Aspen	1.224	0.217	6.900	46%	54	0.836	0.635	1.101	14%	261
	Mixed Conifer	0.930	0.630	1.374	18%	63	0.470	0.328	0.673	18%	137
	Piñon-Juniper	0.134	0.074	0.243	30%	51	0.028	0.014	0.059	38%	26
	Ponderosa Pine	0.403	0.253	0.643	23%	50	0.362	0.237	0.554	21%	125
	Spruce-Fir	1.040	0.715	1.513	17%	100	1.337	0.999	1.788	15%	267
Juniper Titmouse	Piñon-Juniper	0.258	0.168	0.396	21%	116	0.137	0.083	0.224	25%	44
White-breasted Nuthatch	Ponderosa Pine	0.196	0.072	0.533	52%	25	0.259	0.179	0.376	19%	81
Pygmy Nuthatch	Ponderosa Pine	0.734	0.351	1.531	36%	55	0.427	0.269	0.676	23%	114
Rock Wren	Piñon-Juniper	0.014	0.006	0.034	45%	36	0.029	0.017	0.049	27%	57
Bewick's Wren	Piñon-Juniper	0.065	0.037	0.115	29%	49	0.443	0.262	0.747	26%	167
Ruby-crowned Kinglet	Spruce-Fir	0.266	0.102	0.690	45%	32	0.800	0.612	1.046	14%	364
Blue-gray Gnatcatcher	Piñon-Juniper	0.311	0.142	0.682	41%	41	0.966	0.643	1.450	20%	114
Western Bluebird	Ponderosa Pine	0.387	0.207	0.723	29%	50	0.192	0.106	0.351	30%	50
Mountain Bluebird	Piñon-Juniper	0.016	0.007	0.034	39%	24	0.358	0.223	0.574	24%	151
Hermit Thrush	Aspen	0.062	0.016	0.235	46%	26	0.123	0.089	0.170	16%	231
	Mixed Conifer	0.075	0.040	0.140	29%	46	0.470	0.328	0.673	18%	137
	Ponderosa Pine	0.011	0.004	0.028	47%	23	0.047	0.029	0.078	25%	95
	Spruce-Fir	0.166	0.083	0.332	30%	83	0.125	0.089	0.174	17%	227
American Robin	Aspen	0.200	0.068	0.585	45%	30	0.844	0.636	1.120	14%	279
	Mid-elevation Riparian	0.633	0.354	1.132	26%	42	0.671	0.479	0.938	17%	184
	Mixed Conifer	0.341	0.179	0.649	30%	54	0.418	0.273	0.639	22%	157
	Piñon-Juniper	0.011	0.005	0.023	37%	25	0.094	0.046	0.191	37%	49
	Ponderosa Pine	0.234	0.095	0.578	46%	49	0.162	0.110	0.239	19%	159
	Alpine Tundra	1.011	0.009	108.570	50%	58	1.160	0.889	1.514	13%	548
Virginia's Warbler	Piñon-Juniper	0.172	0.079	0.375	40%	50	0.329	0.167	0.652	34%	69
Yellow-rumped Warbler	Aspen	0.425	0.049	3.683	71%	34	1.006	0.766	1.321	14%	237
	Mid-elevation Riparian	0.577	0.119	2.792	60%	29	0.258	0.145	0.458	29%	82
	Mixed Conifer	0.612	0.316	1.188	30%	54	0.756	0.541	1.058	17%	198
	Ponderosa Pine	0.188	0.090	0.390	33%	44	0.344	0.230	0.516	20%	160
	Spruce-Fir	0.560	0.211	1.484	40%	56	0.940	0.684	1.291	16%	251
Black-throated Gray Warbler	Piñon-Juniper	0.576	0.345	0.961	25%	209	0.468	0.321	0.683	19%	205
Western Tanager	Aspen	0.157	0.026	0.948	47%	36	0.209	0.109	0.400	33%	79
	Mixed Conifer	0.504	0.304	0.839	25%	71	0.536	0.366	0.784	19%	181

Appendix D. Continued.

		Carson National Forest					Colorado				
Species	Habitat	D	LCL	UCL	CV%	n	D	LCL	UCL	CV	n
Western Tanager	Piñon-Juniper	0.0460	0.0270	0.0785	27%	42	0.0429	0.0192	0.0960	42%	25
	Ponderosa Pine	0.2235	0.1419	0.3520	21%	81	0.2838	0.1763	0.4568	24%	144
Green-tailed Towhee	Piñon-Juniper	0.0427	0.0152	0.1197	54%	30	0.3471	0.1818	0.6629	33%	103
	Sage Shrubland	0.1755	0.0287	1.0726	78%	23	0.1463	0.0830	0.2579	28%	217
Spotted Towhee	Piñon-Juniper	0.2134	0.1441	0.3161	19%	157	0.4477	0.2548	0.7866	29%	151
	Ponderosa Pine	0.5005	0.1929	1.2984	44%	60	0.0392	0.0170	0.0901	43%	42
Chipping Sparrow	Piñon-Juniper	0.8368	0.4680	1.4960	30%	140	0.8962	0.6448	1.2455	17%	166
	Ponderosa Pine	0.1972	0.0842	0.4616	39%	35	0.2312	0.1672	0.3196	16%	123
Brewer's Sparrow	Sage Shrubland	0.6617	0.2037	2.1497	43%	44	1.2944	0.9115	1.8383	18%	377
Vesper Sparrow	Piñon-Juniper	0.0107	0.0039	0.0290	53%	28	0.0260	0.0115	0.0590	42%	35
	Sage Shrubland	0.5430	0.1593	1.8511	45%	83	0.2137	0.1509	0.3029	17%	243
Sage Sparrow	Sage Shrubland	0.7719	0.1478	4.0318	68%	41	0.0268	0.0127	0.0565	37%	58
White-crowned Sparrow	Alpine Tundra	0.6007	0.0006	622.21	69%	44	1.0902	0.8242	1.4419	14%	728
Dark-eyed Junco	Aspen	0.5126	0.1269	2.0700	39%	47	1.4427	1.1493	1.8110	11%	312
	Mid-elevation Riparian	0.5601	0.1944	1.6141	41%	25	0.8344	0.5330	1.3064	23%	140
	Mixed Conifer	0.3945	0.2272	0.6847	28%	47	1.2647	0.8841	1.8090	18%	233
	Ponderosa Pine	0.3164	0.1485	0.6739	38%	38	0.5989	0.4017	0.8928	20%	169
	Spruce-Fir	0.5010	0.3085	0.8135	23%	62	1.2622	0.9820	1.6223	13%	357
Black-headed Grosbeak	Piñon-Juniper	0.0533	0.0310	0.0917	27%	76	0.0338	0.0134	0.0849	48%	32
Western Meadowlark	Grassland	0.1129	0.0636	0.2004	25%	97	0.2003	0.1557	0.2575	12%	565
Red Crossbill	Ponderosa Pine	0.4277	0.0789	2.3194	86%	26	0.0294	0.0122	0.0711	46%	31
Pine Siskin	Mixed Conifer	0.4668	0.2117	1.0294	38%	36	0.9935	0.6612	1.4927	20%	103
	Ponderosa Pine	0.1668	0.0769	0.3620	38%	32	0.1857	0.0868	0.3973	39%	38
	Spruce-Fir	0.7153	0.4787	1.0688	19%	57	1.9520	1.4893	2.5584	14%	258

D=Density in birds/hectare, **LCL**=lower confidence limit on D; **UCL**=upper confidence limit on D; **CV**=coefficient of variation on D;
n=number of observations.